

Economic Tools for Planning Health Services in Remote Rural Areas

By

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High quality infrastructure is critical for quality of life preservation as well as an essential component of growth and development. As facilities and services deteriorate and/or become inadequate, growth is deterred and quality of life is adversely affected. A viable health sector is a major component of a community's infrastructure. Furthermore, attraction of new firms to provide jobs and economic growth can be extremely difficult without the availability of quality medical services. Several studies support the importance of a quality health sector in rural communities for industrial development and for retaining existing businesses and industries (Chirilos and Nostel, 1985; Lyne, 1988; Scott, Smith and Rungeling, 1997). Finally, the attraction of retirees can be an effective economic development strategy. Selected studies (Reginier and Gelwicks, 1981; Serow, 1987; Toseland and Rasch, 1978) have indicated that health services were one of the primary concerns for selection of retirement locations for the elderly. Consequently, it is imperative that rural communities have quality health services.

More changes are occurring in the delivery of health services than ever before in America's history. Hospital and physician networks are being created. Managed care is being introduced into rural communities. In addition, fiscal problems with Medicare and Medicaid may impose additional financial stress and changes with the delivery of health services in rural areas. Aside from its contribution to existing quality of life and economic growth projects, the health sector provides significant direct economic benefits through employment and income impacts on a community. The objective of this paper is to demonstrate the importance of the health sector to the economy of a rural community and to discuss what community leaders can do to maintain and promote their health sector. More specifically, the objectives are to:

1. Present a model to measure the total impact of the health sector on a community's economy;
2. Discuss overview of community health planning;
3. Present a model to estimate number of physicians an area can support and to estimate the cost to establish a physician practice; and
4. Summarize the health service budgets that are available for use in remote rural areas.

MEASURING THE HEALTH SECTOR IMPACT ON THE ECONOMY

The health sector at the community level is generally not looked at as a large employer, but in fact it is extremely large. In many rural communities, a rural hospital is often the second largest employer (Doeksen, Cordes, and Shaffer, 1992). The largest employer is often the school system. If the employment of the hospital is added to the other health components such as physicians, pharmacies, etc., and the total impact of the health sector is included, health generated employment is often about 10 percent of a rural community's employment. When the secondary benefits are included in this analysis, the health sector often accounts for about 15 percent of the total employment (Doeksen, Johnson, and Willoughby, 1996).

The model and data used to calculate county and community level multipliers is discussed in Doeksen, Johnson, Biard-Holmes, and Schott (1998). Direct employment is the employment and income associated with the health sector. Secondary benefits are the employment and income generated in other business due to the health sector businesses and employees spending income locally.

The Direct Economic Activities

Employment and payroll are the important direct economic activities created in Atoka County from the health sector. The health sector is divided into the following five components:

- Hospitals
- Doctors and Dentists (includes other medical professionals)
- Nursing and Protective Care
- Other Medical and Health Services (includes home health care and county health departments)
- Pharmacies

The total health sector in Atoka County employs 383 full-time equivalent employees and has an estimated payroll of \$8,205,896 (**Table 1**). The health sector in Atoka County is typical of many rural areas, with one hospital, two physician offices, two dental offices, two nursing homes, and two pharmacies. The Hospital component employs 98 people with an annual payroll of \$2,556,396. The Doctors and Dentists (& Other Medical Professionals) component employs 54 full-time equivalent employees, with an annual payroll of \$1,951,000. The Nursing and Protective Care Component employs 149 people with an annual payroll of \$1,806,000. The Other Medical and Health Services component employs 63 employees, with an annual payroll cost of \$1,195,000. The Pharmacies component has a total of 19 employees totaling a payroll of \$697,500. It should be noted that many rural communities have a large number of elderly, and the ranchers and farmers often retire in the towns. Thus, Nursing and Protective Care facilities are an important component of the health sector.

Table 1
Direct Economic Activities of the Health Sector
in Atoka County, Oklahoma, 2000

Component	Estimated Employees	Estimated Payroll
Hospital (1) (Includes the Hospital Home Health and the Atoka County EMS)	98	\$2,556,396
Doctors and Dentists (Includes 2 physicians, 2 optometrists, 2 dentists, and 1 chiropractor)	54	\$1,951,000
Nursing & Protective Care (2)	149	\$1,806,000
Other Medical & Health Services (Includes 4 home health agencies, county health dept., and 2 DME suppliers)	63	\$1,195,000
Pharmacies (2)	<u>19</u>	<u>\$697,500</u>
TOTALS	<u>383</u>	<u>\$8,205,896</u>

SOURCE: Local survey and estimated from research

Secondary Impacts of Health Sector on the Economy of Atoka County, Oklahoma

Employment and income multipliers for the area have been calculated by use of the IMPLAN model. It was developed by the U.S. Forest Service¹ and is a model that allows for development of county multipliers. The employment multipliers for the five components of the

¹ For complete details of model, see Palmer and Siverts, 1985 and Siverts, Palmer, Walters, and Alward, 1983.

health sector are shown in **Table 2**, column 3. The employment multiplier for the hospital component is 1.61. This indicates that for each job created in that sector, 0.61 jobs are created throughout the area due to business (indirect) and household (induced) spending. The employment multipliers for the other health sector components are also shown in **Table 2**, column 3. The income multiplier for the hospital sector is 1.45 (**Table 2**, column 6). This indicates that for each dollar created in that sector, 0.45 dollars are created throughout the area due to business (indirect) and household (induced) spending. The income multipliers for the other four health sector components are also given in **Table 2**, column 6.

Applying the employment multipliers to the employment for each of the five health sector components yields an estimate of each component's employment impact on Atoka County (**Table 2**, columns 2, 3, and 4). For example, for the hospital 98 employees, applying the employment multiplier of 1.61 to the employment number of 98 brings the total employment impact of the hospitals to 158 employees ($98 \times 1.61 = 158$). The Doctors and Dentists component has a direct impact of 54 employees and with the application of the multiplier of 1.64, the total impact comes to 86 employees. The Nursing and Protective Care component has a direct effect of 149 employees and an employment multiplier of 1.44, to bring the total impact to 216 employees. The Other Medical & Health Services component has a direct effect of 63 employees, an employment multiplier of 1.52, and a total employment impact of 95 employees. The Pharmacies component has 19 employees and a total impact of 27 employees, applying the employment multiplier of 1.44. The total employment impact of the health sector in Atoka County is estimated at 582 employees (**Table 2**, total of column 4).

Applying the income multipliers to the income (employee compensation and proprietors' income) for each of the five health sector components yields an estimate of each component's

Table 2
Economic Impact of the Health Sector
on Employment, Income, Retail Sales, and Sales Tax in Atoka County, Oklahoma

Health Sectors	IMPLAN			IMPLAN			Retail Sales	1¢ Sales Tax Collection
	Employed	Multiplier	Impact	Income	Multiplier	Impact		
Hospitals	98	1.61	158	\$2,556,396	1.45	\$3,706,774	\$1,082,378	\$10,824
Physicians, Dentists, and Other Professionals	54	1.64	86	\$1,951,000	1.30	\$2,555,810	\$740,600	\$7,406
Nursing & Protective Care	149	1.44	216	\$1,806,000	1.58	\$2,853,480	\$833,216	\$8,332
Other Medical & Health Services	63	1.52	95	\$1,195,000	1.53	\$1,637,150	\$533,878	\$5,339
Pharmacies	<u>19</u>	1.44	<u>27</u>	<u>\$697,500</u>	1.52	<u>\$1,150,875</u>	<u>\$309,578</u>	<u>\$3,096</u>
Total	383		582	\$8,205,896		\$11,904,089	\$3,499,650	\$34,997

NOTE: Most data were obtained from secondary sources. In a few instances, data were unavailable, extrapolated and/or estimated.

SOURCE: 1999 IMPLAN database, Minnesota IMPLAN Group, Inc.; 1998 updated or 1999 HUPS data, Oklahoma State Department of Health; Community Health Planning data, Oklahoma Cooperative Extension Service and Oklahoma Office of Rural Health; Critical Access Hospital data, Oklahoma State Department of Health, 2001; Personal Income data, Woods and Poole Economics, Inc., 2002; Sales Tax Collections for Cities and Towns and Counties, Oklahoma Tax Commission, 2001; 2000 County Business Patterns, U.S. Census Bureau

*Since the communities in the county have different sales tax rates, the amount of collections generated by a one cent sales tax is presented.

income impact on Atoka County (**Table 2**, columns 5, 6, and 7). The Hospital component has a total payroll of \$2,556,396; applying the income multiplier of 1.45 brings the total Hospital income impact to \$3,706,774 ($\$2,556,396 \times 1.45 = \$3,706,774$). The Doctors and Dentists have a total income impact of \$2,555,810, based on the application of the income multiplier of 1.30 to the payroll of the Doctors and Dentists component of \$1,951,000. The Nursing & Protective Care component has a payroll of \$1,806,000, a multiplier of 1.58, resulting in an income impact of \$2,853,480. The Other Medical & Health Services has an income impact of \$1,637,150, based on the direct payroll of \$1,195,000 and the income multiplier of 1.53. The Pharmacies has an income impact of \$1,150,875, based on the direct payroll of \$697,500 and the income multiplier of 1.52. The total income impact of the health sector in Atoka County is projected to be \$11,904,089 (**Table 2**, total of column 7).

Income also has an impact on retail sales. If the county ratio between retail sales and income continues as in the past several years, then direct and secondary retail sales generated by the health sector and its employees equals \$3,499,650 (**Table 2**, total of column 8). Each of the five health sector components' income impacts is utilized to determine the retail sales and a 1-cent sales tax collection for each component. Then the five components are totaled to determine the direct and secondary retail sales generated by the health sector. A 1-cent sales tax collection is estimated to generate \$34,997 in Atoka County as a result of the total health sector impact (**Table 2**, total of column 9). This estimate is probably low, as many health care employees will spend a larger proportion of their income in local establishments that collect sales tax. The bottom line is that the health sector not only contributes greatly to the medical health of the community, but also to the economic health of the community.

In summary the key results from measuring the economic impact of the health sector in Atoka County include:

- Approximately 14% of all employment in Atoka County is directly working in the health sector,
- About 18% of all employment in Atoka County can be attributed to the health sector through the direct and secondary effects;
- Employment multipliers ranged from 1.44 to 1.64;
- Income multipliers ranged from 1.30 to 1.58;
- Health sector is the second largest employer in Atoka county; and
- Nursing homes created a very large number of jobs.

In general the key results from the Oklahoma studies measuring the economic impact of the health sector illustrate that approximately 10-15% of employment in a rural area work directly in the health sector and approximately 15-20% of total employment in a rural area can be attributed to the health sector.

AN OVERVIEW OF COMMUNITY HEALTH PLANNING

By documenting the importance of health care in attracting business and industry and retirees, and for creating jobs and generating income, this report demonstrates the need for a strong health sector in Atoka County. And, as the county's health care sector continues to change, local decision makers may find it necessary to seek assistance as they work to evaluate, maintain, or expand the health sector. To this end, a resource team consisting of representatives from the Oklahoma State Department of Health, the Oklahoma Office of Rural Health, the Area Health Education Center (AHEC) in the community's area, the Oklahoma Cooperative Extension

Service and the University of Oklahoma Health Sciences Center is available to provide education and technical assistance. Two primary types of assistance that may be most beneficial to the communities, both vital to maintaining a viable health sector, are strategic health planning and health service budget studies (Oklahoma State Department of Health, 1995).

Strategic Health Planning

Strategic health planning is a process that helps local communities identify their health care needs; examine the social, economic, and political realities affecting the local delivery of health care; determine what is wanted and what realistically can be achieved to meet their identified health care needs; and develop and mobilize an action plan based on their analysis and planning. Strategic health planning involves cooperation among people and organizations to pursue common goals. The process is designed to answer three questions:

- (1) Where is the community now?
- (2) Where does the community want to go?
- (3) How will the community get there?

For the strategic health planning process to be most effective, it must be based in the community and driven by the community. Local residents and their leaders must participate—a current knowledge of the health care industry is not necessary. This process is about local people solving local problems. The local hospital and health care providers should have input into the decision making and should support and “trust” the outcomes, but not be the main force behind the process. The community must provide the energy and commitment.

Health Service Budgets

The strategic health planning process often identifies the need for new or additional health providers or services. For example, the health planning process may identify the need for

additional physicians or the need for a service currently not available in the community, such as kidney dialysis. Whatever the identified need, all relevant information must be gathered and analyzed before action is initiated. Budget studies or feasibility studies are often desirable for decision makers. A model to estimate the number of physicians an area can support will be presented to demonstrate one of the tools. A listing of available health service budget studies will then be presented.

PHYSICIAN FEASIBILITY STUDY

Measuring The Number Of Physicians An Area Can Support

To determine an estimate of the number of visits to primary care physicians, the medical service area was delineated (**Table 3**). The medical service area includes places where persons are most likely to use a physician in Atoka County. This was defined as the county and includes

Table 3
Estimated 2000 Population of Atoka County, Oklahoma,
Medical Service Area

Service Area	Population
<u>Atoka County Medical Service Area</u>	
Atoka	2,988
Caney	199
Stringtown	396
Tushka	345
Remainder of county	<u>9,951</u>
Total Medical Service Area Population	<u>13,879</u>

SOURCE: U. S. Census Bureau, 2000

the communities of Atoka, Caney, Stringtown, Tushka, and the surrounding rural area. Data from hospital admission records were used to help delineate the medical service area. The 2000 estimated population of the medical service area is shown in **Table 3**. The estimated 2000 population of the medical service area is 13,879. These estimates were made using 2000 U. S. Census population estimates.

The number of physician office visits generated in the Atoka County service area is estimated by using the service area population data and the data from state and national research. Research shows the number of annual physician office visits for the specified age group breakdowns shown in **Table 4**. For instance, for males under age 15, the average number of physician office visits is 2.4 visits per year (Doeksen, G., et al, 1990; U.S. Department of Health and Human Resources, 2002). This average annual visit rate is applied to the populations for each gender and age group. Residents in the medical service area are estimated to make 42,694 total physician office visits (**Table 4**). Of these total physician office visits, 62.2 percent or 26,555 ($42,694 \times 62.2\% = 26,555$) will be made to physicians active in primary patient care while the remainder will be made to specialists (Doeksen, G., et al, 1990).

The total number of primary care physician office visits given various usage rates is presented in **Table 5** for the Atoka County medical service area. If there is 85 percent usage of Atoka County primary care physicians by residents of the medical service area, an estimated 22,572 primary care physician office visits will be made annually in Atoka County. A primary care physician in Oklahoma has an average of 4,976 patient office visits annually and, therefore, it is estimated that Atoka County needs an estimated 4.5 primary care physicians ($22,572/4,976 = 4.5$) (Doeksen, G., et al, 1990). Atoka County currently has three primary care physicians. Given the estimated annual visits, it appears that Atoka County can support approximately one

additional full-time primary care physician. Higher usage levels would indicate more physicians could be supported and lower usage levels would indicate fewer physicians. All assumptions and local conditions must be taken into consideration by decision makers before deciding if additional physicians could successfully locate in Atoka County.

Table 4
Total Annual Physician Office Visits and Total Annual Primary Care Physician Office Visits Generated in the Atoka County Medical Service Area

Age	Total Annual Physician Office Visits						Total County Population	Total Annual Physician Office Visits
	Male			Female				
	2000 Population	2000 Visit Rate	Total Visits	2000 Population	2000 Visit Rate	Total Visits		
Under 15	1,400	2.4	3,423	1,266	2.3	2,876	2,666	6,299
15-24	1,018	1.2	1,200	731	2.3	1,694	1,749	2,894
25-44	2,414	1.6	3,969	1,621	3.1	5,071	4,035	9,039
45-64	1,783	3.0	5,369	1,596	4.1	6,563	3,379	11,931
65-74	545	5.4	2,936	544	6.1	3,312	1,089	6,248
75+	<u>346</u>	6.7	<u>2,317</u>	<u>615</u>	6.4	<u>3,964</u>	<u>961</u>	<u>6,282</u>
Total	7,506		19,214	6,373		23,480	13,879	42,694

Total Annual Physician Office Visits = 42,694
62.2% of Total Annual Physician Office Visits (62.2% x 42,694)
Equals Total Annual Primary Care Physician Office Visits of 26,555

SOURCE: U. S. Census Bureau, 2000

SOURCE: U. S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center of Health Statistics, "National Ambulatory Medical Care Survey: 2000 Summary," No. 328, June 5, 2002

Table 5
Primary Care Physician Office Visits Given Usage
By Local Residents in Atoka County, Oklahoma

	<u>Usage Levels</u>						
	70%	75%	80%	85%	90%	95%	100%
Office Visits by Usage Level	18,589	19,916	21,244	22,572	23,900	25,227	26,555
Number of Primary Care Physicians	3.7	4	4.3	4.5	4.8	5.1	5.3

For example, **85%** usage level, then 22,572 total primary care physician office visits for an estimated 4.5 Total Primary Care Physicians

Based on 4,976 average annual primary care office visits per primary care physician practice in Oklahoma

Estimating the Costs and Revenues to Establish a Primary Care Physician Practice

If a prospective primary care physician were to consider locating in Atoka County, an estimate of costs, revenues, and net income would be beneficial. Two alternative annual budgets for a solo practice are presented. Cost data are taken from a study of rural Oklahoma physicians (Doeksen, G., et al., 1990) with price adjustments based on the consumer price index for medical care (U.S. Congress). The first alternative assumes that 2,750 visits are made annually and may be considered a first year budget. The second alternative assumes 4,750 visits. (It will take 2-3 years for a new practice to reach this level of business.) These could be considered first year (2,750 visits) and approximately second or third year (4,750 visits) scenarios for a new primary care solo physician practice. In both alternatives, it was assumed that a 1,500 square foot building was rented that would have three examination/treatment rooms.

Alternative 1 (2,750 Visits)

Alternative 1 assumes that 2,750 visits will be made annually to the primary care physician practice. Capital costs include equipment costs (**Table 6**) for the reception area, business office, examination/treatment rooms, laboratory, physician's office, and conference room/staff lounge.

Table 6
Total Capital Costs -
Equipment Found in a Primary Care Physician's Office

Equipment by Office Area	Total Capital Cost
EQUIPMENT SUMMARY	
Total Reception Area	\$1,927
Total Business Office	\$24,604
Total Examination/Treatment Rooms (3)	\$26,202
Total Laboratory	\$4,894
Total Physician's Office	\$3,435
Total Conference Room/Staff Lounge	<u>\$1,442</u>
 TOTAL EQUIPMENT SUMMARY	 <u>\$62,505</u>

Table 6 summarizes the typical equipment found in a solo practice clinic, as determined from research (Doeksen, G., et al., 1990). Equipment costs for the reception area are estimated to be \$1,927, for the business office \$24,604, for three examination/treatment rooms \$26,202, for the laboratory \$4,894, for the physician's office \$3,435, and for the conference room/staff lounge \$1,442. The total cost of equipment is estimated to be \$62,505. **Table 7** again shows the total capital equipment costs of \$62,505. The annual payments for capital equipment are estimated to be \$10,172 (principal and interest), assuming a 10-year loan at 10 percent interest.

Table 7
Estimated Capital Costs
for a Primary Care Physician Practice in Atoka County

Cost Item	Total Capital Costs	Total Annual Capital Costs*
TOTAL ESTIMATED CAPITAL COSTS		
Equipment		
Estimated Total Equipment Costs	<u>\$62,505</u>	<u>\$10,172</u>
ESTIMATED TOTAL COSTS	<u>\$62,505</u>	<u>\$10,172</u>

* Total Annual Equipment Based on a 10 year loan @ 10% interest.

Operating costs for the practice are based on research in Oklahoma (Doeksen, G., et al., 1990). Building expenses include rent, utilities, general maintenance, janitorial services, insurance on equipment, and other miscellaneous costs (**Table 8**). For **Alternative 1**, rent totals \$12,385 annually and the cost of utilities (electricity, gas, water, sewer, and trash) is estimated to total \$2,682 per year. Maintenance is estimated at \$956 per year and annual janitorial services are estimated to cost \$2,866. Insurance on the equipment is estimated to be \$313 per year and a miscellaneous category of \$1,500 is included to cover any additional expenses. The total annual building costs are estimated to be \$20,702.

Office costs include items such as telephone, supplies, office equipment maintenance and billings (**Table 8**). Telephone costs are estimated at \$3,022. The cost of office supplies depends on the number of office visits and is estimated at about \$0.80 per office visit for an annual total of \$2,200. Office equipment maintenance is estimated at \$1,412. Billings are estimated based on approximately \$0.43 per office visit for an annual total of \$1,183. In addition, fees for professional services are budgeted at \$2,298, auto expenses at \$3,949, conventions and travel at

Table 8
Estimated Annual Capital & Operating Costs
for a Primary Care Physician Practice in Atoka County for Alternatives 1 and 2

Cost Item	Total Cost - 2,750 Visits (Alt. 1)	Total Cost - 4,750 Visits (Alt. 2)
ESTIMATED ANNUAL CAPITAL COSTS		
Equipment	\$10,172	\$10,172
ESTIMATED ANNUAL OPERATING COSTS		
Total Annual Building Costs	\$20,702	\$20,702
Total Annual Office Costs	\$22,150	\$22,468
Total Annual Medical Costs	\$17,682	\$24,864
Personnel Costs with Benefits	<u>\$60,256</u>	<u>\$71,640</u>
TOTAL ANNUAL OPERATING EXPENSES	<u>\$120,790</u>	<u>\$139,674</u>
TOTAL ANNUAL CAPITAL & OPERATING EXPENSES	<u>\$130,963</u>	<u>\$149,846</u>

\$2,389, and professional dues and licenses at \$2,500. Allowances are also made for bonding (\$150), marketing (\$1,664), and postage (\$1,383). Total annual office costs are \$22,150 for **Alternative 1**.

Medical costs are listed next in **Table 8**. Maintenance of medical equipment is estimated to cost \$1,685 annually for **Alternative 1**. Costs of medical supplies are estimated at \$1.90 per office visit and vary with the number of patients seen. For 2,750 visits, they are estimated at \$5,230. Malpractice insurance is budgeted at \$6,122. This cost should be examined closely by a prospective physician due to rapidly changing insurance rates. The costs for outside laboratory fees are estimated at \$4,645 annually. Laboratory supplies vary by the number of patients seen and are

estimated at \$1.69 per office visit or \$4,645 for 2,750 visits. The total medical costs for **Alternative 1** are estimated to be \$17,682 annually.

Personnel costs are generally the largest expense for a physician practice. Many solo practices employ a Licensed Practical Nurse (LPN), a receptionist/bookkeeper, and a medical assistant. The annual salary for a full-time LPN is estimated to be \$25,000, for a full-time receptionist/ bookkeeper \$14,098, and for a half-time medical assistant \$9,107. Benefits of 25 percent have been estimated for an annual benefits total of \$12,051. The total cost for personnel with benefits is estimated to be \$60,256 for **Alternative 1 (Table 8)**.

Total annual operating expenses for **Alternative 1** are \$120,790. Local area costs should be used to adjust these estimates if necessary. The total annual capital and operating expenses are estimated to be \$130,963 for **Alternative 1 (Table 8)**.

Gross income can be estimated by using the number of visits to the primary care physician and the average rate schedule. Previous research indicates the number of hospital, emergency room and nursing home visits per office visit. These are considerably lower for new physicians than for more established physicians. In addition, the number of initial and routine office visits, and the number of visits with additional charges can be estimated. For example, initial office visits are estimated to be 14.9% of the total office visits ($2,750 \times .149 = 410$ initial office visits) (**Table 9**). Routine office visits are 85.1% of total office visits or 2,340 routine office visits. Research also indicates the percentage of visits with additional charges is approximately 47% of total office visits or 1,293 visits with additional charges. The percentage of hospital visits is estimated at 8.6% of total office visits or 237 hospital visits. Emergency room visits of 226 represent 8.2% of total office visits and nursing home visits of 99 represent 3.6% of total office visits. Nursery visits of 47

Table 9
Estimates of Primary Care Physician Office Visits and Gross Revenues
by Type of Visit for 2,750 Visits (Alternative 1) and 4,750 Visits (Alternative 2)

Type of Visits	Rate Schedule			% of Total	No. of Visits	Gross Revenues for 2,750 Visits (Alternative 1)			No. of Visits	Gross Revenues for 4,750 Visits (Alternative 2)		
	High	Average	Low	Visits	2,750	High	Average	Low	4,750	High	Average	Low
Initial Office Visits	\$60.75	\$40.64	\$27.00	14.9%	410	\$24,908	\$16,660	\$11,070	708	\$43,011	\$28,770	\$19,116
Routine Office Visits	\$47.52	\$33.28	\$25.47	85.1%	2,340	\$111,197	\$77,869	\$59,610	4,042	\$192,076	\$134,508	\$102,968
Visits w/Add'l Charges	\$83.98	\$30.69	\$11.48	47.0%	1,293	\$108,591	\$39,676	\$14,837	2,233	\$187,535	\$68,521	\$25,624
Hospital Visits	\$55.50	\$46.18	\$34.76	8.6%	237	\$13,153	\$10,945	\$8,239	409	\$22,699	\$18,889	\$14,218
ER Visits	\$135.00	\$76.68	\$40.50	8.2%	226	\$30,510	\$17,330	\$9,153	390	\$52,650	\$29,905	\$15,795
Nursing Home Visits	\$65.49	\$41.18	\$24.75	3.6%	99	\$6,483	\$4,076	\$2,450	171	\$11,199	\$7,041	\$4,231
Nursery Visits	\$189.00	\$118.22	\$67.50	1.7%	47	\$8,883	\$5,556	\$3,173	81	\$15,309	\$9,576	\$5,468
Home Visits	\$101.25	\$54.70	\$35.86	4.2%	116	\$11,745	\$6,345	\$4,159	200	\$20,250	\$10,940	\$7,171
REVENUES - High Range						\$315,469			\$544,728			
REVENUES - Average Range						\$178,459			\$308,149			
REVENUES - Low Range									\$112,691			
									\$194,591			

represent 1.7% of total office visits and home visits of 116 represent 4.2% of total office visits. All of these percentages were derived from research .

The average rates and ranges charged for each category of physician visit are shown in **Table 9**. These are based on 1991 survey data (Doeksen, G., et al, 1990)], adjusted based on the consumer price index (U.S. Congress). These rates should be examined closely to determine if they reflect local conditions. **Table 9** further shows the total estimated gross revenues (or total billings) for one physician with 2,750 office visits using the high, average, and low rates indicated (**Alternative 1**). The rates are multiplied times the estimated number of visits to equal the total estimated revenues. For example, using the average rate schedule for visits, total gross revenues equal \$178,459 for one primary care physician with 2,750 office visits.

To show different collection possibilities, **Table 10** shows the total revenues generated assuming a 95%, 90%, 85%, 82.5%, 80%, 75%, or 70% collection rate. To illustrate **Table 10**, if 82.5% of the average total revenues were collected, total collections would be \$147,229 for **Alternative 1**. To show estimated bottom-line net income for **Alternative 1**, **Table 11** shows that net income would equal \$16,266, based on the assumptions that 82.5 percent of the total average revenues are collected (\$147,229) and that total annual capital and operating costs are \$130,963. As illustrated in **Table 11**, the first year of practice may be difficult financially, given the assumptions presented.

Alternative 2 (4,750 Visits)

Alternative 2 differs from **Alternative 1** with the number of office visits increasing to 4,750. Thus, only those operating costs (**Table 8**) based on the number of patients seen (office supplies, billing and postage expenses, medical supplies, laboratory fees, and additional personnel

Table 10
Estimated Total Collected Revenues for Scenarios
with 2,750 Office Visits (Alternative 1) and 4,750 Office Visits (Alternative 2)
for Atoka County, Oklahoma

Collection Rates	Revenues for 2,750 Visits (Alt. 1)			Revenues for 4,750 Visits (Alt. 2)		
	High	Average	Low	High	Average	Low
Total Revenues	\$315,469	\$178,459	\$112,691	\$544,728	\$308,149	\$194,591
95% Collections	\$299,696	\$169,536	\$107,056	\$517,492	\$292,742	\$184,861
90% Collections	\$283,923	\$160,613	\$101,422	\$490,256	\$277,334	\$175,132
85% Collections	\$268,149	\$151,690	\$95,787	\$463,019	\$261,927	\$165,402
82.5% Collections	\$260,262	\$147,229	\$92,970	\$449,401	\$254,223	\$160,537
80% Collections	\$252,376	\$142,767	\$90,153	\$435,783	\$246,519	\$155,673
75% Collections	\$236,602	\$133,844	\$84,518	\$408,546	\$231,112	\$145,943
70% Collections	\$220,829	\$124,922	\$78,884	\$381,310	\$215,705	\$136,213

Table 11
Estimated Net Income for a Primary Care Physician Practice
for Alternative 1 (2,750 Office Visits) and for Alternative 2 (4,750 Office Visits)
in Atoka County, Oklahoma

	Scenario for 2,750 Visits (Alt. 1)			Scenario for 4,750 Visits (Alt. 2)		
	High	Average	Low	High	Average	Low
Revenues Based on 82.5% Collection Rate	\$260,262	\$147,229	\$92,970	\$449,401	\$254,223	\$160,537
Total Annual Capital & Operating Expenses	<u>\$130,963</u>	<u>\$130,963</u>	<u>\$130,963</u>	<u>\$149,846</u>	<u>\$149,846</u>	<u>\$149,846</u>
NET INCOME	<u>\$129,299</u>	<u>\$16,266</u>	<u>(\$37,993)</u>	<u>\$299,555</u>	<u>\$104,377</u>	<u>\$10,691</u>

and benefits) will be higher than in **Alternative 1**. For 4,750 visits, office supplies will increase to \$3,800, billing costs to \$2,043, and postage expenses to \$2,263, bringing the total annual office costs up to \$22,468. For 4,750 visits, medical supplies cost will increase to \$9,034 and laboratory supplies to \$8,023; the total annual medical costs will increase to \$24,864. Due to the increased number of office visits, additional personnel will be needed. It is assumed that a full-time, rather than a half-time, medical assistant will be employed at an annual salary cost of \$18,214 under **Alternative 2**. The estimated total personnel costs increase to \$57,312 and the subsequent cost of benefits increases to \$14,328. The total of personnel costs and benefits is estimated to be \$71,640. Total annual operating costs for **Alternative 2** are estimated at \$139,674. The total capital costs and the annual capital costs remain the same as **Alternative 1** (**Tables 7 and 8**). The total annual capital and operating costs are estimated to be \$149,846 for **Alternative 2**. Local costs should be used to adjust these estimates if necessary.

The percentage of office visits for the specified type of visit is the same as **Alternative 1**; however, these percentages are applied to the higher number of estimated office visits of 4,750 (**Table 9**). The estimated revenues or billings are calculated the same as in the first alternative. The average total revenues generated are estimated at \$308,149. Assuming an 82.5% collection rate, the average collected revenues would be \$254,223 (**Table 10**). To show the bottom-line net income, **Table 9** shows a net income of \$104,377, based on the assumptions that 82.5 percent of the total average revenues are collected (\$254,223) and that total annual capital and operating costs are \$149,846. **Alternative 2** is based on the scenario of 4,750 physician office visits and this scenario is realistically probably 2 to 3 years into a new primary care physician practice.

AVAILABILITY OF HEALTH SERVICE BUDGETS

The example clearly demonstrates the need for an accurate analysis of each issue. As community decision makers face each issue, it may be useful to know what type of feasibility studies have been completed with the development of existing community health plans. The basic data behind these studies will transfer to other communities and make the job of analyzing an issue much easier. The subject areas where analysis has been completed are presented in **Table 12**. The subject areas include primary care physician, obstetrics/gynecology physician, pediatrician, emergency medical services for basic, advanced, and first responder systems. Other subject areas are outpatient rehabilitation, adult day services, and kidney dialysis. Budget studies under construction include federally qualified health center, rural clinic, rural dentist, and specialty physicians.

Table 12
Health Service Budget Studies
Available or Under Construction
From Oklahoma Cooperative Extension Service

Budget Studies Available

Primary Care Physician
Obstetrics/Gynecology Physician
Pediatrician

Emergency Medical Services
(Basic and Advanced)
First Responder Systems

Outpatient Rehabilitation
Adult Day Services
Kidney Dialysis

Budget Studies Under Construction

Federally Qualified Health Center
Rural Clinic
Rural Dentist
Specialty Physicians

SUMMARY

The presentation demonstrates that the health sector is very important for economic development. The health sector creates a large number of jobs and generates a large payroll. Research indicates that the health sector employs 10-15 percent of the rural labor force. Then, as money is spent locally and secondary jobs are counted, the total impact is 15 to 20 percent of the total jobs. In addition, it is important to plan for the health services that a rural area can provide. As additional health services are identified in a health planning process, health services budgets to analyze the feasibility of these services are needed. This paper presented a physician feasibility study which demonstrated how useful these tools are in rural decision making. These tools can easily be adapted to other rural areas in the world. The end result will be that rural decision makers will be able to make informed decisions and provide the best health care possible under their financial constraints.

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