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Research Study

The Economic Impact of Recent Hospital Closures on Rural Communities

Fred C. Eilrich, Gerald A. Doeksen, and Cheryl F. St. Clair, National Center for Rural Health Works

Key Findings

- Increasing costs and decreasing volumes combined with federal reimbursement and sequestration cuts have rural hospitals confronting difficult financial challenges. NRHA reports that 55 rural hospitals have closed since 2010 with another 283 estimated to be financially at risk.
- A rural hospital is often one of the largest providers of higher-skilled and higher wage employment in a rural community. The community has significant economic losses along with the loss of inpatient and emergency services when the hospital closes.
- Recent hospital closures have led to an average potential total loss of 99 full- and part-time local jobs ranging from 26 to 188 in the respective rural communities. The average potential loss of wages, salaries and benefits was $5.3 million ranging from $902 thousand to $9.5 million.
- Tools are now available that enable community leaders to estimate the economic impact of a closed rural hospital.

Background

Rural hospitals are closing at an alarming rate and rural policy makers are extremely concerned. In addition to providing medical access for residents, hospitals make significant economic contributions to rural communities. The employment opportunities and the resulting wages, salaries and benefits make the health care system an extremely important part of the local economy. Research from the National Center for Rural Health Works indicates that between 10 and 15 percent of the jobs in many rural counties are in the health care sector[1]. Hospitals are normally second only to education in the number of jobs they provide and supply higher-skilled and higher-wage employment.

Hospitals in rural communities are facing many challenges to providing quality health care services to the community residents while maintaining sound viable financial conditions. Rural hospitals have much lower volumes than urban hospitals and volumes are decreasing as many rural communities are losing populations. The health care delivery model is changing with increased emphasis on outpatient and urgent care services and decreased emphasis on volume of inpatient and emergency department visits. In addition, recent policy changes such as federal reimbursement and sequestration cuts, along with increased costs of implementing health information systems have increased the financial strain. All of these challenges resulted in the closure of 43 rural hospitals identified by the University of North Carolina, Cecil G. Sheps Center for Health Services from January 2010 to October

2014[2]. The National Rural Health Association (NRHA) reports the number of closings has increased to 56 hospitals since 2010. A recent report estimated that another 283 hospitals are considered to be financially at-risk of closing in the very near future [3].

A hospital closing can impact a rural community in a number of ways socially and economically. Local delivery of health services creates a familiarity and confidence level with the providers. When local services are lost, considerable anxiety can occur, especially if the services are now provided at a larger, more impersonal tertiary facility. The required travel distance to an available hospital will increase and can be a considerable distance. Increased travel will be difficult for some residents and reduces access to care. The loss of emergency and inpatient services can have a dramatic impact and loss of life can occur when circumstances require immediate treatment.

When a hospital closes, a community typically also loses its emergency department. This can place significant financial pressure on the emergency medical service (EMS) providers. Currently, rural EMS providers face continual financial difficulties providing services. A loss of the local emergency department will significantly increase transport miles and in many cases require increasing the number of ambulances, staffing and/or level of care. This can result in a significant increase in costs to a system that can be challenged with insufficient revenue streams. Response and delivery times can also mean the difference between life and death.

The loss of health care services can also lead to a decline in the community's economic base. Industry is hesitant to invest in a community without a local hospital. Retired and the elderly do not want to locate in a community without a local hospital. Employment spending, along with hospital purchases from other local industries, stimulates additional economic growth or secondary impacts in many other parts of the economy. Much of this economic activity generates additional tax revenues that can be used by the local government to fund important community services. Often, rural communities pay little attention to their health care system until they need it. As a result, many residents do not recognize the significant economic importance.

Purpose of the Study

The objective of this study is to estimate the economic impacts of recent hospital closures in rural communities from the direct and secondary impacts in terms of employment (full- and part-time jobs) and labor income (wages, salaries and benefits.). These estimates reflect the last year of operation. Data shows struggling hospitals reduce employment and labor income for several years prior to closing. Estimates represent only the impacts from the direct jobs and labor income at the hospital and do not include the possible additional impacts from physicians, EMS, pharmacies and other industries that might occur as a result of the closing. Research has shown that physicians often leave the community when the local hospital closes.[1]

Approach

From the list of hospital closings provided by the Sheps Center, relevant information was collected from the Medicare cost reports. Interviews and web searches were completed to better identify each hospital and the local community. For analysis purposes, only those hospitals located in RUCA designated communities of 7 or greater were chosen. Only hospitals with complete costs reports and available data were included resulting in a total sample of 16 of the 43 rural hospital closings.

Acquiring all the required the local data necessary to estimate the net direct impact of a rural hospital closing is challenging. When new medical services are created such as 24-hour urgent care, emergency departments, and outpatient clinics to provide some of the services lost by the hospital closure, the new facilities create new employment opportunities. Some displaced employees from the closed hospital may be rehired. The next closest hospital may increase employment as volumes increase. Therefore, net loss of jobs and labor income from the hospital must be considered.

Every rural community is unique in some way. The size of the community will vary along with its geographical location relative to surrounding communities. Although very close in air miles, a community can be extremely isolated due to the existing road network or geographic impediments such as mountains or water structures. Employees that commute from outside the community to work have a smaller economic impact than the employees who live and purchase within the community. Although still significant, the economic impact would be over-stated if these considerations were not included. A "typical" rural community is extremely difficult to define and therefore caution is required when using one estimate to represent all hospital closures.

After several interviews, the data representing these considerations could not be obtained. This study estimates the average potential impacts of the 16 selected hospital closures. Minimums and maximums are included to illustrate the potential ranges of impacts. A case study is presented to illustrate the total impacts for a particular closed hospital with available data.

Profile of Selected Hospital Closings

A profile of the 16 selected hospital closures presented in **Table 1** shows the potential direct impacts from hospital closures in terms of employment and labor income. The 16 hospitals, nine of which were critical access hospitals (CAHs), were located in 13 different states. Four of the hospital closures have had no additional health services established since the hospital closed. The community populations ranged from 406 to 10,292 with an average population of 3,135. The average daily census for the hospitals during their last year of operation was 1.8 ranging from 0.0 to 6.8. The distance to the next available hospital ranged from 7 to 24 miles with an average of 15 miles for the 16 selected hospital closures.

Table 1
Profile of Hospital Closings in Selected Sample

	Total	Avg	Min	Max
# Hosp.	16			
# CAH	9			
#States	13			
# w/New Services	12			
# w/o New Services	4			
Community Pop		3,135	406	10,292
Bed Size		31	20	59
Avg Daily Census		1.8	0.0	6.8
Closest Hosp. (mi.)		15	7	24
Potential Direct Impacts				
Employment		73	19	139
Labor Income		$4,363,978	$745,482	$7,883,605

The data in **Table 1** show the average potential direct impact on employment of recent hospital closures is the loss of 73 jobs and almost $4.4 million in labor income. The ranges show the significant difference in size of the sample hospitals. The smallest hospital closing had 19 employees compared to the largest hospital closing in the sample with 139. Labor incomes for the sample closings ranged from $745,482 to $7,883,605

The data in **Table 2** show the profiles and potential direct impacts of the nine CAHs. Since 56 percent of the closed hospitals in the selected sample were CAHs, the results were very similar. The average community population from the eight states represented was slightly smaller ranging from 747 to 5,392. Three of the hospital closures currently have not added new health services since the hospital closed. The average daily census for the hospitals during their last year of operation was 2.3 ranging from 0.0 to 6.8. The distance to the next available hospital ranged from 7 to 24 miles with an average of 15 miles for the 9 selected CAH closures.

Table 2
Profile of Critical Access Hospital Closings in Selected Sample

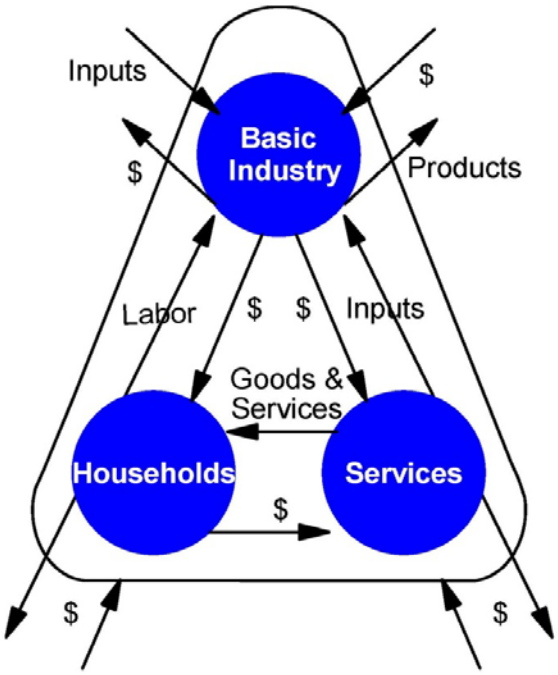
	Total	Avg	Min	Max
# CAH	9			
#States	8			
# w/New Services	6			
# w/o New Services	3			
Community Pop		2,028	747	5,392
Bed Size		25	20	26
Avg Daily Census		2.3	0.0	6.8
Closest Hosp. (mi.)		15	7	24
Potential Direct Impacts				
Employment		81	36	139
Labor Income		$4,465,840	$1,921,369	$7,883,605

Some of the smaller hospitals in the selected sample were not designated CAH which slightly lowered the average daily census for the total sample. Therefore, the closed CAHs had a slightly higher average employment and labor income compared to the average of the total sample. The average potential direct impact on employment was 81 jobs with an average of $4,465,840 in labor income.

Multiplier Effect

As stated earlier, the direct employment and labor income will further benefit the local economy by generating additional jobs and income. Much of the impact will occur in the community. As the hospital and the hospital staff purchase goods and services, additional employment and labor income are created in other businesses and industries in the local economy. The additional employment and labor income can be calculated with an input-output model and data from IMPLAN.

The concept of a multiplier effect is depicted in **Figure 1**, which illustrates the major flows of goods, services, and dollars from a basic industry.



Community Economic System
Figure 1

The basic industry, in this case the hospital, purchases labor from the residents or "households" of the local economy (left side of **Figure 1**), inputs from service industries located within the local economy (right side of **Figure 1**) and inputs from outside the local economy

(upper left portion of **Figure 1**). Households using their earnings to purchase goods and services from the local economy's service industries complete the flow of labor, goods, and services. It is evident from the relationships illustrated in **Figure 1** that a change in any one segment of a local economy will cause reverberations throughout the entire economic system of the county. A multiplier from an input-output model can measure the effect created by an increase or decrease in economic activity.

Total Impacts of Rural Hospital Closures

Data in **Table 3** present the potential total impacts of hospital closures in rural communities. The IMPLAN data was from 11 closed rural hospitals in five states. The model calculates employment (in terms of full- and part-time jobs) and labor income (in terms of wages, salaries and benefits) multipliers. For example, the hospital employment multiplier is 1.35 which estimates that for every 100 jobs lost, an additional 35 full- and part-time jobs will also be lost in other businesses and industries due to reduced spending from the hospital and hospital employees. The hospital labor income multiplier of 1.21 estimates that every $1 lost in labor income will cause an additional $0.21 lost labor income throughout the community. The model generates multipliers that are region-specific due to differences in locally-available goods and services across different states, counties, or zip codes.

The direct employment and income impacts from **Table 1** are used to estimate potential total labor income and employment lost from the hospital closing. Average direct hospital employment from **Table 1** is 73. The total average potential employment impact from the hospital closure was 99 jobs. Looking at the range of direct employment from the sample hospital closings, the total potential employment impact ranged from 26 to 188. **Table 3** also shows the potential labor income impacts. The average direct labor income impact was $4.4 million resulting in the average potential labor income impact of $5.3 million. The total potential labor income impact ranged from $902,033 to $9.5 million. IMPLAN data was not available to estimate the average total labor income and employment impact of the selected closed CAHs.

Table 3
Total Potential Impact on Employment and Income of a Rural Hospital Closing

	Direct Employment	Employment Multiplier	Total Impact
Avg.	73	1.35	99
Min.	19	1.35	26
Max.	139	1.35	188
	Direct Labor Income	**Labor Multiplier**	**Total Impact**
Avg.	$4,363,978	1.21	$5,280,413
Min.	$745,482	1.21	$902,033
Max.	$7,883,605	1.21	$9,539,162

[1]Income includes wages, salaries and benefits
Source: Labor Income (Wage, Salaries and Benefits) estimates from Medicare Cost Report and local data. Multipliers from IMPLAN database, IMPLAN Group LLC. (www.implan,com).

Case Study:

Economic Impact, Demographic and Social Effects from the Closing of Bamberg County Memorial Hospital in South Carolina

One of the selected hospitals, Bamberg County Memorial, was located in Bamberg County, South Carolina. Bamberg County is considered one of the poorer counties but, most residents consider it the most idyllic place to live in South Carolina. The Edisto River runs through the county, providing a great spot for fishing and canoeing. Bamberg County is graced with beautiful moss covered trees, quaint country stores, rich antebellum history, and wonderful people.

Bamberg County Memorial Hospital, hospital had been struggling for several years. In 2010, the majority of discharges from Bamberg residents were at neighboring hospitals. Only 25 percent of total discharges from Bamberg residents were from

the local hospital. The next year, one year before it closed, local discharges decreased to 13 percent of the total resident discharges. Patient revenues decreased almost 62 percent over the last four years of operation. Bamberg County Memorial was closed in 2012. For all of the great things that Bamberg County does have, now it does not have a hospital or emergency department.

This case study report estimates the net economic impacts on employment and labor income and examines demographic and social effects in Bamberg County since the hospital closed. This case study compared data from the four rural counties (contiguous to Bamberg) and four large urban counties.

Net Direct and Secondary Economic Impacts

As mentioned earlier, a rural hospital is one of the largest providers of jobs in the county and provides above average wages and salaries for many of these high-skilled jobs. A hospital closing could result in the total loss of these jobs and be extremely damaging to the local economy. To estimate the potential impact of the hospital closure in Bamberg County, the net direct employment and income losses were estimated.

Net Direct Economic Impacts – Data in **Table 4** present the estimated net direct impacts of hospital closure in terms of employment and labor income. Information from the Medicare cost reports showed that the hospital in Bamberg County employed 102 people and created over $3.0 million in labor income when it closed. Ten of the displaced employees were rehired when The Regional Medical Center from an adjoining county (Orangeburg) opened the new urgent care center. The total labor income for these 10 jobs was $320,920. The estimated net loss of direct jobs in the county was 92 employees and $2.7 million in labor income.

Total Economic Impacts – Data in **Table 4** also present the estimated total net economic impacts of the hospital closure. The hospital employment multiplier for Bamberg County was 1.35 which estimates that for every 100 jobs lost, an additional 35 jobs would also be lost in other businesses and industries due to reduced spending from the hospital and hospital employees. Using the direct employment and income data from **Table 4,** the estimated total net loss of jobs in Bamberg County was 124 with a total net loss of $3.3 million labor income. The assessment only estimates the impact on jobs and labor income.

Table 4
Net Direct and Total Net Impacts of the Closing of Bamberg County Memorial Hospital in Bamberg County, South Carolina

	Direct Impact	Multiplier	Total Impact
Employment			
Hosp.	102		
Urg. Care	10		
Net Impact	**92**	**1.35**	**124**
Labor Income			
Hosp.	$3,043,269		
Urg. Care	$320,920		
Net Impact	**$2,722,349**	**1.21**	**$3,294,042**

[1]Income includes wages, salaries and benefits
Source: Labor Income (Wage, Salaries and Benefits) estimates from Medicare Cost Report and local data. Multipliers from IMPLAN database, IMPLAN Group LLC. (www.implan,com).

Demographic and Social Effects

The first concern when a hospital closes is the health and well-being of its residents. With any loss of heath care services in a community there is a fear that access will be adversely affected. This is especially true in rural areas like Bamberg. Rural communities have higher uninsured/underinsured rates, poverty, health disparities, and inadequate public transportation.

Health data and access trends, along with hospital discharge, population, employment and county health rankings data were analyzed to identify possible demographic effects of the closing of Bamberg County Memorial Hospital. It has been only two years since the hospital closed and most of the data were inconclusive as to the total effects.

When population trends are compared, Bamberg County mirrors most rural counties with decreasing populations. However, the estimated decrease in population has been slightly larger in Bamberg County compared to the four contiguous counties since the hospital closed. Also compared to the rural contiguous counties, Bamberg County had the largest decrease in employment from 2010 to 2013. Employment increased slightly in three of the four contiguous counties in the last year but employment has continued to decrease in Bamberg County.

The Robert Wood Johnson Foundation's *County Health Rankings* ranks South Carolina counties according to their measures of health outcomes and health factors. Counties also receive a rank for mortality, morbidity, health behaviors, clinical care, social and economic factors, and the physical environment. With very few exceptions, rural counties in South Carolina typically rank much worse than urban counties in health outcomes. Of the six counties in SC without a hospital, three counties (Bamberg, Lee, and McCormick) rank near the bottom. Although difficult to determine the effect that the hospital's closure has had on its ranking, Bamberg's rank in the three years since the hospital closing was the highest compared to neighboring counties.

Emergency care - The loss of an emergency department has significant impacts in many ways. While gathering information and talking to Bamberg County residents and health care professionals, the local concerns became crystal clear. The hospital's closure directly affects the financial conditions for the emergency medical service (EMS) providers and dramatically increases transportation time to get patients in life or death situations to an emergency room. Below is a quote from one of Bamberg County's EMS leaders:

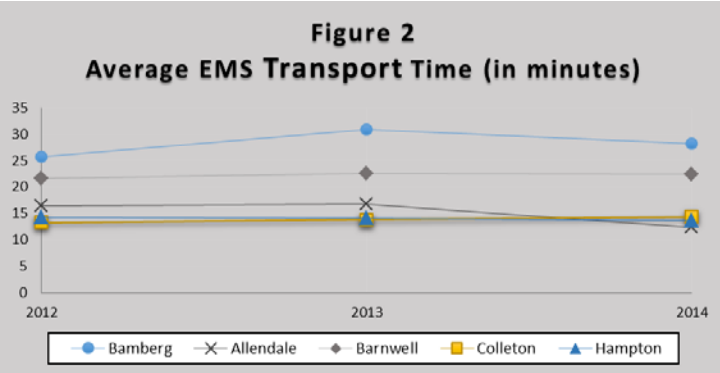
> *"It was the most catastrophic thing that has happened in Bamberg County. The people who live here have to be transported at least 36 miles. Every patient needs to be transported out. Our truck is always full with transporting patients to facilities far away. I don't know what else to say, I could go on and on about my disagreement with the closing of the Bamberg hospital but nothing is going to change unless they start building another hospital for the people."*

> *"With the hospital closure of course, came the closure of the Emergency Department. I don't think that folks truly realized the impact of the closure until their dad had a stroke, their aunt had a heart attack or their small child was bitten by a snake. These are all serious health conditions that this community faces and now the nearest ED is 30 minutes away."*

The transport times graphed in **Figure 2** shows the transit time from pick up to hospital in Bamberg and its rural neighbors. Bamberg County EMS had the highest average annual time (in minutes) from scene to an ED of all four of its rural neighboring counties. Without a local 24 hour emergency department in Bamberg County, it takes the EMS almost twice as long to get a Bamberg County patient to an ED in Colleton, Allendale, and Hampton than it did to deliver a patient to Bamberg Hospital.

Increased transport times adversely affect access to quality care for its citizens, which could impact survival rates in severe situations. Services are available to Bamberg residents at any of the hospitals in their neighboring counties, but there are barriers that many rural people will have difficulty managing in order to access those services. In

addition, the increased mileage significantly increases operating costs for rural EMS providers; many who are already financially at-risk. In many cases, providers will have to increase the number of ambulances, staffing and/or level of care, further increasing operating costs.



Social Effects - A hospital in a small rural county is one of the most powerful economic drivers of the local economy. It creates many jobs that pay higher than average salaries. The local hospital brings in new money and ensures local money stays local. A community with a good health care infrastructure attracts new industry, retirees, and services that support them. Economic and demographic data can back up this fact, but other benefits that a hospital brings are much harder to quantify.

For many residents of Bamberg County the hospital was their most revered social hub. From candy-stripers to volunteer greeters, many young people had their first work experience and many of the older ones had their last. Residents watched their children and grandchildren come into the world and their parents and grandparents leave it. A hospital in a small rural county holds lots of memories and is a source of pride for its residents. To the average person in Bamberg County the loss of their hospital was a terrible thing, no matter what the data says. The loss of the hospital leaves a void that many of Bamberg's residents are going to feel deeply for years to come. The following are a few comments of average citizens and leaders of Bamberg County:

- *Very upset! Hate to see us lose our medical facility so much because I need them.*
- *Very disappointing. I needed it. This town and county needed it, I wish there was something we could do to get it back.*
- *It's sad.*
- *Everyone in the community is affected. We have seen an end to life-saving services. Patients who do not get medical treatment early are more likely to suffer long-term ailments or death.*
- *What if it's an emergency? Then what?*

Summary

The average potential impact of recent hospital closures was a loss of 99 jobs and $5.3 million in labor income for the respective counties. Data showed that these hospitals reduced employment and labor income for several years prior to closing. The large differences among hospitals make it difficult to define the "typical" rural closed hospital. The total potential economic impacts for the 19 selected hospitals in the sample ranged from 26 to 188 jobs and $902,033 to $9.5 million in labor income. The total economic impact reflects the last year of operation. The conservative estimate only measures the impacts from the hospital and does not include the impacts on the emergency medical providers, pharmacies, etc.

The demographic and social effects of closing a local hospital are hard to quantify. The data alone does not indicate significant effects since Bamberg County Memorial Hospital closed. Much of the data just reflects the current conditions of rural America. It does show a slightly larger decrease in population and a greater percentage of lost jobs than its neighboring counties, particularly since the hospital closed. However, the hospital closure did result in an estimated net loss of 124 jobs and $3.3 million in labor income. The total effect of these losses may not fully materialize for a few years.

The decision to close a hospital such as Bamberg County Memorial would have been an easy one to make if you only looked at the data. The hospital was losing money every year and the daily census was too low to break- even, much less turn a profit. The larger regional health care center in the neighboring county was willing to come in and provide essential services to fill the void. The primary care providers and some specialty services remain to take care of Bamberg patients and the neighboring counties have hospitals that are more than willing to see Bamberg residents.

All of these reasons make sense, but Bamberg County residents did lose local access to inpatient services and an emergency department. The increased transit time to an emergency room could be a matter of life and death and is a great concern to all the EMS workers and medical providers we contacted. Furthermore, the increased operating costs could affect the EMS provider's ability to continue providing services in the future. Many residents are also worried about the lack of a 24-hour emergency room. The loss of the hospital is also felt on an emotional level by many residents, especially the older generation, who had so many of their important life moments in Bamberg County Memorial Hospital.

This report clearly documents the potential economic losses of rural hospital closures. The relatively large impact is created through the large employment needed to provide inpatient services, an emergency room, outpatient procedures, ancillary services and the multiplier effect of these lost contributions. Thus, these rural hospital's *economic* contributions were as important to their communities as their medical contributions.

Template to Measure the Economic Impact of Rural Hospital Closing

A template has been provided to assist local leaders interested in estimating the potential economic impact of a hospital closing. Local data should be utilized to derive the most realistic estimates for the local community. If local data are unavailable, the national estimates from the previous tables can be used. All assumptions should be closely examined by local decision-makers to verify that they reflect local conditions.

The first step is to estimate the direct employment from the hospital. Next, the potential job retention must be estimated. Job retention will include employment from any services that will remain after the hospital closes such as an outpatient clinic or potential new jobs from proposed medical services such as an urgent care clinic. Possible employment expansion from nearby medical service providers must also considered. These alternatives will create opportunities for some of the displaced employees. The result is an estimate for the net direct employment impact of the hospital closure. The same methodology can be applied to estimate the direct labor income impact.

After the direct impacts have been determined, the total net impacts can be estimated. Specific county or zip code multipliers are available through IMPLAN and can be generated and utilized to make the results community specific. However, the multipliers provided are the average of 11 rural medical service areas located in 5 states across. The multipliers from the study are presented in the footnotes.

TEMPLATE
To Estimate Total Employment and Labor Income Economic Impacts from a Rural Hospital Closing

EMPLOYMENT IMPACT

	Direct Employment		Employment Multiplier [1,2]		Total Employment Impact
Hospital Employment	_____				
Retained Employment[4]	-_____				
Net Employment	_____	x	_____	=	_____

LABOR INCOME IMPACT

	Direct Labor Income		Labor Income Multiplier [1,3]		Total Labor Income Impact
Hospital Labor Income	$_____				
Retained Labor Income[4]	-$_____				
Net Labor Income	$_____	x	_____	=	$_____

[1] If available, use a multiplier specific to your local medical service area. If not, multipliers from the study can be utilized.
[2] The hospital employment multiplier from the study is 1.35.
[3] The hospital labor income multiplier from the study is 1.21.
[4] Estimate the employment and labor income that will be retained by any new services created (i.e., urgent care, outpatient clinic, neighboring hospital expansion etc.)

References

[1] Doeksen, G.A., Cordes, S., and Shaffer, R. 1992. "Health Care's Contribution to Rural Economic Development." Funded by Federal Office of Rural Health Policy, DHHS, and Health Resources and Services Administration.

[2] North Carolina Rural Health Research Program. *http://www.shepscenter.unc.edu/programs-projects/rural-health/*.

[3] The Advisory Board Company. 2015, "Report IDs 283 hospitals vulnerable to closure." *https://www.advisory.com/daily-briefing/2015/05/05/report-ids-283-hospitals-vulnerable-to-closure*.