

# THE IMPACT OF RURAL HOSPITAL CLOSURE ON THE ECONOMIC HEALTH OF THE LOCAL COMMUNITIES

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## RESEARCH

### ABSTRACT

The purpose of this study is to assess the economic impact of rural hospital closures on the local communities. The data used in this study are from 24 Texas rural counties that have experienced hospital closures matched with 24 equivalent Texas rural counties that did not have such experiences. This research uses a quasi-experimental design similar to the “Pre-test and Post-test Design with Nonequivalent Groups” design described by Cook and Campbell (1979). The results do not show that hospital closure has a significant short- or long-term harm on the economies of the rural counties examined in this study.

Key words: economics, hospital closure, rural health. (Texas Journal of Rural Health 2003; 21(3): 46-51)

## INTRODUCTION

Conventional wisdom suggests that when a major economic sector of a small community ceases to exist, the entire community suffers. To what extent is this economic truism valid for the rural communities that lose their hospital? Rural hospitals are often the only entities that attract new residents and

businesses and infuse outside money into the otherwise depressed economies of these communities (Doeksen, Johnson, & Willoughby, 1997; Mick & Morlock, 1990; Christianson & Faulkner, 1981). There are those who argue that economic fall out of hospital closures in rural communities often leads to the unraveling of a community's social fabric and the demise of its economy (McGuire, Walker, & Cantieri, 1993; Lichty, Jesswein, & McMillan, 1986). Other studies have not found a significant economic impact on the rural communities that lost their only hospital (Probst, Samuels, Hussey, Berry, & Ricketts, 1999). Nor have the neighboring hospitals benefited from rural hospital closures (McKay & Dorner, 1996). The Department of Health and Human Services (1993) did not even find an adverse health impact on the rural communities that lost their hospital. The purpose of this study is to shed some light on the controversy by examining the short-term and the long-term impact of hospital closure on the economies of rural counties in Texas. The findings can assist us to assess the resiliency of rural communities to bounce back to normal economic conditions.

Throughout the last two decades a large number of rural hospitals closed their doors nationwide due to the impact of rural out-migration, shifting demographics, and changes in Medicare payment methodologies. In the ten-year period between 1988 and 1997, 243 rural hospitals throughout the nation had to close their doors (Moscovice, Wellever, Stensland, 1999). States such as Texas, Louisiana, Mississippi, Minnesota, and Alabama suffered double-digit losses in these years (Rural Hospital Flexibility Program National Tracking Team, 2001; Moscovice et al., 1999).

No place was harder hit than Texas, which

has the most rural counties of any state (196 out of 254). Texas led the nation in hospital closures during the 1980s (almost 20% of the national total), and most of these closures took place in the rural areas (Department of Health and Human Services, 1993). There are currently 63 rural Texas counties that no longer have a hospital located within their borders. There are another 103 that are down to just one such facility, while only one rural county has managed to add a hospital to the total over the past three years. The threat of hospital closure is a reality that is still present for many rural Texas communities.

## METHODOLOGY

The following hypothesis is being tested in this study. Hypothesis: Rural hospital closures have negative impact on the economies of their communities.

Five measures of economic development were considered in this study. They are: the total labor force employed, the unemployment rate, the total earned income (sum of all wages and salaries in the county), total personal income (sum of earned income plus all other earnings), and population size.

### *Method*

This study employs a quasi-experimental design similar to the "Pre-test and Post-test Design with Nonequivalent Groups" design described by Cook and Campbell (1979). This design is depicted in Table 1. To assess the short-term and the long-term economic impact of rural hospital closure four measures of economic development are observed at three time periods for a group of rural counties that experienced hospital closure (henceforth, experimental group) and a group of matching

**Table 1. Pre-test and Post-test Design with Nonequivalent Groups**

	Pre-test	Closure	Post-test t+1	Post-test t+10
Experimental Group	$O_{t-1}$	X	$O_{t+1}$	$O_{t+10}$
Comparison Group	$O_{t-1}$		$O_{t+1}$	$O_{t+10}$

rural counties that retained their hospitals during the same time frame (henceforth, comparison group). The observations are for one year before the hospital closure ( $O_{t-1}$ ), one year after the closure ( $O_{t+1}$ ), and ten years after the closure ( $O_{t+10}$ ) for each of the experimental counties and their matching comparison counties. Comparison of ( $O_{t+1}$ ) – ( $O_{t-1}$ ) between the experimental and the comparison groups will represent the short-term impact of hospital closure, and the comparison of ( $O_{t+10}$ ) – ( $O_{t-1}$ ) between the two groups will represent the long-term effect of the closure. This design addresses some of the major threats to the internal validity of the findings.

*The Study Groups*

The experimental counties in this study consist of a total of 24 rural Texas counties that lost their hospital during the last three years of 1980s. Selection of these counties in this time frame will allow us to examine the long-term impact of the closures. Every county in the experimental group was matched with a similar Texas rural county that did not experience hospital closure. The comparison group was chosen using nearly the same demographic information that the Health Resources Services Administration (HRSA) uses to select peer counties for their

Community Health Status Indicators Project (Health Resources Services Administration, 2000). The HRSA selects peer counties according to their population density, population size, poverty level, and age structure.

When adapting HRSA’s method of selection, it was necessary to make some changes specific to Texas. Due to the ethnic diversity of the state, this research substituted minority status for poverty (typically, these two items are highly correlated) and rearranged the priorities to reflect the importance of two other issues. First, we made total population size as our top priority. Second, the percent of residents over age 65 was given a higher priority due to the fact that, as established earlier, rural hospitals are heavily dependent on revenues generated from treating this particular segment of the population.

We collected the 1980 demographic data for all 254 Texas counties and prioritized them according to 1) population size, 2) number of persons per square mile, 3) percent of the population age 65 and older, and 4) percent of the population that is considered minority or non-Anglo. This process helped us to select our comparison counties that most closely matched each member of the experimental group. The 24 matched counties have at least one currently licensed acute care hospital.

**Table 2. List of the Texas Counties Experiencing Hospital Closure and the Matched Texas Counties That Have not Experienced Hospital Closure**

	<b>Experimental Counties</b>	<b>Comparison Counties</b>
1	Foard	Throckmorton
2	Menard	Stonewall
3	San Saba	Fisher
4	Archer	Jack
5	Hamilton	Bailey
6	Leon	Clay
7	Marion	Madison
8	Kendall	Castro
9	Newton	Burleson
10	Jackson	Grimes
11	Bosque	Gillespie
12	Morris	Aransas
13	Robertson	Terry
14	Freestone	Wilbarger
15	Austin	Hood
16	Falls	Burnet
17	Lamb	Colorado
18	Lavaca	Fayette
19	Shelby	Washington
20	Milam	Erath
21	Bastrop	Hopkins
22	Hutchinson	Bee
23	Jasper	Cass
24	Howard	Brown

Both experimental and the comparison groups now consist of 24 different counties. Table 2 provides a list of these counties.

Table 3 shows that the counties selected for the comparison group are indeed equivalent to those in the experimental group on each of the four selected criteria. Equivalency is vital to establish the validity of the comparison group and to control for intervening variables. In this case, no significant differences were found between the treatment and comparison groups with regard to total county population, population density, percent elderly, or percent minority.

### RESULTS

Five economic indicators were used to assess the short-term and the long-term impact of rural hospital closures. Table 4 depicts the results of ten independent t-tests that compare economic changes in the experimental and the comparison counties. The results indicate that there are no significant short-term or long-term economic differences between the counties that lost their hospitals and the ones that retained their hospitals. Total personal income, total earned income, and total population increased for both experimental counties and the comparison counties. But the differences are not statistically significant. Nor are the differences in unemployment significant for the groups. No

**Table 3. Comparison of the Experimental and Comparison Groups Using Paired t-test**

	<b>Experimental Group</b>	<b>Comparison Group</b>	<b>Mean Difference</b>	<b>t-value</b>
Population Mean	15,629	15,517	112	1.10
Population Density	20.14	20.60	-0.46	-0.56
Percent Age 65+	18.76	17.67	1.08	1.05
Percent Minority	18.12	14.38	3.73	1.45

short-term and long-term significant differences were observed in the labor force of the two sets of counties. The evidence of this study clearly fails to support our hypothesis that rural hospital closures hurt local economies.

CONCLUSION

This research does not in any way support the proposition that the closure of rural hospitals is not harmful, nor is it meant to undermine the important role that they play in the lives of millions of rural citizens. This research examined only the economic side of rural hospital closure. Rural hospitals have a number of other important tangible and intangible effects on the lives of rural residents. Two tragic results from rural hospital closures are the lack of access to acute care services and the loss of sense of community.

The results of our findings suggest that there is a certain degree of resiliency to be found in the local economies of Texas rural communities. One may also argue that at the

time rural hospitals are forced to shut down, their economic impact had already drastically diminished. They had to close beds, make staffing reductions, eliminate services, and make any other changes they need in order to stay on their feet. Long before they close down these hospitals are no longer the powerhouses that once invigorated the economies of their local communities. The findings do not suggest that hospitals are not important contributors to local economies. Clearly, rural hospitals that are in full operation are major economic engines of these communities. However, once the point of closure has been reached, the economic impact is severely diminished.

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**Table 4. Short-Term and Long-Term Economic Impact of Hospital Closure**

	Short-term change (t+1)-(t-1)			Long-term change (t+10)-(t-1)		
	Exper.	Comp.	t-value	Exper.	Comp.	t-value
Labor Force	22.54	-46.63	-0.627	957	1283	0.924
Unemployment Rate	-2.25	-1.83	0.555	-2.90	-2.52	0.332
Total Personal Income (in,000)	16,115	19,358	0.555	150,316	176,962	0.745
Total Earned Income (in,000)	5,949	3,914	-0.794	54,644	57,233	0.185
Population*	718	1,620	1.010	3,005	4,462	0.748

\* Population is only measured reliably at the beginning of each decade. Short-term and the long-term population differences are computed based on (1990) – (1980) and (2000) – (1980).

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