



Rural Hospitals that Closed between 2017-20: Profitability and Liquidity in the Year Before Closure

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OVERVIEW

Between January 2017 and August 2020, 56 rural hospitals closed in the U.S., continuing a long-term trend of closures since January 2005.¹ The COVID-19 pandemic brought a new set of financial and operational pressures and increased the financial fragility of many rural hospitals. In April 2020, Congress passed the Coronavirus Aid, Relief, and Economic Security (CARES) Act, from which the Department of Health and Human Services targeted \$10 billion for rural health providers.² Although this funding provided short-term financial relief, many rural hospitals are still in danger of closing, leaving millions of rural Americans to question whether they will be able to continue to receive care in their communities.

In a 2017 article, we presented the Financial Distress Index (FDI).³ The FDI is an algorithm that uses historical data about hospital financial performance, government reimbursement, organizational characteristics, and market characteristics to predict the current risk of financial distress. The model assigns every rural hospital to one of four financial risk categories: high, mid-high, mid-low, or low.⁴ Two measures in the FDI that are important predictors of financial distress are profitability and liquidity. The purpose of this study is to gain some insight into the importance of these single measures as immediate precursors of rural hospital closure. Therefore, we examine the pre-closure profitability and liquidity performance of rural hospitals that closed between 2017-20 and compare it to the median performance of rural hospitals that remained open during the same year.

STUDY METHOD

The sample included Critical Access Hospitals, Medicare Dependent Hospitals, Rural Referral Centers, Sole Community Hospitals, and Prospective Payment System hospitals located in rural areas using the rural definition specified by the Federal Office of Rural Health Policy.⁵ The sample was divided into two groups: 1) rural hospitals that closed between 2017-20 and remained closed (N=56) and 2) rural hospitals that remained open between 2017-20 (2017=2,212, 2018=2,194, 2019=2,179).

All financial data came from the Centers for Medicare & Medicaid Services (CMS) Healthcare Cost Report Information System (HCRIS 3/31/2020). An analytical file with the Medicare cost report data was created for each hospital with at least 360 days in each cost report period for fiscal years 2016 through 2019. Cost reports were assigned to a calendar year based on the end date of the cost report period: e.g., a cost report period of 9/1/2018 to 8/31/19 was assigned to the 2019 calendar year. The Medicare cost report (2010) definitions of each ratio are shown in Table 1.

KEY FINDINGS

The NC Rural Health Research Program has tracked rural hospital closures since 2012. Complete closures are defined as facilities that no longer provide health care services and converted closures are defined as facilities that no longer provide inpatient care, but continue to provide some health care services [e.g., primary care, skilled nursing care, rehabilitation care.] In this study, we analyzed 56 rural hospitals that closed between January 2017 and August 2020 and found that:

- The closed hospitals were clustered in the Southeast and South-central census divisions.
- In the year before closure, most rural hospitals had a negative operating margin, negative total margin, and few days cash on hand.
- In comparison with rural hospitals that remained open between 2017-20, most rural hospitals that closed were much more unprofitable and much less liquid.

Table 1. Indicator Definition and Medicare Cost Report Accounts

Ratio	Description	Account
Total Margin	$\frac{\text{Net income}}{\text{Total revenue}}$	Worksheet G-3, line 29 Worksheet G-3, line 3+25
Operating Margin	$\frac{\text{Net patient revenue} + \text{Other revenue} - \text{Total operating expenses}}{\text{Net patient revenue} + \text{Other revenue}}$	Worksheet G-3, line 3+(8 to 22)+24-4 Worksheet G-3, line 3+(8 to 22)+24
Days Cash on Hand	$\frac{\text{Cash} + \text{Temporary investments} + \text{Investments}}{(\text{Total expenses} - \text{Depreciation}) / \text{Days in period}}$	Worksheet G, col. 1-4, line 1+2+31 (Worksheet A, col. 3, line 200-1-2) /Days in period

For rural hospitals that closed between 2017-20, ratios were calculated using data for the year before they closed. These were compared to the median values of rural hospitals that remained open. For example, for hospitals that closed in 2019, the most recent complete year of financial data is 2018. National medians for rural hospitals that remained open are also calculated using data from the most recent complete year. The table below summarizes the most recent complete year of data available for each year of closure.

Table 2. Year of Financial Data Used for each Closure Year

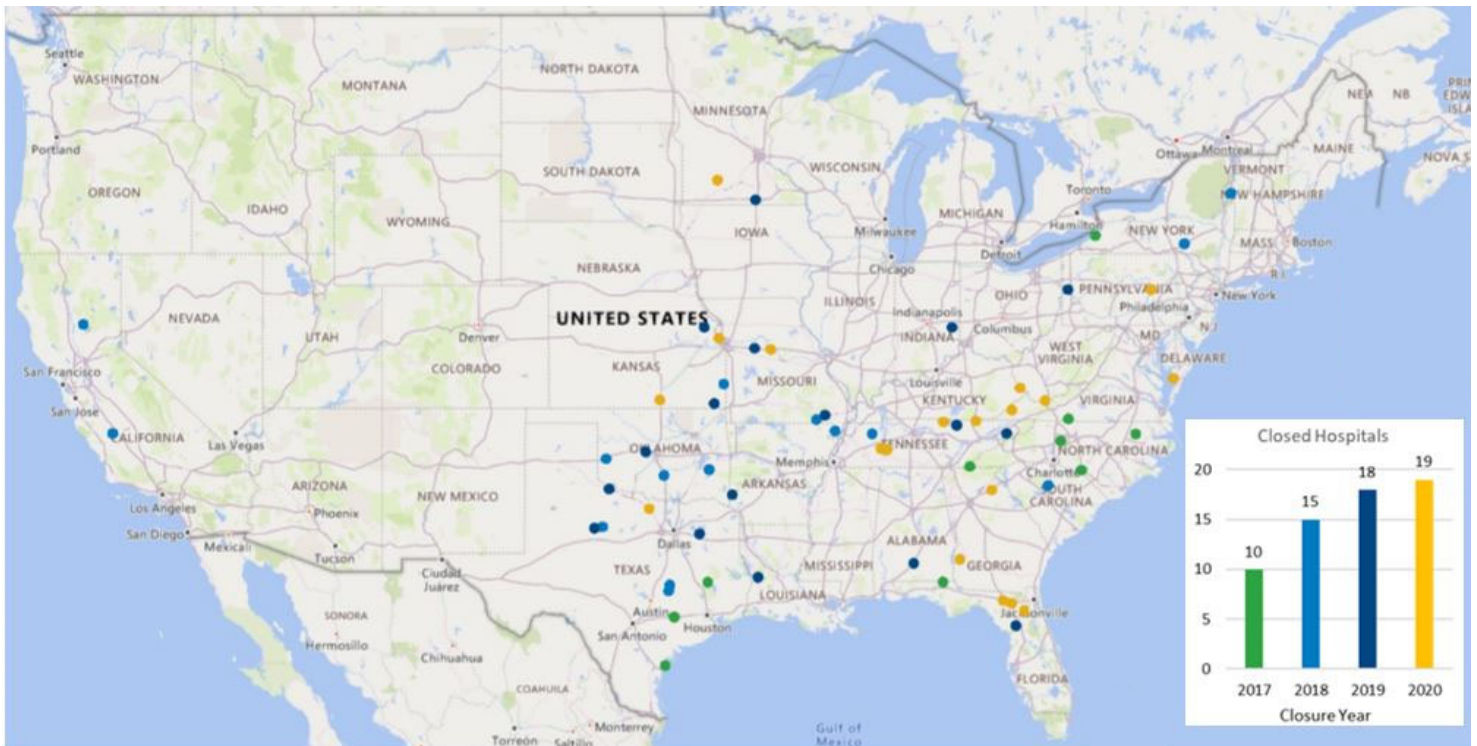
For hospitals that closed in:	2017	2018	2019	2020
Financial ratios are calculated using data from:	2016	2017	2018	2019
National medians for rural hospitals that remained open are calculated using data from:	2016	2017	2018	N/A*

*2019 national medians could not be calculated at the time of analysis because 2019 cost report data were not yet available for many rural hospitals.

RESULTS

Figure 1 shows the locations of rural hospitals that closed between 2017-20. The figure shows that the rural hospitals that closed between 2017-20 were clustered in the Southeast and South-central census divisions, a pattern that is consistent with previous research.⁶

Figure 1. Rural Hospitals that Closed Between 2017-20



*Map includes closure data for January 1, 2017 through December 31, 2020. Study analysis reflects only closures that were known as of August 31, 2020.

Figure 2 shows operating margins of rural hospitals the year before they closed compared to the median operating margins of rural hospitals that remained open. Operating margin measures the profit a hospital makes on a dollar of revenue from patient care. Among the 56 rural hospital closures, 49 had a negative operating margin the year before closure. Only two of the rural hospitals that closed had operating margins less than the median of hospitals that remained open.

Figure 2. Operating Margins of Rural Hospitals in the Year Before They Closed Compared to the Median of Rural Hospitals that Remained Open

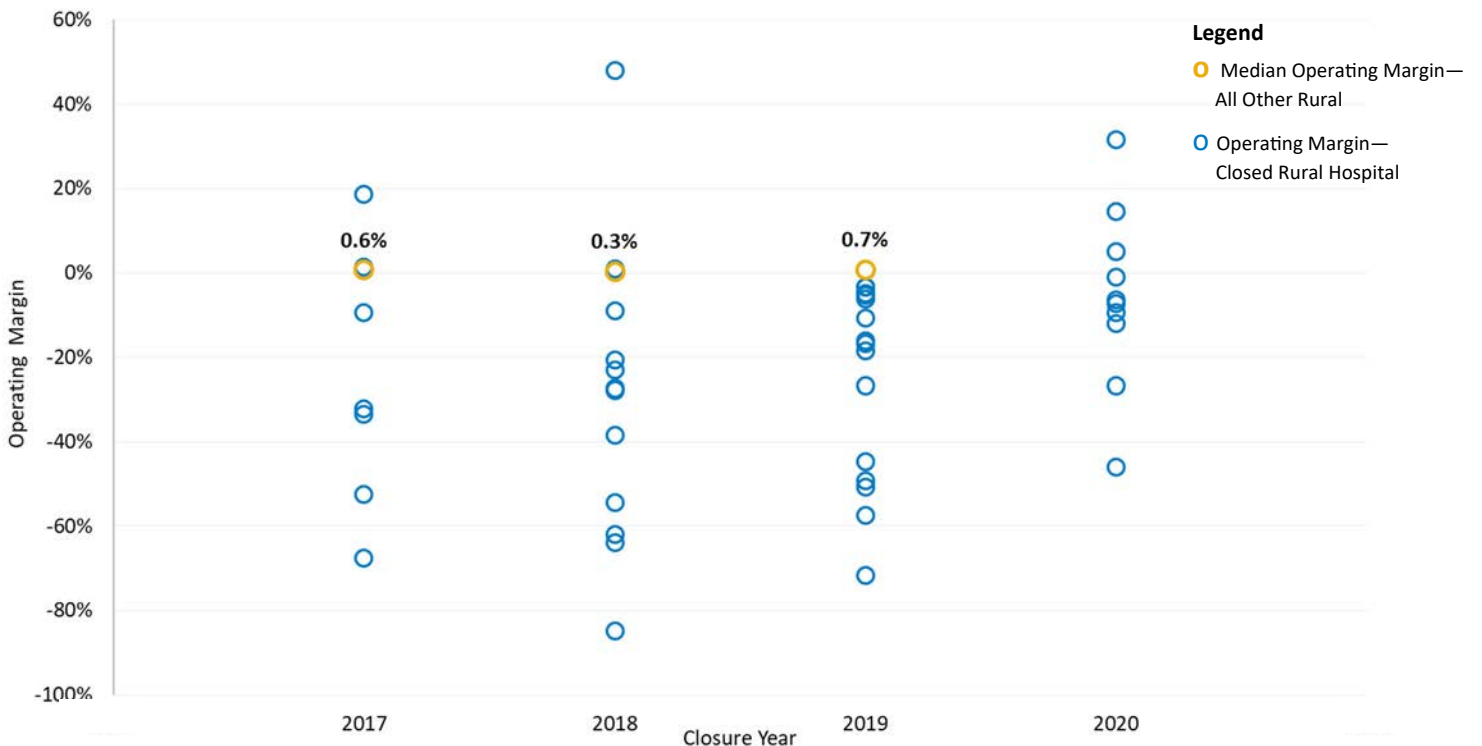


Figure 3 shows total margins of rural hospitals the year before they closed compared to the median of rural hospitals that remained open. Total margin measures the profit a hospital makes on a dollar of revenue from patient care and all other activities. Among the 56 rural hospital closures, 50 had a negative total margin the year before closure. Only two of the rural hospitals that closed had total margins less than the median of hospitals that remained open.

Figure 3. Total Margins of Rural Hospitals in the Year Before They Closed Compared to the Median of Rural Hospitals that Remained Open

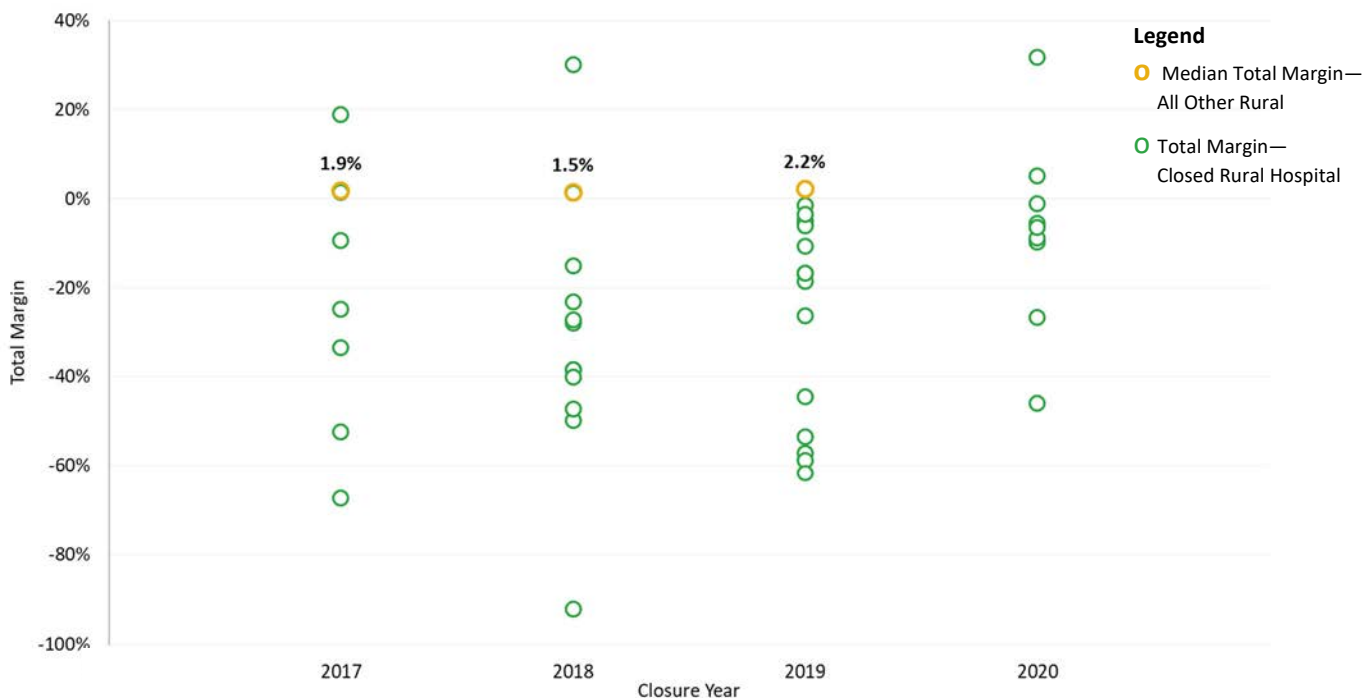
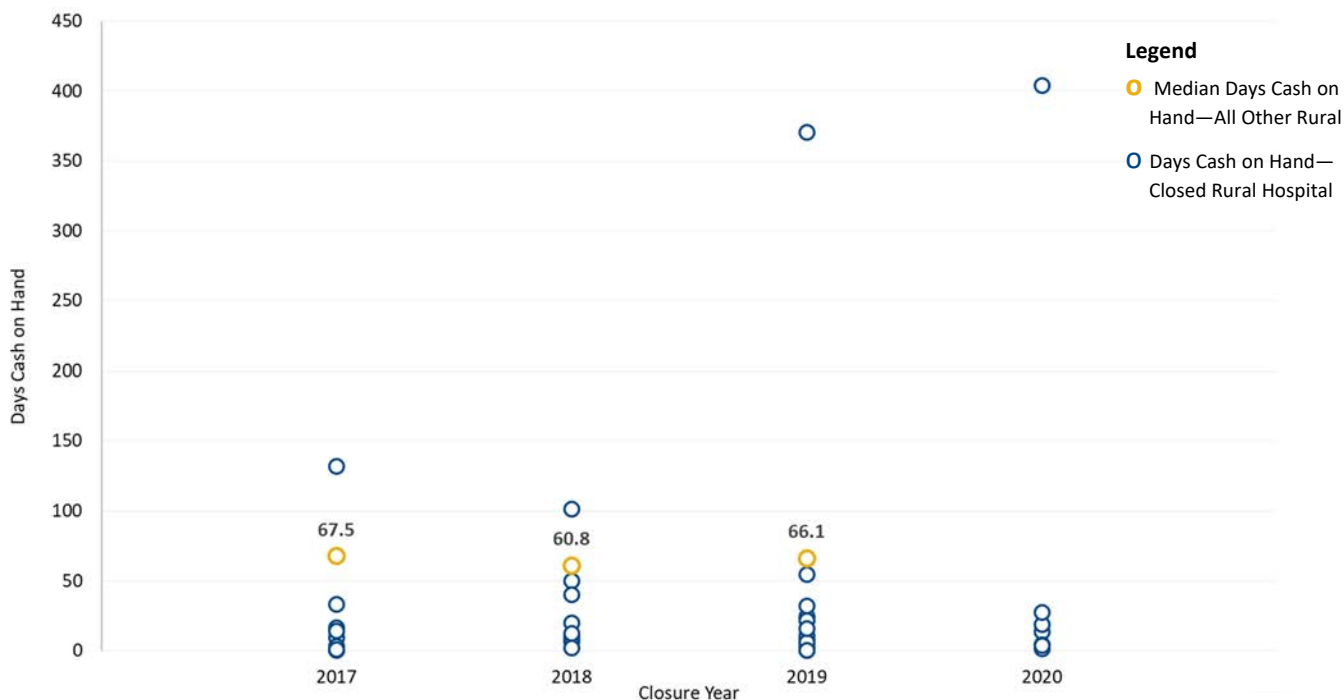


Figure 4 shows the days cash on hand of rural hospitals the year before they closed compared to the median of rural hospitals that remained open. Days cash on hand measures how long a hospital can continue to pay its operating expenses with the current cash it has available. Among the 56 rural hospital closures, 47 had less than 30 days cash on hand the year before closure. All but three of the rural hospitals that closed had days cash on hand less than the median of hospitals that remained open.

Figure 4. Days Cash on Hand of Rural Hospitals in the Year Before They Closed Compared to the Median of Rural Hospitals that Remained Open



DISCUSSION

There are three principal findings in the study. First, *56 rural hospitals that closed between 2017-20 were clustered in the Southeast and South-central census divisions.* Thirty-nine were located in 13 states: Texas, Oklahoma, Kansas, Missouri, Arkansas, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, or Louisiana.

Second, *in the year before closure, most rural hospitals that subsequently closed had a negative operating margin, negative total margin, and few days cash on hand.* Among 56 hospitals that closed between 2017-20, 49 had a negative operating margin. Fifty had a negative total margin, and 47 had less than one-month days cash on hand. Closed hospitals with positive operating margins were likely to have negative total margins and low days of cash on hand. Closed hospitals with a relatively high number of days cash on hand were associated with larger health systems that tend to have larger cash reserves. Although these hospitals had relatively large days cash on hand, they all had negative operating and total margins.

Finally, *in comparison with rural hospitals that remained open between 2017-20, most rural hospitals that closed were much more unprofitable and much less liquid.*

Study results illustrate the importance of profitability and liquidity in prediction of financial distress and closure of rural hospitals. Going into the COVID-19 era, many rural hospitals exhibited long-term unprofitability,⁷ had low levels of profitability,⁸ and relatively low levels of days cash on hand.⁹ During the COVID-19 period, most rural hospitals have faced lower revenue (from fewer elective surgeries, for example) and higher expenses (for personal protective equipment, for example). CARES Act funds provided short-term relief for many rural hospitals, but many rural hospitals will continue to struggle financially after COVID-19.

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