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The Potential for Hospital System Integration to Improve the Financial Outlook of Rural Hospitals in the United States

White Paper

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Table of Contents

Executive Summary...1

Introduction..5

Purpose...6

Definition, Data Sources, and Methodology...7

The Current Financial Status of Rural Hospitals in the United States...........................8

Remaining Open: Analyzing the Finances of Closed Hospitals...................................13

The Impact that Closed Hospitals Have on their Communities....................................15

The Outcome of Mergers, Acquisitions, and Affiliations for Rural Hospitals.............18

Conclusion...26

Executive Summary

This White Paper presents a detailed examination of the economic role of hospitals in rural areas, rural hospital closures in the United States, the financial challenges facing these hospitals, and the outcomes of mergers, acquisitions, and affiliations. Although not necessarily the right choice for all hospitals and communities, aligning with a larger hospital system can reduce the financial vulnerability of rural hospitals as demonstrated by the proportion of rural hospitals that are no longer at high financial risk after affiliating with, merging with, or being acquired by a hospital system. Whether a financially vulnerable rural hospital chooses to affiliate with, merge with, or be acquired by a larger hospital system, the trend remains the same – aligning with a larger hospital system improves the financial viability of rural hospitals, which allows them to stay open and serve their community and surrounding areas. Additionally, rural hospitals that align themselves with a hospital system can benefit from the management processes, organizational structures, telehealth capabilities, and technological innovation available at other system hospitals. As a result of these financial and operational benefits, affiliating with, merging with, or being acquired by a larger hospital system could be an attractive option to financially vulnerable rural hospitals depending on the factors within the local community.

The findings detailed in this White Paper were drawn from a comprehensive analysis of existing research related to the economic state of rural hospitals, Medicare cost reports, American Hospital Association (AHA) Annual Survey data, and qualitative interviews with key stakeholders. Below is a summary of the key areas covered.[1]

Rural hospitals drive local economies and provide some of the highest paying jobs in rural communities. The presence of rural hospitals in communities affects the operation of small businesses and schools in the local area, contributing to the overall economic vitality and enhancing the social cohesion of the communities in which they reside. Rural hospitals can also affect the demographic makeup of rural communities, as the presence of rural hospitals attracts younger professionals to rural areas due to the economic benefits these hospitals provide.

Yet, rural hospitals in the United States are facing financial strain, with 110 closures occurring between 2011 and 2021, the time-period of this analysis. 55% of these closures occurred among standalone hospitals, without support from larger systems. These closures exacerbate healthcare access challenges in already underserved areas, where rural hospitals often represent the only local medical provider. Most of these closures occurred in hospitals identified as high risk, with 63% having negative average total margins and fewer than 30 days cash on hand. Hospitals that closed

[1] Utilizing AHA Survey Data and Medicare Cost Reports, we attempted to conduct an analysis of service lines to determine the effect that hospital system integration had on the service lines offered at rural hospitals. However, the service line data pre-acquisition, merger, or affiliation was incomplete for many of the hospitals in our dataset. Given that our analysis consisted of a pre-/post-comparison, the lack of service line data for many hospitals preceding merger, acquisition, or affiliation prevented us from making statistically sound empirical judgements as to the impact of hospital system integration on rural hospital service lines.

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typically experienced financial distress for approximately five years before finally shutting down, marked by steadily declining average total margins and average days cash on hand.

Notably, 41% of rural hospitals currently in operation demonstrated an average of fewer than 30 days cash on hand, and 27% operate with negative average total margins, putting them at some financial risk. Our analysis concluded that 15% of rural hospitals are at high financial risk, while an additional 21% could move into the high risk category should they experience continued financial strain over the next few years.

Breakdown of Days Cash on Hand and Total Margins for Rural Hospitals that are Currently Open

Analysis Type	Criteria	Number of Hospitals (n = 2857)	Percentage*
Average Total Margins	<0%	767	27%
	0% - 4%	803	28%
	4%+	1287	45%
Average Days Cash on Hand	<30	1183	41%
	30-60	588	21%
	60+	1086	38%
Average Total Margins and Average Days Cash on Hand	<0% and <30	429	15%
	<0% and 30-60	187	7%
	<0% and 60+	151	5%
	0-4% and <30	245	9%
	0-4% and 30-60	223	8%
	0-4% and 60+	335	12%
	4%+ and <30	509	18%
	4%+ and 30-60	178	6%
	4%+ and 60+	600	21%

*Percentages may not add up to 100% due to rounding

Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

Risk Stratification of Rural Hospitals that are Currently Open

Risk Stratification	Number of Hospitals (n = 2857)	Percentage*
High Risk	429	15%
Medium Risk	1092	39%
Low Risk	1336	47%

*Percentages may not add up to 100% due to rounding

Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

Qualitative analyses demonstrated that the closure of rural hospitals affects rural communities, leading to reduced healthcare access, longer travel distances for care, worse health outcomes, and economic downturns. Rural hospital closures create an additional burden on patients as they must travel longer distances to receive care, which could lead to higher mortality rates.

Mergers, acquisitions, and affiliations have shown promise to ameliorate the economic factors leading to rural hospital closures, as they have proven to stabilize the finances of many at-risk rural hospitals. Of the hospitals that merged or affiliated with larger systems between 2011 and 2021, 45% of those at high risk before the merger, acquisition, or affiliation improved their financial position post-

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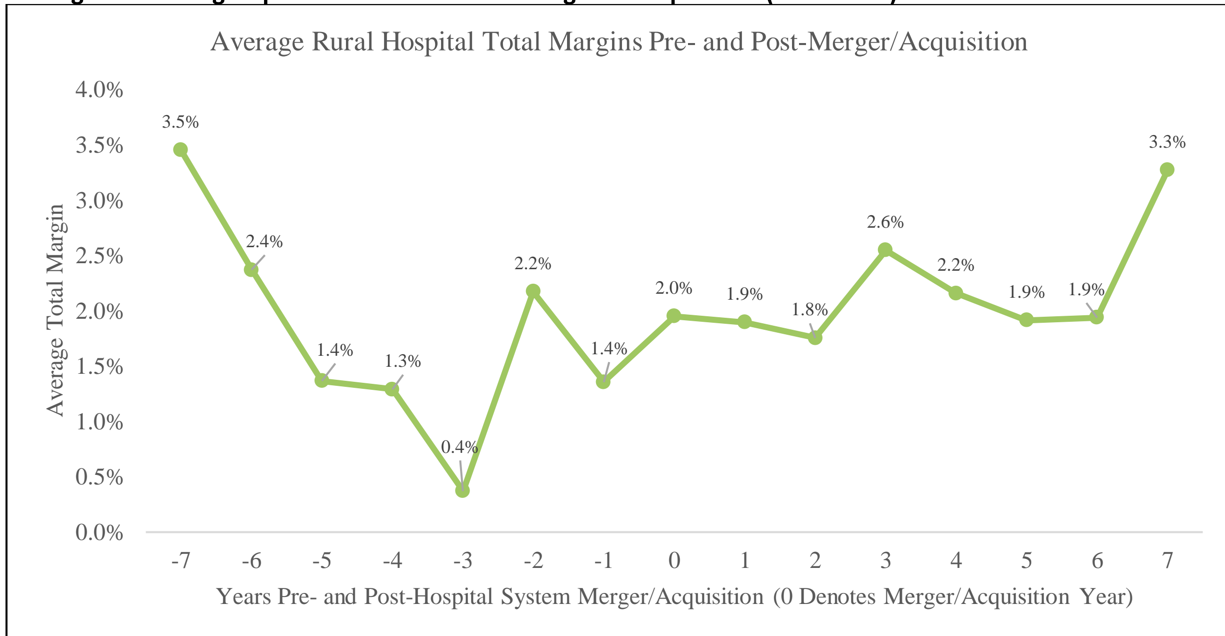
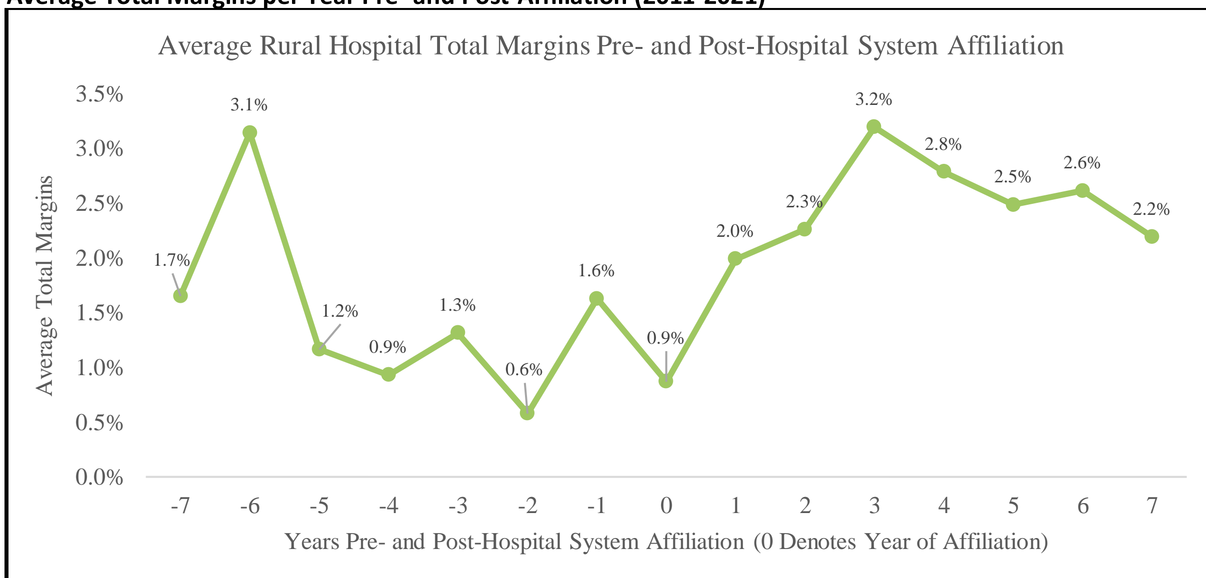
integration, so that they were no longer defined as high risk. Rural hospitals saw an increase in average total margins from 1.8% to 2.2% post-merger, and those that affiliated with larger systems experienced an improvement from 1.5% to 2.3%.

Average Total Margins per Year Pre- and Post-Merger or Acquisition (2011-2021)



Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

Average Total Margins per Year Pre- and Post-Affiliation (2011-2021)



Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

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Expert interviews suggested that mergers or affiliations with larger systems offer access to advanced medical technologies and telehealth, which provide rural hospitals with additional avenues to deliver key services. Larger systems have service lines at other system integrated hospitals, which could serve patients in local, rural communities lacking in a particular healthcare service. Additionally, hospitals aligned with larger systems develop improved management processes and reporting mechanisms, better regulatory compliance, and more standardized care protocols, all of which contribute to higher-quality patient outcomes. One study found that increased access to resources and highly developed, standardized protocols provided to rural hospitals through affiliations, mergers, and acquisitions have been associated with a 10-15% reduction in patient mortality.[2]

In conclusion, mergers, acquisitions, and affiliations with larger hospital systems can improve the financial viability of rural hospitals, which allows them to stay open and continue serving the community in which they reside. Hospital systems also offer enhanced telehealth capabilities and the availability of service lines at other hospitals under the system umbrella, which could improve quality of care. Given the challenges associated with the current financial state of rural hospitals across the United States, policymakers and healthcare leaders must develop a variety of strategies to ensure that rural hospitals can continue to serve their communities effectively.

[2] Guerin-Calvert, ME, Maki, J. (2014). "Hospital Realignment: Mergers Offer Significant Patient and Community Benefits." Center for Healthcare Economics and Policy, January 23, 2014.

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Introduction

Rural hospital closures represent a series of public health and economic issues, posing significant challenges to healthcare accessibility and quality in underserved communities. Hospitals in many rural regions of the United States have been unable to continue operating due to the financial strain of low reimbursement, low patient volume, small populations, and weak local economies.

Given these conditions, rural hospitals are experiencing a marked deterioration in their financial health, leaving rural hospitals vulnerable to closure. Before the onset of the COVID-19 Public Health Emergency (PHE), smaller rural hospitals (26-50 beds) had a median cash on hand of 21.3 days and Medicare Dependent Hospitals had a median of 28.4 days cash on hand,[3] putting them at risk of imminent closure. The total margins at rural hospitals have also seen a marked deterioration over the last few decades, with the total margins in rural hospitals decreasing from 3.1% in 2011 to 0.3% in 2017.[4]

Due to broader societal and economic pressures, rates of rural hospital closures have increased over the past two decades, leaving their surrounding communities without access to healthcare and intensifying healthcare disparities. According to a study by the Chartis Center for Rural Health, 132 rural hospitals closed between January 2010 and February 2020 in the United States,[5] while the Sheps Center at the University of North Carolina documented 71 complete closures and 57 converted closures from 2011 to 2021, the same years examined within this study.[6] These figures are similar to the statistics presented in this study even though they utilized different definitions of rural hospitals.

To avoid hospital closure, rural hospitals may first, among other cost control measures, reduce the service lines they offer to improve the hospital's short-term financial viability. However, determinations about reducing service lines is a complex decision that can be driven by a variety of factors, including volume levels and staffing shortages.

Due to the increasing rates of rural hospital closures throughout the United States, more areas are now designated as Health Professional Shortage Areas (HPSAs). These regions have a shortage of medical professionals, with negative impacts on the health and wellness of the communities designated as such. Areas designated as HPSAs are significantly more likely to experience higher rates of poverty,

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[3] Most Rural Hospitals Have Little Cash on Hand Going into COVID-19. The Cecil G. Sheps Center for Health Services Research. Published May 2020. Accessed April 08, 2024. Most Rural Hospitals Have Little Cash Going into COVID-19 - Sheps Center (unc.edu)

[4] Bai, G, Yehia, F, Chen, W, and Anderson, GF. Varying Trends in the Financial Viability of US Rural Hospitals, 2011-17. *Health Aff* 2020;39(6):942-948.

[5] Kaufman BG, Thomas SR, Randolph RK, Perry JR, Thompson KW, Holmes GM, Pink GH. The Rising Rate of Rural Hospital Closures. The Chartis Group; 2020

[6] Rural Hospital Closures. The Cecil G. Sheps Center for Health Services Research. Published 2024. Accessed October 31, 2024. https://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures/

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lower levels of education, and be populated by individuals from historically marginalized racial populations at a higher rate than regions that do not experience health professional shortages.[7]

Given the role rural hospitals play in both the healthcare and economic outcomes of their local communities, it is critical to sustain the financial health of rural hospitals across the United States. To improve a rural hospital's finances and/or avoid closure, rural hospitals typically have one of three solutions: 1) convert to a Rural Health Clinic or Rural Emergency Hospital; 2) be acquired or merge with a larger hospital system; or 3) affiliate themselves with a larger hospital system.

Purpose

The literature regarding acquisition and affiliation has not produced a consensus as to whether these approaches are in fact financially beneficial to rural hospitals throughout the United States. For instance, Williams, Holmes, and Song, et al. concluded that acquisitions and mergers correlated to a reduction in costs for rural hospitals, but their research also found that acquisitions and mergers contributed to decreased revenue.[8]

Along similar lines, while access to financial resources may enable hospital systems to provide more service lines for rural hospitals,[9] market pressures on hospital finances, lack of adequate patient volume, staff shortages, and/or demographic factors may ultimately lead to service line reductions at rural hospitals.

It is because of the conflicting results within the literature regarding the benefits of acquisitions, mergers, and affiliations that this White Paper is designed to inform the discussion regarding the fiscal and quality benefits provided to rural hospitals as a result of affiliating with, merging with, or being acquired by a larger hospital system. The intent of this White Paper is to provide clarity on the situation surrounding the financial impacts of mergers, acquisitions, and affiliations of rural hospitals throughout the United States. This White Paper was therefore produced to inform federal and state policymakers and rural hospital advocates as they recommend or implement policy decisions that will be beneficial to rural hospitals and by extension, residents of rural communities across the country.

To initiate this discussion, this White Paper examines the current financial stature, as defined by days cash on hand and total margins, of rural hospitals throughout the United States, and the extent to which affiliating with, merging with, or being acquired by a larger hospital system is associated with the improved financial strength of rural hospitals. Additionally, we sought to determine whether

[7] Streeter RA, Snyder JE, Kepley H, Stahl AL, Li T, & Washko MM. The geographic alignment of primary care Health Professional Shortage Areas with markers for social determinants of health. *PloS One* 2020;15(4):e0231443.

[8] Williams Jr. D, Holmes, GM, Song, PH, et al. "For Rural Hospitals That Merged, Inpatient Charges Decreased and Outpatient Charges Increased: A Pre-/Post-Comparison of Rural Hospitals That Merged and Rural Hospitals That Did Not Merge Between 2005 and 2015." *J Rural Health* 2020;1-10.

[9] Schmitt, M. Do hospital mergers reduce costs? *J. Health Econ*, 2017;52:74–94.

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mergers, acquisitions, or affiliations had the potential to support the general economic vitality of local rural communities.

Given the goal and intent of this white paper, we sought to answer the following four questions:

1. As defined by an overall average of fewer than 30 days cash on hand and negative total margins, as well as sustained (2+ consecutive years) negative total margins, how many rural hospitals are in financial distress and therefore at high financial risk?

2. What was the length of time from the point where rural hospitals first demonstrated high financial risk to their ultimate date of closure?

3. How did the closure of rural hospitals or selected service lines impact the communities in which these hospitals operated?

4. How did acquisition or affiliation of rural hospitals into large healthcare systems impact the financial well-being of these hospitals and their delivery of service lines?

Definition, Data Sources, and Methodology

We utilized a three-pronged methodology comprising both quantitative and qualitative data analysis to answer the four questions outlined above.

First, we conducted a targeted literature review encompassing six thematic areas: 1) metrics to define the financial health of rural hospitals: 2) rural hospital closure trends, including service line closures; 3) rural health outcomes and quality of care; 4) community impact of service line cuts and rural hospital closures; 5) increases in the number of health professional shortage areas (HPSAs); and 6) impact of acquisitions, mergers, and affiliations on hospitals and the local communities in which the hospital resides.

Secondly, we utilized Medicare cost reports and American Hospital Association (AHA) Annual Survey data from 2011 to 2021. The Medicare cost report data was primarily used to determine days cash on hand and total margins for all rural hospitals across the United States, while the AHA Annual Survey data provided information on service lines, mergers/acquisitions and affiliations, and closure years. Within our analysis, **we defined rural hospitals to include critical access hospitals (CAHs) and short term acute care hospitals (STACHs) in census designated rural areas.**

To determine the total margin for each hospital, we utilized the formula:

$$Total\ Margin = \frac{(Total\ Revenue - Total\ Expenses)}{Total\ Revenue}.$$

Days cash on hand was calculated using the following two formulas:

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$$Daily\ Cash\ Need = \frac{(Total\ Operating\ Expenses - Depreciation\ Expense)}{(FYEnd\ Date - FY\ Begin\ Date + 1)}$$ and

$$Days\ Cash\ on\ Hand = \frac{(Cash\ on\ Hand + Market\ Securities)}{Daily\ Cash\ Need}.$$

Both days cash on hand and total margin data by hospital group was case weighted as if the group was one large hospital. The data was also Winsorized at the 5th and 95th percentiles to account for outliers in the data to provide a less biased analysis. In this case, Winsorizing means that all values under the 5th percentile were set as equal to the value of the 5th percentile, while all values over the 95th percentile were set as equal to the value of the 95th percentile.

Finally, we conducted semi-structured interviews with key informants, who possess in-depth knowledge of the state of rural hospitals in the United States and in specific states in which they live, work, and/or conduct research. To supplement our interviews and provide a holistic picture of the impact of rural hospital closures across the United States, we also performed a document analysis of local news articles throughout the country that highlighted how rural hospital closures and service line reductions have impacted local communities. The interview transcripts and the local news articles were thematically coded to identify key themes that arose. The purpose of the interviews and document analysis was to supplement the quantitative data analysis and to demonstrate the impact that rural hospital closures have on the communities in which they previously resided.

The Current Financial Status of Rural Hospitals in the United States

Presently, rural hospitals are closing at higher rates than in previous decades due in large part to financial constraints. In fact, the Government Accountability Office found that the number of rural hospital closures more than doubled between 2013 and 2017 as compared to the previous 5-year time period.[10] When selecting for counties containing only towns with fewer than 10,000 residents, 74 rural hospitals closed between 2011 and 2019.[11] Our analysis, using FY 2011 through FY 2021 Medicare cost report data and AHA Annual Survey data and comprising only rural CAHs and STACHs, indicated that 110 of these facilities had closed. The 110 closed rural hospitals were 4% of all rural hospitals within our dataset. Importantly, 55% (61 of 110) of rural hospitals that closed were standalone hospitals without the support of a larger hospital system. Previous research has provided similar findings indicating that the majority of hospitals that closed were independent hospitals.[12]

As depicted in **Figure 1**, rural hospital closures have increased over time. 37 rural hospitals closed in 2019 and 2020 combined– the highest two-year mark over the course of our data and six times greater than the number of closures that occurred in 2011 and 2012 – the first two years of our dataset. While

[10] United States Government Accountability Office. Rural Hospital Closures: Number and Characteristics of Affected Hospitals and Contributing Factors. Report to Congressional Requesters. GAO-18-634. August 2018.

[11] Edmiston KD. Rural Hospital Closures and Growth in Unemployment and Wages. *Federal Reserve Bank of Kansas City Economic Bulletin*; July 16, 2019.

[12] American Hospital Association. Rural hospital closures threaten access: Solutions to preserve care in local communities. September 2022.

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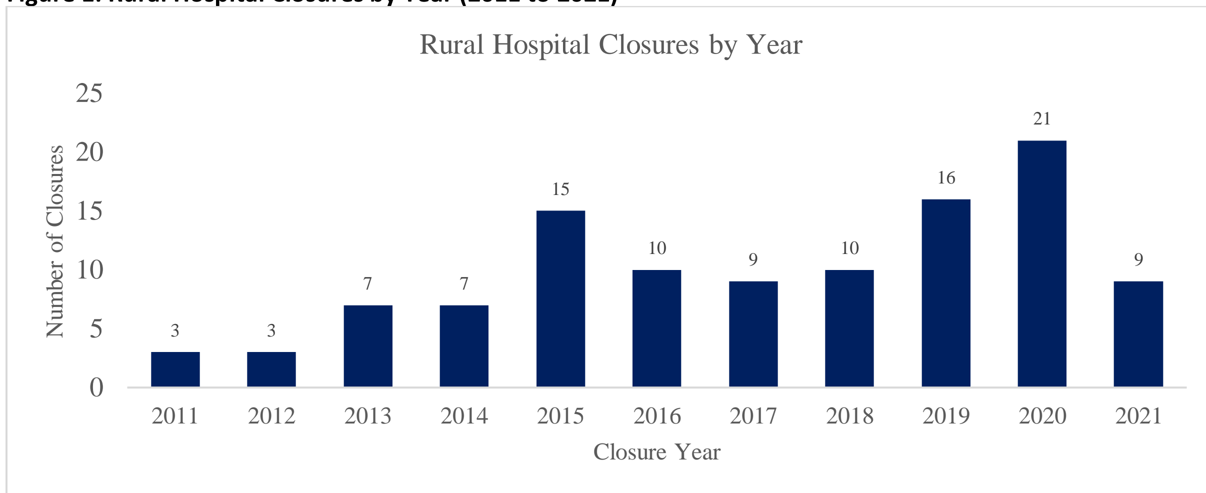
the 2020 closures may be partially due to the immediate financial shock placed on hospitals as a result of the COVID-19 PHE, the 16 hospitals that closed in 2019 were still higher than any other year in the dataset. In 2021, the number of rural hospital closures decreased from the 2020 high potentially due to the increased payments rural hospitals received as a result of the federal government's COVID-19 PHE funds that helped offset their financial shortfalls.

Figure 1: Rural Hospital Closures by Year (2011 to 2021)



Source: Dobson | DaVanzo analysis of rural hospitals that closed utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

A rural health researcher at a major university highlighted that his research provided similar findings to this analysis. He stated there is "financial distress among many rural hospitals…in the period before the pandemic and then an increase in that pressure really early on in the pandemic, which there's no surprise, if you restrict elective procedures and cut down volumes, that creates a lot of financial pressure. But then that was followed up fairly quickly by the Public Health Emergency funding, which did a lot to shore up hospitals' financial performance. And so in 2021 and late 2020, a lot of hospitals were actually doing better than they did prior [to the PHE]." Our analysis points to the pandemic's effect on rural hospital closures, where the pronounced increase of closures in 2020 is likely due to the revenue loss that came with ceasing elective procedures. Once the PHE funds were allocated, hospitals were able to stabilize their financials, leading to fewer closures in 2021.

Keeping rural hospitals open is vital to the nationwide healthcare infrastructure and the local communities in which they reside because rural hospital closures have been associated with less

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access to care,[13,14] increased travel times,[15,16] increased mortality,[17,18,19] and economic downturns in the counties in which the hospital formerly resided.[20,21,22] Yet, there are ways to predict whether a hospital is at risk of closure, which could allow policy makers to develop interventions to delay or prevent rural hospital closures.

Metrics, such as days cash on hand and total margins, are typically utilized to determine if a hospital is at risk of closure. It is generally agreed upon that sustained negative margins and fewer than 30 days cash on hand are useful metrics to determine if a hospital's finances are at risk,[23] increasing the likelihood of closure. The Sheps Center at the University of North Carolina developed the Financial Distress Index (FDI), which includes twelve metrics to analyze a hospital's risk of closure. Liquidity (days cash on hand), profitability (total margins), and equity decline (decreasing total margins) are key financial predictors used in the FDI calculations. 66% of rural hospitals that closed from 2005 to 2015 were identified as high risk by the FDI.[24]

For this study, we stratified rural hospitals in operation into three different risk bands: high risk, medium risk, and low risk. We define high risk as a hospital having sustained negative margins (more than two consecutive years of negative margins), an average negative total margin across all the hospital's reported years of Medicare cost report data, AND having average days cash on hand below 30 across all the hospital's reported years of Medicare cost report data. Medium risk is defined as having an average days cash on hand below 30 and positive average total margins across all the hospital's reported years of Medicare cost report data OR greater than 30 days cash on hand and negative average total margins across all the hospital's reported years of Medicare cost report data. Finally, low risk includes rural hospitals with positive average total margins across all the hospital's

[13] Wishner J, Solleveld P, Rudowitz R, Paradise J, Antonisse A. A Look at Rural Hospital Closures and Implications for Access to Care: Three Case Studies. *The Kaiser Commission on Medicaid and the Uninsured Issue* Brief July 2016.

[14] Vogler J. Rural hospital closures and local economic decline. *SSRN* 2020.

[15] Letheren AM. Rural hospital closures and perceived access to care: A qualitative descriptive study in an Appalachian County of Tennessee. PhD diss., University of Tennessee, 2021.

[16] McCarthy S, Moore D, Smedley WA, et al. Impact of rural hospital closures on health-care access. *J Surg Res.* 2021;258:170-178.

[17] Gurjal K and Basu A. Impact of Rural and Urban Hospital Closures on Inpatient Mortality. *Nat Bur Econ Res* 2020; *Working Paper* 26182: 1-35.

[18] Harrington RA, Califf RM, Balamurugan A, Brown N, Benjamin RM, Braund WE, Hipp J, Konig M, Sanchez E, & Joynt Maddox KE. Call to action: Rural health: A presidential advisory from the American Heart Association and American Stroke Association. *Circulation* 2020;141(10).

[19] Chatterji P, Ho C, & Wu X. The Mortality Effects of Healthcare Consolidation: Evidence from Emergency Department Closures. *Nat Bur Econ Res* 2024; Working Paper 32189:1-27.

[20] Edmiston KD. Rural Hospital Closures and Growth in Unemployment and Wages. *Federal Reserve Bank of Kansas City Economic Bulletin*; July 16,2019.

[21] Mills CA, Yeager V A, Unroe KT, Holmes A, & Blackburn J. The impact of rural general hospital closures on communities—a systematic review of the literature. *J Rural Health*, 2023;40(2):238–248

[22] Elrich FC, Doeksen GA, St. Clair CF. The Economic Impact of Recent Hospital Closures on Rural Communities. *National Center for Rural Health Works* 2015; 1-11.

[23] Most Rural Hospitals Have Little Cash on Hand Going into COVID-19. The Cecil G. Sheps Center for Health Services Research. Published May 2020. Accessed September 23, 2024. Most Rural Hospitals Have Little Cash Going into COVID-19 - Sheps Center (unc.edu)

[24] Kaufman B, Pink G, Holmes M. Prediction of Financial Distress among Rural Hospitals. *NC Rural Health Research Program Findings Brief: Chapel Hill, NC* Jan 9, 2016:1665-72.

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reported years of Medicare cost report data AND greater than an average of 30 days cash on hand across all the hospital's reported years of Medicare cost report data. **Table 1a** provides a breakdown of days cash on hand and average total margins for rural hospitals, while **Table 1b** displays the three risk categories (low, medium, high) with the number and percentage of hospitals in each category.

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Table 1a: Breakdown of Days Cash on Hand and Total Margins for Rural Hospitals that are Currently Open

Analysis Type	Criteria	Number of Hospitals (n = 2857)	Percentage*
Average Total Margins	<0%	767	27%
	0% - 4%	803	28%
	4%+	1287	45%
Average Days Cash on Hand	<30	1183	41%
	30-60	588	21%
	60+	1086	38%
Average Total Margins and Average Days Cash on Hand	<0% and <30	429	15%
	<0% and 30-60	187	7%
	<0% and 60+	151	5%
	0-4% and <30	245	9%
	0-4% and 30-60	223	8%
	0-4% and 60+	335	12%
	4%+ and <30	509	18%
	4%+ and 30-60	178	6%
	4%+ and 60+	600	21%

*Percentages may not add up to 100% due to rounding

Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

Table 1b: Risk Stratification of Rural Hospitals that are Currently Open

Risk Stratification	Number of Hospitals (n = 2857)	Percentage*
High Risk	429	15%
Medium Risk	1092	39%
Low Risk	1336	47%

*Percentages may not add up to 100% due to rounding

Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

Although nearly half of rural hospitals (47%) are defined as low risk, 15% of all rural hospitals are identified as high risk. Moreover, another 21% of rural hospitals, as demonstrated by the hospitals with average negative total margins and greater than 30 days cash on hand (12%) and those hospitals with slightly positive margins and fewer than 30 days cash on hand (9%), could move to the high risk category should they experience cash flow issues or negative total margins in the future. This analysis demonstrates that as many as 36% (15% high risk + 21% with financial risk factors) of rural hospitals could be financially susceptible. The interviews conducted provide further credence to our statistics. When discussing the financial distribution of rural hospitals, a rural health researcher at a major university noted that the "distribution of financial performance among rural hospitals seems to be heavily weighted towards hospitals with negative margins. A significant number of rural hospitals have negative margins." Finally, 54% of all rural hospitals demonstrate at least one risk factor of closure (negative total margins or fewer than 30 days cash on hand), placing them at some financial risk.

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Remaining Open: Analyzing the Finances of Closed Rural Hospitals

As mentioned previously, 110 rural hospitals in our database closed between 2011 and 2021, and most of these rural hospitals that closed exhibited the financial risk indicators described in the previous section. Across all years of data, the rural hospitals that closed had a total margin of -4.3% and an average of 26 days cash on hand, demonstrating the financial susceptibility of these hospitals. **Table 2a** depicts the breakdown of average total margins and average days cash on hand for rural hospitals that closed between 2011 and 2021, and **Table 2b** stratifies these closed rural hospitals into the aforementioned risk bands.

Table 2a: Breakdown of Days Cash on Hand and Total Margins for Closed Rural Hospitals

Analysis Type	Criteria	Number of Hospitals (n = 110)	Percentage*
Average Total Margins	<0%	84	76%
	0% - 4%	15	14%
	4%+	11	10%
Average Days Cash on Hand	<30	89	81%
	30-60	9	8%
	60+	12	11%
Average Total Margins and Average Days Cash on Hand	<0% and <30	69	63%
	<0% and 30-60	7	6%
	<0% and 60+	8	7%
	0-4% and <30	12	11%
	0-4% and 30-60	1	1%
	0-4% and 60+	2	2%
	4%+ and <30	8	7%
	4%+ and 30-60	1	1%
	4%+ and 60+	2	2%

*Percentages may not add up to 100% due to rounding

Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

Table 2b: Risk Stratification of Closed Rural Hospitals

Risk Stratification	Number of Hospitals (n = 110)	Percentage
High Risk	69	63%
Medium Risk	35	32%
Low Risk	6	5%

Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

The analysis presented demonstrates that closed hospitals typically display the financial risk factors associated with closure. From our analysis, 69 of the 110 hospitals (63%) that closed between 2011 and 2021 were categorized as being at high risk of closure, whereas only 6 hospitals (5%) were categorized as low risk of closure. However, it should be noted that 3 of these 6 low risk hospitals closed in 2021, which could have been related to the effects of the COVID-19 public health emergency (PHE). Overall, 104 out of 110 of the hospitals that closed (95%) exhibited at least one of the financial risk indicators of closure.

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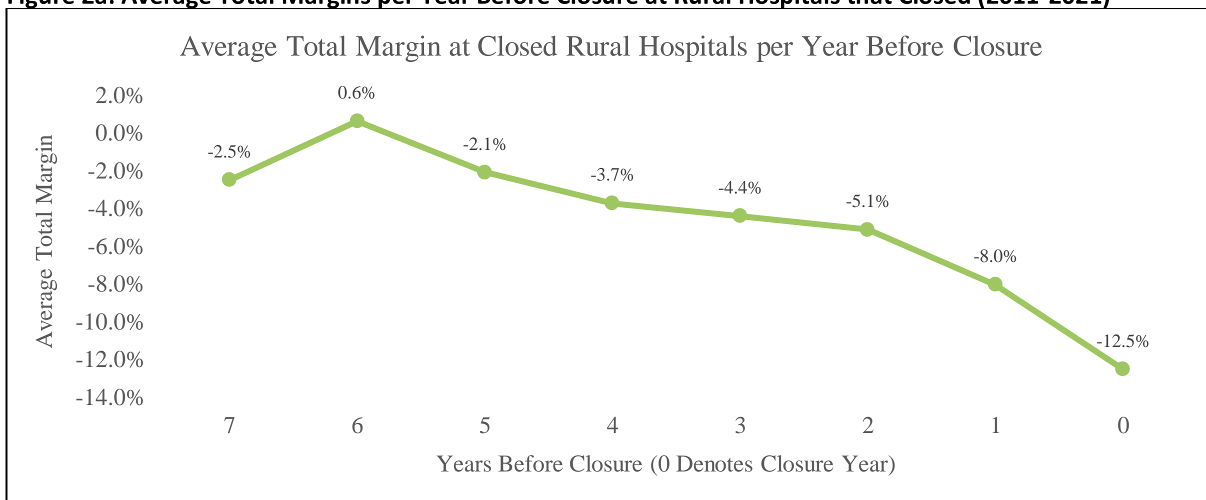
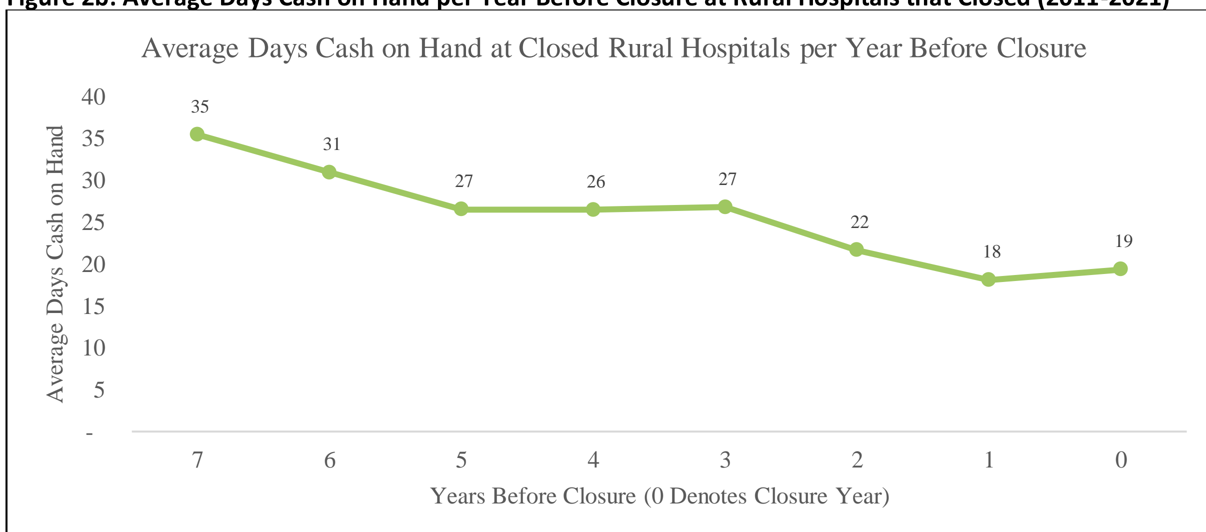
While rural hospitals that closed between 2011 and 2021 experienced unsustainable finances, they tended to delay closure for about 5 years after first presenting the warning signs of financial distress. Both the analysis of average total margins and average days cash on hand depicted similar trends, where the first signs of financial distress, as evidenced by negative average total margins and fewer than 30 days cash on hand, occurred 5 years before the closure date. A steady decline in both metrics occurred as the hospitals progressed closer to the year of closure. **Figure 2a** depicts the decreasing average total margins, and **Figure 2b** shows the decline in average days cash on hand at rural hospitals that closed between 2011 and 2021.

Figure 2a: Average Total Margins per Year Before Closure at Rural Hospitals that Closed (2011-2021)



Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

Figure 2b: Average Days Cash on Hand per Year Before Closure at Rural Hospitals that Closed (2011-2021)



Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

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When examining the average cash on hand and average total margins as the hospitals approach the year of closure, it becomes evident that the average total margins experience a more precipitous and consistent decline. In fact, days cash on hand remained steady from year 5 to year 3 pre-closure. This could suggest that as average total margins fall, hospitals realize that they are in financial jeopardy, causing a sell-off of assets to retain enough liquidity to pay for monthly payroll and expenses. Once it becomes impossible to retain liquidity, as demonstrated by the descent in average days cash on hand in year 2 and year 1 pre-closure, hospital closure becomes more likely.

Within our analysis, we noticed that some hospitals that closed experienced significant *increases* in average days cash on hand year-over-year. However, these increases were temporary, as the average days cash on hand decreased relatively soon after the increases occurred. This trend highlights the sell-off of assets and possibly other cost enhancing strategies described previously.

The Impact that Closed Rural Hospitals Have on the Community

When a rural hospital closes, the community in which it formerly resided feels the loss in many important ways. Rural hospital closures exert substantial and multifaceted effects on communities, encompassing reduced healthcare access, adverse health outcomes, decreased social cohesion,[25] and increased economic stress for other businesses.[26]

Access to care is reduced by a decline in primary and specialty care physicians[27] and a significant increase in travel distances, wait times, and difficulty obtaining care.[28] Between 2014 and 2018, 53 rural counties in the nation lost access to obstetrics care,[29] increasing travel for intrapartum care by an average of 29 miles.[30] Many practicing OB-GYNs and maternal-fetal medicine specialists have left rural areas, leaving a significant gap in care for pregnant residents.[31] A president of a rural health association noted that “it is very difficult for us to get OB-GYN providers across the state, so only three of our critical access hospitals are still providing routine labor and delivery services. For pregnant mothers and their families, that is often a lot of drive time get to one of those three critical access hospitals or to get to one of the urban centers. Transportation adds a lot of stress, and certainly doesn't help those patients needing that care.”

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[25] Christiaanse S & Haartsen T. The influence of symbolic and emotional meanings of rural facilities on reactions to closure: The case of the village supermarket. *J Rural Stud* 2017;54: 326–336.

[26] Mills CA, Yeager V A, Unroe KT, Holmes A, & Blackburn J. The impact of rural general hospital closures on communities—a systematic review of the literature. *J Rural Health*, 2023;40(2):238–248.

[27] Germack HD, Kandrack R, & Martsolf GR. When rural hospitals close, the physician workforce goes. *Health Aff*, 2019;38(12):2086–2094.

[28] Letheren AM. Rural hospital closures and perceived access to care: A qualitative descriptive study in an Appalachian County of Tennessee. PhD diss., University of Tennessee, 2021.

[29] Rodriguez-Siuts, S. “A Rural Hospital Closed Its Obstetrics Unit, Hitting Most Vulnerable the Hardest.” Sandra Rodriguez-Siu (blog), July 24, 2024.

[30] Anderson, B, Gingery, A, McClellan, M, et al. NHRA Policy Paper: Access to rural maternity care. *National Rural Health Association* 2021.

[31] Moseley-Morris, Kelcie. “Idaho Doctor Who Worked at Closed Maternity Ward Says Abortion Ban Harmed Recruiting.” Idaho Capital Sun, April 22, 2024.

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Hospitals in rural areas often provide additional health services that are lost upon closure. When a rural hospital closes, "primary care physicians leave the community, making preventive and routine care more difficult to access. Furthermore, access to lab, radiology, and diagnostic services become more limited."[32] Therefore, residents who are physically or financially unable to travel long distances often delay receiving critical preventive, routine, or specialty care,[33,34] which means that care is often only sought in emergency situations. Reduced access to services presents negative mortality consequences, [35,36] as research has found that rural hospital closures lead to a 5.9% increase in mortality rates for cardiovascular incidents and stroke.[37] A rural health system executive noted that "in an urban area, people are used to having multiple choices: if a hospital closes, I'll go to a different hospital." He noted that in rural communities, "there is no different hospital. There's only one."

In addition to poorer health outcomes for communities that have experienced a rural hospital closure, the economic vitality of a community suffers when a rural hospital closes as higher paying jobs that exist because of the hospitals are no longer present.[38] Rural hospital closures are often associated with economic downturns in a community,[39] as there is an association between closures and decreased employment, income, and home value – all of which contribute to an overall economic decline. Therefore, rural hospitals not only serve as the healthcare "hub" of their communities, but are also central for employment, socialization, and its overall economic vitality.

Rural hospital closures can have a detrimental effect upon the social cohesion of the populations they leave behind. As a result of the declining availability of healthcare services and consequent poor health outcomes in rural communities, fewer families are opting to move to and remain in rural areas. An executive at a hospital spoke about an independent rural hospital in his region that had experienced "a little bit of a decline in their population already because of this [the lack of OB services], and the problem they're seeing is that people ask what's available in the hospital. They can't have children there anymore. They have cut OB, no women's health services. That's one of the first questions they get from new teachers who may want to start a family in the future. It's made it much harder for them to recruit for those jobs. People don't stay if they don't have good healthcare

[32] Weissart, D. "The Toll of Rural Hospital Closures - Public Health Post." Public Health Post, June 17, 2024.

[33] Valdivia, Sebastián Martínez. "Rural Midwest Communities That Lose Their Hospitals Have Few Health Care Options." KCUR - Kansas City News and NPR, December 20, 2022.

[34] Wishner J, Solleveld P, Rudowitz R, Paradise J, Antonisse L. A look at rural hospital closures and implications for access to care: Three case studies. Urban Institute; 2016. Accessed October 31, 2024.

[35] Gujra, K., & Basu A. (2019). Impact of Rural and Urban Hospital Closures on Inpatient Mortality. *Nat Bur Econ Res* 2023; Working Paper 26182:1-34.

[36] Chatterji P, Ho C, & Wu X. The Mortality Effects of Healthcare Consolidation: Evidence from Emergency Department Closures. *Nat Bur Econ Res* 2024; Working Paper 32189:1-27.

[37] Harrington RA, Califf RM, Balamurugan A, Brown N, Benjamin RM, Braund WE, Hipp J, Konig M, Sanchez E, & Joynt Maddox KE. Call to action: Rural health: A presidential advisory from the American Heart Association and American Stroke Association. *Circulation* 2020;141(10).

[38] Alexander DE & Richards, MR. Economic consequences of hospital closures. *Nat Bur Econ Res* 2023; Working Paper 29910:1-48

[39] Mills CA, Yeager V A, Unroe KT, Holmes A, & Blackburn J. The impact of rural general hospital closures on communities—a systematic review of the literature. *J Rural Health*, 2023;40(2):238–248.

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available." In this example, the lack of obstetrics services in the independent rural hospital directly contributed to an aging of the local population.

Because of rural hospital closures and the aging demographics of rural communities, many residents are unable to receive the care they need due to long drive times. The executive noted that rural communities "are aging communities for the most part, so for them [residents of an advanced age] to leave their homes, or if they have a spouse or a loved one that lives with them, or to go see them if they're put in a hospital, that's 50 or 90 miles away or more out west. There are some hospitals that are two or three hours away from them. It's not only inconvenient; it's quite impossible. And that has a big effect on people's mentation and how well they do. Their outcomes are probably going to be affected overall because of that. Financially, and emotionally, it's a big strain on the family." Residents living in rural locations are typically "older, poorer, and have higher levels of chronic diseases, such as type 2 diabetes. The closures worsen health outcomes for an already vulnerable population who have few places to turn for medical care." These factors create additional financial strain upon the communities, which rural hospitals are forced to cover.[40] Coupled with the declining population, the increasing age of the residents in rural communities has led to stifled economic growth in these regions where hospitals have closed.

In addition to these factors, "hospitals are major employers. When a hospital closes its doors, local unemployment rates rise by an average of 1.6% to 3.1% and in certain instances can be far higher, affecting the economic health of an entire region."[41] A rural Tennessee resident described the closure of the local hospital as a loss, noting that "the hospital was not only the health care lifeline to this community. Economically and socially, it was the center of the community."[42] She also stated that with the closure, approximately "300 jobs went with it. Restaurants and other small businesses in Jellico [the local community] also have gone under."[43]

Rural hospitals typically provide jobs that are among the highest wage jobs in a rural county, and according to a rural health system executive, are "one of the largest employers in pretty much all these communities across the nation. That kind of economic driver definitely stands up all the other things you need in a small and rural community to include schools, and to have a tax base to attract people into those areas." This individual also noted that "in the rural communities they're leaned on very heavily by each rural community that we're in, usually being a major employer." One rural health association president noted that "many of our critical access hospitals are in the top five largest employers in that county. So much is happening that we look at them as being kind of the linchpins, the hubs of those rural communities." When a rural hospital closes, those jobs are eliminated, leaving people either unemployed or employed in jobs that pay less than what they were accustomed to

[40] Vollers, Anna Claire. "For Some Rural Communities, a Stripped-down Hospital Is Better Than None at All." Stateline, June 6, 2024.

[41] Weissart, D. "The Toll of Rural Hospital Closures - Public Health Post." Public Health Post, June 17, 2024.

[42] Sisk, T. "Closing of Rural Hospitals Leaves Towns With Hard-to-use Real Estate." USA TODAY, July 4, 2024.

[43] Ibid.

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earning. As a result, unemployment increases, "population size decreases, poverty levels rise, and income acutely decreases by up to 4%."[44]

Closures cause a domino effect, eliminating income from the community and impacting the ability for rural communities without hospitals to attract businesses, which, as a rural health researcher at a major university noted, in turn suppresses community growth. He also went on to state that rural hospitals are "large employers that pay relatively high average wages. That closure is taking a lot of income out of the community in a pretty direct way, and also very likely impacting the ability of the community to attract more businesses."

A rural health association president noted that this stifling of economic growth has caused states to struggle to afford healthcare services. He reported that "we see a lot of patient transfers from their community out of state and that obviously has a major impact on residents when it comes to their insurance coverage and being able to afford those services. It's a real problem for the state. It's something we've worked on and continue to try to support and have hope that we can get more services, but it's a real struggle given the smaller population and the lack of ability for most health systems to invest into that community."

The Outcomes of Hospital System Integration for Rural Hospitals

FINANCIAL METRICS

For rural hospitals at high financial risk, affiliating with, merging with, or being acquired by a larger hospital system could be an attractive option to increase the financial outlook of the hospital and perhaps the local community. Research suggests that mergers and acquisitions can lead to a reduction in cost for the acquired hospital,[45,46] with some demonstrating cost reductions of 4-7% within three years post-merger.[47] The improvement in cost efficiency is typically due to improved resource utilization and economies of scale.[48]

The economic indicators (average total margins and average days cash on hand) of rural hospitals evaluated as part of this study demonstrated that merger, acquisition, and affiliation were able to stabilize or improve the finances of rural hospitals. Larger hospital systems were able to reduce the financial strain often experienced by rural hospitals, taking rural hospitals at high financial risk and

[44] Weissart, D. "The Toll of Rural Hospital Closures - Public Health Post." Public Health Post, June 17, 2024.

[45] Williams Jr. D, Holmes, GM, Song, PH, et al. "For Rural Hospitals That Merged, Inpatient Charges Decreased and Outpatient Charges Increased: A Pre-/Post-Comparison of Rural Hospitals That Merged and Rural Hospitals That Did Not Merge Between 2005 and 2015." *J Rural Health* 2020;1-10.

[46] Guerin-Calvert ME, & Maki J.. "Hospital Realignment: Mergers Offer Significant Patient and Community Benefits." *Center for Healthcare Economics and Policy*, January 23, 2014.

[47] Schmitt, M. (2017). Do hospital mergers reduce costs? *J. Health Econ*, 52, 74–94.

[48] Guerin-Calvert ME, & Maki J.. "Hospital Realignment: Mergers Offer Significant Patient and Community Benefits." *Center for Healthcare Economics and Policy*, January 23, 2014.

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improving their finances to such an extent that these hospitals were no longer defined as high risk shortly after aligning with a larger hospital system.

The analysis conducted demonstrates that merger, acquisition, and affiliation were most beneficial for those at the greatest financial risk of closure. Between 2011 and 2021, 441 out of 2857 hospitals (15%) merged with or were acquired by a larger hospital system, and 416 hospitals (15%) affiliated with a larger hospital system. Of the 441 hospitals that merged with or were acquired by a larger hospital system, 95 (22%) were in the high risk category before acquisition or merger; 59 of the 416 hospitals (14%) that affiliated with a larger hospital system were at high risk before affiliation. Therefore, 154 of the 857 (18%) hospitals that affiliated with, merged with, or were acquired by a larger hospital system were at high financial risk.

Acquisitions and mergers were able to stabilize the finances of many hospitals that were high risk before the year of merger or acquisition. After merging with or being acquired by a larger hospital system, 31 of the 95 hospitals (33%) that were high risk pre-merger and acquisition were no longer in the high risk category post-merger and acquisition, and 39 of the 59 hospitals (66%) identified as high risk before affiliation were able to stabilize their finances and move out of the high risk category after affiliating with a larger hospital system. These statistics demonstrate the ability of acquisitions, mergers, and affiliations to ameliorate the financial distress experienced by some standalone rural hospitals, while improving these hospitals' financial outlook.

When examining average total margins for rural hospitals pre- and post-merger, acquisition, and affiliation, the larger hospital systems that partner with local rural hospitals are able to improve the average margins at these hospitals. **Figure 3a** depicts the average total margins at rural hospitals per year before and after acquisition or merger, and **Figure 3b** shows the same for rural hospitals that affiliated with a larger hospital system. In both cases, 0 denotes the year of acquisition, merger, or affiliation. ***Before merging with or being acquired by a larger hospital system, the average total margin for rural hospitals was 1.8%, which increases to 2.2% after merger or acquisition. Hospitals that affiliated with a larger hospital system demonstrated greater increases in average total margins, moving from 1.5% pre-affiliation to 2.3% post-affiliation.***

Figure 3a: Average Total Margins per Year Pre- and Post-Merger or Acquisition (2011-2021)

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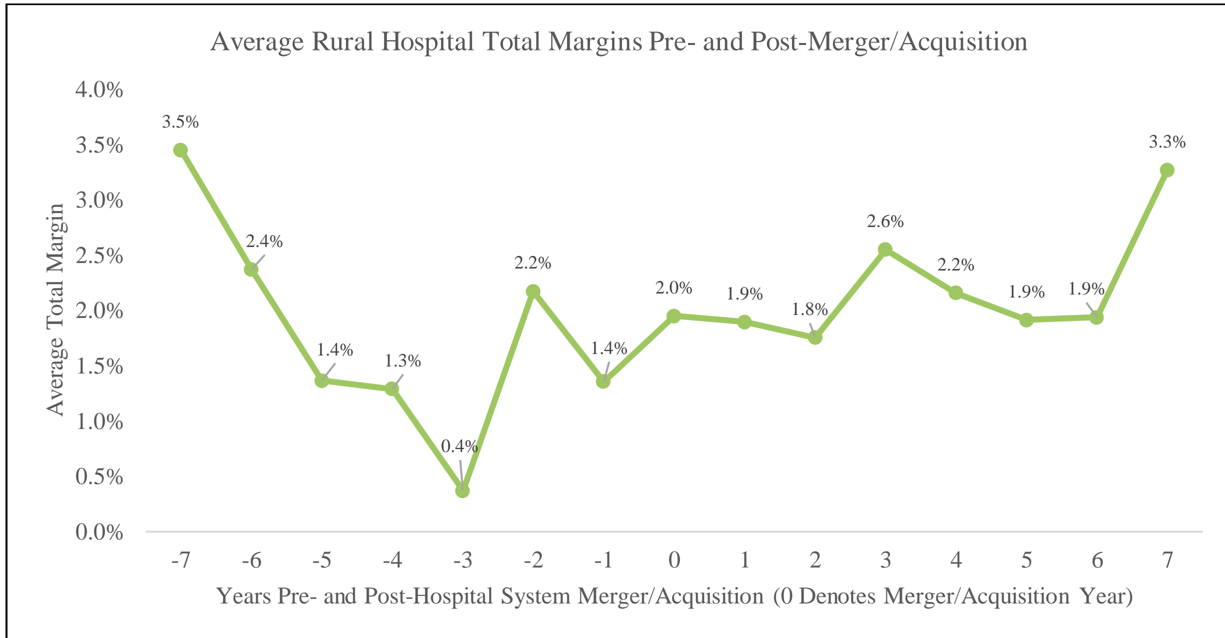

Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

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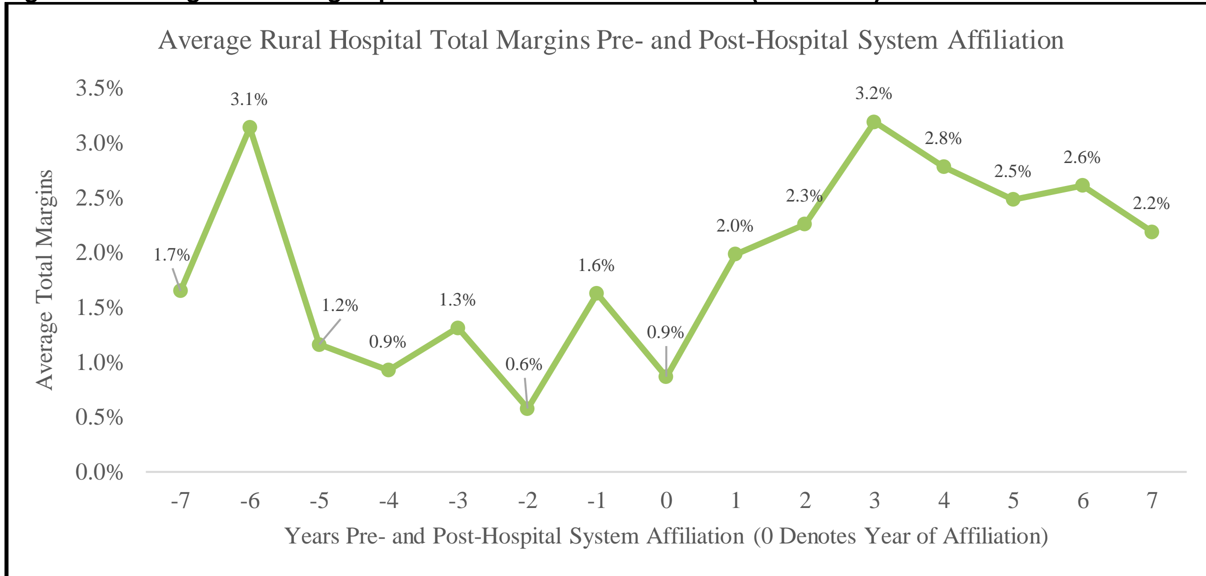
Figure 3b: Average Total Margins per Year Pre- and Post-Affiliation (2011-2021)



Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

In both instances, a similar trend is demonstrated, where average total margins decrease before merger, acquisition, and affiliation, and subsequently increase afterwards. Furthermore, the year-over-year fluctuations in average total margins are greater prior to merger, acquisition, and affiliation, while afterwards the fluctuations become less pronounced, signaling greater year-to-year stability in managing rural hospital finances.

The analysis of days cash on hand pre- and post-merger, acquisition, and affiliation is slightly more nuanced than the analysis of total margins. **Figure 4a** provides the average days cash on hand at rural hospitals before and after acquisition or merger, with 0 denoting the merger/acquisition year. Before merger or acquisition, the average days cash on hand is 38, which decreases to 31 days cash on hand post-merger or acquisition.

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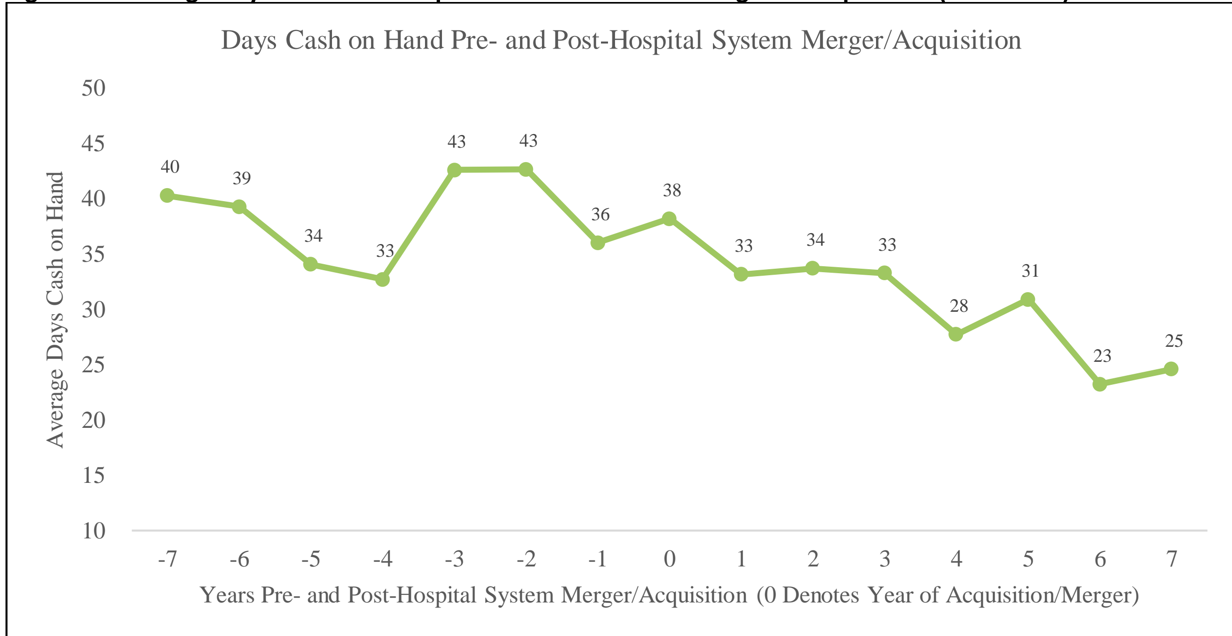
Figure 4a: Average Days Cash on Hand per Year Pre- and Post-Merger or Acquisition (2010-2022)



Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

There are plausible reasons for the decrease in average days cash on hand after merger or acquisition. First, there is a 10 day increase in average days cash on hand occurring between year 4 and year 3 pre-merger or acquisition, which coincides with a 0.9% decrease in average total margins to 0.4% (see **Figure 3a**) – the lowest total margin experienced pre-closure or acquisition. It could be that the days cash on hand increase is a result of a sell-off trend, where the hospitals sold-off assets to be able to cover expenses in a financially low performing year. This potential sell-off trend could bias the pre-/post-analysis. Secondly, hospitals that merged with or were acquired by a larger hospital system increased their total margins after merger or acquisition and had the financial support of a hospital system. Given that the hospital system is providing financial support to the acquired or merged rural hospital, and the hospital system likely has financial reserves for the rural hospital to use, it becomes less necessary for the rural hospital to retain greater volumes of liquid cash, which are measured by days cash on hand. Thirdly, the decrease could be a result of investment in the rural hospital, whereby the hospital system would use some of the liquid cash present in the rural hospital to invest in new technology or staff. The downward trend in days cash on hand could therefore be seen as an investment trend – a reverse of the sell-off trend that increases days cash on hand at financially vulnerable rural hospitals.

While days cash on hand for rural hospitals that merged with or were acquired by a larger hospital system decreased, the days cash on hand for rural hospitals that affiliated with a larger hospital system remained stable, moving from an average of 54 days cash on hand before affiliation to 55 days cash

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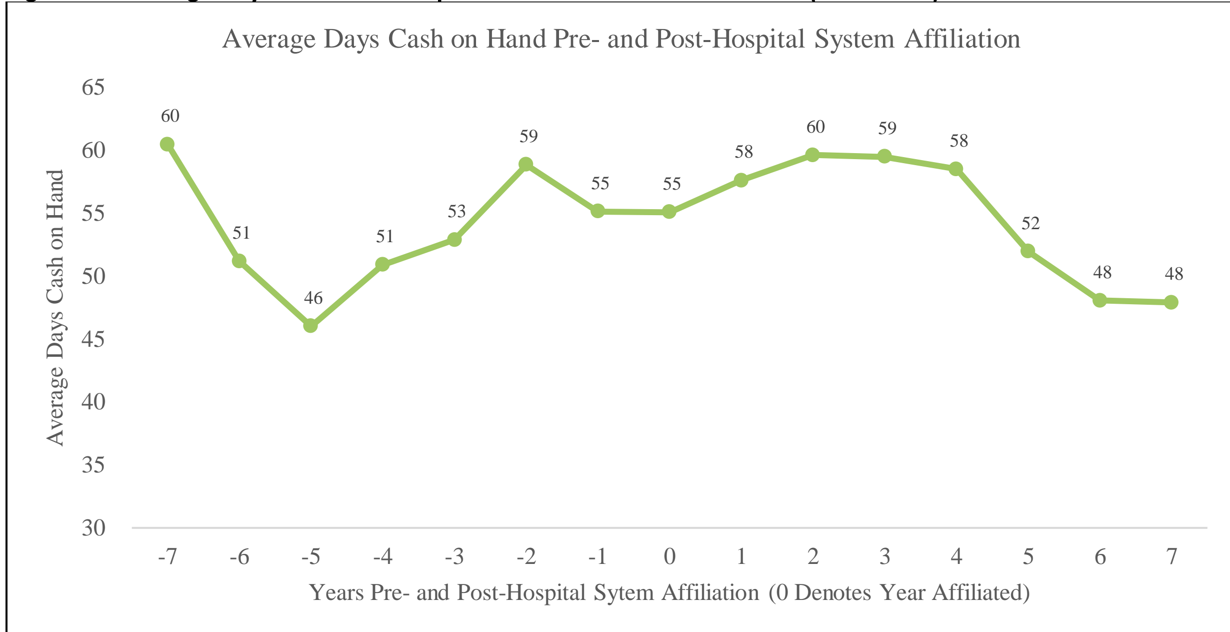
on hand after affiliation. **Figure 4b** provides the average days cash on hand at rural hospitals before and after affiliation.

Figure 4b: Average Days Cash on Hand per Year Pre- and Post-Affiliation (2010-2022)



Source: Dobson | DaVanzo analysis of rural hospitals utilizing Medicare Cost Report and AHA Annual Survey data (2011-2021)

While the days cash on hand averages are similar pre- and post- affiliation, there is a slight uptick in days cash on hand occurring directly after affiliation until year 4 post-affiliation. Although average days cash on hand decreases from years 5 to 7 post-affiliation, it always remains well above the 30 days cash on hand benchmark.

SERVICE LINES

The economic vitality and demographic makeup of a local community may necessitate adding or reducing service lines post-acquisition, affiliation, or merger. The ability to hire and train qualified staff and the volume of activity necessitating a service line may also contribute to the decision to retain or remove a given service.

Some research has shown that being acquired by or merging with a larger hospital system can enable rural hospitals to maintain service lines that could have been otherwise closed due to financial constraints. Hospital systems that are affiliated with specialists provide access to a wider range of healthcare services for rural patients that rural hospitals may not be able to offer independently, improving care options and addressing health disparities.[49] Although the community demographic and

[49] Guerin-Calvert ME, & Maki J.. "Hospital Realignment: Mergers Offer Significant Patient and Community Benefits." *Center for Healthcare Economics and Policy*, January 23, 2014.

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economic makeup could make it unsustainable for rural hospitals to maintain particular service lines post-acquisition and merger,[50,51,52] other evidence suggests that mergers and acquisitions can provide the resources necessary for rural hospitals to expand their services, including but not limited to specialty and advanced care.[53] Research has also found that a broad range of specialized services could be available to hospital systems that may not be available at rural hospitals who do not align with a larger system.[54,55,56,57]

Due to the conflicting literature, this analysis sought to determine the extent to which services lines (pediatrics, burn units, obstetrics units, substance abuse units, and psychiatric units) were reduced, maintained, or reintroduced post-merger or acquisition. However, the service line data pre-acquisition, merger, or affiliation was incomplete for many of the hospitals in our dataset. As is discussed in the following section, the lack of available data is likely because independent rural hospitals in an unsustainable financial position are less likely to have the staff necessary to respond to surveys, like the AHA Annual Survey. Given that our analysis consisted of a pre-/post-comparison, the lack of service line data for many hospitals preceding merger, acquisition, or affiliation prevented us from making statistically sound empirical judgements as to the impact of hospital system alignment on rural hospital service lines.

When conducting the service line analysis, we found that hospitals significantly increased their reporting of service line data after aligning with a larger hospital system. This resulted in a lower number of hospitals in the pre-merger, acquisition, and affiliation analysis as compared to the post-merger, acquisition, and affiliation analysis. Had we reported results, the differences in n-values, because of reporting discrepancies, would have biased the results.

OTHER HOSPITAL SYSTEM OUTCOMES

The qualitative analysis conducted as part of this study uncovered that there are myriad other benefits, including enhanced management processes, care protocols, organizational systems, and specialized services, resulting from affiliating with, merging with, or being acquired by a larger hospital system.

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[50] Carroll, C, Planey, A, and Kozhimannil, KB. Reimagining and reinvesting in rural hospital markets. *Health Serv Res*. 2022;57:1001-1005.

[51] O'Hanlon, CE, Kranz, AM, DeYoreo, M, Mahmud, A, Damber, CL, Timbie, JW. Access, Quality, And Financial Performance Of Rural Hospitals Following Health System Affiliation. *Health Aff (Millwood)* 2019;38(12):2095-2104.

[52] Henke, RM, Fingar, KR, Jiang, HJ, Liang, L, Gibson, TB. Access to Obstetric, Behavioral Health, and Surgical Inpatient Services after Hospital Mergers in Rural Areas. *Health Aff* 2021;20:1627-1636.

[53] Lewis, MS and Pflum, KE. " Hospital Systems and Bargaining Power: Evidence from Out-of-Market Acquisitions" *The RAND Journal of Economics* 2017;48(3):579-610.

[54] Williams Jr. D, Holmes, GM, Song, PH, et al. "For Rural Hospitals That Merged, Inpatient Charges Decreased and Outpatient Charges Increased: A Pre-/Post-Comparison of Rural Hospitals That Merged and Rural Hospitals That Did Not Merge Between 2005 and 2015." *J Rural Health* 2020;1-10.

[55] Schmitt, M. (2017). Do hospital mergers reduce costs? *J. Health Econ*, 52, 74–94.

[56] Noether, M and May, S. "Hospital Merger Benefits: Views from Hospital Leaders and Econometric Analysis." *The RAND Journal of Economics* 2017;48(3):579-610.

[57] O'Hanlon, CE, Kranz, AM, DeYoreo, M, Mahmud, A, Damber, CL, Timbie, JW. "Access, Quality, And Financial Performance Of Rural Hospitals Following Health System Affiliation." *Health Aff (Millwood)* 2019;38(12):2095-2104.

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Additionally, rural hospitals that align themselves with a hospital system benefit from the technological and telehealth capabilities that have been established.

Hospital systems provide enhanced management because there are individuals within the system whose sole responsibility is to perform a specific job. In a smaller, standalone rural hospital one person may be performing the job of numerous individuals within a system. A rural health researcher stated that "a lot of them [challenges of rural hospitals] have to do with management…If you have a 25 bed hospital, and you're the CFO, you're wearing a lot of hats, like you are keeping the books; you are overseeing the billing process; you're doing a lot of the financial analysis. If you were in a larger hospital system, each one of these things might have one individual or probably entire departments that's devoted to it." Aligning with a hospital system therefore allows the employees of a smaller, rural hospital to narrow the scope of their work, allowing them to perform their jobs to a higher degree of quality.

Because of the support of a large team within specialized departments, hospital systems possess the ability to stay on top of changing regulations for the smaller, rural hospital. Prior to aligning with a larger hospital system, rural hospitals either must assign a person, typically an executive with other competing priorities, to stay abreast of regulatory change, or the hospital could contract a consulting firm to assist with adhering to new regulations. However, doing so requires a financial commitment that many rural hospitals are unable to make. For example, an executive at a rural hospital that merged to stay open stated that they now "have the ability to keep in front of ever changing regulation a lot better than when you're standalone" because "as part of the system, we have the expertise within the organization that if we have a regulation change or something, people are all over it." He noted that before the hospital merged, the hospital was "contracting with somebody, some consultant, if it's significant to provide expertise in that [area] because you're just stretched so thin in an independent hospital that you have to."

Care protocols and other organizational systems also become standardized at rural hospitals under the umbrella of larger hospital systems. Research has demonstrated that standardized care protocols improve service delivery and patient health outcomes.[58,59,60,61,62] A president at a rural hospital association stated that the rural hospitals aligning with a larger hospital system have "a lot more support and resources from the health system than any of our district hospitals. For example, they get

[58] Lewis, MS and Pflum, KE. " Hospital Systems and Bargaining Power: Evidence from Out-of-Market Acquisitions" *The RAND Journal of Economics* 2017;48(3):579-610.

[59] O'Hanlon, CE, Kranz, AM, DeYoreo, M, Mahmud, A, Damber, CL, Timbie, JW. "Access, Quality, And Financial Performance Of Rural Hospitals Following Health System Affiliation." *Health Aff (Millwood)* 2019;38(12):2095-2104.

[60] Williams Jr. D, Holmes, GM, Song, PH, et al. "For Rural Hospitals That Merged, Inpatient Charges Decreased and Outpatient Charges Increased: A Pre-/Post-Comparison of Rural Hospitals That Merged and Rural Hospitals That Did Not Merge Between 2005 and 2015." *J Rural Health* 2020;1-10.

[61] Noether, M and May, S. "Hospital Merger Benefits: Views from Hospital Leaders and Econometric Analysis." *The RAND Journal of Economics* 2017;48(3):579-610

[62] Carroll, C, Planey, A, and Kozhimannil, KB. Reimagining and reinvesting in rural hospital markets. *Health Serv Res*. 2022;57:1001-1005.

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to be able to tap into what the system is doing well in different areas of quality," which improves patients' healthcare outcomes. The increased access to resources and highly developed, standardized protocols provided to rural hospitals through affiliations, mergers, and acquisitions has been associated with improved mortality outcomes.[63]

Finally, aligning with a hospital system also allows rural hospitals to invest in new technologies to better care for patients.[64,65] For instance, the technology for telehealth services can be leveraged by rural hospitals when they partner with larger hospital systems that have experience with this technology. Telehealth has been shown to increase patient reach and patient satisfaction,[66,67] while decreasing emergency department visits and lowering healthcare costs.[68]

Conclusion

The rising rates of rural hospital closures present concerns for the citizens of rural communities relying on rural hospitals to provide quality healthcare and act as a cornerstone of the local economy. As rural hospitals close, the physical health and economic vitality of local rural communities dissipates. Adding to this concern is the fact that 15% of rural hospitals currently present substantial financial risk factors, putting their ability to remain open to continue serving the local community in jeopardy.

Aligning with a larger hospital system has demonstrated the ability to reduce the financial vulnerability of rural hospitals as demonstrated by the proportion of rural hospitals that are no longer at high financial risk after affiliating with, merging with, or being acquired by a hospital system. Whether a financially vulnerable rural hospital chooses to affiliate with, merge with, or be acquired by a larger hospital system, the trend remains the same – aligning with a larger hospital system improves the financial viability of rural hospitals, which allows them to stay open and serve their community and surrounding area. Additionally, rural hospitals that align themselves with a hospital system benefit from the management processes, organizational benefits, telehealth capabilities, and technological innovation available at other system hospitals. As a result of these financial and operational benefits, affiliating with, merging with, or being acquired by a larger hospital system could be an attractive option to financially vulnerable rural hospitals.

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[63] Guerin-Calvert ME, & Maki J.. "Hospital Realignment: Mergers Offer Significant Patient and Community Benefits." *Center for Healthcare Economics and Policy*, January 23, 2014..

[64] Ibid.

[65] Williams Jr. D, Holmes, GM, Song, PH, et al. "For Rural Hospitals That Merged, Inpatient Charges Decreased and Outpatient Charges Increased: A Pre-/Post-Comparison of Rural Hospitals That Merged and Rural Hospitals That Did Not Merge Between 2005 and 2015." *J Rural Health* 2020;1-10.

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Of course, the situation of each rural hospital is different, with various community factors at play. Policy makers, hospital executives and board members, and local community members should examine the unique situation present in each locale and make a decision that is in the best interest of the local community and its residents. It is our hope that the information presented in this White Paper is useful to local communities, rural hospitals, and policy makers to make informed decisions to maintain the economic sustainability of rural hospitals and provide the care that the citizens of rural communities deserve.

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