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# Characteristics of Communities Affected by Critical Access Hospital Mergers

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## KEY FINDINGS

- Between 2010-2022, Critical Access Hospitals (CAHs) were the targets of 128 mergers, meaning a health care entity acquired or merged them under a single owner.
- CAH mergers were unevenly distributed across the U.S. Census regions, largely concentrated in the Midwest and the South.
- Communities where CAHs merged had lower rates of uninsurance for both adults and children, lower median household incomes, lower-than-median income inequality, and higher unemployment rates compared with counties without CAH mergers.

## PURPOSE

Between 2010-2019, hospital mergers in the U.S. accelerated, increasing by nearly 80%.<sup>1</sup> From 2008-2018, 22% of rural hospital markets lost a competitor to closure (cessation of inpatient services due to either complete closures and converted closures) or merger (the joining of a target hospital with an acquiring health care entity under common ownership). Out-of-market mergers (mergers where the two merging organizations are in different geographic markets for patient care) affected 33% of markets (here, defined as county clusters based on commuting zones of residents within rural places).<sup>2</sup> Between June 2010 and December 2022, 99.2% (127/128) of merged Critical Access Hospitals (CAHs) were located in areas classified by FORHP as rural. Meaning, most merged CAHs serve areas that are classified as non-metropolitan areas with Rural-Urban Commuting Area (RUCA) codes 4-10.

This descriptive study provides comparative statistics on the demographic, socioeconomic, health status, and geographic characteristics of communities served by CAHs by their merger status. Findings from this study will help inform hospital leaders, State Flex Programs, and policymakers about community characteristics that may be associated with CAH mergers, and the rural populations that are affected by CAH mergers.

## BACKGROUND

Across the U.S., there are approximately 1,300 CAHs, which account for about two-thirds of rural hospitals.<sup>3</sup> Following the passage of the 1997 Balanced Budget Act, the Critical Access Hospital (CAH) designation was created in 1997 by the Centers for Medicare & Medicaid Services (CMS) in response to the rising rate of rural hospital closures, with the joint aims of reducing financial strain on



rural hospitals and improving access to care in rural communities.<sup>3</sup> The CAH program is one of a number of federal responses to the challenges of rural hospital closures, including the Medicare Rural Hospital Flexibility (Flex) Program and the Frontier Community Health Integration Program demonstration.<sup>3,4</sup> Despite these efforts, approximately 14.8% of CAHs were predicted to be at either the highest or mid-highest relative risk of financial distress in 2023.<sup>5</sup> In fact, the CAHs at highest relative risk of financial distress in 2023 were geographically concentrated, with 48.4 percent in the U.S. South region (across Texas, Tennessee, Oklahoma, Missouri, Alabama, Kansas, Kentucky, Mississippi, Georgia, and Florida).<sup>5</sup> These particular hospitals are more likely to serve communities with higher proportions of underrepresented groups, lower rates of high school graduation, higher unemployment, and worse health status including higher obesity, tobacco use, and premature deaths.<sup>6</sup> Some financially vulnerable hospitals may seek to merge or be acquired as a means of avoiding financial distress or closure; yet little is known about the communities where hospital mergers occur.

Prior research has identified characteristics of acquired and merged hospitals, including for-profit status; weaker financial performance and lower profitability; lower staffing costs; and more hospital beds. Mergers were more likely to occur where the acquired hospital was less profitable. For-profit hospitals, larger hospitals, and those less able to cover debt were also more likely to be merged. In terms of market area characteristics, rural hospitals that were targets of a merger tended to be closer to a large hospital with  $\geq 100$  beds (24.7 miles for merged hospitals versus 33.7 miles for non-merged hospitals)<sup>2,7</sup> For acquiring hospitals, the impetus to engage in merger activity included improving their access to capital and their efficiency for delivering care; and increasing their market share.<sup>7</sup> In the wake of mergers, target hospitals experienced decreased operating margins,<sup>8</sup> and cost savings between 4-7% after acquisition due to reduced administrative functions, reduced duplicative services, increased economies of scale, and

utilization of Electronic Medical Record (EMR) systems.<sup>9</sup> However, the communities with merged hospitals experienced reduced wage growth for health care workers, particularly where the mergers increased hospital market concentration.<sup>10</sup> Additionally, hospital mergers are associated with higher hospital prices.<sup>9</sup> Less research has addressed the characteristics of communities affected by mergers— particularly CAH mergers. Thus, this brief seeks to answer the question: *How do the sociodemographic and health characteristics of communities affected by CAH mergers differ from unaffected communities?*

## DATA AND METHODS

Merged or acquired CAHs were identified using the following data sources: American Hospital Association (AHA) Annual Survey data (for changes in hospital closures, mergers, ownership, and hospital characteristics); The Hospital Acquisition Report 2023 (for deal-by-deal transaction data for every announced hospital transaction from 2003-2022); Healthcare Provider Cost Reporting Information System (HCRIS) data (for identification of a home office and the cost and relationship between a hospital and home office, and hospital characteristics).

The hospital-level data were then merged with county-level health workforce, socio-demographic, and community health measures. The demographic and socio-economic data derived were from the U.S. Census Bureau American Community Survey (five-year estimates; 2015-2019), and the community health data were derived from the Robert Wood Johnson Foundation's County Health Rankings (2019) dataset.

Thereafter, we generated descriptive statistics, estimating median values and interquartile ranges (IQR; or the difference between the 25th and 75th percentile values) for communities served by CAHs, comparing their community characteristics by merger status. We then tested whether observed differences between counties with and without CAH mergers were statistically

<sup>3</sup> Critical Access Hospitals (CAHs). Rural Health Information Hub. <https://www.ruralhealthinfo.org/topics/critical-access-hospitals>. Accessed May 24, 2024.

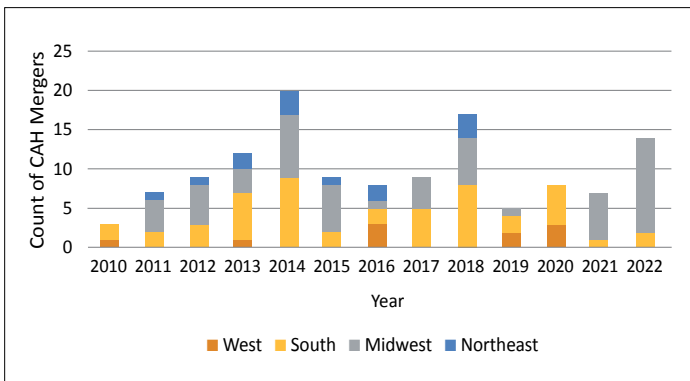


significant, applying Kruskal-Wallis tests for categorical community characteristics, and 2-sided t-tests for continuous variables. Across all tests, we set the significance level at  $\alpha < .05$ .

**RESULTS**

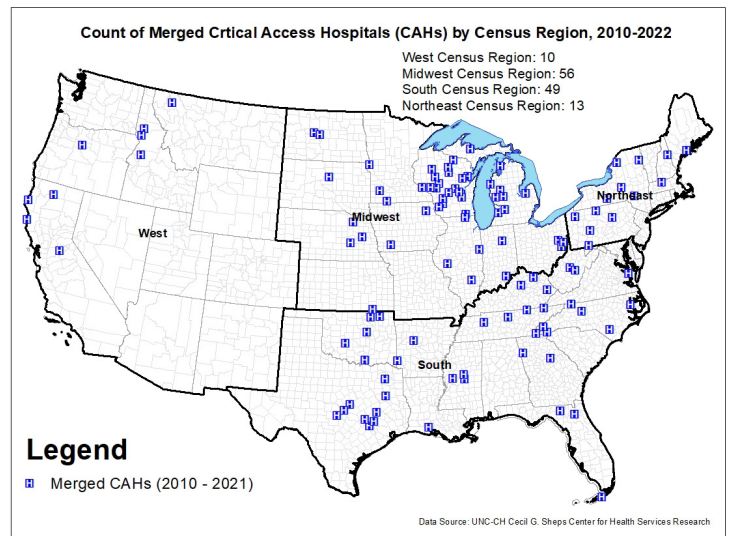
Between 2010-2022, there were 128 total CAH mergers, and they were unevenly distributed across the Census regions, potentially reflecting the uneven geography of communities with hospitals eligible for the CAH program (Figures 1 and 2). The Midwest and South were most affected by CAH mergers, accounting for 82.0% of all mergers between January 2010 and June 2022. Specifically, 43.8% (56) of CAH mergers occurred in the Midwest, 38.3% (49) in the South, 10.2% (13) in the Northeast, and 7.8% (10) in the West.

**FIGURE 1: Number of CAH Mergers by Census Region by Year**



Counties with CAH mergers had slightly higher proportions of non-Hispanic white and non-Hispanic Black residents (Table 1). Conversely, counties with CAH mergers had lower proportions of Hispanic residents compared with counties without CAH mergers (see Table 1). Per the results of paired 2-sided t-tests, we found that counties with CAH mergers had statistically significantly smaller shares of Hispanic residents compared with their counterparts without CAH mergers ( $p=0.010$ ). The 2-sided t-tests also showed that counties with CAH mergers had significantly higher shares of non-Hispanic residents compared with their counterparts without CAH mergers ( $p= 0.025$ ).

**FIGURE 2: Map showing location of CAH mergers and count by Census region**



**TABLE 1: County-Level Racial/Ethnic Composition by CAH Merger Status Over Time (2010-2022)**

Racial/Ethnic Group Composition	No Mergers Median (IQR)	≥1 CAH Mergers Median (IQR)	All Counties with CAHs Median (IQR)
Non-Hispanic Black	0.9% (2.26)	1.4% (2.80)	0.9% (2.3)
Hispanic <sup>+</sup>	3.5% (7.1)	3.3% (6.0)	3.5% (7.1)
American Indian	0.74% (1.4)	0.66% (1.2)	0.74% (1.4)
Non-Hispanic White <sup>+</sup>	88.8% (21.8)	90.2% (19.4)	88.8% (21.7)

<sup>+</sup> Indicates that the difference between counties with and without CAH mergers is statistically significant ( $p < .05$ ), per 2-sided t-tests

**Source:** Reporting median shares and IQR for each racial and ethnic group by county merger status; analysis of U.S. Census Bureau American Community Survey (5-year estimates; 2015-19) data. The interquartile range (IQR), reported in parentheses, is the difference between the 25th and 75th percentile values.



About 17.2% (22 out of 128) of merged CAHs had affiliated Long-Term Care (LTC) facilities. Nearly half (46.9%; 60 out of 128) of merged CAHs had affiliated Rural Health Clinics (RHCs; Table 2). Per the results of a Kruskal-Wallis test, we found that counties with CAH mergers were less likely to have RHCs affiliated with CAHs compared with counties without CAH mergers ( $p= 0.0031$ ).

When comparing the characteristics of hospital markets, we found that CAH mergers were slightly more prevalent in counties with persistent poverty. From 2010-2022, counties with CAH mergers were more likely to be designated as Persistent Poverty Counties (i.e., counties with persistently high poverty rates since 1980), compared with counties without CAH mergers (9.4% vs. 8.3%, respectively; Table 3). This may reflect the design of the CAH program, which is intended to preserve

**TABLE 2: Hospital-Level Summary of Merger Status by County-Level RHC and LTC Affiliation (2010-2022)**

	Non-Merged Hospitals N = 15,972	CAHs with Mergers N = 128	All Hospitals N = 16,100
<b>Affiliated Rural Health Clinic (RHC)<sup>+</sup></b>	Yes	9,553 (59.7%)	60 (46.9%)
	No	6,431 (40.3%)	68 (53.1%)
<b>Affiliated Rural Health Clinic (RHC)<sup>+</sup></b>	Yes	3,713 (23.2%)	22 (17.2%)
	No	12,259 (76.8%)	106 (82.8%)

<sup>+</sup> Indicates that the difference between counties with and without CAH mergers is statistically significant ( $p<.05$ ), per Kruskal-Wallis tests.

**Source:** Analysis of American Hospital Association (AHA) Annual Survey data and The Hospital Acquisition Report 2023. The interquartile range (IQR) is the difference between the 25th and 75th percentile values.

**TABLE 3: County-Level Socioeconomic Factors by CAH Merger Status Over Time (2010-2022)**

Racial/Ethnic Group Composition	No CAH Mergers Median (IQR)	≥1 CAH Mergers Median (IQR)	All Counties with CAHs Median (IQR)
Persistent Poverty (%) <sup>*</sup>	8.3%	9.4%	8.3%
Uninsurance – Adults (%)	16.5% (11.0)	15.2% (12.6)	16.5% (11.0)
Uninsurance – Children (%)	6.8% (5.0)	6.2% (4.8)	6.8% (5.0)
Unemployment Rate (%) <sup>+</sup>	5.5% (4.0)	6.3% (2.7)	5.5% (4.0)
Median Household Income (\$)	\$46,598 (12,717)	\$45,856 (10,605)	\$46,595 (12,708)
Income Inequality <sup>**</sup>	4.27 (.775)	4.23 (.663)	4.27 (.775)
Medicare Advantage Penetration (2019)	18.1% (22.7)	24.3% (23.4)	18.1% (22.7)

<sup>+</sup> Indicates that the difference between counties with and without CAH mergers is statistically significant ( $p<.05$ ), per 2-sided t-tests

<sup>\*</sup> proportions reported only due to categorical nature of both variables (persistent poverty status and merger status)

<sup>\*\*</sup> Gini coefficient, is a summary measure of the dispersion of income across the entire income distribution, measured as the ratio of population with incomes at or below 20th percentile to those at or above 80th percentile. A higher Gini coefficient suggests higher income inequality.

**Source:** Analysis of U.S. Census Bureau American Community Survey (5-year estimates; 2014-19) data, and County Health Rankings (2019) data. The interquartile range (IQR) is the difference between the 25th and 75th percentile values.



**TABLE 4: Community Characteristics by CAH Merger Status Over Time (2010-2022)**

	No CAH Mergers Median (IQR)	≥1 CAH Mergers Median (IQR)	All Counties with CAHs Median (IQR)
Life Expectancy at Birth (years)	78.0 (3.60)	77.4 (2.69)	78.0 (3.60)
Self-Rated Poor Health Status	15.7% (6.8)	16.0% (6.8)	15.7% (6.8)
Premature Death (2018)*	7,564.6 (3,041.2)	7,882.7 (3,542.1)	7,566.4 (3,049.0)
Food Insecurity (2018)	12.9% (4.5)	13.6% (3.8)	12.9% (4.5)
Incidence of Drug Overdose (2018)**	16.7 (11.9)	15.1 (10.9)	16.7 (11.8)
* measured as years of potential life lost before age 75 per 100,000 population (age-adjusted)			
** Defined as drug poisoning deaths per 100,000 population			
<b>Source:</b> Analysis of County Health Rankings data (2019); The interquartile range (IQR) is the difference between the 25th and 75th percentile values.			

health care access in underserved markets. Counties in which CAH mergers occurred had lower rates of uninsurance for both adults and children, and higher rates of Medicare Advantage (MA) penetration among residents age ≥65 compared with counties without CAH mergers (Table 3). Moreover, the difference in MA penetration rates by county CAH merger status was statistically significant ( $p=0.0004$ ), with higher MA penetration in counties with CAH mergers.

In terms of economic indicators, post-merger, merger counties had higher unemployment rates, lower median household incomes, and lower income inequality compared with counties without CAH mergers (Table 3). Per the results of 2-sided t-tests, the difference in unemployment rates among counties with and without CAH mergers was statistically significant, with higher rates in CAH merger counties ( $p=0.0221$ ).

In terms of community health measures, the findings were mixed. Counties where CAH mergers occurred had higher shares of residents self-reporting poor health, lower life expectancy, and higher proportions of residents who were food insecure. Merger counties also had lower incidence of drug overdose compared with their counterparts without mergers (Table 4).

## DISCUSSION

In prior research, patient populations in merged hospital markets<sup>b</sup> were identified as being younger, less likely to have Medicare as a primary payer, and more likely to have Medicaid as a primary payer.<sup>11</sup> Patient populations in merged hospital markets also had higher prevalence of chronic conditions. Our findings show that communities where CAHs merged had lower rates of uninsurance for both adults and children, higher unemployment rates, lower median household incomes, and lower-than-median income inequality compared with counties without CAH mergers. Compared to a previous analysis of the community characteristics of closure counties, closure counties were more likely to have higher-than-median levels of income inequality in contrast to our current findings, but similarly lower per capita income, and higher unemployment compared with the median rural county.<sup>12</sup> Taken together, these findings point to opportunities to identify patient- and community-level factors associated with the likelihood of hospital merger versus closure to better understand how merger and closure activity may disproportionately impact certain populations or communities and, in turn, contribute to disparities in health and health care outcomes.

<sup>b</sup> Here, hospital markets or catchment areas were defined as ZIP Codes that represented the residential location of up to 75 percent of a hospital's total inpatient discharges.



## Flex Monitoring Team

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Prior research shows that mergers are a strategy to avoid closures,<sup>7</sup> and the differential patterning of mergers has implications for affected communities. Specifically, we found that counties in which CAHs merged had higher proportions of white residents and lower income inequality. This is suggestive of potential impacts on health equity and outcomes, because it is opposite the pattern for counties affected by rural hospital closures. Per previous work summarizing the demographic and socioeconomic characteristics of counties affected by rural hospital closures, closure counties had increasing (higher-than-median) shares of Black and Hispanic residents between 1990-2020 and greater income inequality.<sup>12</sup> In fact, recent research shows that rural hospital closures disproportionately affect Hispanic and Black rural-dwelling residents in more economically depressed communities.<sup>13</sup>

Payor mix and uninsurance in a hospital market area has implications for hospital finances. The findings that counties where mergers occurred had lower rates of uninsurance and higher Medicare Advantage penetration is suggestive of acquiring firms' interest in hospital markets with lower risk of uncompensated care. This points to a need to better understand how this preference on the part of acquiring firms may affect patient access to care in areas that are deemed to be medically underserved, and thus have hospitals eligible for the CAH designation. Of note, this descriptive study did not seek to identify causal relationships.

CAH leadership and boards contemplating a merger should consider local community characteristics and potential tradeoffs in order to ensure that decisions consider patient and community needs, and not just financial impacts. For example, if a merger results in higher prices and/or lower wage growth as some previous research has suggested, our findings that mergers are occurring in counties with lower household incomes and higher unemployment may suggest negative impacts on patients' ability to access care. Moreover, the finding that mergers are occurring in counties where populations have lower rates of uninsurance suggests that financially distressed independent CAHs in areas with high uninsurance may be less able to consider affiliation as a strategy for improving financial stability or avoiding closure. State flex coordinators may need to consider alternative approaches to supporting these hospitals, such as providing technical assistance to analyze the feasibility of converting to a Rural Emergency Hospital. Future research should consider the impact of CAH mergers on service line availability, hospital prices, area wages, and access to care in rural communities, and assess whether patterns in CAH mergers and/or closures are having consequences for health equity based on the characteristics of the communities served.

For more information on this report, please contact Kristin Reiter, [reiter@email.unc.edu](mailto:reiter@email.unc.edu).

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