Geographic Variation in the 2016 Profitability of Urban and Rural Hospitals

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OVERVIEW

Rural hospital closures remain a worrisome issue for policy makers and communities: between 2010 and 2017, 83 rural hospitals closed. The NC Rural Health Research Program tracks these closures and studies potential predictors. Profitability is not the only predictor, but it is one of the main predictors of hospital closure. Researchers and policy makers are trying to better understand what factors are associated with a closure and how to develop sustainable health care models for communities that lose their hospitals. These studies underscore some of the more recent challenges facing rural hospitals.

To help policy makers, researchers, and communities understand which hospitals are likely to be less profitable, this study describes the geographic variation in 2016 profitability of critical access hospitals (CAHs), other rural hospitals (Medicare Dependent Hospitals, Sole Community Hospitals, and rural PPS hospitals denoted as "ORH"), and urban PPS hospitals ("URB") by census region, census division, and state (shown in Appendix 1).

STUDY METHOD

The research design is based on standard financial statement analysis. Project data came from the Healthcare Cost Report Information System (HCRIS) and the CMS Provider Specific File, and analysis continues previous work by the North Carolina Rural Health Research Program on rural hospital profitability.[1] Specifically, this study used 2016 Medicare Cost Reports for 1,310 Critical Access Hospitals (CAHs), 931 Other Rural Hospitals (ORHs), and 2,230 urban PPS hospitals (URB) for a total of 4,471 acute general hospitals. See Table 1.

Longitudinal files were created that included all of the Medicare cost report worksheets required for provider identification and calculation of financial indicators. The financial indicator definitions and the Medicare cost report account codes for them were verified with a technical adviser and compared to other sources of financial ratios. An analytical file with the Medicare cost report data was created for each hospital with at least 360 days in a cost report period. There were missing data for some indicators and for some hospitals; therefore, the number of hospital cost reports used to calculate an indicator median was sometimes less than the total number of hospital cost reports. Medicare payment designation was verified using the CMS Provider Specific File. Total margin was defined as net income (Worksheet G-3, line 29) divided by total revenue (Worksheet G-3, lines 3+25).

KEY FINDINGS

- Nationally, **urban hospitals were twice as profitable as rural hospitals in 2016**. Across all census regions except the West, CAHs and ORHs were less profitable than urban hospitals, particularly in the South and Northeast.

- The **least profitable hospitals were ORHs in the Northeast and CAHs in the South**. In particular, the median total margins for 22 ORHs in New England, 75 CAHs in East South Central, and 94 CAHs in South Atlantic were negative.

- Nationally, **the majority of unprofitable hospitals were rural hospitals**. The 847 unprofitable rural hospitals (485 CAHs and 362 ORHs) greatly outnumber the 528 urban hospitals that were unprofitable.

- Among census regions, the **greatest number of unprofitable hospitals were ORHs in the South, urban hospitals in the South, and CAHs in the Midwest**. Among census divisions, the greatest number of unprofitable hospitals were CAHs in West North Central (141), urban hospitals in Pacific (87), and urban hospitals in West South Central (86).

- There was **substantial variation in hospital profitability across states**. The lowest median total margins were for CAHs in Oklahoma (-5.1%) and ORHs in Connecticut (-5.7%), Massachusetts (-4.6%) and Maine (-4.0%). The highest median total margins were for ORHs in Utah (16.6%) and urban hospitals in South Dakota (25.1%), Alaska (19.8%), and Utah (16.6%).

Table 1: Number of Hospital Cost Reports

|	Northeast		Midwest		South			West		US
	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
CAH	39	31	212	416	94	75	168	160	115	1,310
ORH	22	70	132	108	154	162	176	60	47	931
URB	110	291	357	143	403	126	336	155	309	2,230
Total	171	392	701	667	651	363	680	375	471	4,471

PROFITABILITY

Total margin measures the control of expenses relative to revenues, and expresses the profit[2] a hospital makes as a proportion of revenue. For example, a five percent margin means that a hospital makes five cents of profit on every dollar of revenue. Because the total margin is a proportion, two hospitals with the same margin can have vastly different absolute dollars of profit. For example, a hospital with a five percent margin and $50 million in total revenues will have $2.5 million in profits, whereas a hospital with the same total margin but only $5 million in revenue will have only $250,000.

The following two figures and Appendix 2 show the geographic variation of total margins among CAHs, ORHs, and urban hospitals. Figure 1 provides a national and regional comparison. Figure 2 and Appendix 2 subdivide further with Census divisions and states, respectively.

National: Figure 1 shows that the U.S. median total margin for urban hospitals (5.51%) was more than double the margins for CAHs (2.56%) and ORHs (2.01%).

Census region: Figure 1 also shows that the lowest median total margin was -0.20% for the 92 ORHs in the Northeast, and the highest was 6.39% for the 865 urban hospitals in the South (closely followed by 6.38% for the 500 urban hospitals in the Midwest). In each census region except the West, the median total margins for CAHs and ORHs were lower than for urban hospitals.

Figure 1: 2016 Median Total Margins for CAHs, ORHs and Urban Hospitals
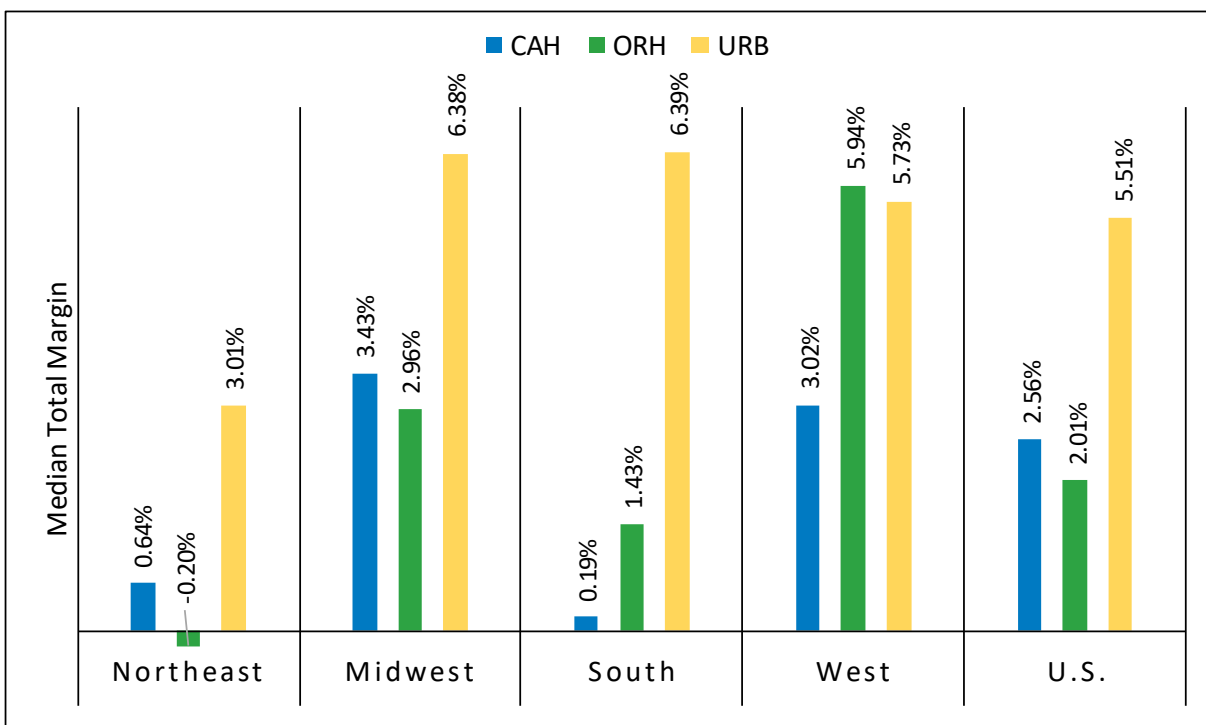
Census division: Figure 2 shows that the lowest median total margins were for the 22 ORHs in New England (-1.37%), the 75 CAHs in East South Central (-0.63%), and the 94 CAHs in South Atlantic (-0.54%). The highest median total margins were for the 60 ORHs in Mountain (8.21%), the 155 urban hospitals in Mountain (7.50%), and the 143 urban hospitals in West North Central (7.26%). In each census division except Mountain, the median total margins for CAHs and ORHs were lower than for urban hospitals.

State: Appendix 2 shows that the lowest median total margins were for ORHs in Connecticut (-5.7%), CAHs in Oklahoma (-5.1%), and ORHs in Massachusetts (-4.6%). The highest median total margins were for urban hospitals in South Dakota (25.1%), urban hospitals in Alaska (19.8%), and ORHs in Utah (16.8%).

Figure 2: 2016 Median Total Margins for CAHs, ORHs and Urban Hospitals by Census Division
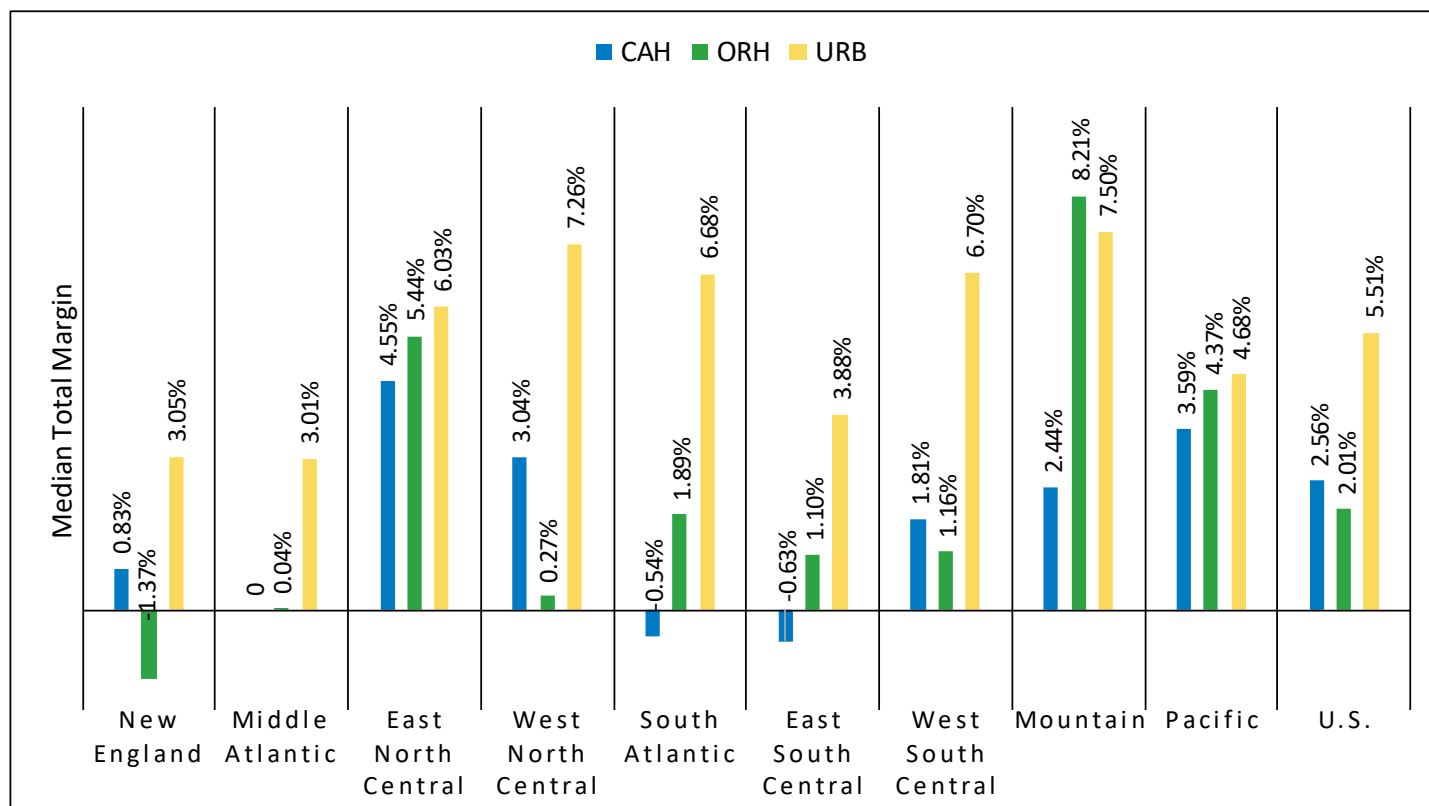
UNPROFITABILITY

Hospitals need positive total margins to keep pace with changes in technology, to replace buildings and equipment, to provide new services, and to keep up with population growth. Negative total margins over multiple years may threaten the financial viability of a hospital, possibly leading to insolvency, bankruptcy or closure.

Figures 3 and 4 (on the next page) show the number of unprofitable hospitals by Census region and division.

National: Figure 3 shows 1,375 out of a total of 4,471 hospitals (31%) were unprofitable in 2016. Among hospital types, 362 of 931 ORHs (39%), 485 of 1,310 CAHs (37%), and 528 of 2,230 urban hospitals (26%) were unprofitable.

Census region: Figure 3 shows the greatest number of unprofitable hospitals were in the South (570), followed by the Midwest (382), the West (236), and the Northeast (187). Among hospital types, the greatest number of unprofitable hospitals were ORHs in the South (208), urban hospitals in the South (200), and CAHs in the Midwest (194). The fewest number of unprofitable hospitals were ORHs in the West (21), CAHs in the Northeast (32), and ORHs in the Northeast (48).

Census division: Figure 4 shows the greatest number of unprofitable hospitals were in West South Central (236), West North Central (217), and South Atlantic (182). Among hospital types, the greatest number of unprofitable hospitals were CAHs in West North Central (141), urban hospitals in Pacific (87), and urban hospitals in West South Central (86). The fewest number of unprofitable hospitals are ORHs in Mountain (8), Pacific (13) and New England (13).

Figure 3: 2016 Number of Unprofitable CAHs, ORHs and Urban Hospitals by Census Region
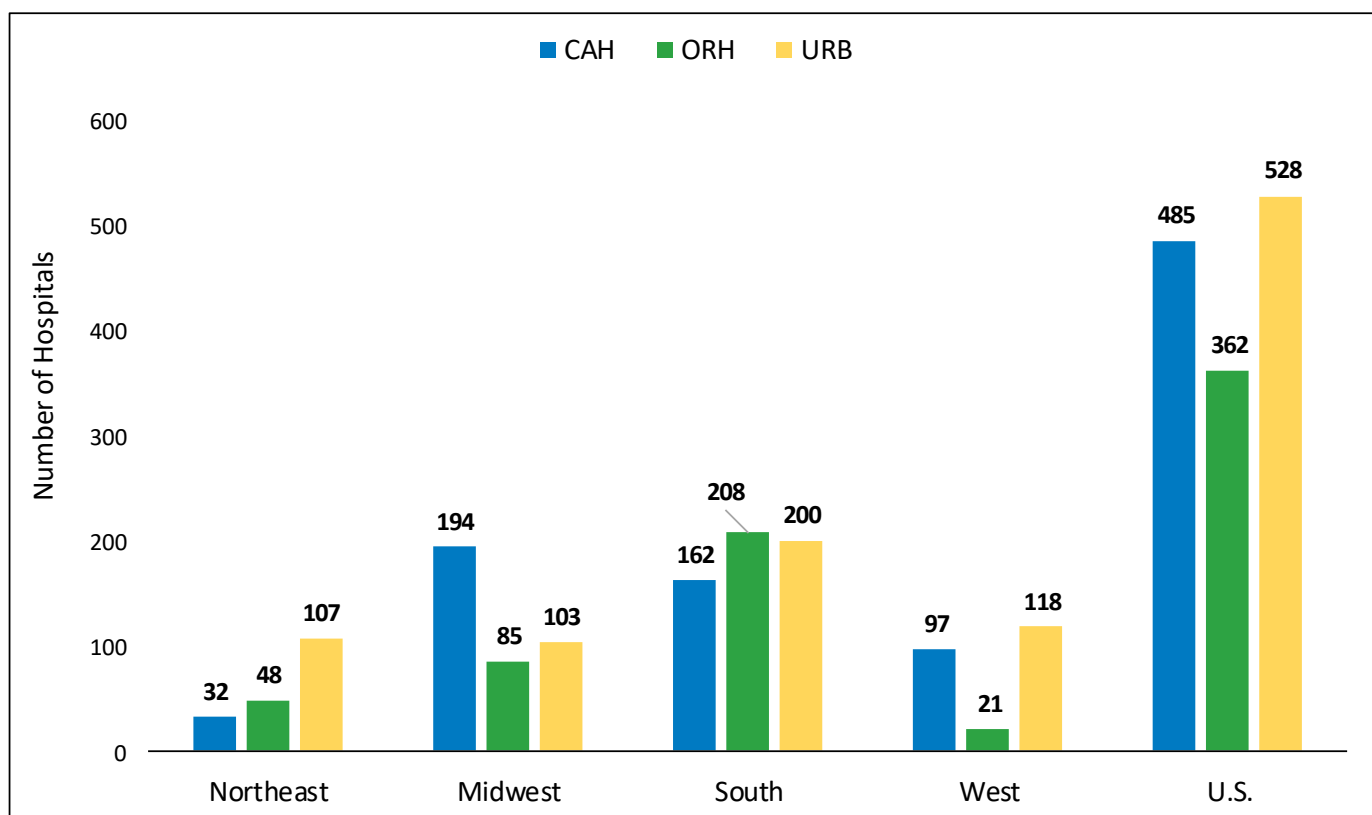
Figure 4: 2016 Number of Unprofitable CAHs, ORHs and Urban Hospitals by Census Division
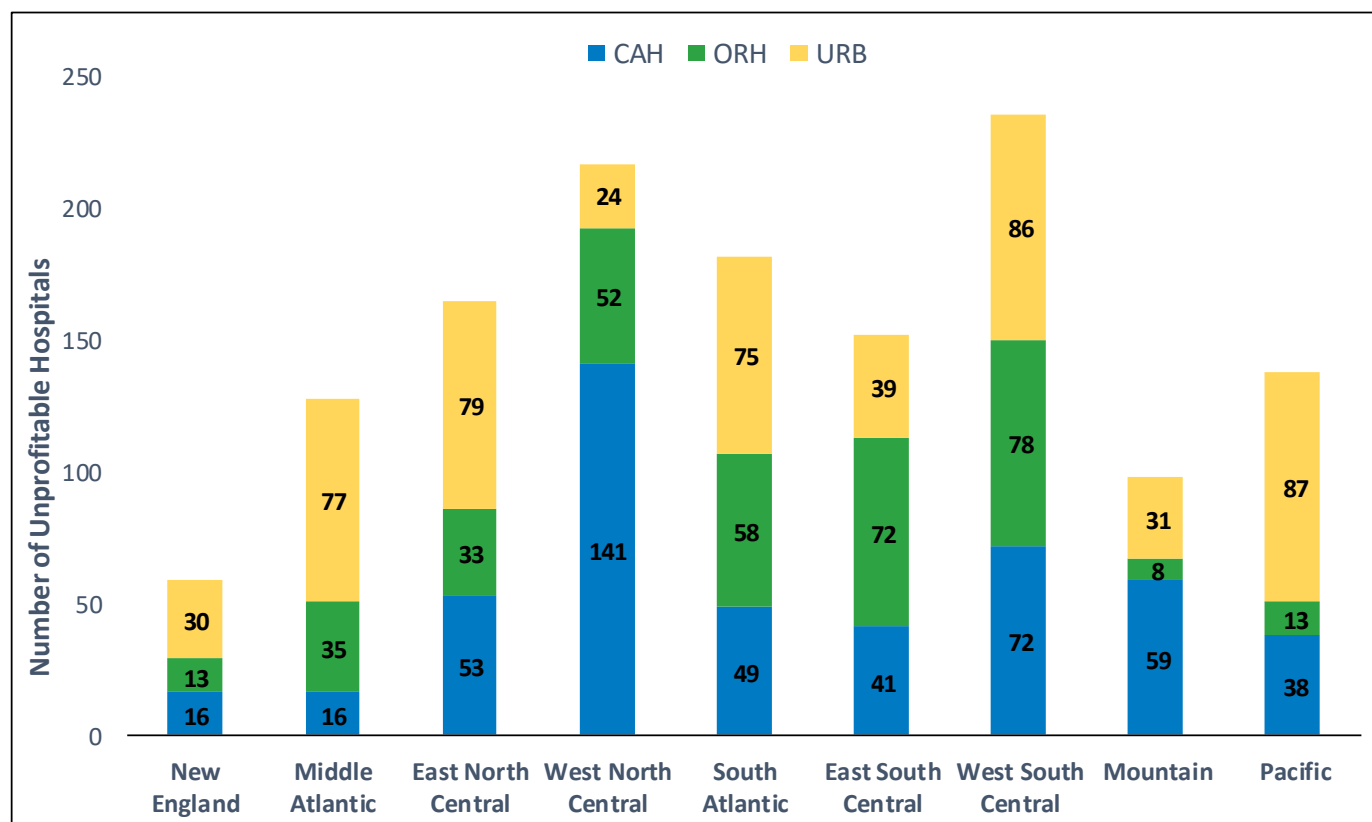
DISCUSSION

In sum, we found that across the nation, the majority of unprofitable hospitals were rural hospitals, with urban hospitals being twice as profitable. While there was substantial variation in hospital profitability across states, the greatest number of unprofitable hospitals were ORHs in the South, urban hospitals in the South, and CAHs in the Midwest. The least profitable hospitals were ORHs in the Northeast and CAHs in the South.

There are many reasons for geographic variation in the profitability of urban and rural hospitals: for example, compared to urban hospitals, rural hospitals serve older, poorer, and sicker communities where higher percentages of patients are covered through public insurance programs if they are covered at all.[3] Most rural hospitals are located in the South, the region with the highest rates of poverty, and in the Midwest, the region with the lowest rates of poverty.[4] Regardless of the reasons, hospitals under the most financial pressure are at greater risk of closing and warrant elevated concern by policy makers and those concerned with access to hospital care by rural residents.

Many communities across the United States are concerned about the ability of their hospitals to continue providing health care to their residents. The hospital groups identified in this study as under the most financial pressure may not be well positioned to meet future challenges as they respond to new realities in the health care delivery system. Major payment reform and industry restructuring will put pressures on hospitals of all types, but especially on financially weak organizations. Furthermore, the pressures will increase in the next two years: $43 billion in cuts to the Medicaid Disproportionate Share Hospital (DSH) program are scheduled, starting with $2 billion in 2019 and reaching $8 billion by 2024, about two-thirds of the entire DSH program.[5] Thus, it will be critical to assess carefully how these changes are affecting these hospitals, the care they deliver, the populations they serve, as well as how existing and potential policies might impact hospitals.

REFERENCES AND NOTES

1. Pink G, Freeman V, Randolph R, Holmes GM. Profitability of Rural Hospitals (August 2013). NC Rural Health Research Program, Cecil G. Sheps Center, University of North Carolina at Chapel Hill. http://www.shepscenter.unc.edu/wp-content/uploads/2013/09/Profitability-Findings-Brief-Final_August-2013.pdf. Accessed 12/21/2017.

2. For not-for-profit hospitals, the difference between revenues and expenses is technically termed "change in net assets," but the term "profit" is used for all hospitals (see http://www.accountingcoach.com/nonprofit-accounting/explanation/2).

3. National Advisory Committee on Rural Health and Human Services. The 2008 Report to the Secretary: Rural Health and Human Services Issues. 2008.

4. Kusmin L. Rural America at a glance. USDA-ERS Economic Brief 24 (2013).

5. Kardish C. Medicare Deal Delays but Deepens Hospital Cuts. Governing the States and Localities: Health and Human Services, April 17, 2015. Available at: http://www.governing.com/topics/health-human-services/gov-medicare-deal-delays-hospital-cuts.html. Accessed 12/21/2017.

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Appendix 1: U.S. Census Regions and Divisions
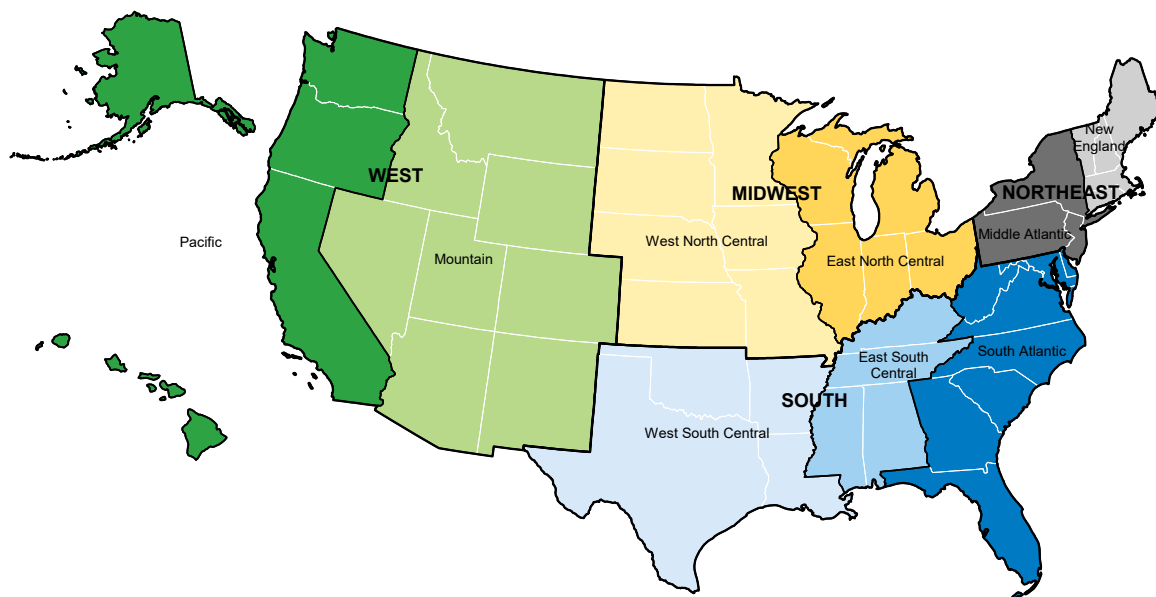
Appendix 2: 2016 CAH, ORH and Urban Hospital Median Total Margin by State

State	CAH	ORH	URB	State	CAH	ORH	URB
Alabama	0.4%	3.6%	1.6%	Montana	0.4%	1.7%	4.4%
Alaska	-0.8%	13.3%	19.8%	Nebraska	3.7%	5.4%	13.4%
Arizona	5.6%	4.1%	5.0%	Nevada	7.5%	9.5%	8.8%
Arkansas	-2.4%	3.2%	6.8%	New Hampshire	0.2%	-2.7%	11.6%
California	7.3%	3.2%	5.0%	New Jersey	-	4.5%	6.3%
Colorado	6.3%	7.7%	7.0%	New Mexico	4.3%	10.7%	5.0%
Connecticut	-	-5.7%	2.9%	New York	7.0%	-0.4%	1.0%
Delaware	-	4.1%	3.9%	North Carolina	1.7%	4.8%	10.2%
D.C.	-	-	4.1%	North Dakota	3.0%	3.7%	2.2%
Florida	1.2%	2.0%	8.5%	Ohio	7.3%	8.6%	5.1%
Georgia	-1.9%	1.8%	4.3%	Oklahoma	-5.1%	-2.2%	7.1%
Hawaii	5.2%	10.2%	-1.0%	Oregon	4.2%	7.6%	7.2%
Idaho	0.8%	3.3%	12.0%	Pennsylvania	-1.3%	0.3%	4.9%
Illinois	2.6%	3.9%	4.5%	Rhode Island	-	-	-1.2%
Indiana	5.5%	3.0%	13.0%	South Carolina	-2.4%	1.0%	11.2%
Iowa	4.0%	0.0%	8.3%	South Dakota	5.5%	-1.8%	25.1%
Kansas	-1.9%	-1.1%	9.9%	Tennessee	4.0%	2.0%	5.2%
Kentucky	0.0%	5.1%	6.8%	Texas	5.7%	3.5%	7.1%
Louisiana	4.1%	-1.9%	3.9%	Utah	3.8%	16.8%	16.6%
Maine	-0.3%	-4.0%	1.1%	Vermont	2.3%	3.1%	5.5%
Maryland	-	2.0%	2.7%	Virginia	-3.2%	-2.2%	8.0%
Massachusetts	7.3%	-4.6%	3.5%	Washington	2.0%	3.1%	2.1%
Michigan	2.0%	1.3%	6.0%	West Virginia	-0.5%	1.7%	3.9%
Minnesota	4.2%	0.7%	8.5%	Wisconsin	6.8%	8.4%	9.1%
Mississippi	-1.7%	0.0%	-1.2%	Wyoming	0.4%	8.9%	2.8%
Missouri	0.3%	2.6%	3.6%	U.S.	2.6%	2.0%	5.5%