NC RHRP

Findings Brief
NC Rural Health Research Program

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Geographic Variation in the 2018 Profitability of Urban and Rural Hospitals

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OVERVIEW

Rural hospital closures remain a worrisome issue for policy makers and communities: since 2005, 170 rural hospitals closed.[1] The North Carolina Rural Health Research Program tracks these closures and studies potential predictors. Profitability (revenue greater than expenses) 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 leads up to a closure and how to develop sustainable health care models for communities who lose their hospital services. These studies underscore some of the more recent challenges facing rural hospitals. Add these to the age-old challenges of lower volume, poorer and sicker patient populations, and it's not hard to understand why some hospitals may be in trouble.

To help policy makers, researchers, and communities understand which hospitals are likely to be less profitable, this study describes the geographic variability in 2018 profitability of CAHs, Other Rural Hospitals (Medicare Dependent Hospitals, Sole Community Hospitals, and rural Prospective Payment System (PPS) hospitals denoted as "ORH"), and urban PPS hospitals ("urban") 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 Centers for Medicare & Medicare Services (CMS) Healthcare Cost Report Information System (HCRIS) and the CMS Fiscal Year Impact Files, and analysis continues previous work by the North Carolina Rural Health Research Program on rural hospital profitability.[2] Specifically, this study used 2018 Medicare Cost Reports for 1,301 CAHs, 1,152 ORHs, and 1,874 urban hospitals for a total of 4,327 acute general hospitals. Rural was defined according to the Federal Office for Rural Health Policy's definition of all non-metro counties and metropolitan counties with Rural-Urban Commuting Area (RUCA) Codes of 4-10. Rural Referral Centers (RRCs) were excluded from this line of analysis because most are located in urban areas and have an average acute bed count of 245.

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

KEY FINDINGS

- Nationally, **urban hospitals were more than twice as profitable as rural hospitals in 2018**. Across all census regions except the Northeast, Critical Access Hospitals (CAHs) and Other Rural Hospitals (ORHs) were less profitable than urban hospitals (urban), particularly in the South and Midwest (Figure 1).
- The **least profitable hospitals were CAHs and ORHs in the South**. In particular, the median total margins for 76 CAHs and 189 ORHs in East South Central were negative (Figure 2).
- Nationally, **the majority of unprofitable hospitals were rural hospitals.** The 945 unprofitable rural hospitals (516 CAHs and 429 ORHs) was more than double the 447 unprofitable urban hospitals (Figure 3).
- Among census regions, the **greatest number of unprofitable hospitals were ORHs in the South and CAHs in the Midwest**. Among census divisions, the greatest number of unprofitable hospitals were CAHs in West North Central (175), ORHs in East South Central (101), and urban hospitals in Middle Atlantic (90) (Figure 4).
- There was **substantial variation in hospital profitability across states**. The lowest median total margins were for CAHs in New Mexico (-5.8%), Mississippi (-4.8%), and Virginia (-4.7%). The highest median total margins were for urban hospitals in South Dakota (29.4%), Utah (21.2%), and Alaska (20.0%) (Appendix 2).

sometimes less than the total number of hospital cost reports. Medicare payment designation was verified using the CMS FY18 Impact File. Total margin was defined as net income (Worksheet G-3, line 29) divided by total revenue (Worksheet G-3, lines 3+25).

Table 1. Profitability Indicator Definition and Medicare Cost Report Accounts

Ratio	Definition	Numerator	Denominator
Total margin	$\frac{\text{Net income}}{\text{Total revenue}}$	Worksheet G-3, line 29	Worksheet G-3, lines 3+25

Table 2. Number of 2018 Hospital Cost Reports by Census Region and Division

	Northeast		Midwest		South			West		U.S.
	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
CAH	40	32	208	413	93	76	165	163	111	1,301
ORH	35	104	177	117	192	189	180	88	70	1,152
Urban	95	235	283	118	352	96	292	116	287	1,874
Total	170	371	668	648	637	361	637	367	468	4,327

CAH = Critical Access Hospital ORH = Other Rural Hospital Urban = Urban PPS hospital

PROFITABILITY

Total margin measures the control of expenses relative to revenues, and expresses the profit[3] a hospital makes as a proportion of revenue brought in. For example, a 5% margin means that a hospital makes 5 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 5% 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.

National. Figure 1 shows that the U.S. median total margin for urban hospitals (5.9%) was more than double the margins for ORHs (2.5%) and more than triple the margins for CAHs (1.7%).

Census region. Figure 1 shows that the lowest median total margins were both in the South: 0.7% for the 334 CAHs and 1.0% for the 561 ORHs. The highest median total margins were 7.0% for the 740 urban hospitals in the South and 7.0 % for the 401 urban hospitals in the Midwest. In each census region except the Northeast, the median total margins for CAHs and ORHs were lower than for urban hospitals.

Census division. Figure 2 shows that the lowest median total margins were both in East South Central: -1.3% for the 76 CAHs and -0.8% for the 189 ORHs. The highest median total margins were both in Mountain: 10.7% for the 116 urban hospitals and 8.5% for the 88 ORHs. In each census division except Middle Atlantic, 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 CAHs in New Mexico (-5.8%), Mississippi (-4.8%), and Virginia (-4.6%). The highest median total margins were for urban hospitals in South Dakota (29.4%), Utah (21.2%), and Alaska (20.0%).

Figure 1. 2018 Median Total Margins for CAHs, ORHs and Urban Hospitals by Census Region

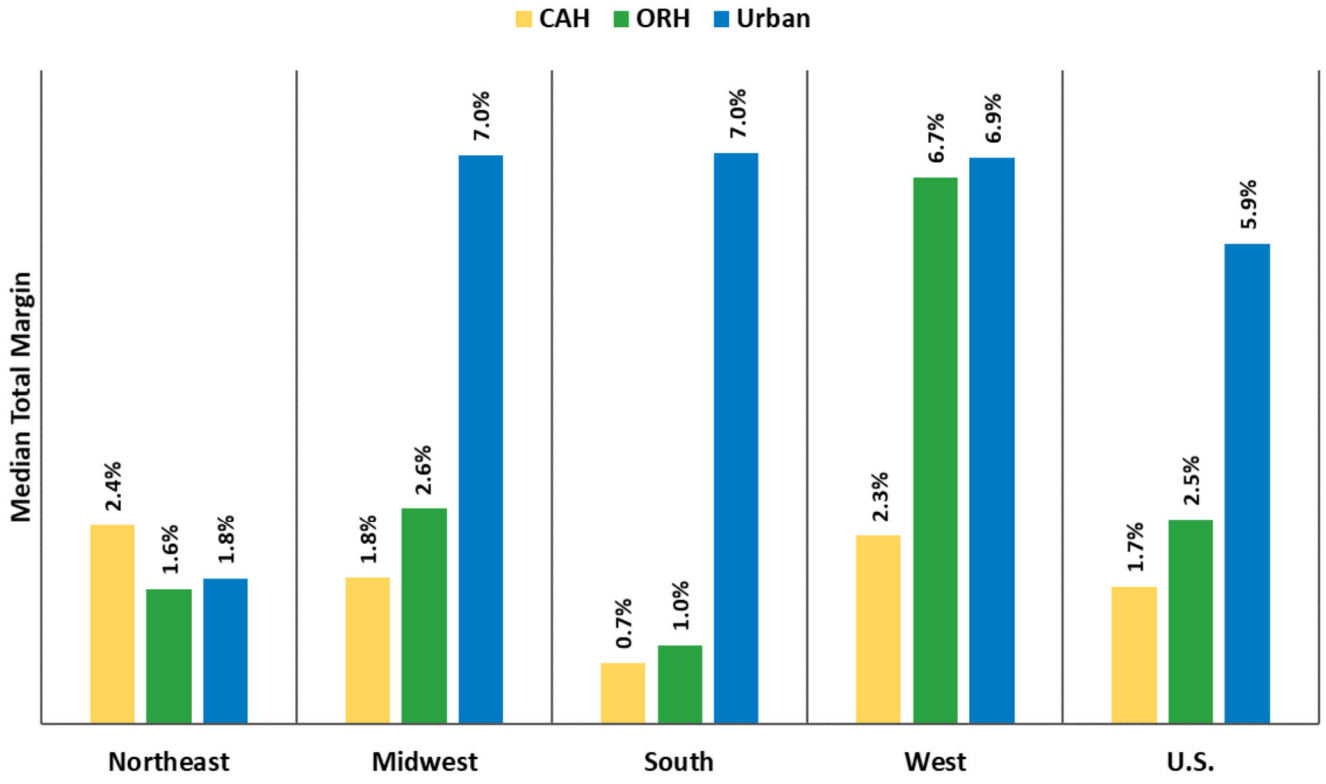
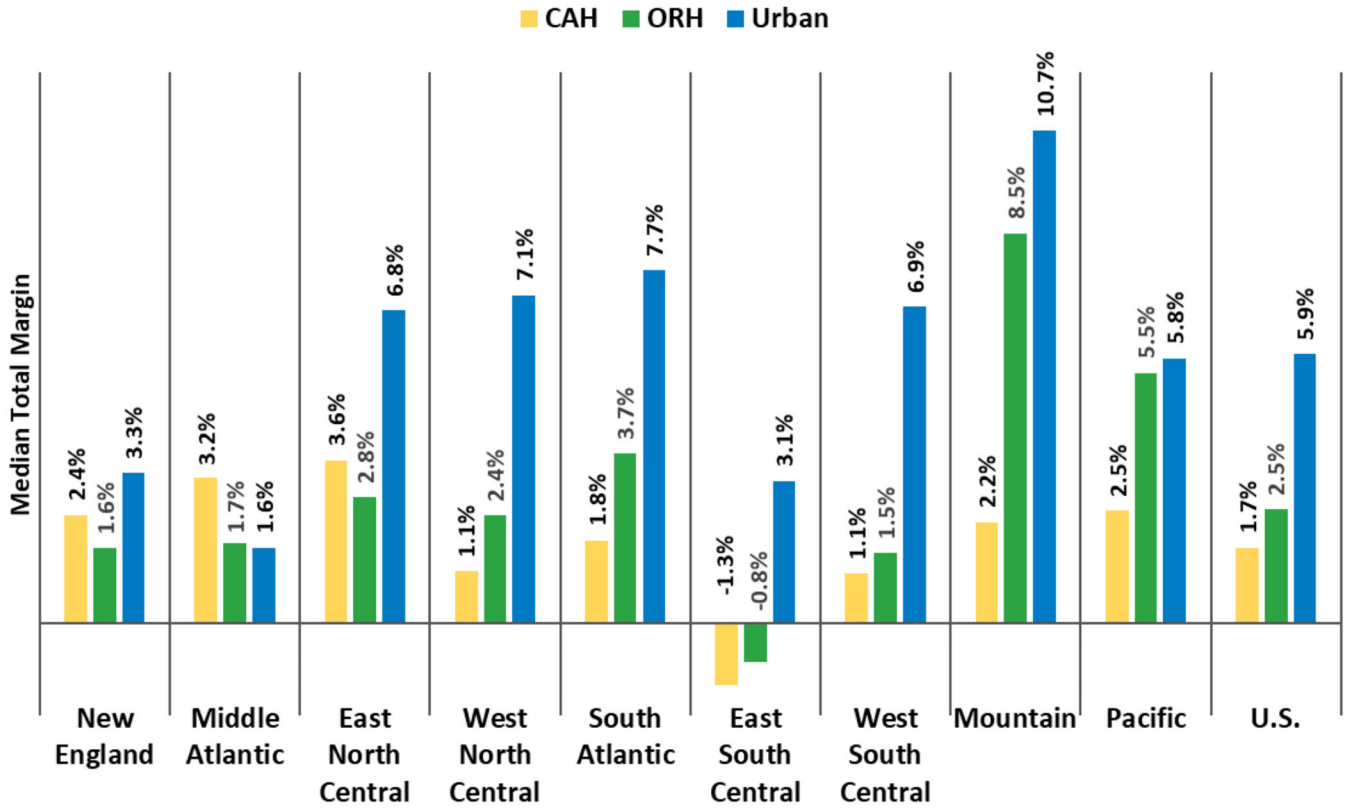


Figure 2. 2018 Median Total Margins for CAHs, ORHs and Urban Hospitals by Census Division



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[4] may threaten the financial viability of a hospital, possibly leading to insolvency, bankruptcy, or closure.

National. Figure 3 and Table 3 shows that 1,422 out of a total of 4,327 hospitals (33%) were unprofitable in 2018. Among hospital types, 516 of 1,301 CAHs (40%), 429 of 1,152 ORHs (37%), and 477 of 1,874 urban hospitals (25%) were unprofitable.

Census region. Figure 3 shows that the greatest number of unprofitable hospitals were in the South (579), followed by the Midwest (429), the West (228), and the Northeast (186). Among hospital types, the greatest number of unprofitable hospitals were ORHs in the South (254), CAHs in the Midwest (245), and urban hospitals in the South (178).

Census division. Figure 4 shows that the greatest number of unprofitable hospitals were in West North Central (237), West South Central (229), and East North Central (192). Among hospital types, the greatest number of unprofitable hospitals were CAHs in West North Central (175), ORHs in East South Central (101), and urban hospitals in Middle Atlantic (90).

Figure 3. 2018 Number of Unprofitable CAHs, ORHs and Urban Hospitals by Census Region

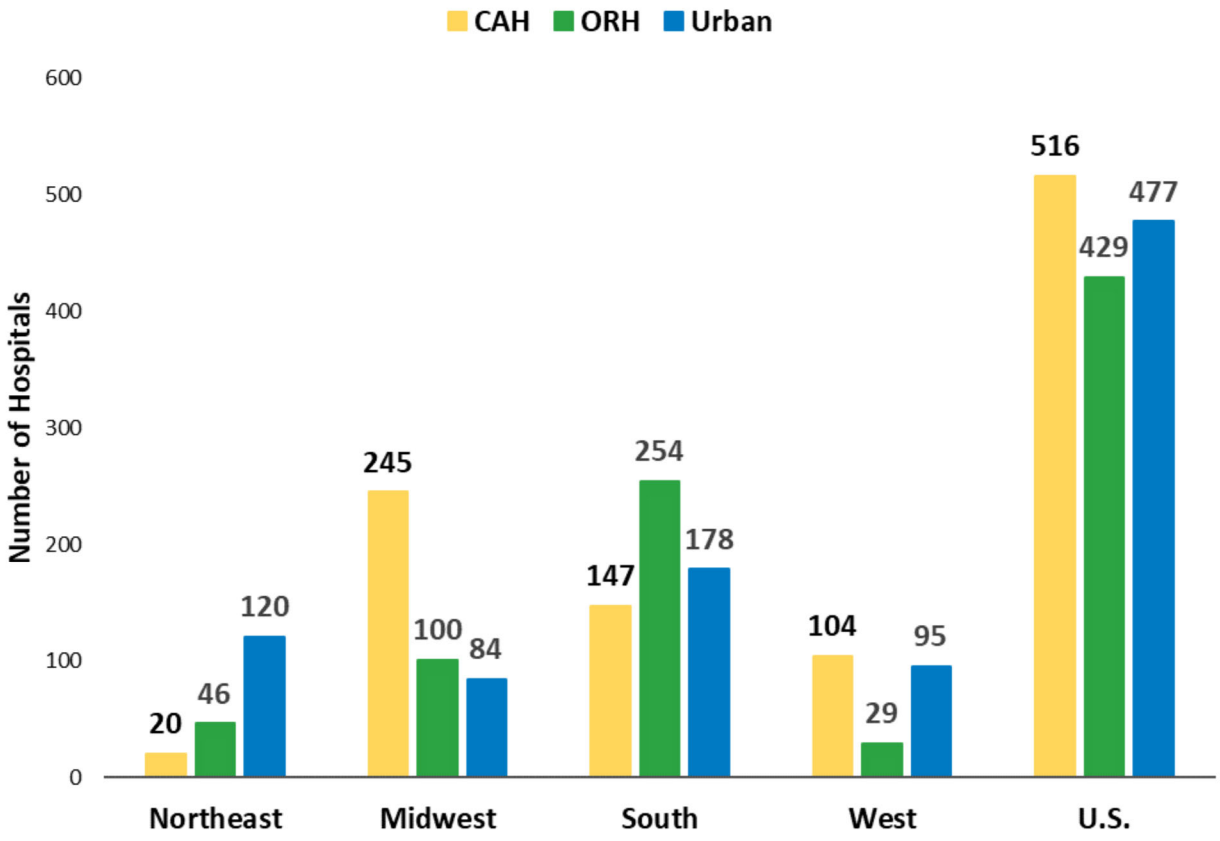
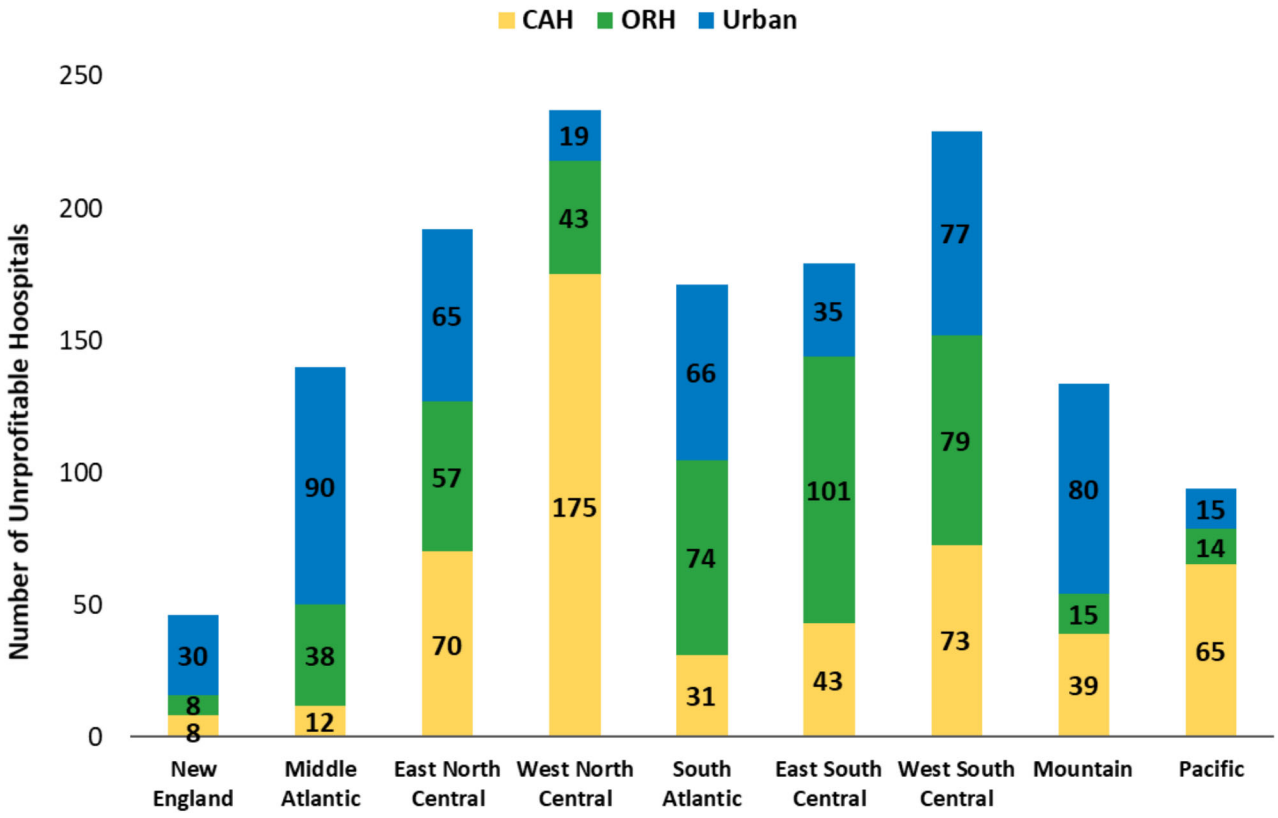


Table 3. Percentage of 2018 U.S. Hospitals that Were Unprofitable by Census Region

	Northeast	Midwest	South	West	U.S.
Number of Unprofitable Hospitals	186	429	579	228	1,422
Total hospitals	541	1,316	1,635	835	4,327
Percent of Hospitals that are Unprofitable	34.4%	32.6%	35.4%	27.3%	32.9%

Figure 4. 2018 Number of Unprofitable CAHs, ORHs and Urban Hospitals by Census Division



DISCUSSION

This study has five key findings: 1) Nationally, urban hospitals were more than twice as profitable as rural hospitals in 2018; 2) The least profitable hospitals were CAHs and ORHs in the South; 3) Nationally, the majority of unprofitable hospitals were rural hospitals; 4) Among census regions, the greatest number of unprofitable hospitals were ORHs in the South and CAHs in the Midwest, and; 5) There was substantial variation in hospital profitability across states.

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.[5] The majority of 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.[6] 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.

The hospital groups identified in this study as under the most financial pressure may not be well positioned to meet future challenges. These hospitals have financial weaknesses that may make it difficult for them to respond to new realities in the health care delivery system. Rural hospitals in the 14 states that have not expanded Medicaid represent only 39% of rural hospitals but make up 45% of the hospitals that were unprofitable in 2018. Although planned reductions to the Medicaid Disproportionate Share Hospital (DSH) program were scheduled to start in 2014, Congress has pushed them back to start in May 2020 at $4 billion and increase to $8 billion in 2021.[7] Ultimately, these cuts will total to $43 billion between 2020 and 2025, representing two-thirds of the entire DSH program.[8] 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. Hospital closures are defined as hospitals that ceased providing inpatient services.
2. Pink G, Freeman V, Randolph R, Holmes MG. Profitability of Rural Hospitals (2013). NC Rural Health Research Program, Sheps Center for Health Services Research, UNC-Chapel Hill. https://www.shepscenter.unc.edu/product/profitability-in-rural-hospitals/.
3. 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).
4. Maxwell AW, Howard HA, Pink GH. Rural Hospitals with Long-term Unprofitability (April 2020). NC Rural Health Research Program, Sheps Center for Health Services, UNC-Chapel Hill.
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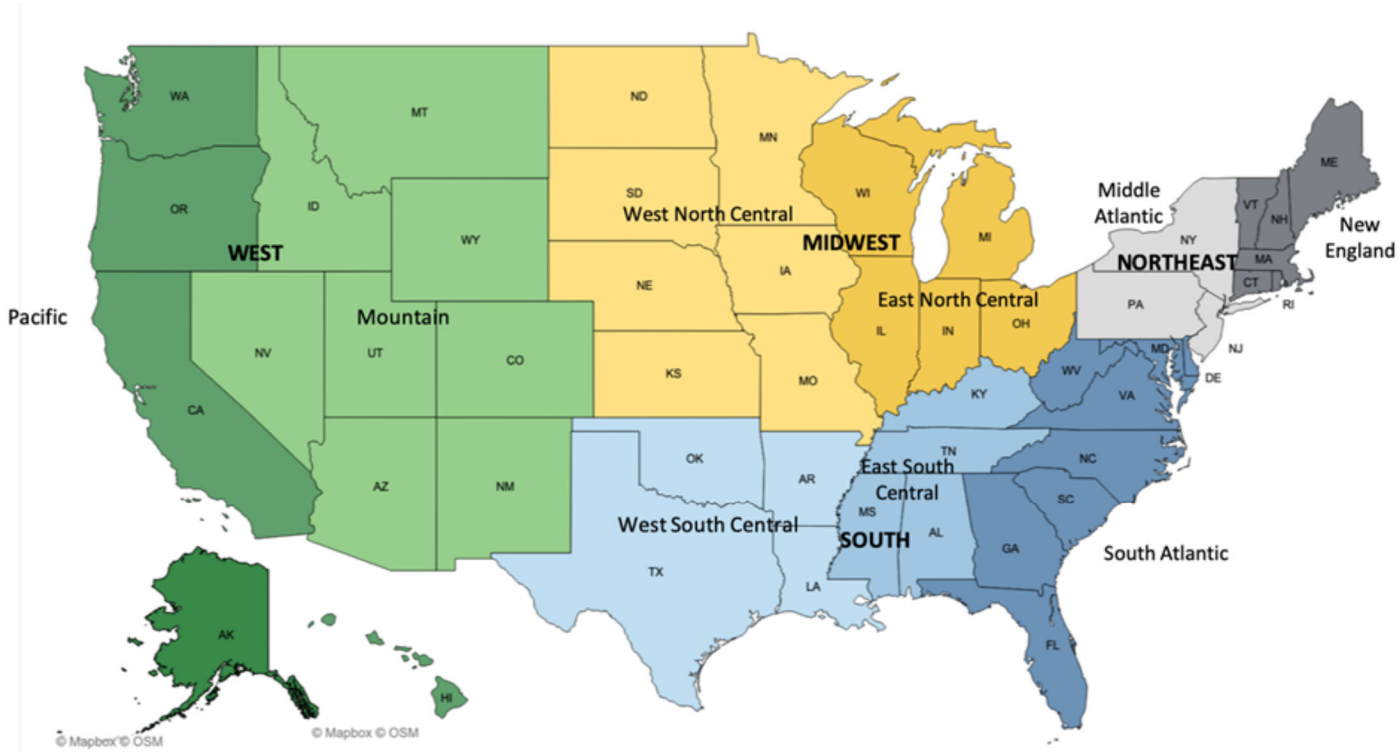
Appendix 1. Census Regions and Divisions



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Appendix 2. 2018 CAH, ORH and Urban Median Total Margin by State

State	CAH	ORH	Urban	State	CAH	ORH	Urban
Alabama	-0.2%	-4.3%	0.0%	Montana	1.7%	5.4%	8.3%
Alaska	6.3%	5.9%	20.0%	Nebraska	2.2%	3.7%	13.1%
Arizona	2.6%	8.7%	8.3%	Nevada	7.0%	16.9%	9.5%
Arkansas	-2.2%	2.0%	1.6%	New Hampshire	3.2%	3.4%	10.6%
California	3.4%	5.5%	6.2%	New Jersey	N/A	0.9%	3.6%
Colorado	2.8%	12.2%	9.2%	New Mexico	-5.8%	9.2%	10.0%
Connecticut	N/A	2.5%	1.2%	New York	6.3%	0.7%	0.7%
Delaware	N/A	9.7%	12.1%	North Carolina	0.6%	3.7%	10.0%
D.C.	N/A	N/A	6.7%	North Dakota	3.2%	5.1%	-3.2%
Florida	1.6%	6.3%	9.5%	Ohio	1.5%	3.7%	7.4%
Georgia	4.1%	3.7%	6.8%	Oklahoma	-3.3%	0.3%	9.3%
Hawaii	-1.1%	8.0%	1.8%	Oregon	3.3%	5.5%	1.2%
Idaho	1.2%	3.2%	13.4%	Pennsylvania	-1.7%	4.2%	2.9%
Illinois	3.7%	3.5%	3.2%	Rhode Island	N/A	N/A	1.3%
Indiana	-1.1%	1.9%	12.1%	South Carolina	0.0%	0.4%	9.6%
Iowa	-0.1%	0.4%	5.6%	South Dakota	5.8%	1.7%	29.4%
Kansas	-2.3%	-0.2%	11.5%	Tennessee	-1.4%	-1.0%	7.1%
Kentucky	1.0%	3.0%	3.4%	Texas	2.9%	2.5%	7.3%
Louisiana	6.2%	0.6%	5.8%	Utah	7.8%	18.3%	21.2%
Maine	2.0%	1.3%	-2.3%	Vermont	1.5%	0.9%	5.0%
Maryland	N/A	5.7%	6.3%	Virginia	-4.6%	4.9%	8.3%
Massachusetts	4.5%	4.6%	4.3%	Washington	0.4%	2.5%	0.3%
Michigan	3.3%	0.9%	4.8%	West Virginia	0.6%	-1.1%	2.5%
Minnesota	3.6%	4.5%	7.0%	Wisconsin	5.1%	7.0%	10.0%
Mississippi	-4.8%	-2.2%	-0.4%	Wyoming	-2.2%	3.3%	N/A
Missouri	0.1%	2.4%	5.2%	U.S.	1.7%	2.5%	5.9%