

# RUPRI Center for Rural Health Policy Analysis

## *Rural Policy Brief*

Brief No. 2018-5

October 2018

[www.public-health.uiowa.edu/rupri](http://www.public-health.uiowa.edu/rupri)

### Trends in Hospital System Affiliation, 2007-2016

*Onyinye Oyeka, MPH; Fred Ullrich, BA; and Keith Mueller, PhD*

#### Purpose

This policy brief updates a RUPRI Center brief published in 2014<sup>1</sup> and documents the continued growth in system affiliation by both metropolitan and non-metropolitan hospitals.

#### Key Findings

- From 2007 to 2016, hospital system affiliation continued to increase across all categories of hospital size, metropolitan/non-metropolitan location, and Critical Access Hospital (CAH) status.
- From 2007 to 2016, hospital system affiliation increased in all census regions except in the West census region among non-metropolitan hospitals.

#### Definition

**System:** A system is defined by the American Hospital Association (AHA) as “either a multihospital or a diversified single hospital system. A multihospital system is two or more hospitals owned, leased, sponsored, or contract managed by a central organization. Single, freestanding hospitals may be categorized as a system by bringing into membership three or more, and at least 25 percent, of their owned or leased non-hospital pre-acute or post-acute health care organizations. System affiliation does not preclude network participation.”<sup>2</sup>

#### Introduction

Previous analysis by the RUPRI Center has described trends in network participation and system affiliation among rural hospitals, showing that, overall, system affiliation increased between 2007 and 2012. This growth occurred in hospitals of all sizes and in all census regions, regardless of metropolitan/non-metropolitan location. Ongoing changes to the health care delivery landscape continue to lead hospitals of all sizes and in all settings to affiliate with larger health care systems. System affiliation often provides the additional capacity—technology, capital, and human resources—required to provide care to a patient population.<sup>3</sup> Tracking changes in the rates of system affiliation over time can inform policy discussions focused on how small and rural hospitals can participate in new payment models such as Accountable Care Organizations, that presume elements of care redesign and scale. This policy brief updates hospital system affiliation trends through 2016.



Rural Health Research  
& Policy Centers

Funded by the Federal Office of Rural Health Policy  
[www.ruralhealthresearch.org](http://www.ruralhealthresearch.org)

This project was supported by the Federal Office of Rural Health Policy (FORHP), Health Resources and Services Administration (HRSA), U.S. Department of Health and Human Services (HHS) under grant # U1C RH20419. The information, conclusions and opinions expressed in this policy brief are those of the authors and no endorsement by FORHP, HRSA, HHS, is intended or should be inferred.



RURAL POLICY RESEARCH INSTITUTE

RUPRI Center for Rural Health Policy Analysis  
University of Iowa College of Public Health  
Department of Health Management and Policy  
145 Riverside Dr., Iowa City, IA 52242-2007  
(319) 384-3830  
<http://www.public-health.uiowa.edu/rupri>  
E-mail: [cph-rupri-inquiries@uiowa.edu](mailto:cph-rupri-inquiries@uiowa.edu)

## Data

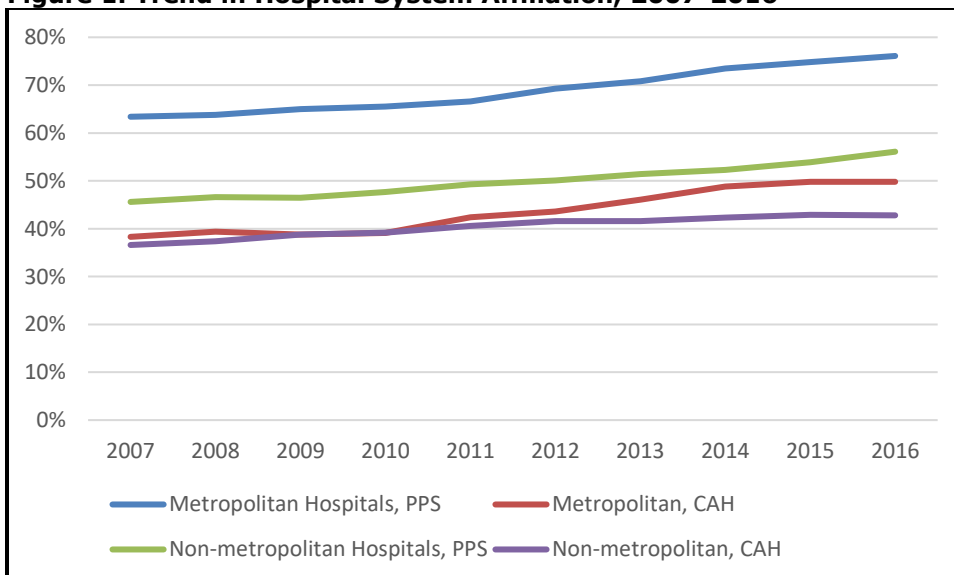
The AHA annual survey data were used to track the trends in hospital system affiliation. The AHA obtained the original data for system affiliation directly from the headquarters of hospital systems. Using the same protocols employed by the AHA, the RUPRI Center's analysis was limited to registered community hospitals defined as "all non-federal, short-term general, and other special hospitals."<sup>2</sup> These include non-federal government (e.g., state, county, or city) hospitals, non-government not-for-profit hospitals, and investor-owned for-profit hospitals. Academic medical centers or other teaching hospitals were included if they were non-federal short-term hospitals. Excluded were hospitals "not accessible by the public, such as prison hospitals or college infirmaries."<sup>2</sup> For this analysis, we included only general medical and surgical hospitals. We further differentiate hospitals based on designation as Critical Access Hospitals (CAHs), for two reasons: 1) cost-based reimbursement (for CAHs) may create different incentives (disincentives) to affiliate; and 2) CAH designation is a proxy for size since CAHs are limited to 25 total patient beds.

Hospitals were classified as metropolitan or non-metropolitan using the Urban Influence Codes (UICs) developed by the USDA Economic Research Service<sup>4</sup> based on county of hospital location. All hospitals not located in counties with a metropolitan designation (i.e., UIC larger than "2") were designated as non-metropolitan.

## Key Trends

From 2007 to 2016, the proportion of hospitals affiliating with health care systems grew steadily in all four categories of hospitals as shown in Figure 1 and Table 1. The percent affiliating remains highest for prospective payment system (PPS) hospitals throughout those years, with non-metropolitan PPS hospitals having higher rates than CAHs located in metropolitan areas. The growth rate in affiliations is highest for metropolitan CAH hospitals (30 percent) and lowest for non-metropolitan CAHs (17 percent).

**Figure 1. Trend in Hospital System Affiliation, 2007-2016**



Data Source: American Hospital Association Annual Survey, 2007-2016.

**Table 1. Trend in Hospital System Affiliation, 2007-2016**

	Overall	Metropolitan Hospitals, PPS			Metropolitan, CAH			Non-metropolitan Hospitals, PPS			Non-metropolitan, CAH		
	Total	Total	System Part.		Total	System Part.		Total	System Part.		Total	System Part.	
2007	4,612	2,468	1,565	63.4%	248	95	38.3%	899	410	45.6%	997	365	36.6%
2008	4,592	2,445	1,561	63.8%	251	99	39.4%	899	419	46.6%	997	373	37.4%
2009	4,602	2,449	1,592	65.0%	250	97	38.8%	901	419	46.5%	1,002	389	38.8%
2010	4,560	2,422	1,586	65.5%	253	99	39.1%	859	410	47.7%	1,026	402	39.2%
2011	4,589	2,452	1,634	66.6%	250	106	42.4%	854	421	49.3%	1,033	419	40.6%
2012	4,520	2,394	1,660	69.3%	250	109	43.6%	847	424	50.1%	1,029	428	41.6%
2013	4,503	2,374	1,680	70.8%	256	118	46.1%	834	429	51.4%	1,039	432	41.6%
2014	4,430	2,313	1,699	73.5%	256	125	48.8%	820	429	52.3%	1,041	440	42.3%
2015	4,400	2,301	1,720	74.8%	255	127	49.8%	803	433	53.9%	1,041	447	42.9%
2016	4,400	2,297	1,749	76.1%	257	128	49.8%	798	448	56.1%	1,048	449	42.8%

Data Source: American Hospital Association Annual Survey, 2007-2016.

Larger hospitals were more likely to be system affiliates. Table 2 shows that, with the exception of Metropolitan CAHs, larger hospitals (based on bed size) affiliated with systems at a significantly higher rate than smaller hospitals. Further, growth in the rate of system affiliation between 2007 and 2016 occurred across nearly all bed-size categories. The picture of hospital system affiliation based on hospital control is less clear. In general, investor-owned hospitals affiliated with systems at higher rates than either government non-federal, or non-government not-for-profit hospitals. Non-government not-for-profit hospitals saw growth in rates of system affiliation between 2007 and 2016, but system affiliation by government non-federal hospitals grew slowly (or declined slightly) and system affiliation among investor-owned hospitals grew slowly in metropolitan areas and was mixed in non-metropolitan areas.

**Table 2. Characteristics of System-Affiliated Hospitals, 2007 and 2016**

	Metropolitan, PPS				Metropolitan, CAH				Non-metropolitan, PPS				Non-metropolitan, CAH			
	2007		2016		2007		2016		2007		2016		2007		2016	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Hospital size <sup>1</sup>																
1-15 beds	6	15.8%	5	15.2%	12	33.3%	29	53.7%	2	25.0%	8	36.4%	43	28.7%	72	38.3%
16-25 beds	11	22.9%	16	40.0%	83	39.2%	99	48.8%	16	32.7%	17	35.4%	322	38.0%	377	43.8%
26-50 beds	75	50.7%	98	63.6%					104	40.5%	117	49.6%				
51-150 beds	468	64.8%	464	75.5%					236	50.0%	242	61.0%				
Over 150 beds	1,005	66.5%	1,166	80.1%					52	46.0%	64	67.4%				
Control type <sup>2</sup>																
Gov't, non-fed	100	32.7%	98	41.4%	19	20.4%	19	23.8%	62	24.6%	44	22.2%	99	21.9%	97	21.9%
Investor-owned	417	76.5%	431	83.0%	9	60.0%	10	62.5%	137	85.6%	129	84.9%	22	62.9%	33	68.8%
Non-gov't NFP	1,048	64.8%	1,220	79.2%	67	47.9%	99	61.5%	211	43.3%	275	61.4%	244	47.9%	319	57.2%

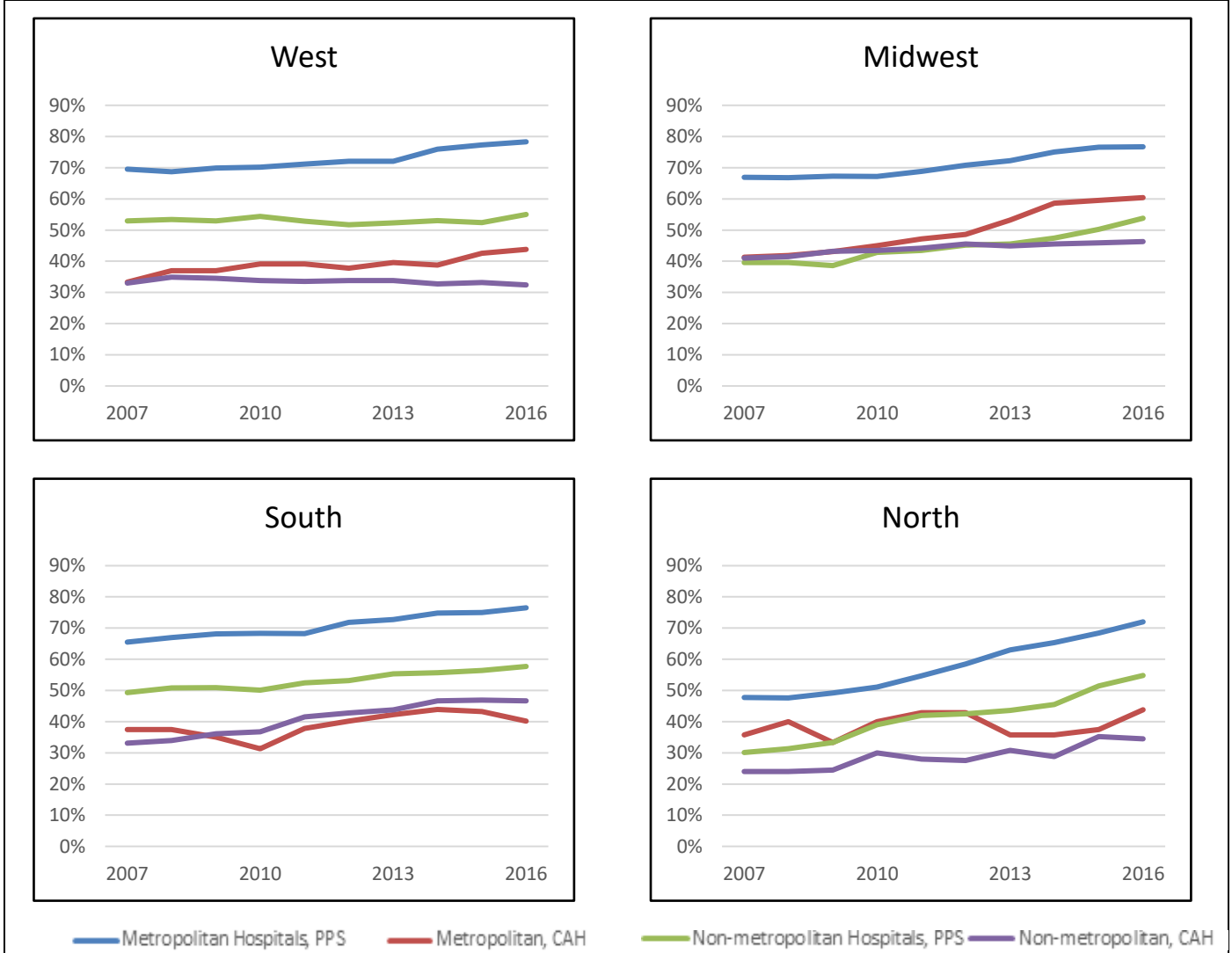
Data Source: American Hospital Association Annual Survey, 2007-2016.

1 CAHs cannot have more than 25 staffed beds. Note that the method for calculating hospital bed size used for this report differs slightly from the method utilized for the 2014 report. There is some slight variation in the numbers reported.

2 Government, non-federal includes state, county, city, city-county, and hospital district or authority; non-government not-for-profit includes church-operated, non-government non-profit Catholic-controlled, and other; investor-owned (for-profit) includes investor-owned for profit, individual, partnership, and corporation

The pattern of growth in hospital system affiliation is similar in all regions of the country. Graphs in Figure 2 show system affiliation by census region. System affiliation increased in all categories and all census regions except in the West census region among non-metropolitan hospitals and CAHs.

**Figure 2. Trend in Hospital System Affiliation by Census Region**



Data Source: American Hospital Association Annual Survey, 2007-2016.

The AHA data classifies system types “based on how much they differentiate and centralize their hospital services, physician arrangements, and provider-based insurance products.”<sup>5</sup> Nearly one-fourth of the hospitals affiliating with systems were in a moderately centralized health system, regardless of metropolitan/non-metropolitan status (Table 3). Metropolitan hospitals were more likely to affiliate with centralized systems, and non-metropolitan hospitals are more likely to affiliate with either decentralized or independent systems.

**Table 3. Health System Centralization, 2016**

	Metropolitan		Non-metropolitan, All		Non-metropolitan, CAH	
	n	%	n	%	n	%
Centralized Health System	287	15.3%	61	6.8%	27	6.0%
Centralized Physician/Insurance Health System	173	9.2%	80	8.9%	37	8.2%
Moderately Centralized Health System	497	26.5%	236	26.3%	109	24.3%
Decentralized Health System	741	39.5%	409	45.6%	214	47.7%
Independent Hospital System	155	8.3%	101	11.3%	57	12.7%
Insufficient data	24	1.3%	10	1.1%	5	1.1%

Data Source: American Hospital Association Annual Survey, 2007-2016.

The largest system (HCA Healthcare) had no CAH member hospitals, and rural hospitals represented only 5.6 percent of its total membership (Table 4A). However, two systems with the largest rural hospital membership (Community Health Systems, Inc., and Catholic Health Initiatives) made the top five largest systems overall. With some exceptions, CAHs tend to represent a very small minority of the number of affiliated hospitals in large health care systems. The most notable exception to this pattern is Avera Health, where 71.9 percent of the affiliated hospitals were CAHs (Table 4B).

**Table 4A. Largest Systems, Based on Affiliated Hospitals, 2016**

System Name	Hospitals (rank)	Total Beds (rank)	Rural Hospitals (pct)	Rural Hospital Beds (pct)	Non-metro CAHs	Non-metro CAH Beds
HCA Healthcare, Nashville, TN	144 (1)	37,123 (1)	8 (5.6%)	1,025 (2.8%)	0 (0%)	0 (0%)
Community Health Systems, Inc., Franklin, TN	127 (2)	18,616 (2)	46 (36.2%)	4,519 (24.3%)	4 (3.1%)	96 (0.5%)
Ascension Healthcare, Saint Louis, MO	94 (3)	16,032 (4)	21 (22.3%)	913 (5.7%)	10 (10.6%)	168 (1.0%)
Catholic Health Initiatives, Englewood, CO	86 (4)	11,517 (6)	40 (46.5%)	1,835 (15.9%)	26 (30.2%)	570 (4.9%)
Trinity Health, Livonia, MI	70 (5)	14,337 (5)	22 (31.4%)	800 (5.6%)	17 (24.3%)	367 (2.6%)

Data Source: American Hospital Association Annual Survey, 2016

**Table 4B. Largest Systems, Based on Non-Metropolitan Affiliated Hospitals, 2016**

System Name	Hospitals (rank)	Total Beds (rank)	Rural Hospitals (pct)	Rural Hospital Beds (pct)	Non-metro CAHs	Non-metro CAH Beds
Community Health Systems, Inc., Franklin, TN	127 (2)	18,616 (2)	46 (36.2%)	4,519 (24.3%)	4 (3.1%)	96 (0.5%)
Catholic Health Initiatives, Englewood, CO	86 (4)	11,517 (6)	40 (46.5%)	1,835 (15.9%)	26 (30.2%)	570 (4.9%)
QHR, Brentwood, TN	56 (7)	2,878 (35)	47 (83.9%)	2,364 (82.1%)	23 (41.1%)	538 (18.7%)
LifePoint Health, Brentwood, TN	53 (8)	5,512 (12)	33 (62.3%)	3,197 (58.0%)	1 (1.9%)	25 (0.5%)
Avera Health, Sioux Falls, SD	32 (18)	1,281 (115)	28 (87.5%)	855 (66.7%)	23 (71.9%)	463 (36.1%)

Data Source: American Hospital Association Annual Survey, 2016

## Discussion

Hospital system affiliation continued to increase from 2007 to 2016 in hospitals of all sizes, in non-government not-for-profit hospitals, in hospitals in all census regions, in CAHs, and in both metropolitan and non-metropolitan hospitals. While system affiliation grew among all hospitals, affiliation by metropolitan PPS hospitals in all census regions except the South grew at a faster rate from 2012 to 2016 compared with the growth rate from 2007 to 2012. System affiliation among non-metropolitan CAHs declined across all regions between 2012 and 2016 when compared with system affiliation among non-metropolitan CAHs from 2007 to 2012.

Non-metropolitan hospitals and CAHs face unique challenges, given the demographics of the population in their service area, payer mix, and reimbursement levels. All of these conditions contribute to the greater financial constraints faced by many CAHs<sup>6</sup>. System affiliation can be a strategy to participate in new care and payment models that require investment in information systems and/or large patient

populations. Rural hospital leaders will weigh that benefit against implications for any desire to remain an independent provider. Further research will be useful to understand the stagnation in system affiliation for non-metropolitan hospitals in the West census region, and the impact that hospital closures and/or the financial state of these hospitals has on system affiliation.

Our analysis shows that most large systems have relatively low representation of non-metropolitan CAHs. There are several reasons why a large system might not be motivated to affiliate with small CAHs or rural hospitals. For example, research results suggest that profitability may decline after affiliation.<sup>7</sup> The RUPRI Center is studying the motivation for larger systems to affiliate with rural hospitals and the necessary and practical steps rural hospitals can take to make themselves attractive affiliation partners.

## References and Endnotes

1. Zhu X, Ullrich F, Mueller K, MacKinney A, Vaughn T. "Trends in Hospital Network Participation and System Affiliation, 2007-2012" RUPRI Center for Rural Health Policy Analysis, P2014-6. Available at <https://cph.uiowa.edu/rupri/publications/policybriefs/2014/Hospital%20Network%20Participation.pdf>.
2. American Hospital Association. Fast Facts on US Hospitals. <http://www.aha.org/research/rc/stat-studies/101207fastfacts.pdf>.
3. Vogel, J. (2012, September 14). Let's make a deal: Lessons learned from hospital mergers. Minnesota Public Radio. Retrieved from <http://minnesota.publicradio.org/display/web/2012/09/14/ground-level-rural-health-deal/>
4. USDA. Urban Influence Codes. <http://www.ers.usda.gov/data-products/urban-influence-codes.aspx>.
5. The AHA, working with Bazzoli et al (Bazzoli, GJ; Shortell, SM; Dubbs, N; Chan, C; and Kralovec, P; "A Taxonomy of Health Networks and Systems: Bringing Order Out of Chaos" Health Services Research, February; 1999.), developed a set of five distinct groups of health systems. Health systems are assigned to one of the categories "based on how much they differentiate and centralize their hospital services, physician arrangements, and provider-based insurance products. Differentiation refers to the number of different products or services that the organization offers. Centralization refers to whether decision-making and service delivery emanates from the system level more so than individual hospitals." (American Hospital Association Annual Survey 2014, Data Documentation).

System Category	Description
Centralized Health System	A delivery system in which the system centrally organizes individual hospital service delivery, physician arrangements, and insurance product development. The number of different products/services that are offered across the system is moderate.
Centralized Physician/Insurance Health System	A delivery system with highly centralized physician arrangements and insurance product development. Within this group, hospital services are relatively decentralized with individual hospitals having discretion over the array of services they offer. The number of different products/services that are offered across the system is moderate.
Moderately Centralized Health System	A delivery system that is distinguished by the presence of both centralized and decentralized activity for hospital services, physician arrangements, and insurance product development. For example, a system within this group may have centralized care of expensive, high technology services, such as open heart surgery, but allows individual hospitals to provide an array of other health services based on local needs. The number of different products/services that are offered across the system is moderate.
Decentralized Health System	A delivery system with a high degree of decentralization of hospital services, physician arrangements, and insurance product development. Within this group, systems may lack an overarching structure for coordination. Service and product differentiation is high, which may explain why centralization is hard to achieve. In this group, the system may simply serve a role in sharing information and providing administrative support to highly developed local delivery systems centered around hospitals.
Independent Hospital System	A delivery system with limited differentiation; hospital services, physician arrangements, and insurance product development. These systems are largely horizontal affiliations of autonomous hospitals.

6. Holmes, M. (2015). Financially fragile rural hospitals: mergers and closures. North Carolina Medical Journal. 76(1), 37-40.
7. Noles, M. J., Reiter, K. L., Boortz-Marx, J., & Pink, G. (2015). Rural Hospital Mergers and Acquisitions: Which Hospitals Are Being Acquired and How Are They Performing Afterward? J Healthc Manag, 60(6), 395-407.