



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



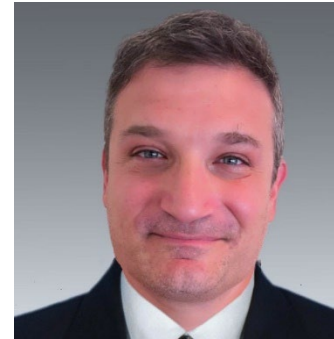
The Compendium of U.S. Health Systems: Data Structure Overview

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Presenters



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Agenda



- Welcome from AHRQ
- Overview of the Compendium of U.S. Health Systems
- Tour of Compendium website resources
- Compendium applications
- Questions and answers

Welcome

Daniel Miller

Agency for Healthcare Research and Quality (AHRQ)

AHRQ's interest in health systems



- Health systems have proliferated over recent decades
 - ▶ More than **half of all physicians** and **three-quarters of hospitals** are part of vertically integrated systems.
- It is critical to understand the role of systems in care delivery.
- However, most research has focused on individual care settings.

The Comparative Health System Performance (CHSP) Initiative



- In 2015, AHRQ launched the CHSP initiative to
 - ▶ Classify and characterize health systems
 - ▶ Identify ways that health systems organize resources to generate and adopt best practices
 - ▶ Assess the ways that health systems incorporate knowledge from patient-centered outcomes research (PCOR) into practice
 - ▶ Compare performance on clinical and cost outcomes
- CHSP has produced over 180 publications, listed at <https://www.ahrq.gov/chsp/publications/index.html>

Compendium of U.S. Health Systems



- Previous research was limited by a lack of health system data.
- Created under the CHSP initiative, the Compendium of U.S. Health Systems is the first publicly available data on health systems and affiliated providers.
- AHRQ plans to release annual Compendium updates and data enhancements.

Overview of the Compendium of U.S. Health Systems

The Compendium: Overview

- The Compendium includes data on:

 Systems

 Hospitals

 Group practices

- AHRQ previously released 2016 and 2018 Compendium data
- **New** 2020 and 2021 data released in June 2023

The Compendium: Opportunities

- Provides data on trends and the changing landscape of health systems
- Links to other resources to aid health systems research
 - ▶ 2016 and 2018 Compendium data has been featured in many high-impact journal articles

JAMA®

Health
Affairs

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MEDICINE

Journal of the Association of American Medical Colleges

Defining health systems



- AHRQ developed a definition of a health system that relies on existing data resources:
 - ▶ Based on provider organization ownership or joint management
 - ▶ Focuses on vertically integrated systems

A health system includes at least one hospital and at least one group of physicians that provide comprehensive care (including primary and specialty care) and are connected with each other and with the hospital through common ownership or joint management.

Health system definition details

A health system includes at least one hospital and at least one group of physicians that provide comprehensive care (including primary and specialty care) and are connected with each other and with the hospital through common ownership or joint management.

- Organizations must have at least:
 - ▶ 1 non-federal general acute care hospital
 - ▶ 50 total physicians
 - ▶ 10 primary care physicians

Compendium system files: Data sources



- IQVIA OneKey
- American Hospital Association (AHA) Annual Survey
- Healthcare Provider Cost Report Information System (HCRIS)

They provide system information, including:

- ▶ Numbers of physicians and hospitals
- ▶ Teaching intensity
- ▶ Uncompensated care burden

New data from the AHRQ Compendium

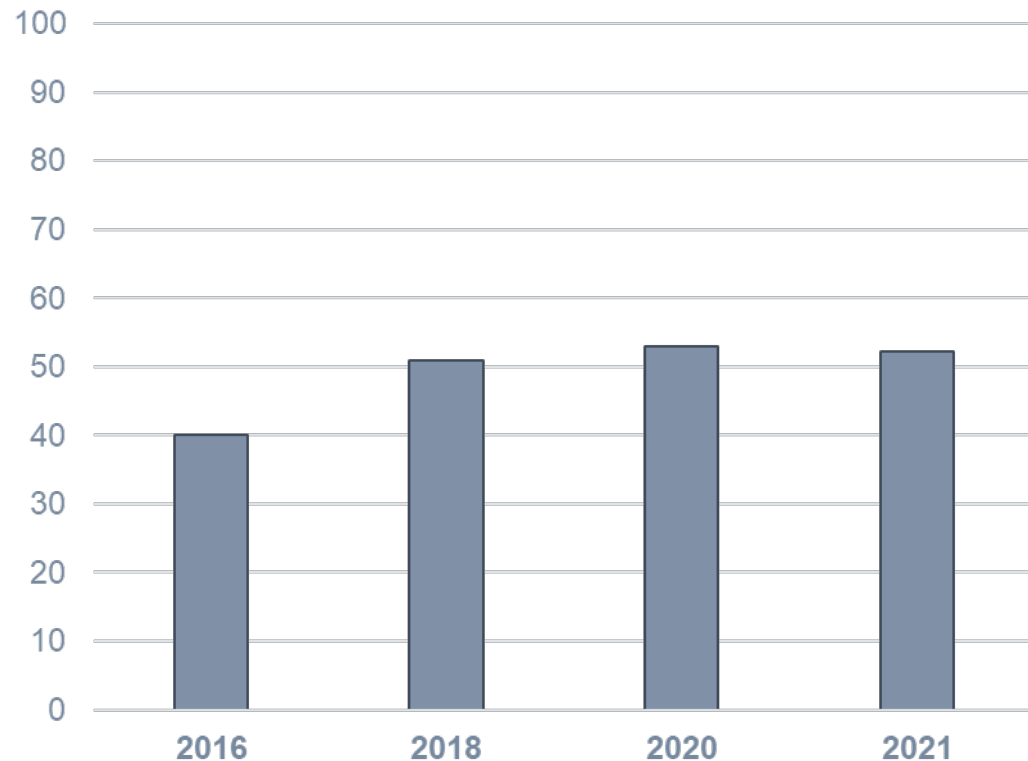


- Numbers of systems
 - ▶ 2016: 626 systems
 - ▶ 2018: 637 systems
 - ▶ 2020: 629 systems
 - ▶ 2021: 635 systems
- Increased variation in system size in 2021:
 - ▶ Fewer and larger systems were at the top of the size distribution
 - ▶ New smaller systems were added at the bottom

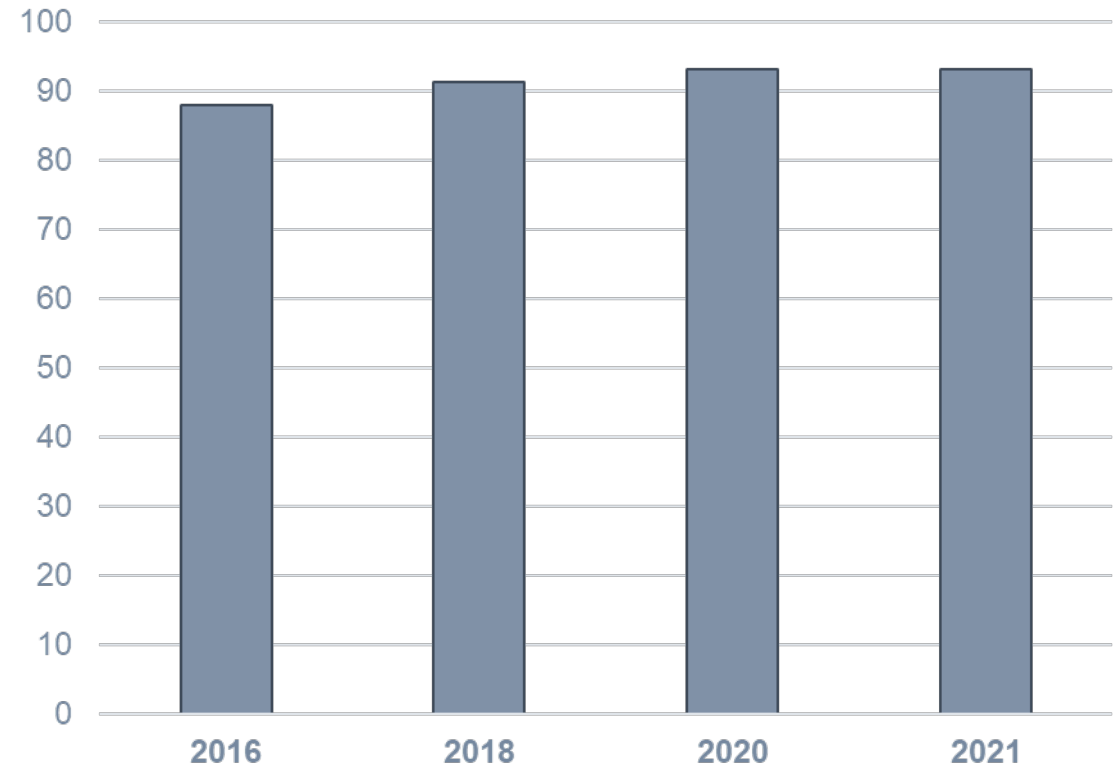
Changes in provider affiliation from 2016 to 2021



**Share of physicians in systems
Grew from 40 to 52%**

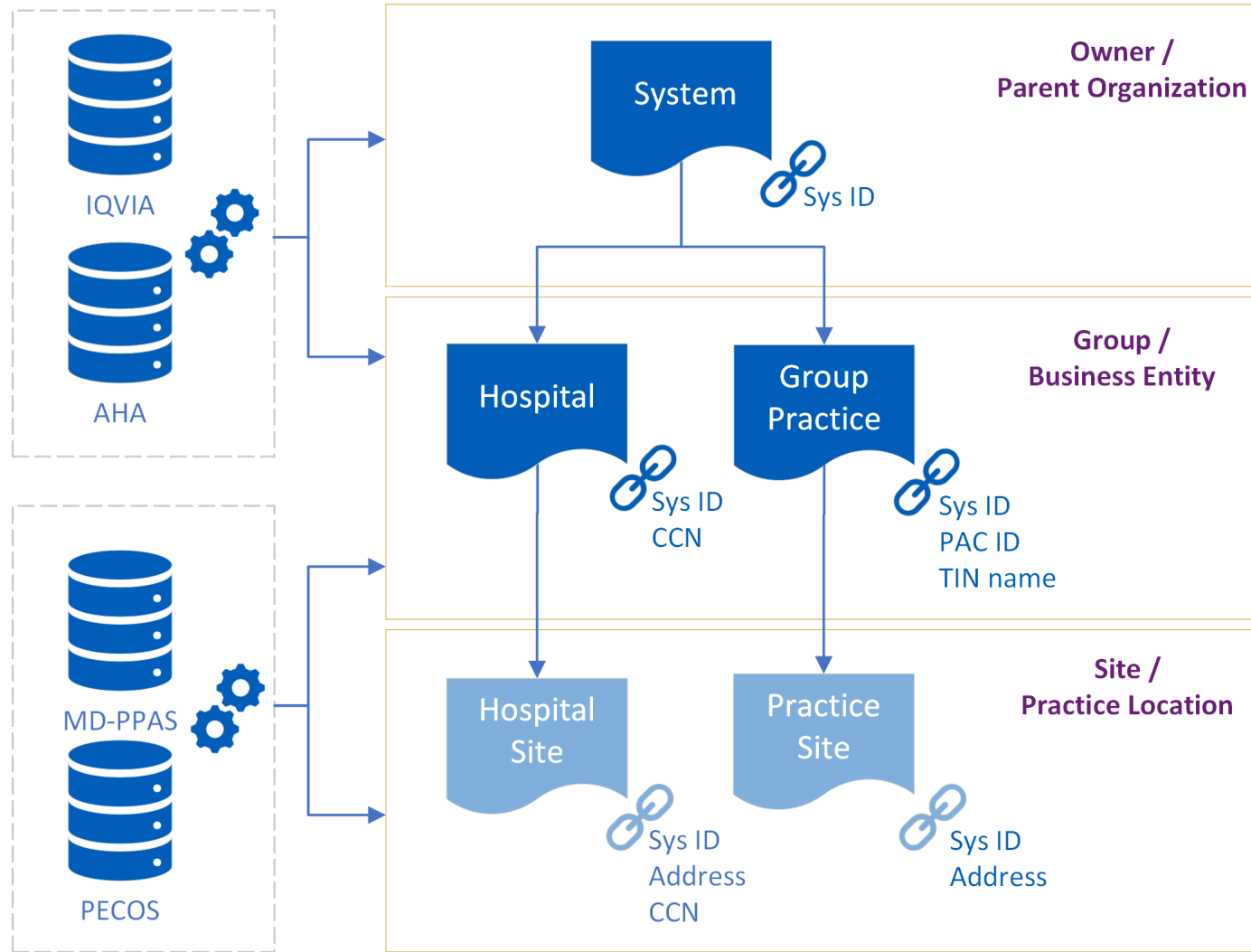


**Share of hospital beds in systems
Grew from 88 to 93%**



Tour of Compendium website resources

Data sources and file structure



List of Compendium files



- **System** file: A system-level file with one row per health system
 - Each system has a unique Compendium system ID that can link to other files
- Provider files
 - ▶ **Hospital** linkage file: A hospital-level file with one row per hospital.
 - ▶ **Group practice** linkage file: A group practice-level file with one row per group practice
 - The provider files include the Compendium system ID that links to the system file

Compendium of U.S. Health Systems files

| System-level file | | | | | |
|-------------------|-------------------------|-------|---------|-----------|----------------|
| System ID | System name | State | Doctors | Hospitals | Investor-owned |
| HSI00000008 | Adena Health | OH | 221 | 3 | 0 |
| HSI00000010 | Adventist Health System | FL | 2,558 | 34 | 0 |



| Provider-level files | | | | | | | | | |
|--------------------------------|-------------|--------------|-------|--------|-------------------------|-------------|--------------|---------|-----------|
| Hospital name | System ID | System name | State | CCN | Group practice name | System ID | System name | Doctors | NPs & PAs |
| Adena Regional Medical Center | HSI00000008 | Adena Health | OH | 360159 | Adena Medical Group | HSI00000008 | Adena Health | 145 | 76 |
| Greenfield Area Medical Center | HSI00000008 | Adena Health | OH | 361304 | Ross Emergency Group | HSI00000008 | Adena Health | 17 | 7 |
| Pike Community Hospital | HSI00000008 | Adena Health | OH | 361334 | Jackson Family Practice | HSI00000008 | Adena Health | 2 | 0 |

System files

- Cover 2016, 2018, 2020, and 2021
- Include system type, affiliated provider counts, and location
- Include a unique Compendium ID that links to the hospital and group practice linkage files
- Data sources: IQVIA OneKey and AHA Annual Survey

Health system attributes



- The number of:
 - ▶ Physicians (total and primary care)
 - ▶ Outpatient centers
 - ▶ Nursing homes
 - ▶ Hospitals (total and general acute care)
 - ▶ Hospital beds
 - ▶ Hospital discharges
 - ▶ Full-time-equivalent interns and residents
- Indicators for:
 - ▶ Multistate systems
 - ▶ System offers an insurance product (any product, Medicare Advantage, Medicaid managed care, Health Insurance Marketplace)

Indicators of health system types

- Safety net indicators
 - ▶ Includes hospital with a high Disproportionate Share Hospital patient percentage
 - ▶ Includes hospital with a high uncompensated care burden
 - Systemwide measure of uncompensated care burden
- Teaching intensity
 - ▶ Includes hospital with a major or very major teaching intensity
 - Systemwide measure of teaching intensity
- Degree to which the system serves children only
- Predominantly investor-owned

Compendium system file

| | A | B | C | D | E | F | G | H | I | J |
|----|---------------|--------------------------------------------|-------------------|------------------|-----------|--------|-----------|-----------|-----------|---------------|
| 1 | health_sys_id | health_sys_name | health_sys_city | health_sys_state | in_onekey | in_aha | onekey_id | aha_sysid | total_mds | prim_care_mds |
| 2 | HSI00000008 | Adena Health System | Chillicothe | OH | 1 | 1 | 17780403 | 895 | 341 | 104 |
| 3 | HSI00000010 | AdventHealth | Altamonte Springs | FL | 1 | 1 | 17773293 | 4165 | 2957 | 1056 |
| 4 | HSI00000011 | Adventist Health | Roseville | CA | 1 | 1 | 17773620 | 235 | 1725 | 647 |
| 5 | HSI00000012 | Adventist Healthcare | Gaithersburg | MD | 1 | 1 | 17773292 | 214 | 626 | 159 |
| 6 | HSI00000018 | Alameda Health System | Oakland | CA | 1 | 1 | 18283551 | 225 | 434 | 163 |
| 7 | HSI00000019 | Albany Medical Center | Albany | NY | 1 | 0 | 18202149 | | 1153 | 268 |
| 8 | HSI00000021 | Alecto Healthcare Services | Irvine | CA | 1 | 1 | 18394721 | 1020 | 64 | 15 |
| 9 | HSI00000025 | Allegheny Health Network | Pittsburgh | PA | 1 | 1 | 17773987 | 199 | 1839 | 538 |
| 10 | HSI00000026 | Allegiance Health Management | Shreveport | LA | 1 | 1 | 18226046 | 413 | 63 | 36 |
| 11 | HSI00000029 | Allina Health | Minneapolis | MN | 1 | 1 | 17773295 | 41 | 1772 | 866 |
| 12 | HSI00000032 | Altru Health System | Grand Forks | ND | 1 | 0 | 17830969 | | 253 | 122 |
| 13 | HSI00000034 | Anderson Regional Health System | Meridian | MS | 1 | 0 | 18359667 | | 103 | 35 |
| 14 | HSI00000036 | Ann and Robert H Lurie Children's Hospital | Chicago | IL | 1 | 0 | 17773934 | | 743 | 272 |
| 15 | HSI00000038 | Luminis Health | Annapolis | MD | 1 | 1 | 17830970 | 1048 | 520 | 150 |
| 16 | HSI00000041 | Appalachian Regional Healthcare | Lexington | KY | 1 | 1 | 17774074 | 145 | 262 | 102 |
| 17 | HSI00000042 | Appalachian Regional Healthcare | Boone | NC | 1 | 1 | 18197550 | 866 | 92 | 34 |
| 18 | HSI00000045 | Archbold Medical Center | Thomasville | GA | 1 | 1 | 17830971 | 104 | 96 | 23 |
| 19 | HSI00000046 | Ardent Health Services | Nashville | TN | 1 | 1 | 17847721 | 69 | 849 | 274 |
| 20 | HSI00000048 | Jefferson Health | Philadelphia | PA | 1 | 1 | 17773319 | 7775 | 3989 | 1202 |

Hospital linkage files

- Cover 2016, 2018, 2020, and 2021
- List hospitals and link to Compendium system files
 - ▶ They link to the system file using a unique Compendium ID
 - ▶ They also include CCN to link to external data sources
- Data sources: IQVIA OneKey and AHA Annual Survey

Hospital linkage file

| | A | B | C | D | E | F | G | I | J |
|----|------------------------|--------|------------------------------------|-----------------------------|-------------------|----------------|--------------|---------------|---------------------------|
| 1 | compendium_hospital_id | ccn | hospital_name | hospital_street | hospital_city | hospital_state | hospital_zip | health_sys_id | health_sys_name |
| 10 | CHSP00000019 | 140122 | Adventist Hinsdale Hospital | 120 North Oak Street | Hinsdale | IL | 60521 | HSI00000010 | AdventHealth |
| 11 | CHSP00000020 | 140304 | Adventist Bolingbrook Hospital | 500 Remington Boulevard | Bolingbrook | IL | 60440 | HSI00000010 | AdventHealth |
| 12 | CHSP00000023 | 140258 | Alexian Brothers Medical Center | 800 Biesterfield Road | Elk Grove Village | IL | 60007 | HSI00000055 | Ascension Health |
| 13 | CHSP00000024 | 140292 | Adventist Glenoaks Hospital | 701 Winthrop Avenue | Glendale Heights | IL | 60139 | HSI00000010 | AdventHealth |
| 14 | CHSP00000025 | 140290 | St. Alexius Medical Center | 1555 Barrington Road | Hoffman Estates | IL | 60169 | HSI00000055 | Ascension Health |
| 15 | CHSP00000027 | 421301 | Abbeville Area Medical Center | 420 Thomson Circle | Abbeville | SC | 29620 | HSI00000860 | Quorum Health Corporation |
| 16 | CHSP00000028 | 190034 | Abbeville General Hospital | 118 North Hospital Drive | Abbeville | LA | 70510 | HSI00000780 | Ochsner Health System |
| 17 | CHSP00000029 | 240057 | Abbott Northwestern Hospital | 800 East 28th Street | Minneapolis | MN | 55407 | HSI00000029 | Allina Health |
| 18 | CHSP00000030 | 454098 | Oceans Behavioral Hospital Abilene | 4225 Woods Pl | Abilene | TX | 79602 | | |
| 19 | CHSP00000031 | 450558 | Hendrick Medical Center South | 6250 Us Highway 83 | Abilene | TX | 79606 | HSI00000471 | Hendrick Health System |
| 20 | CHSP00000032 | 390231 | Abington Memorial Hospital | 1200 Old York Road | Abington | PA | 19001 | HSI00000048 | Jefferson Health |
| 21 | CHSP00000033 | 390012 | Lansdale Hospital | 100 Medical Campus Drive | Lansdale | PA | 19446 | HSI00000048 | Jefferson Health |
| 22 | CHSP00000034 | 141322 | Abraham Lincoln Memorial Hospital | 200 Stahlhut Drive | Lincoln | IL | 62656 | HSI00000648 | Memorial Health System |
| 23 | CHSP00000036 | 030094 | Abrazo Arrowhead Campus | 18701 North 67th Avenue | Glendale | AZ | 85308 | HSI00001066 | Tenet Healthcare |
| 24 | CHSP00000037 | 030030 | Abrazo Central Campus | 2000 West Bethany Home Road | Phoenix | AZ | 85015 | HSI00001066 | Tenet Healthcare |
| 25 | CHSP00000039 | 030083 | Abrazo Scottsdale Campus | 3929 East Bell Road | Phoenix | AZ | 85032 | HSI00001066 | Tenet Healthcare |
| 26 | CHSP00000040 | 030110 | Abrazo West Campus | 13677 West Mcdowell Road | Goodyear | AZ | 85395 | HSI00001066 | Tenet Healthcare |

Group practice linkage files: Background



- Cover 2016 and 2018
- List group practices and link to Compendium systems files
 - ▶ They include all group practices with 2+ physicians billing Medicare
 - ▶ They link the group practices and the physician NPIs billing those TINs to health systems
 - ▶ They also include PAC ID to link to external data sources

Group practice linkage files

- Data sources
 - ▶ Medicare Data on Provider Practice and Specialty (MD-PPAS)
 - ▶ Medicare Advantage data
 - ▶ Medicare fee-for-service claims
 - ▶ Medicare Provider Enrollment, Chain, and Ownership System (PECOS) data
 - ▶ IQVIA OneKey
 - ▶ Compendium hospital linkage file

Group practice linkage file

| | A | B | C | D | E | F |
|-----|----------------------------------------------|---------------|---------------|---------------------------|----------------------------------------------|---------------|
| 1 | tin_name | pecos_pac_ids | health_sys_id | health_sys_name | tin_name_md_ppas | state_md_ppas |
| 742 | Adventist Health St. Helena Ob/Gyn | 9234038209 | HSI00000011 | Adventist Health | Adventist Health St. Helena Ob/Gyn | CA |
| 743 | Adventist Health System Georgia Inc | 4486568037 | HSI00000010 | Adventist Health System | Adventist Health System Georgia Inc | GA |
| 744 | Adventist Health System/Sunbelt, Inc. | 6406849256 | HSI00000010 | Adventist Health System | Adventist Health System/Sunbelt, Inc. | FL |
| 745 | Adventist Health System-Sunbelt Inc | 0749232445 | HSI00000010 | Adventist Health System | Adventist Health System-Sunbelt Inc | FL |
| 746 | Adventist Healthcare Urgent Care Centers Inc | 0244559540 | HSI00000012 | Adventist Healthcare | Adventist Healthcare Urgent Care Centers Inc | MD |
| 747 | Adventist Midwest Health | 4486556727 | HSI00000010 | Adventist Health System | Adventist Midwest Health | IL |
| 748 | Adventist Midwest Health | 2769790401 | HSI00000010 | Adventist Health System | Adventist Midwest Health | IL |
| 749 | Adventist Physician Services Inc. | 4284631540 | HSI00000012 | Adventist Healthcare | Adventist Physician Services Inc. | MD |
| 750 | Advivum Anesthesiology Pc | 7416942891 | HSI00000935 | Saint Lukes Health System | Advivum Anesthesiology Pc | MO |
| 751 | Advocare Llc | 3678562188 | | | Advocare Llc | NJ |
| 752 | Advocate Health And Hospitals Corporation | 7810800935 | HSI00001277 | Advocate Aurora Health | Advocate Health And Hospitals Corporation | IL |

AHRQ Compendium website



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SHARE:

Comparative Health
System Performance
(CHSP) Initiative

About CHSP

Data Resources

**Compendium of U.S.
Health Systems**

Technical Documentation

Compendium of U.S. Health Systems

The **Compendium of U.S. Health Systems** includes information on U.S. health systems, defined in this analysis to include at least one hospital and at least one group of physicians providing comprehensive care, and who are connected with each other and with the hospital through common ownership or joint management. The Compendium is updated on a regular basis, with the newest files released in June 2023:

- [2021 Compendium](#) (New) ←
- [2020 Compendium](#) (New)
- [2018 Compendium](#)
- [2016 Compendium](#)

Accessing the Compendium on the AHRQ website



2021 Compendium Files

- **Excel File**—Your computer should automatically prompt you to open the file in a spreadsheet application to view the data.
 - [Compendium of U.S. Health Systems](#) (CSV, 77 KB)
 - [Compendium with searchable and sortable fields](#) (XLS, 94 KB)
- **Hospital Linkage File**—We recommend that Excel users download only the Excel version of the file. If Excel is used to open the CSV file, the program will automatically drop the zeros in fields with leading zeros.
 - [Excel](#) (554 KB)
 - [CSV file](#) (800 KB)
- **Technical Documentation**
 - [Technical Documentation Report](#) (PDF, 6 MB)
 - [Compendium Hospital Linkage File, Technical Documentation](#) (PDF, 469 KB)
 - [Appendix A. Non-Federal General Acute Care Flag](#) (PDF, 261 KB)
 - [Appendix B. Data Dictionary – Hospital Linkage File](#) (PDF, 262 KB)

Future Compendium updates

Compendium applications

Compendium as a springboard for research

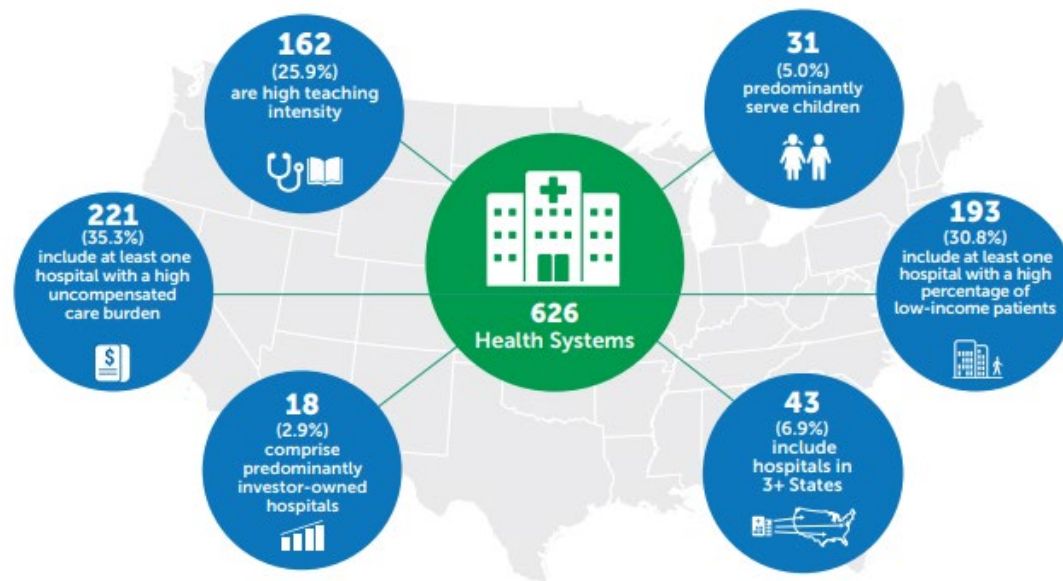


- Valuable as a standalone resource for examining **systems**
- Can link to other data sources, creating possibilities to study:
 - ▶ **Physicians** (for example, IQVIA OneKey, CMS MIPS)
 - ▶ **Hospitals** (for example, AHA, CMS Hospital Compare)
 - ▶ **Patients** (for example, claims and administrative data)
 - ▶ **Geography** (for example, AHRQ SDOH database, CDC Social Vulnerability Index)

Describe health systems

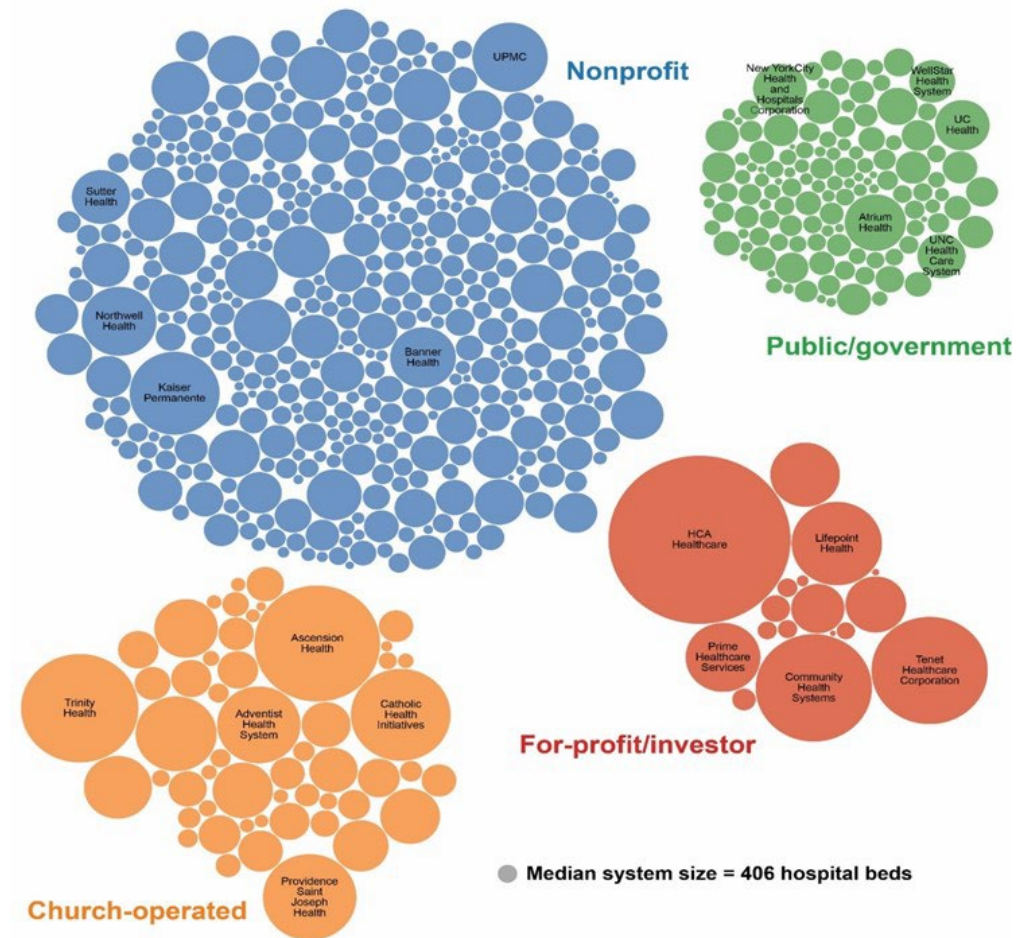
- Rich in system-level information
- Can shed light on health system characteristics nationally

By the end of 2016, there were 626 health systems* in the United States.



Link the Compendium to other data sources

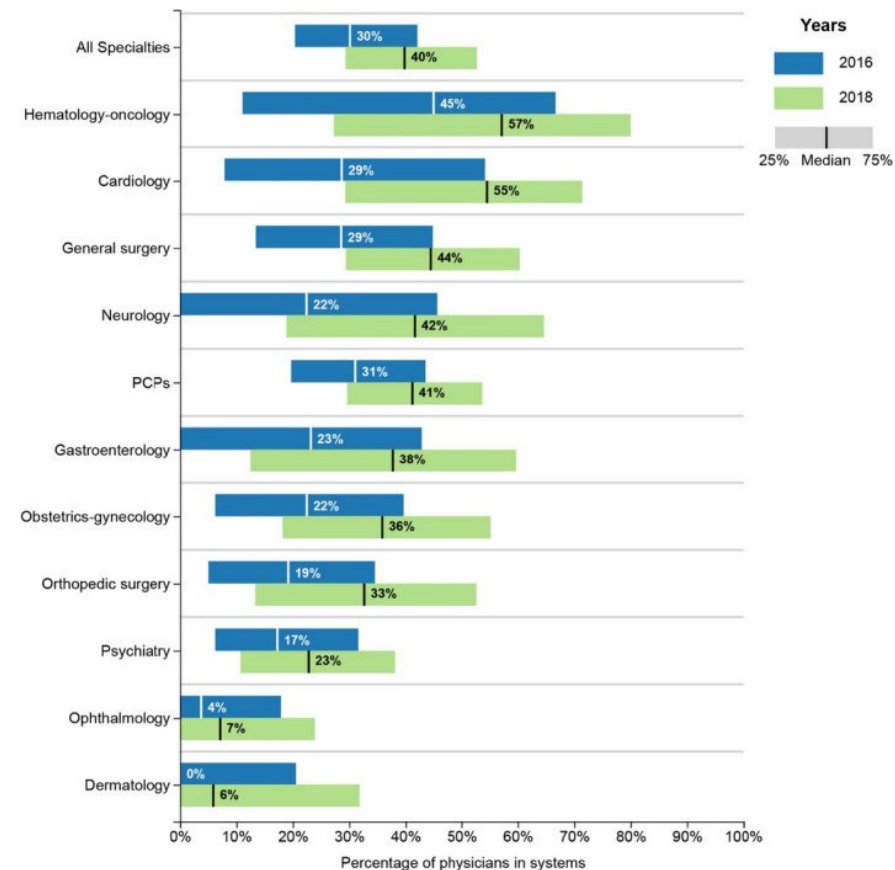
- Facilitates granular analysis on topics such as size and ownership:
 - ▶ What type of health system ownership is most common?
 - ▶ How large are health systems?
 - ▶ Does health system size vary by ownership type?



Analyze changes over time

- Facilitates analysis of health system **variation over time**

- ▶ How did physician integration with systems change from 2016 to 2018?
- ▶ Does physician alignment with systems vary by specialty?

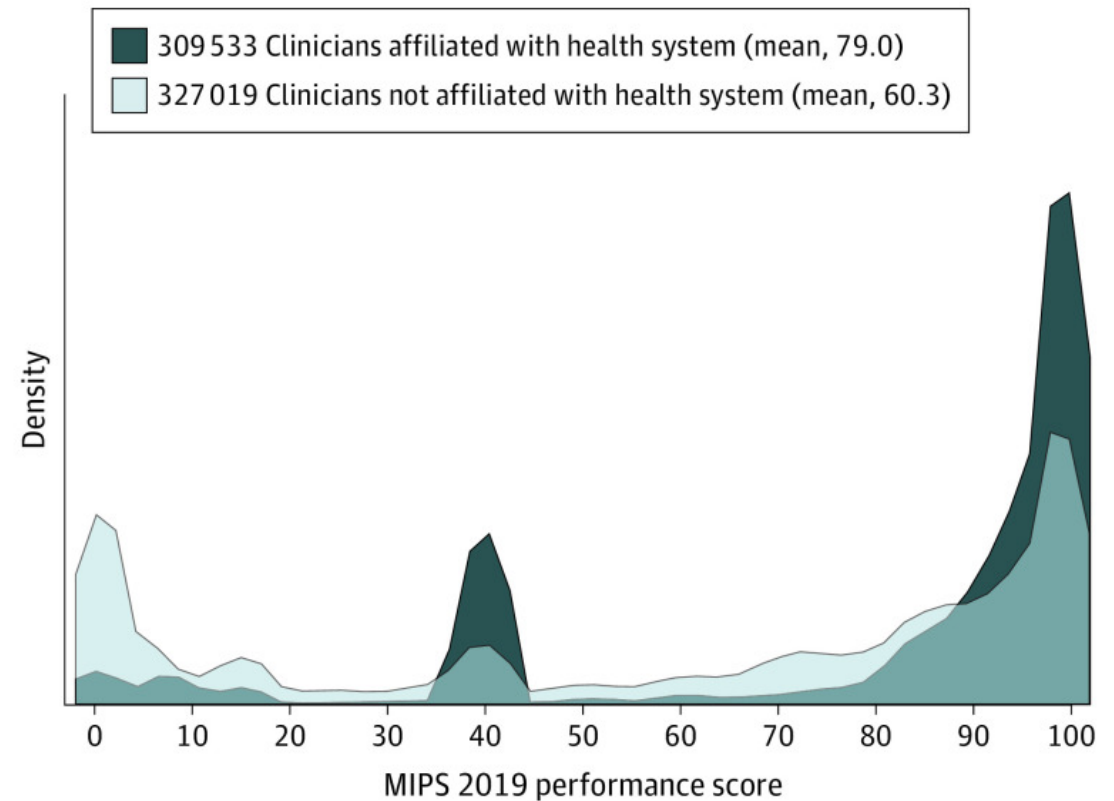


Kimme, L., M. Furukawa, D. Jones, R. Machta, J. Guo, and E. Rich. "Geographic Variation in the Consolidation of Physicians into Health Systems, 2016-2018." *Health Affairs*, vol. 40, no. 1, 2021.

Machta, R.M., D. Reschovsky, D.J. Jones, L. Kimme, M.F. Furukawa, and E.C. Rich. "Health System Integration with Physician Specialties Varies Across Markets and System Types." *Health Services Research*, vol. 55, suppl. 3, 2020.

Explore performance of physicians in health systems

- Linking to data from the **Merit-based Incentive Payment System (MIPS)** helped answer whether clinicians affiliated with health systems had better performance ratings than their peers



Test hypotheses about system performance

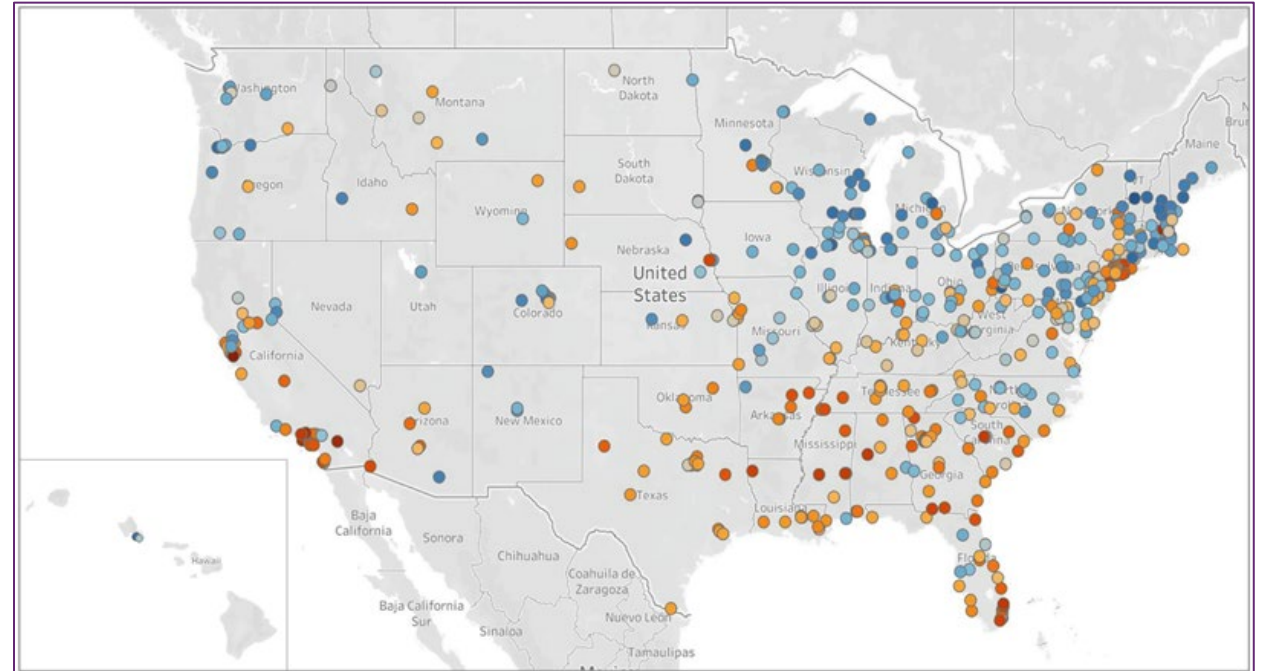


- Linking to **hospital cost and quality data from CMS** helped answer whether system providers perform better than nonsystem providers under an alternative payment model that incentivizes high-quality, cost-efficient care

| Outcomes | System hospitals | | Nonsystem hospitals |
|------------------------------------------------|--------------------|------------------------|---------------------|
| | Locally integrated | Not locally integrated | |
| Per-episode cost, mean | \$26 800.8 | \$29 814.9 | \$28 854.3 |
| HCAHPS patient experience survey measure, mean | 85.5 | 84.2 | 85.5 |
| THA/TKA complication measure, mean | 2.6 | 2.6 | 2.5 |

Illustrate patterns in low-value care

- Linking to Medicare fee-for-service administrative data and claims provided a view into system-level variation in receipt of low-value care



Questions and Answers

