100 TOP HOSPITALS: STUDY OVERVIEW AND RESEARCH FINDINGS

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THOMSON REUTERS
100 TOP HOSPITALS

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INTRODUCING THE 100 TOP HOSPITALS, 2011

Objective Research Yields Valuable Insights Into Performance

The Thomson Reuters 100 Top Hospitals® study is annual, quantitative research that identifies the hospitals with the best facility-wide performance. To evaluate hospital performance, our team of researchers — which includes epidemiologists, statisticians, physicians, and former hospital executives — uses public data sources to develop an independent and objective assessment. At the heart of this research is the 100 Top Hospitals National Balanced Scorecard[1], a set of measures that evaluate performance excellence in clinical care, patient perception of care, operational efficiency, and financial stability. To yield fair comparisons, hospitals are measured against peers of similar size and teaching status.

For 18 years, the 100 Top Hospitals research has helped hospital and health system leaders gain an objective comparison of their performance to similar hospitals and develop a carefully balanced plan to reach for excellence. The findings presented in this document give hospital leaders benchmarks for targeting top performance.

Each year, the relevant benchmarks and robust findings we assemble for the 100 Top Hospitals studies provide numerous examples of excellence, as evidenced in a number of published studies.[2–18] This year, our estimates found that if all Medicare inpatients received the same level of care as those in the 100 Top Hospitals winners across all categories:

- Nearly 116,000 additional patients would survive each year.
- More than 197,000 patient complications would be avoided annually.
- Expenses would decline by an aggregate $4.3 billion a year.
- The average patient stay would decrease by half a day.

If the same standards were applied to all inpatients, the impact would be even greater. You can find more details about how the 100 Top Hospitals are outperforming their peers in the Findings section of this document.

MEASURING CURRENT PERFORMANCE AND IMPROVEMENT TRENDS

To understand what makes a top performer, we also study the direction of performance change of all hospitals in the study over time. Through this research, we can see that in recent years (2005 through 2009), all U.S. hospitals have made noteworthy performance improvements in patient survival, adherence to core measures, and shortening patient stays, as follows:

- More than half of the hospitals studied lowered their mortality rates.
- Nearly all (86 percent) improved their core measures score.
- More than a third (41 percent) decreased their average patient stay.

These gains were made despite industry-wide increases in patient acuity.

In a competitive, ever-changing, and highly regulated environment like the hospital industry, being a top performer is not enough. Hospital leaders must pay close attention to their competition and better demonstrate their value to consumers and payers. They must also understand what areas still need improvement and find ways to keep improving. In addition to the current 100 Top Hospital winners, this study also names our Everest Award winners. This award honors a special group of the 100 Top Hospitals award winners who have achieved both the highest recent national performance and the fastest five-year rates of improvement. This year, only six hospitals received this award. See the special Everest Award section of this document for more information on the award's methodology and a list of the winners.

To provide hospitals with a clear view of relative long-term improvement and current performance compared with national peers, Thomson Reuters 100 Top Hospital program also produces the 100 Top Hospitals Performance Matrix. This visual and data-rich two-dimensional chart helps hospital executives identify opportunities to make the greatest impact and drive change in their organization. The matrix is part of the National Benchmarks report, available for all hospitals included in the study. It provides a detailed look at the performance measure scores and graphical analysis for an individual hospital, and compares its progress with the latest 100 Top Hospitals benchmarks and similar hospitals in its peer group.

The 100 Top Hospitals program also looks at relative hospital performance within health systems, states, and markets. Customized reports and Performance Matrix views allow executives to assess the value they are delivering to communities, the public, and subscribers.

AN OBJECTIVE EVALUATION OF PERFORMANCE

For 18 years, the 100 Top Hospitals program has used independent and objective research to guide hospitals and health systems to improve their performance. Hospitals do not apply and winners do not pay to market this honor. To increase understanding of trends in specific areas of the industry, the program includes a range of studies and reports:

- 100 Top Hospitals and Everest Award, described here.
- 50 Top Cardiovascular Hospitals study, identifying hospitals that demonstrate the highest performance in hospital cardiovascular services.
- 10 Top Health Systems, a groundbreaking study introduced in 2009 that provides an objective measure of health system performance as a sum of its parts.
- A variety of custom benchmark reports designed to help executives understand how their performance compares with their peers.

You can read more about these studies, and see lists of all winners, by visiting *100tophospitals.com*.

ABOUT THOMSON REUTERS

Thomson Reuters is the world's leading source of intelligent information for businesses and professionals. We combine industry expertise with innovative technology to deliver critical information to leading decision makers in the financial, legal, tax and accounting, healthcare, science, and media markets, powered by the world's most trusted news organization. With headquarters in New York and major operations in London and Eagan, Minnesota, Thomson Reuters employs 55,000 people and operates in over 100 countries.

THE EVEREST AWARD

The 100 Top Hospitals® Everest Award honors hospitals that have both the highest current performance and the fastest long-term improvement.

This award recognizes the boards, executives, and medical staff leaders who have developed and executed strategies that drove the highest rate of improvement, resulting in the highest performance in the country at the end of five years. Hospitals that win this award are setting national benchmarks for both long-term improvement and top one-year performance.

The Everest Award winners are a special group of the 2011 100 Top Hospitals award winners that, in addition to achieving benchmark status for one year, have simultaneously set national benchmarks for the fastest long-term improvement on our national balanced scorecard.

THE 2011 EVEREST AWARD WINNERS

Thomson Reuters is proud to present the winners of the second annual Thomson Reuters 100 Top Hospitals Everest Award.

2011 Everest Award Winners*

MEDICARE ID	HOSPITAL NAME	LOCATION
010065	Russell Medical Center	Alexander City, AL
140281	Northwestern Memorial Hospital	Chicago, IL
190036	Ochsner Medical Center	New Orleans, LA
220110	Brigham and Women's Hospital	Boston, MA
230100	St. Joseph Health System	Tawas City, MI
490018	Augusta Health	Fishersville, VA

* Order of hospitals does not reflect performance rankings. Hospitals are ordered by Medicare ID.

VALUE TO THE HEALTHCARE INDUSTRY

Leaders making critical decisions in an economic downturn and an increasingly transparent environment must have more sophisticated intelligence that provides clearer insight into the complexity of changing organizational performance. They must also balance short- and long-term goals to drive continuous gains in performance and value. By comparing individual hospital and health system performance with integrated national benchmarks for highest achievement and improvement, we provide unique new insights for making smarter decisions that will achieve their mission and consistently increase value to the community.

VALUE TO HOSPITALS AND HEALTH SYSTEMS

Transparency presents hospital boards and CEOs with a very public challenge to increase the value of core services to their communities. Providing real value is not a one-time event – it is a continuous process of increasing worth over time. Leaders of hospitals and health systems must develop strategies to *continuously* strengthen both the organization and the value of their services to the community.

Integrating national benchmarks for highest achievement with national benchmarks for fastest long-term improvement radically increases the value of objective business information available for strategy development and decision making. Comparing hospital or health system performance to these integrated benchmarks allows leaders to review the effectiveness of long-term strategies that led to current performance.

This integrated information enables boards and CEOs to better answer multi-dimensional questions, such as:

- Did our long-term strategies result in a stronger hospital across all performance areas?
- Did our strategies drive improvement in some areas but inadvertently cause deteriorating performance in others?
- What strategies will help us increase the rate of improvement in the right areas to come closer to national performance levels?
- What incentives do we set for management to achieve the desired improvement more quickly?
- Will the investments we're considering help us achieve improvement goals for the hospital or health system?
- Can we quantify the long- and short-term increases in value our hospital has provided to our community?

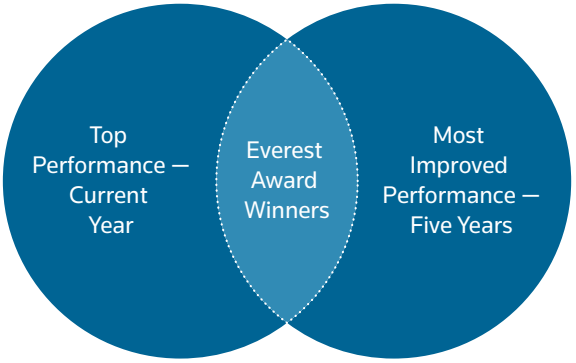
In this special Everest Award section, you will find the list of winners and a description of the methodology we used to select the winners.

HOW WE SELECT THE EVEREST AWARD WINNERS

Winners of the 100 Top Hospitals Everest Award are setting national benchmarks for both long-term (five-year) improvement and highest one-year performance on the study's balanced scorecard. Everest Award winners are selected from among the new 100 Top Hospitals award winners. The national award and the Everest award are based on a set of measures that reflect highly effective performance across the whole organization.

Our methodology for selecting the Everest Award winners can be summarized in three main steps:

1. Selecting the annual 100 Top Hospitals award winners using our time-tested objective methodology* based on publicly available data and a balanced scorecard of performance measures.
2. Using our multi-year trending methodology to select the 100 hospitals that have shown the fastest, most consistent five-year improvement rates on the same balanced scorecard of performance measures.†
3. Aligning these two lists of hospitals and looking for overlap; those that ranked in the top 100 of *both* lists are the Everest Award winners.



Combining these two methodologies yields a very select group of Everest Award winners; the number of winners will vary every year, based solely on performance. This year, only six hospitals achieved this status.

Data Sources

As with all of the 100 Top Hospitals awards, our methodology is objective and all data come from trusted public sources. We build a database of short-term, acute-care, nonfederal U.S. hospitals that treat a broad spectrum of patients. The primary data sources are the Medicare Provider Analysis and Review (MedPAR) dataset and the Medicare Cost Report. We use the five most recent years of data available — for this year's studies, federal fiscal years 2005–2009.

Several other datasets are also used. Core measures and patient satisfaction (Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey) data are from the Centers for Medicare and Medicaid Services (CMS) Hospital Compare dataset. Residency program information, used in classifying teaching hospitals, is from the American Medical Association (Accreditation Council for Graduate Medical Education (ACGME)-accredited programs) and the American Osteopathic Association (AOA).

* For full details on how the 100 Top Hospitals winners are selected, please see the Methodology section of this document.
† This methodology is based on our previous 100 Top Hospitals: Performance Improvement Leaders study and award.

After excluding hospitals with data that would skew study results (e.g., specialty hospitals), we have a database study group of nearly 3,000 hospitals. Because bed size and teaching status have a profound effect on the types of patients a hospital treats and the scope of services it provides, we assigned each hospital in our study database to one of five comparison groups, or classes, according to its size and teaching status (for definitions of each group, see the Methodology section):

- Major Teaching Hospitals
- Teaching Hospitals
- Large Community Hospitals
- Medium Community Hospitals
- Small Community Hospitals

To judge hospitals fairly and compare them to like hospitals, we use these classes for all scoring and ranking of hospitals to determine winners. For more information on how we build the database, please see the Methodology section of this document.

Performance Measures

Both the 100 Top Hospitals award and the Everest Award are based on a set of measures that reflect highly effective performance across the whole organization, including board members, medical staff, management, and nursing. These measures include patient outcomes and safety, national treatment standards (core measures), patient satisfaction, operational efficiency, and financial stability. The 10 measures used to select the 2011 winners are:

1. Risk-adjusted mortality index (in-hospital)
2. Risk-adjusted complications index
3. Risk-adjusted patient safety index
4. Core measures mean percent
5. 30-day risk-adjusted mortality rate for acute myocardial infarction (AMI), heart failure, and pneumonia[§]
6. 30-day risk-adjusted readmission rate for AMI, heart failure, and pneumonia[§]
7. Severity-adjusted average length of stay
8. Case mix- and wage-adjusted inpatient expense per discharge
9. Adjusted operating profit margin
10. HCAHPS score (patient rating of overall hospital performance)[§]

For full details, including calculation and scoring methods, please see the Methodology section.

Final Selection: Ranking and Five-Year Trending

To select the 100 Top Hospitals award winners, we rank hospitals on the basis of their current-year performance on each of the 10 measures relative to other hospitals in their comparison group. We then sum each hospital's performance-measure rankings and re-rank them, overall, to arrive at a final rank for the hospital. (The 30-day rates by patient condition each receive a weight of one-sixth. All other measures receive a weight of one.) The hospitals with the best final ranks in each comparison group are selected as the 100 Top Hospitals award winners.

Separately, for every hospital in the study, we calculate a t-statistic that measures five-year performance improvement on each of the seven performance measures.[§] This statistic measures both the direction and magnitude of change in performance, and the statistical significance of that change. Within the five comparison groups, we rank hospitals on the basis of their performance improvement t-statistic on each of the seven measures relative to other hospitals in their group. We then sum each hospital's performance-measure rankings and re-rank them, overall, to arrive at a final rank for the hospital. The hospitals with the best final rank in each comparison group are selected as the performance improvement benchmark hospitals.

As our final step, we align the two groups of benchmark hospitals and look for overlap. Those that are identified as benchmarks on *both* lists are the Everest Award winners.

§ Because these measures were new to the study last year and we do not have five years of data for them, they are not included in the five-year trending step of the Everest Award winners selection process.

AWARD WINNERS

Thomson Reuters is proud to present the 2011 100 Top Hospitals® award winners, listed on the following pages. We stratify winners by five separate peer comparison groups: major teaching, teaching, large community, medium community, and small community hospitals.

For full details on these peer groups and the process we use to select the benchmark hospitals, please see the Methodology section of this document.

Major Teaching Hospitals*

MEDICARE ID	HOSPITAL	LOCATION
140010	NorthShore University HealthSystem	Evanston, IL
140182	Advocate Illinois Masonic Medical Center	Chicago, IL
140223	Advocate Lutheran General Hospital	Park Ridge, IL
140281	*Northwestern Memorial Hospital*	Chicago, IL
190036	*Ochsner Medical Center*	New Orleans, LA
220036	Caritas St. Elizabeth's Medical Center	Boston, MA
220071	Massachusetts General Hospital	Boston, MA
220077	Baystate Medical Center	Springfield, MA
220086	Beth Israel Deaconess Medical Center	Boston, MA
220110	*Brigham and Women's Hospital*	Boston, MA
240061	Mayo Clinic — Rochester Methodist Hospital	Rochester, MN
360137	University Hospitals Case Medical Center	Cleveland, OH
360152	Doctors Hospital	Columbus, OH
390006	Geisinger Medical Center	Danville, PA
440039	Vanderbilt University Medical Center	Nashville, TN

* Order of hospitals does not reflect performance ranking. Hospitals are ordered by Medicare ID. Everest Award winners are italicized.

Teaching Hospitals*

MEDICARE ID	HOSPITAL	LOCATION
050424	Scripps Green Hospital	La Jolla, CA
140091	Carle Foundation Hospital	Urbana, IL
140135	Decatur Memorial Hospital	Decatur, IL
140186	Riverside Medical Center	Kankakee, IL
150058	Memorial Hospital & Health System	South Bend, IN
150084	St. Vincent Indianapolis Hospital	Indianapolis, IN
160064	Mercy Medical Center North Iowa	Mason City, IA
180035	St. Elizabeth Healthcare	Edgewood, KY
220176	Saint Vincent Hospital	Worcester, MA
230017	Bronson Methodist Hospital	Kalamazoo, MI
230038	Spectrum Health Hospital Group	Grand Rapids, MI
230097	Munson Medical Center	Traverse City, MI
230269	Beaumont Hospital, Troy	Troy, MI
360006	Riverside Methodist Hospital	Columbus, OH
360077	Fairview Hospital	Cleveland, OH
360079	Kettering Medical Center	Kettering, OH
360084	Aultman Hospital	Canton, OH
360134	Good Samaritan Hospital	Cincinnati, OH
390063	UPMC Hamot	Erie, PA
390079	Robert Packer Hospital	Sayre, PA
390139	Bryn Mawr Hospital	Bryn Mawr, PA
450184	Memorial Hermann Hospital System	Houston, TX
450788	Corpus Christi Medical Center	Corpus Christi, TX
520087	Gundersen Lutheran Health System	La Crosse, WI
520089	Meriter Hospital	Madison, WI

* Order of hospitals does not reflect performance ranking. Hospitals are ordered by Medicare ID. Everest Award winners are italicized.

Large Community Hospitals*

MEDICARE ID	HOSPITAL	LOCATION
100044	Martin Memorial Medical Center	Stuart, FL
140213	Silver Cross Hospital	Joliet, IL
140231	Edward Hospital	Naperville, IL
140242	Central DuPage Hospital	Winfield, IL
140280	Trinity Rock Island	Rock Island, IL
140288	Advocate Good Samaritan Hospital	Downers Grove, IL
150125	Community Hospital	Munster, IN
220033	Beverly Hospital	Beverly, MA
230092	Allegiance Health	Jackson, MI
260068	Boone Hospital Center	Columbia, MO
260108	Missouri Baptist Medical Center	St. Louis, MO
360039	Genesis HealthCare System	Zanesville, OH
360155	Southwest General Health Center	Middleburg Heights, OH
440082	Saint Thomas Hospital	Nashville, TN
440091	Memorial Health Care System	Chattanooga, TN
440161	Centennial Medical Center	Nashville, TN
450102	Trinity Mother Frances Hospital	Tyler, TX
450137	Baylor All Saints Medical Center at Fort Worth	Fort Worth, TX
450431	St. David's Medical Center	Austin, TX
450801	CHRISTUS St. Michael Health System	Texarkana, TX

* Order of hospitals does not reflect performance ranking. Hospitals are ordered by Medicare ID. Everest Award winners are italicized.

Medium Community Hospitals*

MEDICARE ID	HOSPITAL	LOCATION
010100	Thomas Hospital	Fairhope, AL
050426	West Anaheim Medical Center	Anaheim, CA
070020	Middlesex Hospital	Middletown, CT
100289	Cleveland Clinic Florida	Weston, FL
150048	Reid Hospital & Health Care Services	Richmond, IN
150112	Columbus Regional Hospital	Columbus, IN
180143	Saint Joseph East	Lexington, KY
190144	Minden Medical Center	Minden, LA
220105	Winchester Hospital	Winchester, MA
230072	Holland Hospital	Holland, MI
240115	Mercy Hospital	Coon Rapids, MN
360001	Mercy Hospital Anderson	Cincinnati, OH
360056	Mercy Hospital Fairfield	Fairfield, OH
360095	Blanchard Valley Hospital	Findlay, OH
360236	Mercy Hospital Clermont	Batavia, OH
360239	Sycamore Medical Center	Miamisburg, OH
390153	Paoli Hospital	Paoli, PA
450847	Memorial Hermann Katy Hospital	Katy, TX
490018	*Augusta Health*	Fishersville, VA
520035	Aurora Sheboygan Memorial Medical Center	Sheboygan, WI

* Order of hospitals does not reflect performance ranking. Hospitals are ordered by Medicare ID. Everest Award winners are italicized.

Small Community Hospitals*

MEDICARE ID	HOSPITAL	LOCATION
010036	Andalusia Regional Hospital	Andalusia, AL
010065	*Russell Medical Center*	Alexander City, AL
030033	Payson Regional Medical Center	Payson, AZ
050042	St. Elizabeth Community Hospital	Red Bluff, CA
050537	Sutter Davis Hospital	Davis, CA
150133	Kosciusko Community Hospital	Warsaw, IN
180025	Flaget Memorial Hospital	Bardstown, KY
180050	Harlan ARH Hospital	Harlan, KY
230035	Spectrum Health United Memorial	Greenville, MI
230069	St. Joseph Mercy Livingston Hospital	Howell, MI
230080	Central Michigan Community Hospital	Mount Pleasant, MI
230081	Mercy Hospital Cadillac	Cadillac, MI
230100	*St. Joseph Health System*	Tawas City, MI
260074	Moberly Regional Medical Center	Moberly, MO
370006	Ponca City Medical Center	Ponca City, OK
440056	St. Mary's Jefferson Memorial Hospital	Jefferson City, TN
440081	LeConte Medical Center	Sevierville, TN
450372	Baylor Medical Center at Waxahachie	Waxahachie, TX
450848	Memorial Hermann Sugar Land Hospital	Sugar Land, TX
460023	American Fork Hospital	American Fork, UT

* Order of hospitals does not reflect performance ranking. Hospitals are ordered by Medicare ID. Everest Award winners are italicized.

FINDINGS

100 Top Hospitals® outperform their peers by demonstrating balanced excellence — operating effectively across all key functional areas. In this section, we will detail:

- Winner versus peer performance on the 100 Top Hospitals study's 10 performance measures
- Differences in performance of the study's five hospital comparison groups: major teaching; teaching; and large, medium, and small community hospitals
- New research on how the 100 Top Hospitals winners are performing on some outpatient care standards
- How regional trends influence performance, and how the Midwest hospitals continue to dominate our list of winners
- How all the hospitals in our study are faring in their efforts to improve performance over time:
  - More than half of the hospitals studied lowered their mortality rates.
  - Nearly all (86 percent) improved their core measures score.
  - More than a third (41 percent) decreased their average patient stay.
- Trends showing individual performance measure trends for the hospitals with the best long-term performance improvement

HOW ARE THE WINNERS OUTPERFORMING THEIR PEERS?

In this section, we show how the 100 Top Hospitals performed within their comparison groups, or classes (major teaching and teaching hospitals; and large, medium, and small community hospitals), compared with non-winning peers. For performance measure details and definitions of each class, please see the Methodology section.

In the tables below, data for the 100 Top Hospitals award winners are labeled Benchmark, and data for all hospitals, excluding award winners, are labeled Peer Group. In columns labeled Benchmark Compared with Peer Group (Tables 1-6), we calculate the actual and percentage difference between the benchmark hospital scores and the peer group scores. We found:

Quality and clinical performance

- Survival is improving and more complications are being avoided at the winning hospitals. In this study year, the winners had a median risk-adjusted mortality rate of 0.91 and a median risk-adjusted complications rate of 0.91, meaning they managed 9 percent fewer deaths and 9 percent fewer complications than expected, given patient severity (Table 1).
- Winning hospitals had far better patient safety scores than their peers. The winners' median patient safety index of 0.84 tells us that they had 16 percent fewer adverse patient safety events than expected. They also follow core measures more closely than their peers (Table 1).
- Winners may fare better in a reform-minded pay-for-performance structure: Their 30-day mortality and 30-day readmission rates were lower than their peers' (Table 1).

Financial performance

- Profits at the top hospitals were substantially higher than at non-winners, and the gap has grown over the last several years of the study. The winning hospitals had a median operating profit margin of 11.6 percent; non-winners had a median of only 3.2 percent (Table 1).
- Winning hospitals are keeping expenses in line: Their median adjusted inpatient expense per discharge was nearly 8 percent lower than their peers' (Table 1).

Winners versus their comparison group peers:

- Profit margins vary widely among the 100 Top Hospitals comparison groups. Large community and major teaching hospitals had the lowest margins, while medium-sized and small hospitals had much higher margins (Tables 2 and 4-6).
- The medium-sized community winning hospitals had the highest operating profit margins of any group – 16.5 percent. The small community hospital winners were a close second, with a median 15.4 percent operating profit margin (Tables 5 and 6).
- The smallest hospitals had some of the best patient outcomes (lowest mortality and complications rates, and best patient safety indices), combined with good efficiencies (the shortest average length of stay (ALOS) and lowest expenses) (Table 6).
- The small community hospitals had stand-out performance, both when compared with their peers and with the other comparison groups. Their mortality, complications, and patient safety indices; LOS; and expenses were better than other groups. And for all these measures, they outperformed their peers more than any other hospital group (Table 6).
- In most measures of performance, the winners in the medium-sized community hospital group had scores just below those of the small community hospital winners (Table 5).

TABLE 1: National Performance Comparisons (All Classes)

PERFORMANCE MEASURE	MEDIANS[1]		BENCHMARK COMPARED WITH PEER GROUP		
	CURRENT BENCHMARK	PEER GROUP OF U.S. HOSPITALS	ACTUAL	PERCENT	
Mortality Index[2]	0.91	0.99	0.08	8.37%	lower mortality
Complications Index[2]	0.91	1.03	0.12	11.31%	lower complications
Patient Safety Index[2]	0.84	0.97	0.13	13.78%	better patient safety
Core Measures Mean Percent (%)	96.2	94.5	1.7	n/a[3]	better core measure performance
30-Day Mortality Rate (%)	12.3	12.9	0.7	n/a[3]	lower 30-day mortality
30-Day Readmission Rate (%)	20.6	21.0	0.4	n/a[3]	lower 30-day readmissions
Average Length of Stay (days)	4.60	5.04	0.44	8.82%	shorter ALOS
Expense per Adjusted Discharge ($)	5,497	5,959	462	7.75%	lower expenses
Operating Profit Margin (%)	11.6	3.2	8.4	n/a[3]	higher profitability
HCAHPS Score	264	255	9	3.53%	higher hospital rating

1. Data are as of 2009 unless otherwise noted. Median values reflect rounding. Performance measure definitions can be found in the Methodology section.
2. Based on national norms, ratings greater than 1.0 indicate more adverse events than expected; ratings less than 1.0 indicate fewer. See Appendix C for more details.
3. We do not calculate percentage difference for this measure. See Appendix C for explanation.

TABLE 2: Major Teaching Hospital Performance Comparisons

PERFORMANCE MEASURE	MEDIANS[1]		BENCHMARK COMPARED WITH PEER GROUP		
	CURRENT BENCHMARK	PEER GROUP OF U.S. HOSPITALS	ACTUAL	PERCENT	
Mortality Index[2]	0.95	1.00	0.05	4.94%	lower mortality
Complications Index[2]	0.95	1.02	0.07	6.70%	lower complications
Patient Safety Index[2]	0.85	1.00	0.15	15.32%	better patient safety
Core Measures Mean Percent (%)	95.8	93.8	2.1	n/a[3]	better core measure performance
30-Day Mortality Rate (%)	11.5	12.5	1.0	n/a[3]	lower 30-day mortality
30-Day Readmission Rate (%)	22.1	22.0	0.1	n/a[3]	lower 3-day readmissions
Average Length of Stay (days)	4.71	5.27	0.56	10.63%	shorter ALOS
Expense per Adjusted Discharge ($)	7,168	7,350	182	2.47%	lower expenses
Operating Profit Margin (%)	7.2	2.3	5.0	n/a[3]	higher profitability
HCAHPS Score	261	253	8	3.16%	higher hospital rating

1. Data are as of 2009 unless otherwise noted. Median values reflect rounding. Performance measure definitions can be found in the Methodology section.
2. Based on national norms, ratings greater than 1.0 indicate more adverse events than expected; ratings less than 1.0 indicate fewer. See Appendix C for more details.
3. We do not calculate percentage difference for this measure. See Appendix C for explanation.

TABLE 3: Teaching Hospital Performance Comparisons

PERFORMANCE MEASURE	MEDIANS[1]		BENCHMARK COMPARED WITH PEER GROUP		
	CURRENT BENCHMARK	PEER GROUP OF U.S. HOSPITALS	ACTUAL	PERCENT	
Mortality Index[2]	0.92	0.99	0.07	7.08%	lower mortality
Complications Index[2]	0.94	1.01	0.06	6.36%	lower complications
Patient Safety Index[2]	0.92	0.99	0.07	7.32%	better patient safety
Core Measures Mean Percent (%)	95.8	94.8	1.0	n/a[3]	better core measure performance
30-Day Mortality Rate (%)	12.0	12.5	0.5	n/a[3]	lower 30-day mortality
30-Day Readmission Rate (%)	19.9	20.8	0.9	n/a[3]	lower 30-day readmissions
Average Length of Stay (days)	4.66	5.16	0.50	9.63%	shorter ALOS
Expense per Adjusted Discharge ($)	5,519	5,996	478	7.96%	lower expenses
Operating Profit Margin (%)	11.5	3.7	7.8	n/a[3]	higher profitability
HCAHPS Score	266	255	12	4.52%	higher hospital rating

1. Data are as of 2009 unless otherwise noted. Median values reflect rounding. Performance measure definitions can be found in the Methodology section.
2. Based on national norms, ratings greater than 1.0 indicate more adverse events than expected; ratings less than 1.0 indicate fewer. See Appendix C for more details.
3. We do not calculate percentage difference for this measure. See Appendix C for explanation.

TABLE 4: Large Community Hospital Performance Comparisons

PERFORMANCE MEASURE	MEDIANS[1]		BENCHMARK COMPARED WITH PEER GROUP		
	CURRENT BENCHMARK	PEER GROUP OF U.S. HOSPITALS	ACTUAL	PERCENT	
Mortality Index[2]	0.92	1.00	0.09	8.66%	lower mortality
Complications Index[2]	0.92	1.02	0.10	9.52%	lower complications
Patient Safety Index[2]	0.83	1.00	0.17	17.02%	better patient safety
Core Measures Mean Percent (%)	96.1	95.1	1.0	n/a[3]	better core measure performance
30-Day Mortality Rate (%)	12.0	12.6	0.6	n/a[3]	lower 30-day mortality
30-Day Readmission Rate (%)	20.7	20.9	0.2	n/a[3]	lower 30-day readmissions
Average Length of Stay (days)	4.81	5.24	0.43	8.15%	shorter ALOS
Expense per Adjusted Discharge ($)	5,516	5,931	416	7.01%	lower expenses
Operating Profit Margin (%)	6.4	4.8	1.6	n/a[3]	higher profitability
HCAHPS Score	265	255	10	3.73%	higher hospital rating

1. Data are as of 2009 unless otherwise noted. Median values reflect rounding. Performance measure definitions can be found in the Methodology section.
2. Based on national norms, ratings greater than 1.0 indicate more adverse events than expected; ratings less than 1.0 indicate fewer. See Appendix C for more details.
3. We do not calculate percentage difference for this measure. See Appendix C for explanation.

TABLE 5: Medium-Sized Community Hospital Performance Comparisons

PERFORMANCE MEASURE	MEDIANS[1]		BENCHMARK COMPARED WITH PEER GROUP		
	CURRENT BENCHMARK	PEER GROUP OF U.S. HOSPITALS	ACTUAL	PERCENT	
Mortality Index[2]	0.89	0.99	0.11	10.74%	lower mortality
Complications Index[2]	0.89	1.01	0.12	12.11%	lower complications
Patient Safety Index[2]	0.79	0.98	0.19	19.36%	better patient safety
Core Measures Mean Percent (%)	97.2	94.8	2.4	n/a[3]	better core measure performance
30-Day Mortality Rate (%)	12.8	12.9	0.1	n/a[3]	lower 30-day mortality
30-Day Readmission Rate (%)	20.5	21.0	0.5	n/a[3]	lower 30-day readmissions
Average Length of Stay (days)	4.50	5.20	0.70	13.38%	shorter ALOS
Expense per Adjusted Discharge ($)	5,272	5,834	561	9.62%	lower expenses
Operating Profit Margin (%)	16.5	4.0	12.4	n/a[3]	higher profitability
HCAHPS Score	262	254	8	3.15%	higher hospital rating

1. Data are as of 2009 unless otherwise noted. Median values reflect rounding. Performance measure definitions can be found in the Methodology section.
2. Based on national norms, ratings greater than 1.0 indicate more adverse events than expected; ratings less than 1.0 indicate fewer. See Appendix C for more details.
3. We do not calculate percentage difference for this measure. See Appendix C for explanation.

TABLE 6: Small Community Hospital Performance Comparisons

PERFORMANCE MEASURE	MEDIANS[1]		BENCHMARK COMPARED WITH PEER GROUP		
	CURRENT BENCHMARK	PEER GROUP OF U.S. HOSPITALS	ACTUAL	PERCENT	
Mortality Index[2]	0.85	0.99	0.15	14.67%	lower mortality
Complications Index[2]	0.75	1.00	0.25	25.39%	lower complications
Patient Safety Index[2]	0.72	0.97	0.25	25.76%	better patient safety
Core Measures Mean Percent (%)	96.2	93.7	2.5	n/a[3]	better core measure performance
30-Day Mortality Rate (%)	13.1	13.3	0.2	n/a[3]	lower 30-day mortality
30-Day Readmission Rate (%)	20.1	20.9	0.7	n/a[3]	lower 30-day readmissions
Average Length of Stay (days)	4.35	5.15	0.80	15.47%	shorter ALOS
Expense per Adjusted Discharge ($)	5,048	5,954	906	15.22%	lower expenses
Operating Profit Margin (%)	15.4	1.6	13.8	n/a[3]	higher profitability
HCAHPS Score	263.50	257.00	6.50	2.53%	higher hospital rating

1. Data are as of 2009 unless otherwise noted. Median values reflect rounding. Performance measure definitions can be found in the Methodology section.
2. Based on national norms, ratings greater than 1.0 indicate more adverse events than expected; ratings less than 1.0 indicate fewer. See Appendix C for more details.
3. We do not calculate percentage difference for this measure. See Appendix C for explanation.

OUTPATIENT CARE STANDARDS FOLLOWED MORE CLOSELY AT WINNING HOSPITALS

This year, we made an important discovery about the 100 Top Hospitals and outpatient care. As we seek to add outpatient measures to the 100 Top Hospitals programs, we've been researching data sources and methodologies. In recent research, we found that the 100 Top Hospital winners performed significantly better than non-winners in two core measures of outpatient care concerning antibiotic use. To read more about this research, download the research brief about this analysis at *100tophospitals.com*.

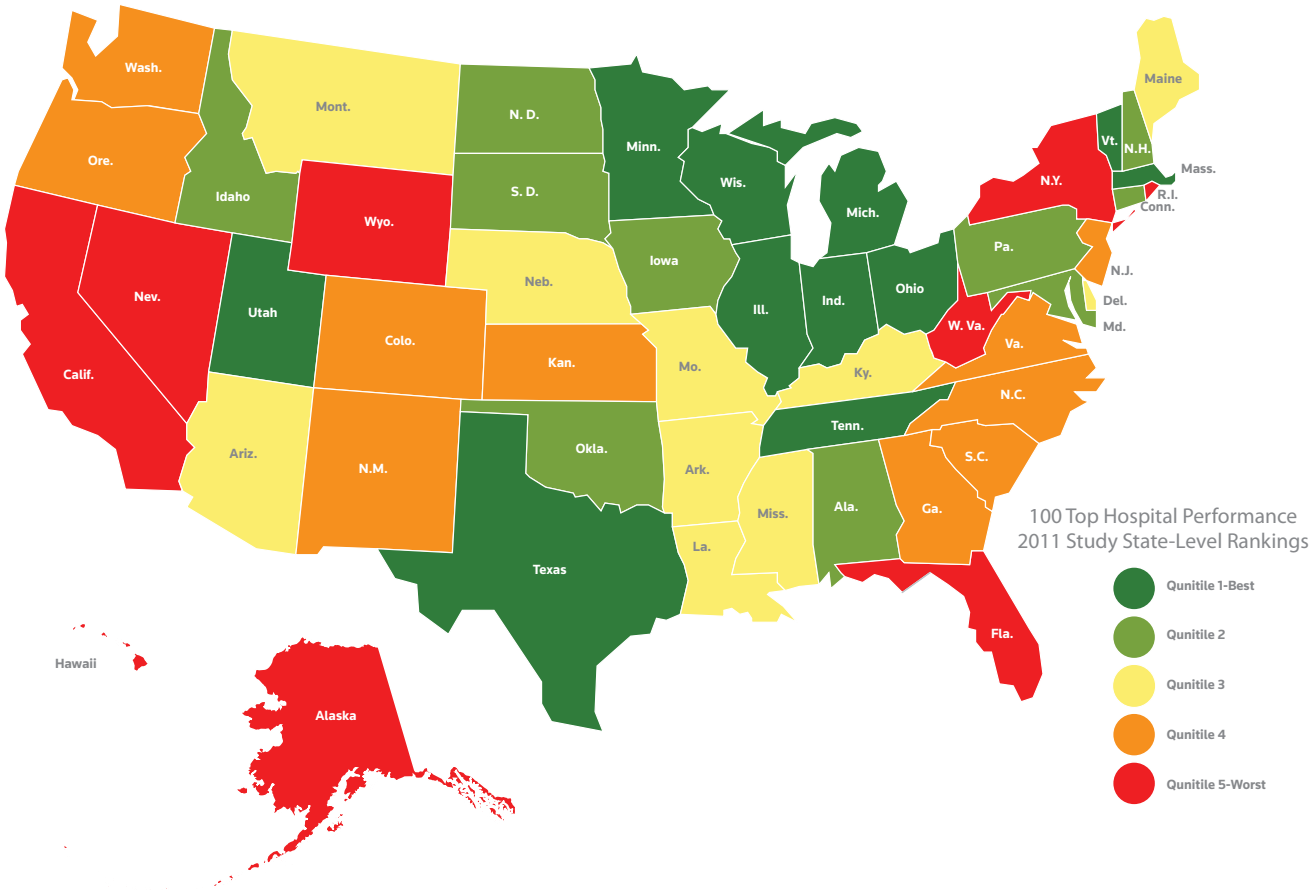
MIDWEST STATES CONTINUE TO LEAD IN HOSPITAL PERFORMANCE

Hospital performance varies widely throughout the country. Regional differences in the population's age and health, as well as differences in payment protocols, greatly affect hospitals' ability to improve patient outcomes and build healthy business structures. The methodology of the 100 Top Hospitals studies helps to level the playing field for some of the factors beyond a hospital's control by adjusting for patient severity, urban/rural geography, wage differences, and other factors. But regional variations in hospital performance are clear.

In this year's study, half of all the National study award winners were located in the Midwest census region. The South came in second, with 29 of the 100 winners. The Northeast and West were further behind, with 14 and 6 winners, respectively. (See Appendix A for a breakdown of all winners by state and census region, and Appendix B for a list of all states in each region.)

Because the regions do not have equal numbers of hospitals, evaluating hospital performance by looking at the number of winners by region can be deceiving. To further assess regional performance, we prepared analysis that demonstrates state-level performance over the last two years of the 100 Top Hospitals study. To show performance by state, we ranked states and aggregated them into five equal groups (quintiles) based on their performance in this year's study versus other states.

FIGURE 1: State-Level Performance Comparisons



By assigning a color to each quintile, the map (Figure 1) provides a visual representation of the variability in performance across the country for 2011, the current study year. Additionally, Table 7 shows each state's rank for the 2011 and previous-year studies. This analysis allows us to observe geographic patterns in performance. Among our observations:

- In both years, the Midwest was the clear front-runner in performance versus peers. At least 75 percent of the states in this region were in the top-performing two quintiles both study years. Only one state in this region fell into one of the bottom two quintiles (Table 7).
- Overall, more than half of all top-performing states (those in the best quintile) were located in the Midwest in this year's study.
- The Northeast had the highest percentage of states that improved their performance (moved into a higher quintile) between the two study years.
- The West showed the weakest performance overall, with 70 percent of the region's states in the lowest-performing two quintiles in the current study and 46 percent in the previous. Figures were similar in the South.

When considering performance shifts between the current and previous year studies, it's important to note that study methodology changes (improvements in the accuracy of the expense measure and the addition of present on admission data to our risk models) may account for some of the differences.

TABLE 7: 100 Top Hospitals Two-Year State-Level Performance Comparisons

NORTHEAST		MIDWEST		SOUTH		WEST	
CURRENT STUDY	PREVIOUS STUDY	CURRENT STUDY	PREVIOUS STUDY	CURRENT STUDY	PREVIOUS STUDY	CURRENT STUDY	PREVIOUS STUDY
Connecticut	Connecticut	Illinois	Illinois	Alabama	Alabama	Alaska	Alaska
Maine	Maine	Indiana	Indiana	Arkansas	Arkansas	Arizona	Arizona
Massachusetts	Massachusetts	Iowa	Iowa	Delaware	Delaware	California	California
New Hampshire	New Hampshire	Kansas	Kansas	District of Columbia	District of Columbia	Colorado	Colorado
New Jersey	New Jersey	Michigan	Michigan	Florida	Florida	Hawaii	Hawaii
New York	New York	Minnesota	Minnesota	Georgia	Georgia	Idaho	Idaho
Pennsylvania	Pennsylvania	Missouri	Missouri	Kentucky	Kentucky	Montana	Montana
Rhode Island	Rhode Island	Nebraska	Nebraska	Louisiana	Louisiana	Nevada	Nevada
Vermont	Vermont	North Dakota	North Dakota	Maryland	Maryland	New Mexico	New Mexico
		Ohio	Ohio	Mississippi	Mississippi	Oregon	Oregon
		South Dakota	South Dakota	North Carolina	North Carolina	Utah	Utah
		Wisconsin	Wisconsin	Oklahoma	Oklahoma	Washington	Washington
				South Carolina	South Carolina	Wyoming	Wyoming
				Tennessee	Tennessee		
				Texas	Texas		
				Virginia	Virginia		
				West Virginia	West Virginia		

HOSPITAL PERFORMANCE IMPROVEMENT OVER TIME

By studying the direction of performance change of all hospitals in our study (winners and non-winners), we can see that, in recent years, U.S. hospitals have not been able to significantly improve overall performance across the entire balanced scorecard (Table 8). But, over the years we studied (2005 through 2009), there were noteworthy performance improvements in patient survival, adherence to core measures, and shortening patient stays (see green column), as follows:

- More than half of the hospitals studied lowered their mortality rates.
- Nearly all (86 percent) improved their core measures score.
- More than a third (41 percent) decreased their average patient stay.

These gains were made despite industry-wide increases in patient acuity. For the remainder of the measures, the majority of hospitals in the study had no statistically significant change in performance (yellow column).

Financially, most hospitals (87 percent) showed no marked change in profitability; considering the economic downturn of this period, this is not especially remarkable. Of the remainder, a nearly equal percentage saw significant improvement or decline.

On the operating efficiency front, 59 percent of the hospitals have not significantly decreased their expense per adjusted discharge, and 40 percent have seen an increase in expense per discharge.

TABLE 8: Direction of Performance Change for All Hospitals in Study, 2005–2009

PERFORMANCE MEASURE	SIGNIFICANTLY IMPROVING PERFORMANCE		NO STATISTICALLY SIGNIFICANT CHANGE IN PERFORMANCE		SIGNIFICANTLY DECLINING PERFORMANCE	
	COUNT OF HOSPITALS[1]	PERCENT OF HOSPITALS[2]	COUNT OF HOSPITALS[1]	PERCENT OF HOSPITALS[2]	COUNT OF HOSPITALS[1]	PERCENT OF HOSPITALS[2]
Risk-Adjusted Mortality Index	1,582	55.4%	1,245	43.6%	27	0.9%
Risk-Adjusted Complications Index	257	9.0%	2,194	76.9%	403	14.1%
Patient Safety Index	293	10.4%	2,343	83.0%	187	6.6%
Core Measures Mean Percent	2,442	85.6%	412	14.4%	0	0.0%
Severity-Adjusted Average Length of Stay	1,175	41.2%	1,652	57.9%	27	0.9%
Adjusted Inpatient Expense per Discharge	16	0.6%	1,682	59.1%	1,150	40.4%
Operating Profit Margin	184	6.5%	2,478	87.3%	176	6.2%

1. Count refers to the number of hospitals in the study whose performance fell into the highlighted category on the measure.
2. Percent is of total in-study hospitals across all peer groups.
Note: All calculations exclude outlier values. Differences may occur due to rounding.

SETTING THE PACE FOR IMPROVEMENT

The hospitals that are able to improve long-term performance while also achieving top current performance — the Everest Award winners — are truly setting high benchmarks for the industry. To help select the Everest Award winners, we identify the group of hospitals from our overall study group of nearly 3,000 hospitals, with the best five-year performance improvement.

The line graphs below show individual performance-measure trends for these hospitals. They compare how the hospitals in our study that had the fastest, most consistent five-year rate of performance improvement (labeled as "Bench") compared with their peers (those that did not have the fastest five-year improvement) on each study performance measure. The peer and benchmark lines represent the best-fit straight line through the data over the five years studied, showing the direction of performance over time.

Clinical quality

Figures 2–5 show how the hospitals with the best five-year performance improvement have made consistent improvement on clinical measures:

- The hospitals with the most consistent five-year performance improvement (Bench) lowered patient mortality and complications, reduced adverse safety events, and improved core measures steadily.
- Peer group hospitals, on the other hand, did not show consistent improvement across all clinical measures.
- Although they did steadily lower mortalities and increase their core measures scores, the peer group of hospitals had increased patient complications rates and relatively flat patient safety indices over the five years studied.

FIGURE 2: Hospitals with Best Performance Improvement Rates Versus Peers, Risk-Adjusted Mortality Index

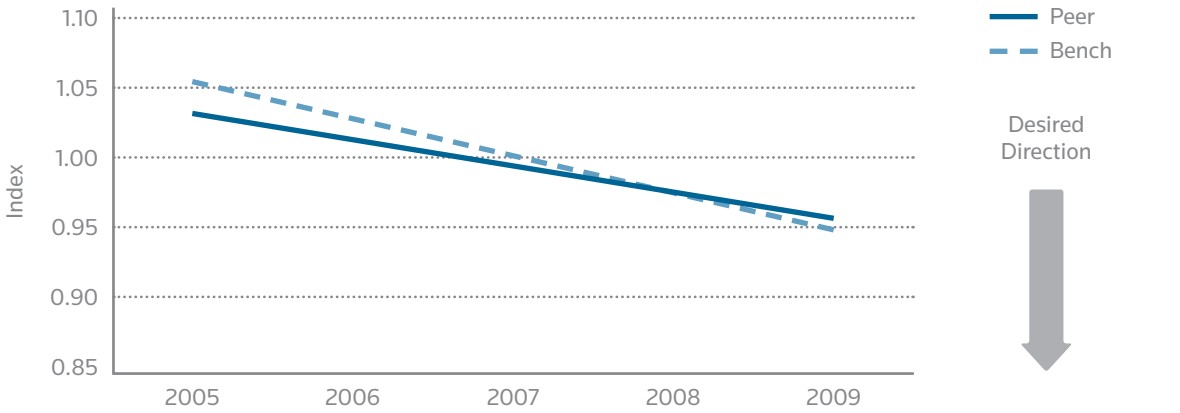


FIGURE 3: Hospitals with Best Performance Improvement Rates Versus Peers, Risk-Adjusted Complications Index

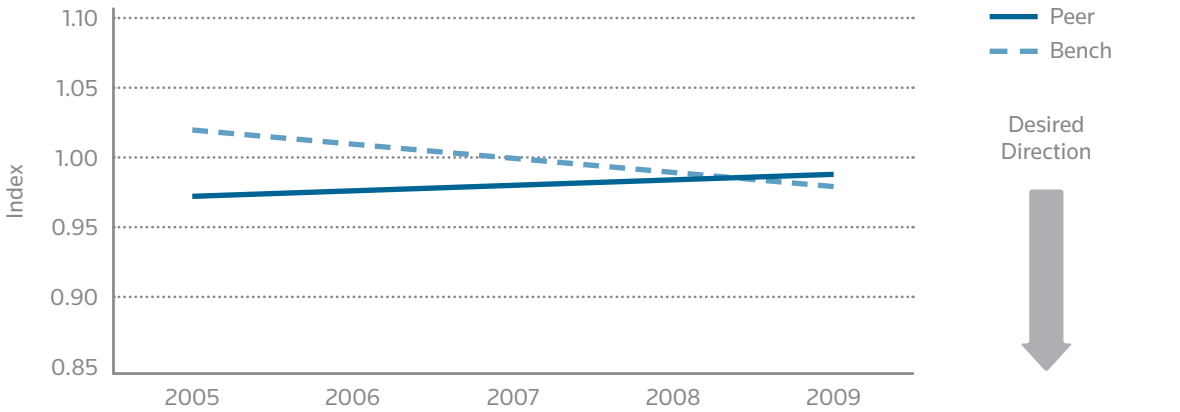


FIGURE 4: Hospitals with Best Performance Improvement Rates Versus Peers, Risk-Adjusted Patient Safety Index

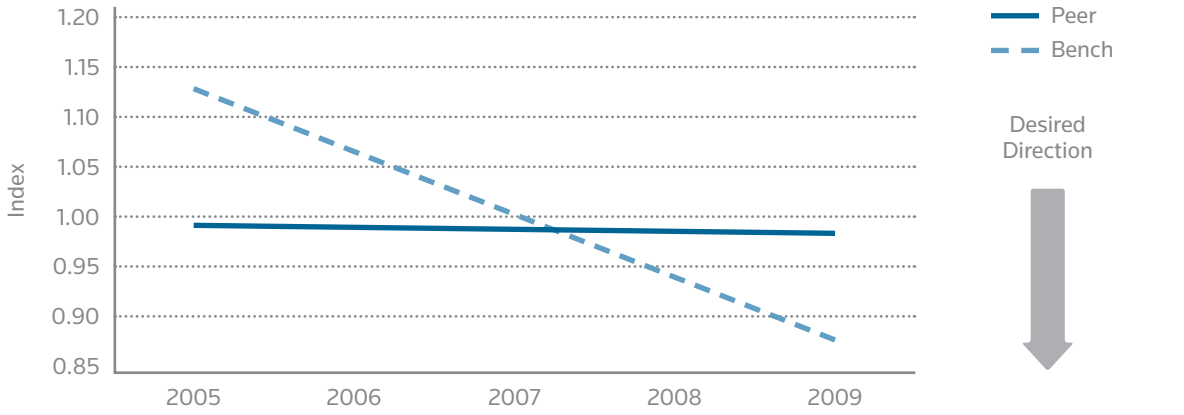
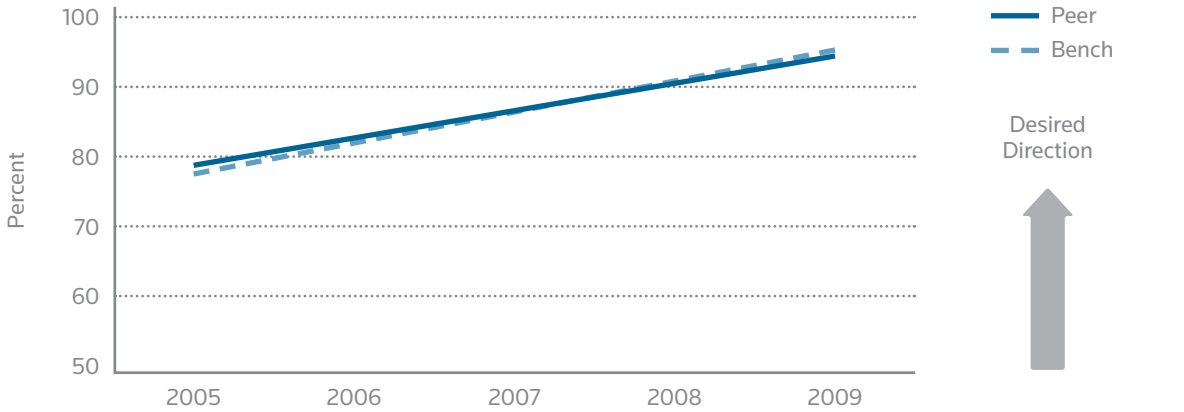


FIGURE 5: Hospitals with Best Performance Improvement Rates Versus Peers, Core Measures Mean Percent



Efficiency

- Figures 6–8 demonstrate how the hospitals in our study with the fastest, most consistent five-year improvement rates (Bench) have improved their efficiency and financial position.
- The benchmarks in this analysis shortened ALOS nearly a whole day and had a lower rate of inpatient expense increases than their peers.
- Profit margin differences were dramatic. The benchmark group increased their operating profit margin from 1.7 to 7.5 in the years studied, while the peer group hospitals suffered a decrease — from 4.7 to 3.9 percent.

FIGURE 6: Hospitals with Best Performance Improvement Rates Versus Peers, Severity-Adjusted Average Length of Stay

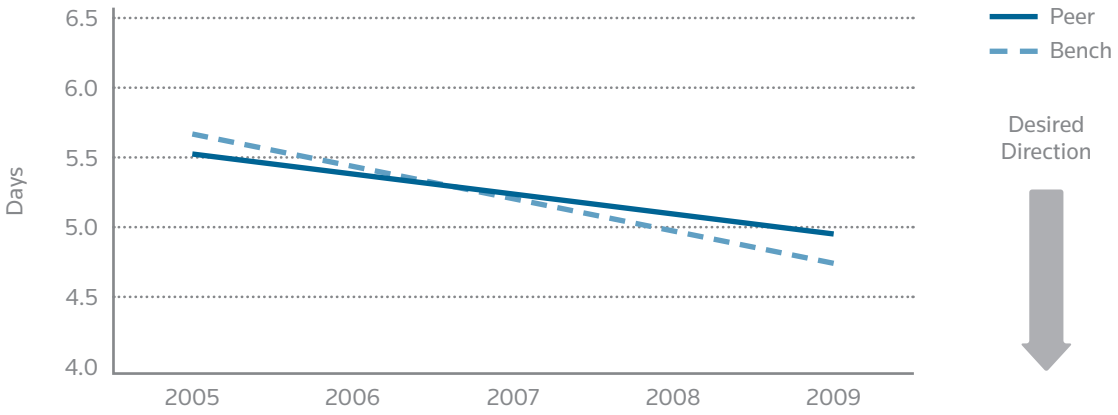


FIGURE 7: Hospitals with Best Performance Improvement Rates Versus Peers, Inpatient Expense per Adjusted Discharge

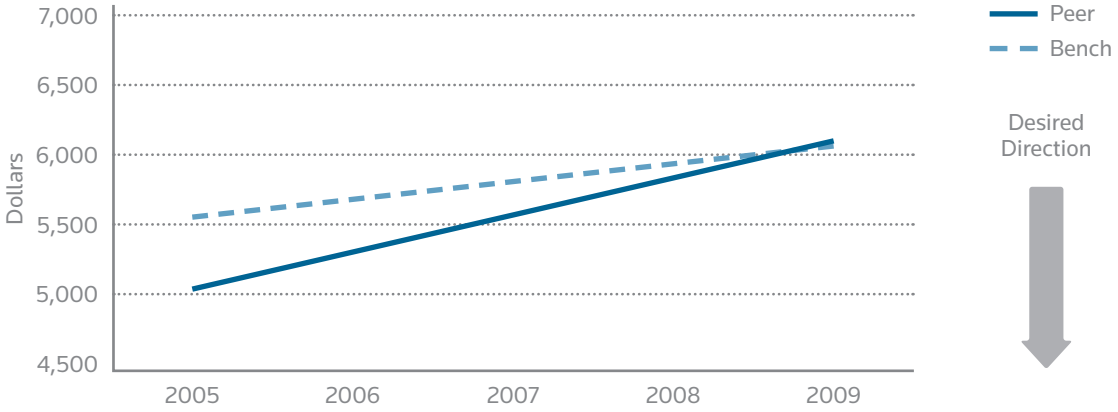
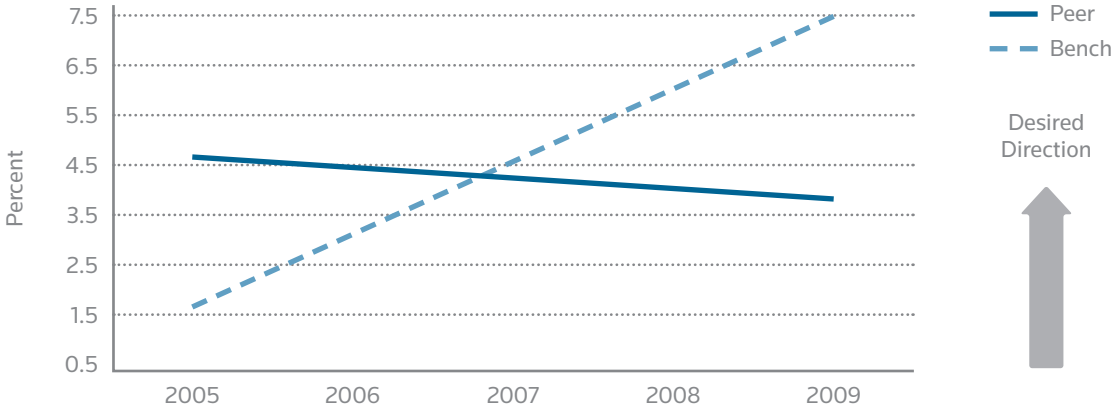


FIGURE 8: Hospitals with Best Performance Improvement Rates Versus Peers, Operating Profit Margin



METHODOLOGY

OVERVIEW

The 100 Top Hospitals® study is quantitative research that identifies 100 hospitals with the highest achievement on the 100 Top Hospitals Balanced Scorecard. The scorecard, based on Norton and Kaplan's[1] concept, consists of 10 measures, distributed across four domains — quality, efficiency, finance, and consumer assessment of care — and uses only publicly available data. The hospitals with the highest achievement are those with the highest ranking on a composite score of the 10 measures. This study includes only short-term, acute-care, nonfederal U.S. hospitals that treat a broad spectrum of patients.

The main steps we take in selecting the 100 Top Hospitals are:

- Building the database of hospitals, including special selection and exclusion criteria
- Classifying hospitals into comparison groups by size and teaching status
- Scoring hospitals on a balanced scorecard of 10 performance measures
- Determining 100 Top Hospitals by ranking hospitals relative to their comparison group

The following section is intended to be an overview of these steps. To request more detailed information on any of the study methodologies outlined here, please e-mail us at *healthcare.pubs@thomsonreuters.com* or call +1 800 366 7526.

***Note**: This section details the methods used to produce the 100 Top Hospitals award winners. For details on the methods used to find the Everest Award winners, please see the Everest Awards section of this document.*

BUILDING THE DATABASE OF HOSPITALS

All of the 100 Top Hospitals studies use only publicly available data. The data for this study primarily come from:

- The Medicare Provider Analysis and Review (MedPAR) dataset
- The Medicare Cost Report
- The Centers for Medicare and Medicaid Services (CMS) Hospital Compare dataset

We use MedPAR patient-level medical record information to calculate mortality, complications, patient safety, and length of stay. The MedPAR dataset contains information on the approximately 12 million Medicare patients discharged annually from U.S. acute-care hospitals. In this study, we used the most recent two federal fiscal years of MedPAR data available: 2008 and 2009.[19] The 2009 MedPAR dataset now includes HMO encounters. To be included in the study, a hospital must have had both years of data available.

***Note**: To choose the Everest Award winners, we also reviewed the most recent five years of data, 2005 through 2009, to study the rate of change in performance through the years. To read more about the Everest Award methodology, please see the special Everest Award section of this document.*

We use Medicare Cost Reports to create our proprietary database, which contains hospital-specific demographic information and hospital-specific all-payer revenue and expense data. The Medicare Cost Report is filed annually by every U.S. hospital that participates in the Medicare program. Hospitals are required to submit cost reports to receive reimbursement from Medicare. It should be noted, however, that cost report data include services for all patients, not just Medicare beneficiaries.

The Medicare Cost Report promotes comparability and consistency among hospitals in reporting. We used hospital 2009 cost reports, published in the federal Hospital Cost Report Information System (HCRIS) third quarter 2010 dataset, for this study. If we did not have a 2009 cost report, we excluded the hospital from the study. Hospitals that file cost reports jointly with other hospitals under one provider number are analyzed as one organization.

We and many others in the healthcare industry have used the MedPAR and Medicare Cost Report databases for many years. We believe them to be accurate and reliable sources for the types of analyses performed in this study. Performance based on Medicare data has been found to be highly representative of that of all-payer data.

We used the CMS Hospital Compare dataset published in the third quarter of 2010 for core measures, 30-day mortality rates, 30-day readmission rates, and Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) patient perception of care data in this study.

We use residency program information to classify teaching hospitals. This comes from the American Medical Association (for Accreditation Council for Graduate Medical Education (ACGME)-accredited programs) and the American Osteopathic Association (AOA).

Present on Admission Data

The study's mortality, complications, and length of stay measures use Thomson Reuters propriety risk adjustment models. These models now are calibrated for present on admission (POA) data that was reported in the 2009 MedPAR dataset. The patient safety index measure, which uses the Agency for Healthcare Research and Quality (AHRQ) Patient Safety Indicator (PSI) models, is also now calibrated for POA data. Under the Deficit Reduction Act of 2005, as of federal fiscal year 2008, hospitals do not receive payment for cases with certain conditions, such as falls, surgical site infections, and pressure ulcers, that were not present on the patient's admission but occur during their hospitalization. As a result, CMS now requires all inpatient prospective payment system hospitals to document whether a patient has these conditions when admitted.[14]

Data periods included in each dataset vary and are discussed at the end of this section.

After building the database, we excluded a number of hospitals that would have skewed the study results. Excluded from the study were:

- Specialty hospitals (e.g., critical access, children's, women's, psychiatric, substance abuse, rehabilitation, cardiac, orthopedic, heart, cancer, and long-term acute-care hospitals)
- Federally owned hospitals
- Non-U.S. hospitals (such as those in Puerto Rico, Guam, and the U.S. Virgin Islands)
- Hospitals with fewer than 25 acute-care beds
- Hospitals with fewer than 100 Medicare patient discharges in federal fiscal year (FFY) 2009
- Hospitals with Medicare average lengths of stay longer than 25 days in FFY 2009
- Hospitals with no reported Medicare patient deaths in FFY 2009
- Hospitals for which a current Medicare Cost Report was not available
- Hospitals with a current Medicare Cost Report that was not for a 12-month reporting period
- Hospitals that did not report POA information, because their data are not comparable to other hospitals (affects most Maryland hospitals in the Medicare waiver program)
- Hospitals missing data required to calculate performance measures

In addition, specific patient records were also excluded:

- Patients who were discharged to another short-term facility (this is done to avoid double counting)
- Patients who were not at least 65 years old
- Rehabilitation, psychiatric, and substance-abuse patients
- Patients receiving palliative care (ICD-9-CM code V66.7)
- Patients with stays shorter than one day

After all exclusions were applied, 2,914 hospitals were included in the study.

CLASSIFYING HOSPITALS INTO COMPARISON GROUPS

Bed size, teaching status, and residency/fellowship program involvement have a profound effect on the types of patients a hospital treats and the scope of services it provides. When analyzing the performance of an individual hospital, it is crucial to evaluate it against other similar hospitals. To address this, we assigned each hospital to one of five comparison groups, or classes, according to its size and teaching status.

Our classification methodology draws a significant distinction between major teaching hospitals and teaching hospitals by measuring the magnitude and type of teaching programs, and by accounting for their level of involvement in physician education and research. This methodology de-emphasizes the role of bed size and focuses more on teaching program involvement. Through it, we seek to measure both the depth and breadth of teaching involvement and recognize teaching hospitals' tendencies to reduce beds and concentrate on true tertiary care.

Our formula for defining the teaching comparison groups includes each hospital's bed size, residents-to-beds ratio, and involvement in graduate medical education programs accredited by either the ACGME[20] or the AOA.[21] The definition includes both the magnitude (number of programs) and type (sponsorship or participation) of GME program involvement. In this study, AOA residency program involvement was treated as being equivalent to ACGME program sponsorship.

The five comparison groups, and their parameters, are as follows:

Major Teaching Hospitals

There are three ways to qualify:

1. 400 or more acute-care beds in service plus an intern and resident-per-bed ratio of at least 0.25, plus
   - sponsorship of at least 10 GME programs or
   - involvement in at least 20 programs overall
2. Involvement in at least 30 GME programs overall (regardless of bed size or intern and resident-per-bed ratio)
3. An intern and resident-per-bed ratio of at least 0.60 (regardless of bed size or GME program involvement)

Teaching Hospitals

- 200 or more acute-care beds in service and
- either an intern and resident-per-bed ratio of at least 0.25 or involvement in at least three GME programs overall

Large Community Hospitals

- 250 or more acute-care beds in service and
- not classified as a teaching hospital per definitions above

Medium Community Hospitals

- 100–249 acute-care beds in service and
- not classified as a teaching hospital per definitions above

Small Community Hospitals

- 25–99 acute-care beds in service and
- not classified as a teaching hospital per definitions above

The final study group contained:

HOSPITAL COMPARISON GROUP	NUMBER OF HOSPITALS IN STUDY
Major Teaching Hospitals	175
Teaching Hospitals	435
Large Community Hospitals	338
Medium Community Hospitals	1,042
Small Community Hospitals	924
All Hospitals	**2,914**

* Maryland's hospitals are not paid under Medicare's inpatient prospective payment system. Instead, they have a Medicare waiver agreement that allows Medicare reimbursement according to rates set by the state's Health Services Cost Review Commission. For more information, see http://mhcc.maryland.gov/consumerinfo/hospitalguide/patients/other_information/overview_of_maryland_regulatory_system_for_hospital_oversight.html.

23 Thomson Reuters 100 Top Hospitals

SCORING HOSPITALS ON WEIGHTED PERFORMANCE MEASURES

Evolution of Performance Measures

We use a balanced scorecard approach, based on public data, to select the measures most useful for boards and CEOs in the current hospital operating environment. Throughout the life of the study, we have worked hard to meet this vision. We gather feedback from industry leaders, hospital executives, academic leaders, and internal experts; review trends in the healthcare market; and survey hospitals in demanding marketplaces to learn what measures are valid and reflective of top performance. As the market has changed, our methods have evolved. Our current measures are centered on four main components of hospital performance: clinical quality, efficiency, financial health, and patient perception of care.

The measures for the 2011 study are:

1. Risk-adjusted mortality index (in-hospital)
2. Risk-adjusted complications index
3. Risk-adjusted patient safety index
4. Core measures mean percent
5. 30-day risk-adjusted mortality rates for acute myocardial infarction (AMI), heart failure, and pneumonia
6. 30-day risk-adjusted readmission rates for AMI, heart failure, and pneumonia
7. Severity-adjusted average length of stay
8. Case mix- and wage-adjusted inpatient expense per discharge
9. Adjusted operating profit margin
10. HCAHPS score (patient rating of overall hospital performance)

Below we provide a rationale for the selection of our balanced scorecard categories and the measures used for each.

Clinical Quality

Our measures of clinical quality are the risk-adjusted mortality index, risk-adjusted complications index, 30-day mortality rate, 30-day readmission rate, risk-adjusted patient safety index, and the core measures mean percent.

The mortality and complications measures show us how the hospital is performing on the most basic and essential care standards — survival and error-free care — while treating patients in the hospital. The extended outcomes measures — 30-day mortality and readmission rates for AMI, heart failure, and pneumonia patients — help us understand how the hospital's patients are faring over a longer period. These measures are part of CMS' value-based purchasing program and are watched closely in the industry. Hospitals with lower values appear to be providing care with better medium-term results for these conditions.

Patient safety is another important measure of hospital quality tracked closely in the industry. The risk-adjusted patient safety index is based on the AHRQ PSIs.[22] Patient safety measures reflect both clinical quality and the effectiveness of systems within the hospital. Because they use hospital administrative data and focus on surgical complications and other iatrogenic events, we feel that AHRQ's PSIs provide an unbiased look at many aspects of patient safety inside hospitals. Such objective analysis is central to the 100 Top Hospitals mission. The risk-adjusted patient safety index facilitates comparison of national and individual hospital performance using a group of eight PSIs, which allows us to gauge the results of hospital-wide patient safety performance.

To be truly balanced, a scorecard must include various measures of quality. To this end, we also include an aggregate core measures score. Core measures were developed by the Joint Commission and CMS and endorsed by the National Quality Forum as minimum basic process of care standards. They are a widely accepted method for measuring patient care quality that includes specific guidelines for heart attack, heart failure, pneumonia, pregnancy and related conditions, and surgical-infection prevention. Our core measures score is based on the heart attack, heart failure, pneumonia, and surgical-infection prevention areas of this program, using Hospital Compare data reported on the CMS Web site.[23]

Efficiency and Financial Health

These categories include severity-adjusted average length of stay, adjusted inpatient expense per discharge, and adjusted operating profit margin. Severity-adjusted average length of stay serves as a proxy for clinical efficiency, while adjusted inpatient expense per discharge serves as a measure of operating efficiency. We previously used operating expense per adjusted discharge, which is the most commonly used measure of hospital operating efficiency. This measure relies on adjusting discharges for outpatient volume based on the ratio of total inpatient revenue to acute inpatient revenue. This overstates the number of discharges allocated to outpatient volume because the mark-up on outpatient services is generally much higher than for inpatient services. By switching to a metric based on inpatient expense per inpatient discharge, we have a much stronger predictor of operating efficiency. The operating profit margin is a measure of management's ability to operate within its current financial constraints and provides an indicator of the hospital's financial health.

All three measures require adjustment to increase the validity of comparisons across the hospital industry. We use a Thomson Reuters severity-adjustment model to determine expected length of stay at the patient level. This is used to calculate the hospital-level, severity-adjusted, average length of stay. We adjust inpatient expenses, as reported on the hospital cost report, for patient severity (case mix index) and area wage levels (area wage index). These adjustments allow us to more accurately compare hospitals with different levels of patient severity operating in varying cost of living environments. We adjust operating profit margin to reflect related organization expense to provide a more accurate measure of a hospital's profitability.

Previous studies used the cash-to-total-debt ratio to look at a hospital's liquidity. Such measures of liquidity are one way to measure the financial viability and health of an organization. However, measuring liquidity has become problematic as more and more hospitals join health systems. Health system accounting practices often recognize hospitals as units of the system, with no cash or investment assets of their own; a typical practice is to sweep cash up to the system accounts daily. Moreover, hospitals in health systems are now often reported as having no debt in their own name. Using public data, there is no effective way to accurately determine liquidity, so we have removed the cash-to-debt measure from the 100 Top Hospitals study.

Patient Perception of Care

We believe that a measure of patient perception of care is crucial to the balanced scorecard concept. Understanding how patients perceive the care a hospital provides, and how that perception compares and contrasts with perceptions of its peers, is an important step a hospital must take in pursuing performance improvement. As such, this study includes the HCAHPS score, based on patient perception of care data from the HCAHPS patient survey. In this study, the HCAHPS score is based on the HCAHPS overall hospital rating question only.

Through the combined measures described above, we hope to provide a balanced picture of overall quality of care and financial health, and reflect the probability of sustained high performance. Full details about each of these performance measures are included on the following pages.

PERFORMANCE MEASURES

Risk-Adjusted Mortality Index (In-Hospital)

WHY WE INCLUDE THIS ELEMENT	CALCULATION	COMMENT	FAVORABLE VALUES ARE
Patient survival is a universally accepted measure of hospital quality. The lower the mortality index, the greater the survival of the patients in the hospital, considering what would be expected based on patient characteristics. While all hospitals have patient deaths, this measure can show where deaths did not occur but were expected, or the reverse, given the patient's condition.	We calculate an index value based on the number of actual in-hospital deaths in 2009, divided by the number expected, given the risk of death for each patient. We normalize the index based on the observed and expected deaths for each comparison group. This measure is based on our proprietary, risk-adjusted mortality index model, which is designed to predict the likelihood of a patient's death based on patient-level characteristics (age, sex, presence of complicating diagnoses, and other characteristics) and factors associated with the hospital (size, teaching status, geographic location, and community setting). Post-discharge deaths are not included, but POA data are considered as part of the risk model. For more details, see Appendix C. The reference value for this index is 1.00; a value of 1.15 indicates 15 percent more deaths occurred than were predicted, and a value of 0.85 indicates 15 percent fewer deaths than predicted.	We based the scoring on the difference between observed and expected deaths, expressed in normalized standard deviation units (z-score).[24,25] Hospitals with the fewest deaths, relative to the number expected, after accounting for standard binomial variability, received the most favorable scores. Only one year of MedPAR data (2009) was included so that POA-enabled risk models could be used. Normalization was done by comparison group. Hospitals with values that were high statistical outliers, based on a normalized z-score greater than or equal to 1.64 (95 percent confidence), were not eligible to be named as benchmarks.	Lower

Risk-Adjusted Complications Index

WHY WE INCLUDE THIS ELEMENT	CALCULATION	COMMENT	FAVORABLE VALUES ARE
Keeping patients free from potentially avoidable complications is an important goal for all healthcare providers. A lower complications index indicates fewer patients with complications, considering what would be expected based on patient characteristics. Like the mortality index, this measure can show where complications did not occur but were expected, or the reverse, given the patient's condition.	We calculate an index value based on the number of cases with complications in 2009, divided by the number expected, given the risk of complications for each patient. We normalize the index based on the observed and expected complications for each comparison group. This measure uses our proprietary, expected complications rate index models. These models account for patient-level characteristics (age, sex, principal diagnosis, comorbid conditions, and other characteristics), as well as differences in hospital characteristics (size, teaching status, geographic location, and community setting). Complications rates are calculated from normative data for two patient risk groups: medical and surgical. POA data are considered as part of the risk model. For more details, see Appendix C. The reference value for this index is 1.00; a value of 1.15 indicates 15 percent more complications occurred than were predicted, and a value of 0.85 indicates 15 percent fewer complications than predicted.	We based the scoring on the difference between the observed and expected number of patients with complications, expressed in normalized standard deviation units (z-score).[7,8] Only one year of MedPAR data (2009) was included so that POA-enabled risk models could be used. Normalization was done by comparison group. Hospitals with the fewest observed complications, relative to the number expected, after accounting for standard binomial variability, received the most favorable scores.	Lower

Risk-Adjusted Patient Safety Index

WHY WE INCLUDE THIS ELEMENT	CALCULATION	COMMENT	FAVORABLE VALUES ARE
Patient safety has become an increasingly important measure of hospital quality. Patient safety measures are reflective of both clinical quality and the effectiveness of systems within the hospital. The AHRQ, a public health service agency within the federal government's Department of Health and Human Services, has developed a set of PSIs. These indicators are widely used as a means of measuring hospital safety. Because they use hospital administrative data and include surgical complications and other iatrogenic events, we feel that AHRQ's PSIs provide an unbiased look at the quality of care inside hospitals. Such objective analysis is central to the 100 Top Hospitals mission.	For each of the eight included PSIs (see Appendix C for a list), we calculated an index value based on the number of actual PSI occurrences for 2008 and 2009, combined, divided by the number of normalized expected occurrences, given the risk of the PSI event for each patient. Values were normalized by comparison group. We applied the hospital-level PSI methodology from AHRQ to the 2008 and 2009 MedPAR acute-care data, using AHRQ program code to adjust for risk.[22] POA data are considered as part of the PSI model. For more information, see Appendix C. The reference value for this index is 1.00; a value of 1.15 indicates 15 percent more events than predicted, and a value of 0.85 indicates 15 percent fewer.	We based the scoring on the difference between the observed and expected number of patients with PSI events, for each of the eight selected PSIs, expressed in standard deviation units (z-score).[7,8] We used two years of MedPAR data (2008 and 2009) to reduce the influence of chance fluctuation. The AHRQ PSI risk models used POA coding in 2009 MedPAR data and imputed POA in 2008 MedPAR data. We normalized z-scores by hospital comparison group and developed a mean normalized z-score as an aggregate PSI score. Hospitals with the fewest observed PSIs, relative to the number expected, accounting for binomial variability, received the most favorable scores. Hospitals with extreme outlier values in this measure were not eligible to be named benchmarks (see "Eliminating Outliers" on page 33).	Lower

Core Measures Mean Percent

WHY WE INCLUDE THIS ELEMENT	CALCULATION	COMMENT	FAVORABLE VALUES ARE
To be truly balanced, a scorecard must include various measures of quality. Core measures were developed by the National Quality Forum as minimum basic standards. They are a widely accepted method for measuring patient care quality that includes specific guidelines for heart attack, heart failure, pneumonia care, and surgical infection prevention.	For each hospital, we calculate the arithmetic mean of the included core measure percent values. The reported core measure percent values reflect the percentage of eligible patients who received the expected standard of patient care. We consider reported Core Measure percents with patient counts less than or equal to 25 or with relative standard error values greater than or equal to 0.30 statistically unreliable. In these cases, we substitute the comparison group-specific median percent value for the affected core measure.	Core measure values are from the CMS Hospital Compare Web site for calendar year 2009. We excluded a number of core measures in our analysis due to under-reporting and small numbers issues. In addition, we excluded all AMI core measures for small community hospitals, due to these issues. For a list of the measures used, and those excluded, please see Appendix C.	Higher

30-Day Risk-Adjusted Mortality Rates for AMI, Heart Failure, and Pneumonia Patients

WHY WE INCLUDE THIS ELEMENT	CALCULATION	COMMENT	FAVORABLE VALUES ARE
30-day mortality rates are a widely accepted measure of the effectiveness of hospital care. They allow us to look beyond immediate inpatient outcomes and understand how the care the hospital provided to inpatients with these particular conditions may have contributed to their longer-term survival. Because these measures are part of CMS' value-based purchasing program, they are now being watched closely in the industry. In addition, tracking these measures may help hospitals identify patients at risk for post-discharge problems and target improvements in discharge planning and in aftercare processes. Hospitals that score well may be better prepared for a pay-for-performance structure.	CMS calculates a 30-day mortality rate for each patient condition using three years of MedPAR data, combined. CMS does not calculate rates for hospitals where the number of cases is too small (less than 25). We build a database of this information for the hospitals in our study then rank the hospitals independently on each of the three conditions (AMI, heart failure, and pneumonia), by hospital comparison group. Each patient condition receives one-sixth weight, for a total 30-Day Mortality Rate weight of one-half in overall hospital ranking.	Data are from the CMS Hospital Compare dataset for the third quarter of 2010. This contains data from July 1, 2006, through June 30, 2009. For more information about this data, see Appendix C.	Lower

30-Day Risk-Adjusted Readmission Rates for AMI, Heart Failure, and Pneumonia Patients

WHY WE INCLUDE THIS ELEMENT	CALCULATION	COMMENT	FAVORABLE VALUES ARE
30-day readmission rates are a widely accepted measure of the effectiveness of hospital care. They allow us to understand how the care the hospital provided to inpatients with these particular conditions may have contributed to issues with their post-discharge medical stability and recovery. Because these measures are part of CMS' value-based purchasing program, they are now being watched closely in the industry. In addition, tracking these measures may help hospitals identify patients at risk for post-discharge problems if discharged too soon, as well as target improvements in discharge planning and in aftercare processes. Hospitals that score well may be better prepared for a pay-for-performance structure.	CMS calculates a 30-day readmission rate for each patient condition using three years of MedPAR data, combined. CMS does not calculate rates for hospitals where the number of cases is too small (less than 25). We build a database of this information for the hospitals in our study then rank the hospitals independently on each of the three conditions (AMI, heart failure, and pneumonia), by hospital comparison group. Each patient condition receives one-sixth weight, for a total 30-Day Readmission Rate weight of one-half in overall hospital ranking.	Data are from the CMS Hospital Compare dataset for the third quarter of 2010. This contains data from July 1, 2006, through June 30, 2009. For more information about this data, see Appendix C.	Lower

Severity-Adjusted Average Length of Stay

WHY WE INCLUDE THIS ELEMENT	CALCULATION	COMMENT	FAVORABLE VALUES ARE
A lower severity-adjusted average length of stay (LOS) generally indicates more efficient consumption of hospital resources and reduced risk to patients.	We calculate an LOS index value by dividing the actual LOS by the normalized expected LOS. Expected LOS adjusts for difference in severity of illness using a linear regression model. We normalize the expected values based on the observed and expected LOS of the hospitals in the comparison group. See Appendix C for more information.	This measure uses MedPAR data for 2009. We adjusted average LOS to factor out differences attributable to the varying severity of illness of patients at each hospital using POA-enabled risk models. For more information on this model, See Appendix C.	Lower

Case Mix- and Wage-Adjusted Inpatient Expense per Discharge

WHY WE INCLUDE THIS ELEMENT	CALCULATION	COMMENT	FAVORABLE VALUES ARE
This measure helps to determine how efficiently a hospital cares for its patients. Low values indicate lower costs and thus better efficiency.	Total acute care inpatient expense, divided by total acute inpatient discharges, adjusted for case mix and area wage indexes. See Appendix C for detailed calculations and the Medicare Cost Report locations (worksheet, line, and column) for each calculation element.	This measure uses Medicare Cost Report data for hospital cost reports ending in calendar year 2009. Adjusted inpatient expense per discharge measures the hospital's average cost of delivering inpatient care on a per-unit basis. Inpatient expense for each department is calculated from fully allocated cost using the ratio of inpatient charges to total charges. For inpatient nursing units, this will always be 100 percent of the fully allocated cost. For departments with both inpatient and outpatient services, the ratio will vary. Non-reimbursable and special purpose cost centers are omitted as these have no charges for patient care. The hospital's CMS-assigned case mix index is used to account for differences in patient complexity. The CMS area wage index is used to account for geographic differences in cost of living. Hospitals with extreme outlier values in this measure were not eligible to be named benchmarks (see "Eliminating Outliers" on page 33).	Lower

Profitability (Adjusted Operating Profit Margin)

WHY WE INCLUDE THIS ELEMENT	CALCULATION	COMMENT	FAVORABLE VALUES ARE
Operating profit margin is one of the purest measures of a hospital's financial health. It is a clear measure of the amount of income a hospital is taking in versus its expenses	The difference between a hospital's total operating revenue and total operating expense, expressed as a percentage of its total operating revenue. Total operating revenue is the sum of net patient revenue plus other operating revenue. Operating expense is adjusted for related organization expense. See Appendix C for detailed calculations and the Medicare Cost Report locations (worksheet, line, and column) for each calculation element.	This measure uses Medicare Cost Report data for hospital cost reports ending in calendar year 2009. Operating expense includes adjustment for related organizational expenses. Extreme outlier values in this measure were not eligible to be named benchmarks (see "Eliminating Outliers" below). We scored hospitals by ranking the adjusted operating profit margin.	Higher

HCAHPS Score (Patient Rating of Overall Hospital Performance)

WHY WE INCLUDE THIS ELEMENT	CALCULATION	COMMENT	FAVORABLE VALUES ARE
We believe that including a measure of patient perception of care is crucial to the balanced scorecard concept. How patients perceive the care a hospital provides has a direct effect on its ability to remain competitive in the marketplace.	We used the HCAHPS survey instrument question, "How do patients rate the hospital, overall?" to score hospitals. Patient responses could fall into three categories, and the number of patients in each category was reported as a percent: • Patients who gave a rating of 6 or lower (low) • Patients who gave a rating of 7 or 8 (medium) • Patients who gave a rating of 9 or 10 (high) For each answer category, we assign a scale as follows: 3 equals high or good performance, 2 equals medium or average performance, and 1 equals low or poor performance. We then calculate a weighted score for each hospital by multiplying the HCAHPS answer percent by the scale value. For each hospital, we sum the weighted percent values for the three answer categories. Hospitals are then ranked by this weighted percent sum. The highest possible HCAHPS score is 300 (100 percent of patients rate the hospital high).	Data are from CMS Hospital Compare, third quarter 2010, database. This database contains the HCAHPS results for data period January 1 through December 31, 2009.	Higher

Summary of Balanced Scorecard Measure Data Sources, Data Periods, and Ranking Weights

SCORECARD MEASURE	DATA SOURCE/DATA PERIOD	RANKING WEIGHT
Risk-Adjusted Mortality Index	MedPAR FFY 2009	1
Risk-Adjusted Complications Index	MedPAR FFY 2009	1
Risk-Adjusted Patient Safety Index	MedPAR FFY 2008 and 2009	1
Core Measures Mean Percent	CMS Hospital Compare, 3rd quarter 2010 (calendar year (CY) 2009 dataset)	1
30-Day Mortality Rate (AMI, Heart Failure, Pneumonia)	CMS Hospital Compare, 3rd quarter 2010 (July 1, 2006 – June 30, 2009 dataset)	½
30-Day Readmission Rate(AMI, Heart Failure, Pneumonia)	CMS Hospital Compare, 3rd quarter 2010 (July 1, 2006 – June 30, 2009 dataset	½
Severity-Adjusted Average Length of Stay	MedPAR FFY 2009	1
Adjusted Inpatient Expense per Discharge	HCRIS, 3rd quarter 2010 (CY 2009 Medicare Cost Reports)	1
Adjusted Operating Profit Margin	HCRIS, 3rd quarter 2010 (CY 2009 Medicare Cost Reports)	1
HCAHPS Score	CMS Hospital Compare, 3rd quarter 2010, (CY 2009 dataset)	1

DETERMINING THE 100 TOP HOSPITALS

Eliminating Outliers

Within each of the five hospital comparison groups, we scored hospitals based on their performance on each of the measures relative to other hospitals in their group. Prior to ranking, we used three methods of identifying hospitals who were performance outliers. These hospitals were not eligible to be named winners.

Interquartile Range Methodology

We used the interquartile range methodology to identify hospitals with extreme outlier values for the following measures:

- Risk-adjusted patient safety index (high outliers only)
- Case mix- and wage-adjusted inpatient expense per discharge (high or low outliers)
- Adjusted operating profit margin (high and low outliers)

This was done because we do not want hospitals that have poor patient safety performance or a high probability of having erroneous cost report data to be declared winners.

Mortality and Complications Outliers

For mortality and complications, which have observed and expected values, we identified hospitals with performance that was statistically worse than expected using normalized z-scores that were high statistical outliers, with 95 percent confidence as our outlier threshold. This was done because we do not want hospitals that have poor clinical outcomes to be declared winners.

Operating Profit Margin Outliers

We identified hospitals with a negative adjusted operating profit margin as outliers. This was done because we do not want hospitals that fail to meet this very basic financial responsibility to be declared winners.

Ranking

Within the five hospital comparison groups, we ranked hospitals on the basis of their performance on each of the performance measures independently, relative to other hospitals in their group. Each performance measure is assigned a weight for use in overall ranking. Each hospital's performance measure ranks were summed to arrive at a total score for the hospitals. The hospitals were then ranked based on their total scores, and the hospitals with the best overall rankings in each comparison group were selected as the winners.

All measures except the 30-day mortality and 30-day readmission rates received a weight of one in the final ranking process. For the 30-day mortality and readmission rate measures, we give the rates for each of the conditions (AMI, heart failure, and pneumonia) a weight of one-sixth in the final 100 Top Hospitals ranking process for winner selection.

This study includes:

COMPARISON GROUP	NUMBER OF WINNERS	NUMBER OF NON-WINNERS	TOTAL HOSPITALS IN STUDY
Major Teaching Hospitals	15	160	175
Teaching Hospitals	25	410	435
Large Community Hospitals	20	318	338
Medium Community Hospitals	20	1,022	1,042
Small Community Hospitals	20	904	924
All Hospitals	**100**	**2,814**	**2,914**

Thomson Reuters Policy on Revocation of a 100 Top Hospitals Award

To preserve the integrity of the study, it is the policy of Thomson Reuters to revoke a 100 Top Hospitals award if a hospital is found to have submitted inaccurate or misleading data to any 100 Top Hospitals data source.

At the sole discretion of Thomson Reuters, the circumstances under which a 100 Top Hospitals award could be revoked include, but are not limited to, the following:

1. Discovery by Thomson Reuters staff, through statistical analysis or other means, that a hospital has submitted inaccurate data.
2. Discovery of media or Internet reports of governmental or accrediting agency investigations or sanctions for actions by a hospital that could have an adverse impact on the integrity of the 100 Top Hospitals studies or award winner selection.

WINNERS THROUGH THE YEARS

HOSPITAL*	LOCATION	TOTAL YEAR(S) WON	STUDY EDITIONS																
			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
NorthShore University HealthSystem	Evanston, IL	15		•	•	•	•	•	•	•	•	•		•	•		•	•	•	•
Advocate Lutheran General Hospital	Park Ridge, IL	13			•	•		•	•	•	•	•	•	•	•			•	•	•
Munson Medical Center	Traverse City, MI	13	•				•	•	•	•	•			•	•	•	•	•	•	•
Brigham and Women's Hospital	Boston, MA	12	•	•	•	•	•	•	•	•	•			•		•				•
Vanderbilt University Medical Center	Nashville, TN	12							•	•	•	•	•	•	•	•	•	•	•	•
EMH Regional Medical Center	Elyria, OH	11	•	•				•		•	•	•	•	•	•	•	•			
Hillcrest Hospital	Mayfield Heights, OH	11			•	•		•	•	•	•	•	•			•	•	•		
Mayo Clinic — Rochester Methodist Hospital	Rochester, MN	10		•	•	•	•		•		•	•			•				•	•
Licking Memorial Hospital	Newark, OH	10						•	•	•	•	•	•		•	•	•	•		
Providence St. Vincent Medical Center	Portland, OR	10	•	•				•	•	•	•	•	•		•			•		
Lancaster General Hospital	Lancaster, PA	10					•	•	•	•	•		•		•	•	•	•		
Saint Thomas Hospital	Nashville, TN	10	•	•	•			•	•		•					•		•	•	•
Blake Medical Center	Bradenton, FL	9			•		•	•	•	•	•	•	•		•					
Beth Israel Deaconess Medical Center	Boston, MA	9		•	•	•	•								•	•	•	•		•
Riverside Methodist Hospital	Columbus, OH	9									•	•	•	•	•	•		•	•	•
North Florida Regional Medical Center	Gainesville, FL	8		•	•		•	•	•	•	•	•								
Mercy Medical Center North Iowa	Mason City, IA	8									•	•	•	•		•	•	•		•
Beaumont Hospital, Troy	Troy, MI	8						•	•			•	•	•	•	•				•
Spectrum Health Hospital Group	Grand Rapids, MI	8		•	•			•	•	•							•		•	•
St. Cloud Hospital	St. Cloud, MN	8	•	•					•						•	•	•	•	•	
Mercy Hospital Anderson	Cincinnati, OH	8							•	•		•	•		•	•	•			•
Sanford USD Medical Center	Sioux Falls, SD	8	•	•									•	•	•	•	•		•	
Memorial Health Care System	Chattanooga, TN	8						•						•	•	•	•	•	•	•
Inova Fairfax Hospital	Falls Church, VA	8	•		•		•	•	•	•	•		•							
University of Virginia Medical Center	Charlottesville, VA	8						•	•	•	•	•		•	•			•		
Exempla Lutheran Medical Center	Wheat Ridge, CO	7	•	•		•		•			•	•			•					
Saint Francis Hospital and Medical Center	Hartford, CT	7					•	•		•	•	•	•	•						
Mease Countryside Hospital	Safety Harbor, FL	7					•		•	•	•		•	•			•			

*List is ordered by years won, then state, then hospital name.

HOSPITAL*	LOCATION	TOTAL YEAR(S) WON	STUDY EDITIONS																
			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Regional Medical Center Bayonet Point	Hudson, FL	7			•			•	•	•	•	•	•							
St. Luke's Boise Medical Center	Boise, ID	7	•	•	•									•			•	•	•	
Silver Cross Hospital	Joliet, IL	7												•	•	•	•	•	•	•
University of Michigan Hospitals & Health Centers	Ann Arbor, MI	7	•	•										•	•	•	•	•		
Cleveland Clinic Foundation	Cleveland, OH	7		•	•	•	•	•		•	•									
Kettering Medical Center	Kettering, OH	7								•	•			•	•	•	•			•
Southwest General Health Center	Middleburg Heights, OH	7	•												•	•	•	•	•	•
Geisinger Medical Center	Danville, PA	7					•	•			•				•	•			•	•
York Hospital	York, PA	7					•	•	•	•	•			•	•					
Scott and White Memorial Hospital	Temple, TX	7											•	•	•	•	•	•	•	
Castleview Hospital	Price, UT	7		•	•	•		•	•	•								•		
St. Joseph Medical Center	Tacoma, WA	7		•	•	•	•	•	•		•									
Chambers Memorial Hospital	Danville, AR	6											•	•	•	•	•	•		
Poudre Valley Hospital	Fort Collins, CO	6		•									•	•	•	•	•			
Community Hospital	New Port Richey, FL	6			•	•	•	•		•	•									
Kendall Regional Medical Center	Miami, FL	6			•	•	•	•			•						•			
Leesburg Regional Medical Center	Leesburg, FL	6				•	•	•	•	•	•									
Martin Memorial Medical Center	Stuart, FL	6						•	•		•	•							•	•
Palmetto General Hospital	Hialeah, FL	6					•	•	•	•	•		•							
Northwestern Memorial Hospital	Chicago, IL	6					•	•			•							•	•	•
St. Elizabeth Healthcare	Edgewood, KY	6					•									•	•	•	•	•
Beverly Hospital	Beverly, MA	6								•	•	•			•	•				•
Newton-Wellesley Hospital	Newton, MA	6		•							•		•	•	•	•				
Holland Hospital	Holland, MI	6													•	•	•	•	•	•
William Beaumont Hospital — Royal Oak	Royal Oak, MI	6					•	•	•	•	•		•							
St. Luke's Hospital	Chesterfield, MO	6				•				•	•	•		•	•					
University Hospitals Case Medical Center	Cleveland, OH	6													•	•	•	•	•	•
Medical Center of Southeastern Oklahoma	Durant, OK	6			•	•	•	•	•	•										
DuBois Regional Medical Center	DuBois, PA	6	•								•		•	•		•			•	
DeKalb Community Hospital	Smithville, TN	6			•	•		•	•	•	•									
Harris Methodist Fort Worth	Fort Worth, TX	6		•	•	•	•	•	•											
American Fork Hospital	American Fork, UT	6		•			•	•	•										•	•
Southwest Washington Medical Center	Vancouver, WA	6		•					•	•		•			•	•				
Appleton Medical Center	Appleton, WI	6		•					•	•	•	•	•							

*List is ordered by years won, then state, then hospital name.

HOSPITAL*	LOCATION	TOTAL YEAR(S) WON	STUDY EDITIONS																
			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
St. Joseph's Hospital and Medical Center	Phoenix, AZ	5									•	•		•			•	•		
University Medical Center	Tucson, AZ	5													•	•	•	•	•	
Desert Valley Hospital	Victorville, CA	5											•		•	•		•	•	
St. Elizabeth Community Hospital	Red Bluff, CA	5														•	•	•	•	•
Exempla Saint Joseph Hospital	Denver, CO	5	•	•			•		•			•								
Rose Medical Center	Denver, CO	5									•	•					•	•	•	
Aventura Hospital and Medical Center	Aventura, FL	5			•	•	•		•	•										
Brandon Regional Hospital	Brandon, FL	5			•	•	•		•	•										
Gulf Coast Medical Center	Fort Myers, FL	5				•	•				•		•		•					
Largo Medical Center	Largo, FL	5		•	•		•			•					•					
Morton Plant Hospital	Clearwater, FL	5							•	•	•		•	•						
Piedmont Fayette Hospital	Fayetteville, GA	5											•	•	•	•			•	
WellStar Kennestone Hospital	Marietta, GA	5	•					•	•	•	•									
Central DuPage Hospital	Winfield, IL	5														•	•	•	•	•
St. Vincent Indianapolis Hospital	Indianapolis, IN	5						•	•									•	•	•
Baptist Hospital East	Louisville, KY	5												•	•	•	•	•		
Flaget Memorial Hospital	Bardstown, KY	5												•	•	•	•			•
King's Daughters Medical Center	Ashland, KY	5												•	•	•	•	•		
Meadowview Regional Medical Center	Maysville, KY	5			•			•	•		•	•								
University of Kentucky Albert B. Chandler Hospital	Lexington, KY	5	•	•	•											•	•			
Cape Cod Hospital	Hyannis, MA	5					•	•	•		•				•					
Allegiance Health	Jackson, MI	5			•	•											•		•	•
Spectrum Health Hospitals	Grand Rapids, MI	5		•	•	•	•				•									
Mayo Clinic — Saint Marys Hospital	Rochester, MN	5		•								•	•	•				•		
St. John's Mercy Hospital	Washington, MO	5			•			•	•	•		•								
Saint Elizabeth Regional Medical Center	Lincoln, NE	5	•										•	•		•		•		
Aultman Hospital	Canton, OH	5						•	•	•									•	•
Mercy Hospital Clermont	Batavia, OH	5										•				•		•	•	•
The Christ Hospital	Cincinnati, OH	5	•		•			•		•	•									
The Ohio State University Medical Center	Columbus, OH	5	•	•	•					•		•								
UPMC Hamot	Erie, PA	5								•					•			•	•	•
Robert Packer Hospital	Sayre, PA	5														•	•	•	•	•
Jamestown Regional Medical Center	Jamestown, TN	5			•	•	•	•				•								
St. Mark's Hospital	Salt Lake City, UT	5		•							•	•	•		•					

*List is ordered by years won, then state, then hospital name.

HOSPITAL*	LOCATION	TOTAL YEAR(S) WON	STUDY EDITIONS																
			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Valley View Medical Center	Cedar City, UT	5						•	•	•	•	•								
Providence Regional Medical Center Everett	Everett, WA	5	•	•											•		•	•		
St. Francis Hospital	Federal Way, WA	5							•	•	•	•	•							
Gundersen Lutheran Health System	La Crosse, WI	5					•										•	•	•	•
Theda Clark Medical Center	Neenah, WI	5	•						•	•	•		•							
Northwest Medical Center	Tucson, AZ	4										•	•	•			•			
Pomona Valley Hospital Medical Center	Pomona, CA	4				•		•	•	•										
Scripps Green Hospital	La Jolla, CA	4												•	•				•	•
Torrance Memorial Medical Center	Torrance, CA	4	•	•	•									•						
UCSF Medical Center	San Francisco, CA	4		•	•	•	•													
Hartford Hospital	Hartford, CT	4				•	•	•		•										
Middlesex Hospital	Middletown, CT	4												•			•	•		•
Cleveland Clinic Florida	Weston, FL	4													•			•	•	•
Delray Medical Center	Delray Beach, FL	4									•	•	•	•						
JFK Medical Center	Atlantis, FL	4			•					•	•		•							
Lee Memorial Health System	Fort Myers, FL	4		•								•	•	•						
Memorial Hospital of Jacksonville	Jacksonville, FL	4					•	•	•	•										
Palms West Hospital	Loxahatchee, FL	4			•					•	•	•								
Wellington Regional Medical Center	Wellington, FL	4										•	•	•	•					
Riverside Medical Center	Kankakee, IL	4															•	•	•	•
Shelby Memorial Hospital	Shelbyville, IL	4						•	•	•					•					
Saint Joseph East	Lexington, KY	4													•		•	•		•
Baystate Medical Center	Springfield, MA	4							•		•					•				•
Milford Regional Medical Center	Milford, MA	4							•	•	•	•								
Washington County Health System	Hagerstown, MD	4					•	•		•		•								
Gerber Memorial Health Services	Fremont, MI	4	•						•					•	•					
Providence Hospital and Medical Center	Southfield, MI	4				•											•	•	•	
Spectrum Health United Memorial	Greenville, MI	4					•	•		•										•
St. Joseph Mercy Saline Hospital	Saline, MI	4														•	•	•	•	
Lakeview Hospital	Stillwater, MN	4											•			•	•	•		
St. Mary's Medical Center	Duluth, MN	4		•	•		•		•											
Carolinas Medical Center — NorthEast	Concord, NC	4									•	•	•	•						
Albany Medical Center	Albany, NY	4		•			•	•	•											
Bethesda North Hospital	Cincinnati, OH	4												•	•	•	•			

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			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Fairview Hospital	Cleveland, OH	4													●	●	●			●
Summa Health System	Akron, OH	4									●	●		●	●					
Sycamore Medical Center	Miamisburg, OH	4														●	●	●		●
University Hospital	Cincinnati, OH	4	●		●						●		●							
Providence Portland Medical Center	Portland, OR	4	●	●					●	●										
St. Charles Medical Center — Bend	Bend, OR	4	●	●							●				●					
The Western Pennsylvania Hospital	Pittsburgh, PA	4									●	●	●					●		
UPMC Northwest	Seneca, PA	4									●	●	●	●						
Avera McKennan Hospital and University Health Center	Sioux Falls, SD	4														●	●	●	●	
Baptist Hospital	Nashville, TN	4			●			●			●								●	
Baptist Hospital of East Tennessee	Knoxville, TN	4					●	●	●	●										
Centennial Medical Center	Nashville, TN	4					●										●	●		●
Hendersonville Medical Center	Hendersonville, TN	4			●	●				●	●									
Brackenridge Hospital	Austin, TX	4				●					●	●	●							
Clear Lake Regional Medical Center	Webster, TX	4				●	●	●	●											
East Texas Medical Center Tyler	Tyler, TX	4					●	●					●		●					
St. Clare Hospital	Lakewood, WA	4							●		●	●	●							
Aurora Sheboygan Memorial Medical Center	Sheboygan, WI	4															●	●	●	●
Bellin Hospital	Green Bay, WI	4	●						●		●	●								
University of Wisconsin Hospital and Clinics	Madison, WI	4	●									●		●		●				
Andalusia Regional Hospital	Andalusia, AL	3													●		●			●
Mt. Graham Regional Medical Center	Safford, AZ	3			●	●	●													
Paradise Valley Hospital	Phoenix, AZ	3					●			●						●				
Payson Regional Medical Center	Payson, AZ	3														●			●	●
Wickenburg Regional Health Center	Wickenburg, AZ	3		●	●	●														
Tri-City Medical Center	Oceanside, CA	3		●	●	●														
St. Anthony North Hospital	Westminster, CO	3					●	●			●									
Danbury Hospital	Danbury, CT	3												●	●	●				
Yale-New Haven Hospital	New Haven, CT	3											●	●		●				
Baptist Hospital of Miami	Miami, FL	3							●		●	●								
Orange Park Medical Center	Orange Park, FL	3				●					●	●								
Orlando Regional Medical Center	Orlando, FL	3			●	●		●												
St. Vincent's Medical Center	Jacksonville, FL	3		●	●	●														
Fairview Park Hospital	Dublin, GA	3								●	●	●								

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Meadows Regional Medical Center	Vidalia, GA	3													•	•		•		
WellStar Douglas Hospital	Douglasville, GA	3							•	•	•									
St. Luke's Hospital	Cedar Rapids, IA	3												•	•				•	
Advocate Christ Medical Center	Oak Lawn, IL	3						•	•	•										
Centegra Northern Illinois Medical Center	McHenry, IL	3													•	•	•			
Crossroads Community Hospital	Mount Vernon, IL	3				•	•	•												
Memorial Hospital of Carbondale	Carbondale, IL	3												•	•	•				
Marion General Hospital	Marion, IN	3	•														•	•		
St. Mary's Medical Center	Evansville, IN	3		•	•	•														
Wishard Health Services	Indianapolis, IN	3	•	•	•															
Shawnee Mission Medical Center	Shawnee Mission, KS	3										•		•	•					
Georgetown Community Hospital	Georgetown, KY	3					•	•				•								
Harlan ARH Hospital	Harlan, KY	3						•									•			•
Kentucky River Medical Center	Jackson, KY	3									•	•			•					
Whitesburg ARH	Whitesburg, KY	3	•								•	•								
Minden Medical Center	Minden, LA	3											•						•	•
Bronson Methodist Hospital	Kalamazoo, MI	3													•				•	•
Central Michigan Community Hospital	Mount Pleasant, MI	3	•															•		•
Metro Health Hospital	Wyoming, MI	3														•	•	•		
MidMichigan Medical Center — Midland	Midland, MI	3														•	•	•		
Otsego Memorial Hospital	Gaylord, MI	3							•	•		•								
St. John Hospital & Medical Center	Detroit, MI	3													•	•	•			
St. Joseph Mercy Hospital	Ann Arbor, MI	3				•			•										•	
St. Mary Mercy Livonia Hospital	Livonia, MI	3														•	•	•		
Buffalo Hospital	Buffalo, MN	3				•			•										•	
Fairview Ridges Hospital	Burnsville, MN	3	•					•			•									
St. John's Hospital	Maplewood, MN	3		•									•	•						
Boone Hospital Center	Columbia, MO	3												•					•	•
Missouri Baptist Medical Center	St. Louis, MO	3																•	•	•
St. John's Hospital	Springfield, MO	3	•	•										•						
St. John's Mercy Medical Center	St. Louis, MO	3						•	•	•										
FirstHealth Moore Regional Hospital	Pinehurst, NC	3			•								•	•						
Heritage Hospital	Tarboro, NC	3			•	•	•													
Mission Hospitals	Asheville, NC	3		•									•	•						
Alegent Health Bergan Mercy Medical Center	Omaha, NE	3									•							•	•	
Speare Memorial Hospital	Plymouth, NH	3										•	•	•						

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Staten Island University Hospital	Staten Island, NY	3				●	●	●												
Akron General Medical Center	Akron, OH	3				●					●	●								
Good Samaritan Hospital	Cincinnati, OH	3															●	●		●
Grandview Medical Center	Dayton, OH	3									●				●		●			
Grant Medical Center	Columbus, OH	3				●	●							●						
Mercy Medical Center	Springfield, OH	3				●						●		●						
Wooster Community Hospital	Wooster, OH	3															●	●	●	
Duncan Regional Hospital	Duncan, OK	3													●		●	●		
Providence Milwaukie Hospital	Milwaukie, OR	3		●							●		●							
Willamette Valley Medical Center	McMinnville, OR	3			●	●	●													
Paoli Hospital	Paoli, PA	3											●	●						●
Thomas Jefferson University Hospital	Philadelphia, PA	3					●			●	●									
UPMC Bedford Memorial	Everett, PA	3		●							●	●								
Copper Basin Medical Center	Copperhill, TN	3			●		●				●									
Maury Regional Medical Center	Columbia, TN	3	●														●		●	
Riverview Regional Medical Center — South Campus	Carthage, TN	3				●	●						●							
St. Mary's Jefferson Memorial Hospital	Jefferson City, TN	3																●	●	●
Trinity Hospital	Erin, TN	3					●					●			●					
Citizens Medical Center	Victoria, TX	3														●	●	●		
Doctors Hospital at Renaissance	Edinburg, TX	3															●	●	●	
Harris Methodist Walls Regional Hospital	Cleburne, TX	3		●	●			●												
Houston Northwest Medical Center	Houston, TX	3								●	●	●								
Lake Pointe Medical Center	Rowlett, TX	3				●					●		●							
Lake Whitney Medical Center	Whitney, TX	3															●	●	●	
McAllen Medical Center	McAllen, TX	3					●	●	●											
Memorial Hermann Hospital System	Houston, TX	3				●			●											●
Parkland Health and Hospital System	Dallas, TX	3								●		●					●			
Trinity Mother Frances Hospital	Tyler, TX	3														●			●	●
University Health System	San Antonio, TX	3					●						●	●						
University Medical Center of El Paso	El Paso, TX	3			●	●											●			
Alta View Hospital	Sandy, UT	3	●			●		●												
Brigham City Community Hospital	Brigham City, UT	3			●	●											●			
Intermountain Medical Center	Murray, UT	3	●						●	●										
Augusta Health	Fishersville, VA	3					●	●												●

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Winchester Medical Center	Winchester, VA	3		•											•	•				
New London Family Medical Center	New London, WI	3			•	•				•										
Sauk Prairie Memorial Hospital and Clinics	Prairie du Sac, WI	3								•			•	•						
Banner Mesa Medical Center	Mesa, AZ	2			•	•														
Carondelet St. Joseph's Hospital	Tucson, AZ	2									•	•								
Carondelet St. Mary's Hospital	Tucson, AZ	2										•		•						
Scottsdale Healthcare Shea	Scottsdale, AZ	2												•					•	
Tucson Medical Center	Tucson, AZ	2			•									•						
Barstow Community Hospital	Barstow, CA	2				•	•													
Community & Mission Hospitals of Huntington Park	Huntington Park, CA	2				•	•													
El Camino Hospital	Mountain View, CA	2	•	•																
Garfield Medical Center	Monterey Park, CA	2					•	•												
Hoag Memorial Hospital Presbyterian	Newport Beach, CA	2	•	•																
Inland Valley Medical Center	Wildomar, CA	2		•							•									
Mercy General Hospital	Sacramento, CA	2					•									•				
Mercy San Juan Medical Center	Carmichael, CA	2														•	•			
Mills-Peninsula Health Services	Burlingame, CA	2						•	•											
Scripps Mercy Hospital	San Diego, CA	2								•	•									
Sutter Davis Hospital	Davis, CA	2															•			•
Sutter Medical Center, Sacramento	Sacramento, CA	2									•	•								
UCI Medical Center	Orange, CA	2											•	•						
West Anaheim Medical Center	Anaheim, CA	2																•		•
Penrose-St. Francis Health Services	Colorado Springs, CO	2						•					•							
Porter Adventist Hospital	Denver, CO	2									•		•							
St. Anthony Central Hospital	Denver, CO	2						•			•									
Swedish Medical Center	Englewood, CO	2										•	•							
Hospital of St. Raphael	New Haven, CT	2						•	•											
Baptist Medical Center	Jacksonville, FL	2				•	•													
Bayfront Medical Center	St. Petersburg, FL	2						•			•									
Cape Coral Hospital	Cape Coral, FL	2								•		•								
Citrus Memorial Hospital	Inverness, FL	2	•					•												
Florida Hospital — Flagler	Palm Coast, FL	2												•	•					
Gulf Coast Medical Center	Fort Myers, FL	2				•	•													
Gulf Coast Medical Center	Panama City, FL	2			•				•											
Jackson North Medical Center	North Miami Beach, FL	2		•				•												
Memorial Hospital West	Pembroke Pines, FL	2																•	•	

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Munroe Regional Medical Center	Ocala, FL	2							•				•							
Pasco Regional Medical Center	Dade City, FL	2					•						•							
Seven Rivers Regional Medical Center	Crystal River, FL	2							•		•									
South Miami Hospital	South Miami, FL	2							•			•								
University Hospital and Medical Center	Tamarac, FL	2			•	•														
University of Miami Hospital	Miami, FL	2					•	•												
Donalsonville Hospital	Donalsonville, GA	2							•		•									
Hamilton Medical Center	Dalton, GA	2			•	•														
MCG Health Medical Center	Augusta, GA	2										•					•			
Piedmont Hospital	Atlanta, GA	2									•			•						
Saint Joseph's Hospital of Atlanta	Atlanta, GA	2	•												•					
Tanner Medical Center — Villa Rica	Villa Rica, GA	2				•					•									
Union General Hospital	Blairsville, GA	2		•													•			
Fort Madison Community Hospital	Fort Madison, IA	2									•			•						
The Finley Hospital	Dubuque, IA	2	•																•	
St. Benedict's Family Medical Center	Jerome, ID	2						•	•											
St. Mary's Hospital & Clinics	Cottonwood, ID	2			•					•										
Advocate Good Samaritan Hospital	Downers Grove, IL	2																•		•
Advocate Illinois Masonic Medical Center	Chicago, IL	2																	•	•
Greenville Regional Hospital	Greenville, IL	2										•		•						
MacNeal Hospital	Berwyn, IL	2	•			•														
Morris Hospital and Healthcare Centers	Morris, IL	2	•													•				
Northwest Community Hospital	Arlington Heights, IL	2									•					•				
Trinity Rock Island	Rock Island, IL	2														•				•
University of Chicago Medical Center	Chicago, IL	2			•										•					
Columbus Regional Hospital	Columbus, IN	2																•		•
Community Hospital	Munster, IN	2																	•	•
Deaconess Hospital and Health System	Evansville, IN	2			•	•														
Major Hospital	Shelbyville, IN	2																•	•	
Memorial Hospital and Health System	South Bend, IN	2													•					•
Memorial Hospital and Health Care Center	Jasper, IN	2												•				•		
St. Francis Hospital and Health Centers	Beech Grove, IN	2																•	•	

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The King's Daughters' Hospital and Health Services	Madison, IN	2															•	•		
St. Francis Health Center	Topeka, KS	2		•		•														
Bourbon Community Hospital	Paris, KY	2					•	•												
Hardin Memorial Hospital	Elizabethtown, KY	2														•	•			
Manchester Memorial Hospital	Manchester, KY	2								•	•									
Trover Health System	Madisonville, KY	2										•							•	
Wayne County Hospital	Monticello, KY	2			•	•														
Ochsner Medical Center	New Orleans, LA	2																	•	•
Massachusetts General Hospital	Boston, MA	2									•									•
MetroWest Medical Center	Natick, MA	2			•	•														
Saint Vincent Hospital	Worcester, MA	2								•										•
St. Luke's Hospital	New Bedford, MA	2			•	•														
Winchester Hospital	Winchester, MA	2					•													•
Northwest Hospital Center	Randallstown, MD	2									•	•								
The Johns Hopkins Hospital	Baltimore, MD	2	•	•																
Union Hospital	Elkton, MD	2									•			•						
Union Memorial Hospital	Baltimore, MD	2											•					•		
Chelsea Community Hospital	Chelsea, MI	2	•																•	
Gratiot Medical Center	Alma, MI	2														•		•		
Hackley Hospital	Muskegon, MI	2														•	•			
McLaren Regional Medical Center	Flint, MI	2								•						•				
Mecosta County Medical Center	Big Rapids, MI	2													•	•				
Mercy Hospital Cadillac	Cadillac, MI	2																•		•
St. Joseph Health System	Tawas City, MI	2																	•	•
St. Joseph Mercy Livingston Hospital	Howell, MI	2																	•	•
Douglas County Hospital	Alexandria, MN	2									•							•		
Fairview Southdale Hospital	Edina, MN	2	•				•													
Mercy Hospital	Coon Rapids, MN	2		•																•
Park Nicolett Methodist Hospital	St. Louis Park, MN	2								•				•						
United Hospital	St. Paul, MN	2		•	•															
Cox Health	Springfield, MO	2				•	•													
Northeast Regional Medical Center	Kirksville, MO	2															•		•	
Parkland Health Center — Farmington	Farmington, MO	2															•	•		
SSM St. Joseph Hospital West	Lake Saint Louis, MO	2								•			•							
St. John's Regional Medical Center	Joplin, MO	2														•		•		
Franklin Regional Medical Center	Louisburg, NC	2			•	•														

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Gaston Memorial Hospital	Gastonia, NC	2									•								•	
Jamestown Hospital	Jamestown, ND	2	•															•		
Parkland Medical Center	Derry, NH	2			•						•									
St. Peter's Hospital	Albany, NY	2						•			•									
Adena Regional Medical Center	Chillicothe, OH	2											•		•					
Atrium Medical Center	Franklin, OH	2						•	•											
Blanchard Valley Hospital	Findlay, OH	2													•					•
Brown County General Hospital	Georgetown, OH	2									•	•								
Doctors Hospital	Columbus, OH	2																	•	•
Dunlap Memorial Hospital	Orrville, OH	2										•	•							
Good Samaritan Hospital	Dayton, OH	2								•	•									
Lake Hospital System	Painesville, OH	2										•			•					
Mercy Hospital Fairfield	Fairfield, OH	2													•					•
Mercy Medical Center	Canton, OH	2									•	•								
St. Rita's Medical Center	Lima, OH	2				•			•											
University Hospitals Geauga Regional Hospital	Chardon, OH	2						•			•									
Mercy Health Center	Oklahoma City, OK	2	•	•																
Grande Ronde Hospital	La Grande, OR	2	•	•																
Sacred Heart Medical Center	Eugene, OR	2	•	•																
Samaritan Lebanon Community Hospital	Lebanon, OR	2	•	•																
Bryn Mawr Hospital	Bryn Mawr, PA	2																•		•
Butler Memorial Hospital	Butler, PA	2											•	•						
Excela Health Latrobe Area Hospital	Latrobe, PA	2					•					•								
Excela Health Westmoreland	Greensburg, PA	2								•	•									
Punxsutawney Area Hospital	Punxsutawney, PA	2						•	•											
St. Joseph Medical Center	Reading, PA	2									•	•								
St. Luke's Hospital and Health Network	Bethlehem, PA	2					•				•									
St. Mary Medical Center	Langhorne, PA	2										•	•							
The Reading Hospital and Medical Center	West Reading, PA	2						•			•									
UPMC Passavant	Pittsburgh, PA	2								•	•									
UPMC St. Margaret	Pittsburgh, PA	2											•	•						
Medical University of South Carolina	Charleston, SC	2				•	•													
Trident Health System	Charleston, SC	2						•	•											
Prairie Lakes Healthcare System	Watertown, SD	2												•	•					
Cookeville Regional Medical Center	Cookeville, TN	2														•	•			
LeConte Medical Center	Sevierville, TN	2															•			•

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Parkridge Medical Center	Chattanooga, TN	2									•		•							
St. Mary's Medical Center of Campbell County	LaFollette, TN	2															•	•		
Central Texas Hospital	Cameron, TX	2													•	•				
Corpus Christi Medical Center	Corpus Christi, TX	2									•									•
East Houston Regional Medical Center	Houston, TX	2			•								•							
Harris County Hospital District	Houston, TX	2		•	•															
Llano Memorial Healthcare System	Llano, TX	2		•	•															
Memorial Hermann Katy Hospital	Katy, TX	2																	•	•
Memorial Hermann — Texas Medical Center	Houston, TX	2			•	•														
Seton Medical Center Austin	Austin, TX	2		•									•							
St. David's Medical Center	Austin, TX	2																	•	•
Lakeview Hospital	Bountiful, UT	2				•					•									
Logan Regional Hospital	Logan, UT	2								•	•									
Mountain View Hospital	Payson, UT	2			•		•													
San Juan Hospital	Monticello, UT	2											•	•						
Memorial Regional Medical Center	Mechanicsville, VA	2																•	•	
Sentara Leigh Hospital	Norfolk, VA	2									•	•								
Sentara Virginia Beach General Hospital	Virginia Beach, VA	2								•	•									
VCU Medical Center	Richmond, VA	2					•					•								
St. Mary Medical Center	Walla Walla, WA	2	•													•				
Sunnyside Community Hospital	Sunnyside, WA	2		•				•												
Valley Medical Center	Renton, WA	2											•	•						
Whitman Hospital and Medical Center	Colfax, WA	2		•	•															
Aurora West Allis Medical Center	West Allis, WI	2															•	•		
Baldwin Area Medical Center	Baldwin, WI	2			•	•														
Bay Area Medical Center	Marinette, WI	2												•		•				
Meriter Hospital	Madison, WI	2																	•	•
Monroe Clinic	Monroe, WI	2														•		•		
St. Elizabeth Hospital	Appleton, WI	2									•			•						
St. Mary's Hospital	Madison, WI	2		•												•				
Waukesha Memorial Hospital	Waukesha, WI	2			•													•		
Powell Valley Healthcare	Powell, WY	2					•		•											
Baptist Medical Center East	Montgomery, AL	1																	•	
Evergreen Medical Center	Evergreen, AL	1																	•	
Hill Hospital of Sumter County	York, AL	1									•									
J. Paul Jones Hospital	Camden, AL	1											•							

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Lake Martin Community Hospital	Dadeville, AL	1									•									
Lanier Health Services	Valley, AL	1						•												
Medical Center Barbour	Eufaula, AL	1	•																	
Medical Center Enterprise	Enterprise, AL	1								•										
Riverview Regional Medical Center	Gadsden, AL	1					•													
Russell Medical Center	Alexander City, AL	1																		•
Russellville Hospital	Russellville, AL	1						•												
Southwest Alabama Medical Center	Thomasville, AL	1								•										
Thomas Hospital	Fairhope, AL	1																		•
UAB Hospital	Birmingham, AL	1				•														
Wedowee Hospital	Wedowee, AL	1							•											
Booneville Community Hospital	Booneville, AR	1									•									
Arrowhead Hospital	Glendale, AZ	1														•				
Community Hospital Medical Center	Phoenix, AZ	1			•															
John C. Lincoln — North Mountain	Phoenix, AZ	1											•							
La Paz Regional Hospital	Parker, AZ	1															•			
Mayo Clinic Hospital	Phoenix, AZ	1											•							
Mesa General Hospital	Mesa, AZ	1					•													
Sun Health Boswell Hospital	Sun City, AZ	1											•							
Tempe St Luke's Hospital	Tempe, AZ	1								•										
Yavapai Regional Medical Center	Prescott, AZ	1													•					
CHA Hollywood Presbyterian Medical Center	Los Angeles, CA	1				•														
Citrus Valley Medical Center — Queen of the Valley Campus	West Covina, CA	1	•																	
Eisenhower Medical Center	Rancho Mirage, CA	1												•						
Fairchild Medical Center	Yreka, CA	1												•						
Fountain Valley Regional Hospital and Medical Center	Fountain Valley, CA	1				•														
Good Samaritan Medical Center	San Jose, CA	1			•															
Hemet Valley Medical Center	Hemet, CA	1							•											
Lakewood Regional Medical Center	Lakewood, CA	1	•																	
Lancaster Community Hospital	Lancaster, CA	1				•														
Mercy Hospital of Folsom	Folsom, CA	1											•							
Methodist Hospital of Southern California	Arcadia, CA	1	•																	
Montclair Hospital Medical Center	Montclair, CA	1																	•	
O'Connor Hospital	San Jose, CA	1		•																

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HOSPITAL*	LOCATION	TOTAL YEAR(S) WON	STUDY EDITIONS																
			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Pacific Alliance Medical Center	Los Angeles, CA	1															•			
Parkview Community Hospital Medical Center	Riverside, CA	1	•																	
Plumas District Hospital	Quincy, CA	1					•													
Providence Little Company of Mary Medical Center	Torrance, CA	1	•																	
Providence Saint Joseph Medical Center	Burbank, CA	1						•												
Saddleback Memorial Medical Center	Laguna Hills, CA	1																	•	
Saint Agnes Medical Center	Fresno, CA	1				•														
San Antonio Community Hospital	Upland, CA	1																•		
Santa Ana Hospital Medical Center	Santa Ana, CA	1									•									
Sierra Kings District Hospital	Reedley, CA	1		•																
Sierra Nevada Memorial Hospital	Grass Valley, CA	1												•						
Sonora Regional Medical Center	Sonora, CA	1						•												
Stanford Hospital & Clinics	Stanford, CA	1		•																
UC Davis Medical Center	Sacramento, CA	1		•																
UC San Diego Medical Center — Hillcrest	San Diego, CA	1																	•	
Avista Adventist Hospital	Louisville, CO	1									•									
Community Hospital	Grand Junction, CO	1									•									
Denver Health Medical Center	Denver, CO	1													•					
Montrose Memorial Hospital	Montrose, CO	1	•																	
North Colorado Medical Center	Greeley, CO	1									•									
Presbyterian/St. Luke's Medical Center	Denver, CO	1									•									
San Luis Valley Regional Medical Center	Alamosa, CO	1		•																
The Medical Center of Aurora	Aurora, CO	1											•							
University of Colorado Hospital	Aurora, CO	1				•														
Valley View Hospital	Glenwood Springs, CO	1												•						
University of Connecticut Health Center	Farmington , CT	1														•				
Washington Hospital Center	Washington, DC	1							•											
Christiana Care Health System	Wilmington, DE	1								•										
Baptist Medical Center Nassau	Fernandina Beach, FL	1									•									
Bay Medical Center	Panama City, FL	1												•						
Bethesda Memorial Hospital	Boynton Beach, FL	1		•																
Boca Raton Community Hospital	Boca Raton, FL	1						•												

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Columbia Pompano Beach Medical Center	Pompano Beach, FL	1			•															
Doctor's Memorial Hospital	Perry, FL	1					•													
Englewood Community Hospital	Englewood, FL	1									•									
Florida Hospital — Ormond Memorial	Ormond Beach, FL	1											•							
Florida Medical Center	Fort Lauderdale, FL	1								•										
Halifax Health Medical Center	Daytona Beach, FL	1										•								
Manatee Memorial Hospital	Bradenton, FL	1											•							
Memorial Hospital Miramar	Miramar, FL	1																	•	
Memorial Regional Hospital South	Tampa, FL	1			•															
North Okaloosa Medical Center	Crestview, FL	1									•									
Northwest Medical Center	Margate, FL	1				•														
Oak Hill Hospital	Brooksville, FL	1									•									
Ocala Regional Medical Center	Ocala, FL	1									•									
Palms of Pasadena Hospital	Saint Petersburg, FL	1								•										
Putnam Community Medical Center	Palatka, FL	1						•												
Sacred Heart Hospital on the Emerald Coast	Miramar Beach, FL	1																•		
Sarasota Memorial Hospital	Sarasota, FL	1											•							
Sebastian River Medical Center	Sebastian, FL	1													•					
St. Joseph's Hospital	Tampa, FL	1															•			
St. Luke's Hospital	Jacksonville, FL	1															•			
The Villages Regional Hospital	The Villages, FL	1														•				
Venice Regional Medical Center	Venice, FL	1																	•	
West Florida Hospital	Pensacola, FL	1			•															
Coliseum Medical Centers	Macon, GA	1			•															
Doctors Hospital	Augusta, GA	1								•										
East Georgia Regional Medical Center	Statesboro, GA	1							•											
Emory University Hospital	Atlanta, GA	1		•																
Fannin Regional Hospital	Blue Ridge, GA	1										•								
Flint River Community Hospital	Montezuma, GA	1				•														
Grady General Hospital	Cairo, GA	1									•									
Medical Center of Central Georgia	Macon, GA	1	•																	
Northeast Georgia Medical Center	Gainesville, GA	1																	•	
South Fulton Medical Center	East Point, GA	1	•																	
St. Joseph's/Candler Hospital	Savannah, GA	1				•														
Wellstar Cobb Hospital	Austell, GA	1		•																
Wilcox Memorial Hospital	Lihue, HI	1							•											

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			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Allen Hospital	Waterloo, IA	1												●						
Burgess Health Center	Onawa, IA	1			●															
Floyd Valley Hospital	Le Mars, IA	1												●						
Greater Regional Medical Center	Creston, IA	1	●																	
Henry County Health Center	Mount Pleasant, IA	1		●																
Mercy Medical Center — Dubuque	Dubuque, IA	1																●		
Sartori Memorial Hospital	Cedar Falls, IA	1											●							
Winneshiek Medical Center	Decorah, IA	1												●						
Eastern Idaho Regional Medical Center	Idaho Falls, ID	1									●									
Gritman Medical Center	Moscow, ID	1		●																
Madison Memorial Hospital	Rexburg, ID	1	●																	
Twin Falls Clinic and Hospital	Twin Falls, ID	1					●													
Carle Foundation Hospital	Urbana, IL	1																	●	
Decatur Memorial Hospital	Decatur, IL	1																	●	
Edward Hospital	Naperville, IL	1																	●	
FHN Memorial Hospital	Freeport, IL	1															●			
Heartland Regional Medical Center	Marion, IL	1									●									
Hillsboro Area Hospital	Hillsboro, IL	1						●												
Iroquois Memorial Hospital	Watseka, IL	1												●						
MetroSouth Medical Center	Blue Island, IL	1									●									
Michael Reese Hospital and Medical Center	Chicago, IL	1			●															
Ottawa Regional Hospital & Healthcare Center	Ottawa, IL	1		●																
Rush University Medical Center	Chicago, IL	1																	●	
Rush-Copley Medical Center	Aurora, IL	1														●				
Sarah Bush Lincoln Health Center	Mattoon, IL	1													●					
St. Alexius Medical Center	Hoffman Estates, IL	1							●											
SwedishAmerican Hospital	Rockford, IL	1							●											
Vista Medical Center East	Waukegan, IL	1	●																	
Ball Memorial Hospital	Muncie, IN	1								●										
Clarian Health/Indiana University Medical Center	Indianapolis, IN	1	●																	
Community Hospital Anderson	Anderson, IN	1	●																	
Community Hospital East/North	Indianapolis, IN	1									●									
DeKalb Memorial Hospital	Auburn, IN	1														●				
Floyd Memorial Hospital and Health Services	New Albany, IN	1	●																	
Kosciusko Community Hospital	Warsaw, IN	1																		●
Lutheran Hospital of Indiana	Fort Wayne, IN	1									●									

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Margaret Mary Community Hospital	Batesville, IN	1												•						
Parkview Hospital	Fort Wayne, IN	1				•														
Parkview Huntington Hospital	Huntington, IN	1																	•	
Reid Hospital & Health Care Services	Richmond, IN	1																		•
Saint Joseph Regional Medical Center — South Bend	South Bend, IN	1																•		
Scott Memorial Hospital	Scottsburg, IN	1										•								
St. Francis Hospital — Beech Grove	Beech Grove, IN	1												•						
St. Vincent Carmel Hospital	Carmel, IN	1																	•	
Terre Haute Regional Hospital	Terre Haute, IN	1								•										
Westview Hospital	Indianapolis, IN	1				•														
Goodland Regional Medical Center	Goodland, KS	1				•														
Osborne County Memorial Hospital	Osborne, KS	1			•															
Scott County Hospital	Scott City, KS	1					•													
St. John's Hospital	Salina, KS	1	•																	
Breckinridge Memorial Hospital	Hardinsburg, KY	1				•														
Clark Regional Medical Center	Winchester, KY	1									•									
Frankfort Regional Medical Center	Frankfort, KY	1									•									
Jackson Purchase Medical Center	Mayfield, KY	1																	•	
Lake Cumberland Regional Hospital	Somerset, KY	1					•													
McDowell ARH Hospital	McDowell, KY	1											•							
Saint Joseph — London	London, KY	1																•		
Saint Joseph — Martin	Martin, KY	1							•											
Baton Rouge General	Baton Rouge, LA	1		•																
Oakdale Community Hospital	Oakdale, LA	1						•												
Rapides Regional Medical Center	Alexandria, LA	1					•													
West Jefferson Medical Center	Marrero, LA	1				•														
Willis-Knighton Medical Center	Shreveport, LA	1													•					
Willis-Knighton Medical Center South	Shreveport, LA	1		•																
Boston Medical Center	Boston, MA	1											•							
Caritas St. Elizabeth's Medical Center	Boston, MA	1																		•
Hubbard Regional Hospital	Webster, MA	1								•										
NSMC Salem Hospital	Salem, MA	1									•									
South Shore Hospital	South Weymouth, MA	1													•					
Sturdy Memorial Hospital	Attleboro, MA	1									•									

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Anne Arundel Medical Center	Annapolis, MD	1												●						
Baltimore Washington Medical Center	Glen Burnie, MD	1														●				
Franklin Square Hospital Center	Baltimore, MD	1											●							
Greater Baltimore Medical Center	Baltimore, MD	1	●																	
Mercy Medical Center	Baltimore, MD	1				●														
St. Agnes Hospital	Baltimore, MD	1			●															
Maine Medical Center	Portland, ME	1									●									
Bay Regional Medical Center	Bay City, MI	1												●						
Garden City Hospital	Garden City, MI	1															●			
Genesys Regional Medical Center	Grand Blanc, MI	1													●					
Grand View Hospital	Ironwood, MI	1													●					
Mercy Health Partners	Muskegon, MI	1														●				
MidMichigan Medical Center — Clare	Clare, MI	1															●			
Oaklawn Hospital	Marshall, MI	1		●																
Pennock Hospital	Hastings, MI	1														●				
Port Huron Hospital	Port Huron, MI	1														●				
Sparrow Health System	Lansing, MI	1							●											
St. Joseph Mercy Port Huron	Port Huron, MI	1	●																	
Zeeland Community Hospital	Zeeland, MI	1	●																	
Abbott Northwestern Hospital	Minneapolis, MN	1	●																	
Austin Medical Center	Austin, MN	1								●										
Cambridge Medical Center	Cambridge, MN	1	●																	
Clearwater County Memorial Hospital	Bagley, MN	1						●												
District One Hospital	Faribault, MN	1	●																	
Fairview Lakes Medical Center	Wyoming, MN	1			●															
Grand Itasca Clinic and Hospital	Grand Rapids, MN	1								●										
Northfield Hospital	Northfield, MN	1							●											
Olmsted Medical Center	Rochester, MN	1									●									
Perham Memorial Hospital and Home	Perham, MN	1											●							
St. Francis Regional Medical Center	Shakopee, MN	1												●						
St. Joseph's Hospital	St. Paul, MN	1												●						
Swift County — Benson Hospital	Benson, MN	1										●								
University of Minnesota Medical Center, Fairview	Minneapolis, MN	1	●																	
Woodwinds Health Campus	Woodbury, MN	1																	●	
Barnes — Jewish St. Peters Hospital	St. Peters, MO	1																	●	
Freeman Health System	Joplin, MO	1										●								

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			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Missouri Southern Healthcare	Dexter, MO	1													•					
Moberly Regional Medical Center	Moberly, MO	1																		•
Ray County Memorial Hospital	Richmond, MO	1													•					
SSM St. Mary's Health Center	St. Louis, MO	1														•				
St. John's St. Francis Hospital	Mountain View, MO	1									•									
North Mississippi Medical Center	Tupelo, MS	1																•		
The University of Mississippi Medical Center	Jackson, MS	1															•			
Billings Clinic	Billings, MT	1										•								
Community Hospital of Anaconda	Anaconda, MT	1					•													
Marcus Daly Memorial Hospital	Hamilton, MT	1		•																
Duke University Hospital	Durham, NC	1																•		
Morehead Memorial Hospital	Eden, NC	1	•																	
Pitt County Memorial Hospital	Greenville, NC	1										•								
Rex Healthcare	Raleigh, NC	1															•			
Rutherford Hospital, Inc.	Rutherfordton, NC	1																•		
Wake Forest University Baptist Medical Center	Winston-Salem, NC	1											•							
MeritCare Medical Center	Fargo, ND	1											•							
Union Hospital	Mayville, ND	1				•														
BryanLGH Medical Center	Lincoln, NE	1											•							
Creighton University Medical Center	Omaha, NE	1									•									
Niobrara Valley Hospital	Lynch, NE	1			•															
Catholic Medical Center	Manchester, NH	1	•																	
Dartmouth-Hitchcock Medical Center	Lebanon, NH	1									•									
Kennedy Memorial Hospital	Cherry Hill, NJ	1								•										
Robert Wood Johnson University Hospital	New Brunswick, NJ	1														•				
Lea Regional Medical Center	Hobbs, NM	1									•									
Lincoln County Medical Center	Ruidoso, NM	1		•																
Nor-Lea Hospital District	Lovington, NM	1										•								
Presbyterian Hospital	Albuquerque, NM	1	•																	
University of New Mexico Hospital	Albuquerque, NM	1	•																	
University Medical Center	Las Vegas, NV	1					•													
North Shore University Hospital	Manhasset, NY	1									•									
St. Joseph's Hospital Health Center	Syracuse, NY	1									•									
Stony Brook University Hospital	Stony Brook, NY	1				•														
Community Hospitals and Wellness Centers	Bryan, OH	1														•				
Community Memorial Hospital	Hicksville, OH	1		•																

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Forum Health Trumbull Memorial Hospital	Warren, OH	1												•						
Genesis HealthCare System	Zanesville, OH	1																		•
Henry County Hospital	Napoleon, OH	1									•									
Jewish Hospital	Cincinnati, OH	1													•					
Knox Community Hospital	Mount Vernon, OH	1				•														
Lima Memorial Hospital	Lima, OH	1														•				
Memorial Hospital of Union County	Marysville, OH	1										•								
MetroHealth Medical Center	Cleveland, OH	1															•			
Miami Valley Hospital	Dayton, OH	1					•													
Mount Carmel	Columbus, OH	1										•								
Parma Community General Hospital	Parma, OH	1										•								
St. Elizabeth Boardman Health Center	Youngstown, OH	1																	•	
St. Joseph Health Center	Warren, OH	1								•										
Union Hospital	Dover, OH	1																•		
Van Wert County Hospital	Van Wert, OH	1									•									
INTEGRIS Canadian Valley Regional Hospital	Yukon, OK	1													•					
Memorial Hospital	Stilwell, OK	1															•			
OU Medical Center	Oklahoma City, OK	1					•													
Perry Memorial Hospital	Perry, OK	1		•																
Ponca City Medical Center	Ponca City, OK	1																		•
Saint Francis Hospital	Tulsa, OK	1	•																	
Sequoyah Memorial Hospital	Sallisaw, OK	1										•								
Adventist Medical Center	Portland, OR	1	•																	
Good Samaritan Regional Medical Center	Corvallis, OR	1	•																	
Legacy Good Samaritan Hospital and Medical Center	Portland, OR	1	•																	
Legacy Meridian Park Hospital	Tualatin, OR	1		•																
Oregon Health and Science University	Portland, OR	1									•									
Providence Newberg Medical Center	Newberg, OR	1											•							
Rogue Valley Medical Center	Medford, OR	1		•																
Salem Hospital	Salem, OR	1		•																
Silverton Hospital	Silverton, OR	1													•					
Three Rivers Hospital — Dimmick	Grants Pass, OR	1	•																	
Willamette Falls Hospital	Oregon City, OR	1	•																	
Geisinger Wyoming Valley Medical Center	Wilkes-Barre, PA	1												•						

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			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Hospital of the University of Pennsylvania	Philadelphia, PA	1			•															
Lewistown Hospital	Lewistown, PA	1									•									
Southwest Regional Medical Center	Waynesburg, PA	1										•								
St. Clair Hospital	Pittsburgh, PA	1									•									
Titusville Area Hospital	Titusville, PA	1								•										
Tyrone Hospital	Tyrone, PA	1									•									
UPMC Horizon	Greenville, PA	1	•																	
UPMC Presbyterian	Pittsburgh, PA	1											•							
Kent Hospital	Warwick, RI	1									•									
Rhode Island Hospital	Providence, RI	1					•													
Roger Williams Medical Center	Providence, RI	1						•												
Colleton Medical Center	Walterboro, SC	1					•													
Avera St. Benedict Health Center	Parkston, SD	1			•															
Spearfish Regional Hospital	Spearfish, SD	1				•														
Crockett Hospital	Lawrenceburg, TN	1										•								
Cumberland Medical Center	Crossville, TN	1						•												
Cumberland River Hospital	Celina, TN	1					•													
Erlanger Bledsoe Hospital	Pikeville, TN	1									•									
Grandview Medical Center	Jasper, TN	1					•													
Horizon Medical Center	Dickson, TN	1			•															
Indian Path Medical Center	Kingsport, TN	1							•											
Jellico Community Hospital	Jellico, TN	1												•						
Marshall Medical Center	Lewisburg, TN	1										•								
Methodist University Hospital	Memphis, TN	1					•													
Rhea Medical Center	Dayton, TN	1										•								
River Park Hospital	McMinnville, TN	1			•															
Skyline Medical Center	Nashville, TN	1																	•	
SkyRidge Medical Center	Cleveland, TN	1	•																	
St. Mary's Medical Center	Knoxville, TN	1														•				
StoneCrest Medical Center	Smyrna, TN	1																	•	
Summit Medical Center	Hermitage, TN	1					•													
The University of Tennessee Medical Center	Knoxville, TN	1							•											
Wellmont Holston Valley Medical Center	Kingsport, TN	1							•											
White County Community Hospital	Sparta, TN	1														•				
Woods Memorial Hospital District	Etowah, TN	1				•														
Baptist Health System	San Antonio, TX	1													•					
Baylor All Saints Medical Center at Fort Worth	Fort Worth, TX	1																		•
Baylor Medical Center at Irving	Irving, TX	1	•																	

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			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Baylor Medical Center at Waxahachie	Waxahachie, TX	1																		•
Bayshore Medical Center	Pasadena, TX	1					•													
Brazosport Regional Health System	Lake Jackson, TX	1															•			
Childress Regional Medical Center	Childress, TX	1													•					
Christus Jasper Memorial Hospital	Jasper, TX	1					•													
CHRISTUS St. Michael Health System	Texarkana, TX	1																		•
Connally Memorial Medical Center	Floresville, TX	1																	•	
East Texas Medical Center Quitman	Quitman, TX	1				•														
Ennis Regional Medical Center	Ennis, TX	1														•				
Good Shepherd Medical Center	Longview, TX	1							•											
Hill Country Memorial Hospital	Fredericksburg, TX	1											•							
Laredo Medical Center	Laredo, TX	1					•													
Medical Center of Plano	Plano, TX	1						•												
Medical City Dallas Hospital	Dallas, TX	1			•															
Memorial Hermann Memorial City Medical Center	Houston, TX	1																	•	
Memorial Hermann Sugar Land Hospital	Sugar Land, TX	1																		•
Mesquite Community Hospital	Mesquite, TX	1			•															
Methodist Hospital	San Antonio, TX	1											•							
Parkview Regional Hospital	Mexia, TX	1				•														
Presbyterian Hospital of Dallas	Dallas, TX	1				•														
Providence Health Center	Waco, TX	1													•					
South Texas Regional Medical Center	Jourdanton, TX	1							•											
Spring Branch Medical Center	Houston, TX	1							•											
St. David's South Austin Hospital	Austin, TX	1									•									
The Methodist Hospital	Houston, TX	1											•							
Tri-City Health Centre	Dallas, TX	1			•															
Ashley Regional Medical Center	Vernal, UT	1										•								
Dixie Regional Medical Center	St. George, UT	1																	•	
LDS Hospital	Salt Lake City, UT	1	•																	
McKay-Dee Hospital Center	Ogden, UT	1																	•	
Ogden Regional Medical Center	Ogden, UT	1									•									
CJW Medical Center	Richmond, VA	1							•											
Culpeper Regional Hospital	Culpeper, VA	1			•															
Henrico Doctors' Hospital	Richmond, VA	1											•							

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			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
INOVA Fair Oaks Hospital	Fairfax, VA	1							•											
INOVA Loudoun Hospital	Leesburg, VA	1	•																	
Lee Regional Medical Center	Pennington Gap, VA	1				•														
Martha Jefferson Hospital	Charlottesville, VA	1								•										
Potomac Hospital	Woodbridge, VA	1		•																
Allenmore Hospital	Tacoma, WA	1						•												
Cascade Valley Hospital and Clincs	Arlington, WA	1		•																
Deaconess Medical Center	Spokane, WA	1	•																	
Enumclaw Regional Hospital	Enumclaw, WA	1								•										
Harrison Medical Center	Bremerton, WA	1				•														
Mount Carmel Hospital	Colville, WA	1		•																
Northwest Hospital and Medical Center	Seattle, WA	1		•																
Othello Community Hospital	Othello, WA	1			•															
Sacred Heart Medical Center	Spokane, WA	1		•																
Samaritan Hospital	Moses Lake, WA	1		•																
St. John Medical Center	Longview, WA	1	•																	
St. Joseph Hospital	Bellingham, WA	1													•					
Toppenish Community Hospital	Toppenish, WA	1														•				
University of Washington Medical Center	Seattle, WA	1	•																	
Virginia Mason Medical Center	Seattle, WA	1										•								
Aspirus Wausau Hospital	Wausau, WI	1		•																
Aurora BayCare Medical Center	Green Bay, WI	1																	•	
Aurora St. Luke's Medical Center	Milwaukee, WI	1	•																	
Beaver Dam Community Hospitals, Inc.	Beaver Dam, WI	1					•													
Columbia St. Mary's Hospital Columbia	Milwaukee, WI	1													•					
Columbia St. Mary's Hospital Milwaukee	Milwaukee, WI	1														•				
Community Memorial Hospital	Menomonee Falls, WI	1	•																	
Grant Regional Health Center	Lancaster, WI	1		•																
Howard Young Medical Center	Woodruff, WI	1	•																	
Memorial Hospital of Lafayette County	Darlington, WI	1			•															
Memorial Medical Center	Ashland, WI	1	•																	
Mercy Hospital Janesville	Janesville, WI	1	•																	

*List is ordered by years won, then state, then hospital name.

HOSPITAL*	LOCATION	TOTAL YEAR(S) WON	STUDY EDITIONS															
			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th
Mercy Medical Center	Oshkosh, WI	1												•						
Red Cedar Medical Center	Menomonie, WI	1		•																
Riverside Medical Center	Waupaca, WI	1												•						
St. Joseph's Hospital	Chippewa Falls, WI	1															•			
St. Mary's Hospital Medical Center	Green Bay, WI	1											•							
St. Vincent Hospital	Green Bay, WI	1		•																
Waupun Memorial Hospital	Waupun, WI	1				•														
Wheaton Franciscan Healthcare — St. Joseph	Milwaukee, WI	1																•		
Greenbrier Valley Medical Center	Ronceverte, WV	1															•			
St. Joseph's Hospital	Parkersburg, WV	1								•										
United Hospital Center	Clarksburg, WV	1															•			
Williamson Memorial Hospital	Williamson, WV	1									•									
Ivinson Memorial Hospital	Laramie, WY	1	•																	
Riverton Memorial Hospital	Riverton, WY	1			•															

*List is ordered by years won, then state, then hospital name.

APPENDIX A

Distribution of Winners by State and Region*

STATE	NUMBER OF WINNERS CURRENT STUDY	PREVIOUS STUDY
Alabama	3	2
Alaska	0	0
Arizona	1	3
Arkansas	0	0
California	4	6
Colorado	0	1
Connecticut	1	0
Delaware	0	0
District of Columbia	0	0
Florida	2	5
Georgia	0	2
Hawaii	0	0
Idaho	0	1
Illinois	12	8
Indiana	6	6
Iowa	1	2
Kansas	0	0
Kentucky	5	3
Louisiana	2	2
Maine	0	0
Maryland	0	0
Massachusetts	8	0
Michigan	10	11
Minnesota	2	4
Mississippi	0	0
Missouri	3	4
Montana	0	0
Nebraska	0	1
Nevada	0	0
New Hampshire	0	0
New Jersey	0	0
New Mexico	0	0
New York	0	0
North Carolina	0	1
North Dakota	0	0
Ohio	14	8
Oklahoma	2	0
Oregon	0	0
Pennsylvania	5	4
Rhode Island	0	0
South Carolina	0	0
South Dakota	0	2
Tennessee	6	8
Texas	9	8
Utah	1	3
Vermont	0	0
Virginia	0	1
Washington	0	0
West Virginia	0	0
Wisconsin	3	4
Wyoming	0	0

CENSUS REGION*	NUMBER OF WINNERS CURRENT STUDY	PREVIOUS STUDY
Northeast	14	4
Midwest	51	50
South	29	32
West	6	14

* For a listing of states in each census region, see Appendix B.

* For a listing of states within each census region, see Appendix B.

APPENDIX B

States Included in Each Census Region

NORTHEAST	MIDWEST	SOUTH	WEST
Connecticut	Illinois	Alabama	Alaska
Maine	Indiana	Arkansas	Arizona
Massachusetts	Iowa	Delaware	California
New Hampshire	Kansas	District of Columbia	Colorado
New Jersey	Michigan	Florida	Hawaii
New York	Minnesota	Georgia	Idaho
Pennsylvania	Missouri	Kentucky	Montana
Rhode Island	Nebraska	Louisiana	Nevada
Vermont	North Dakota	Maryland	New Mexico
	Ohio	Mississippi	Oregon
	South Dakota	North Carolina	Utah
	Wisconsin	Oklahoma	Washington
		South Carolina	Wyoming
		Tennessee	
		Texas	
		Virginia	
		West Virginia	

APPENDIX C

Methodology Details

METHODS FOR IDENTIFYING COMPLICATIONS OF CARE

To make valid normative comparisons of hospital outcomes, it is necessary to adjust raw data to accommodate differences that result from the variety and severity of admitted cases. It is necessary also to account for individual facility characteristics that affect the clinical outcomes measures, such as the hospital's geographic location, size, teaching status, and community setting (urban versus rural).

Risk-Adjusted Mortality Index Models

We are able to make valid normative comparisons of mortality and complications rates by using patient-level data to control effectively for case mix and severity differences. We do this by evaluating ICD-9-CM diagnosis and procedure codes in order to adjust for severity within clinical case mix groupings. Conceptually, we group patients with similar characteristics (i.e., age, sex, principal diagnosis, procedures performed, admission type, and comorbid conditions) to produce expected, or normative, comparisons. In the same way, we group facilities with similar characteristics. Through extensive testing, we have found that this methodology produces valid normative comparisons using readily available administrative data, eliminating the need for additional data collection.

We construct a normative database of case-level data from our Projected Inpatient Data Base (PIDB) national all-payer database containing over 21 million all-payer discharges annually, obtained from approximately 2,500 hospitals, representing more than 50 percent of all discharges from short-term, general, nonfederal hospitals in the United States. The data include age, sex, and length of stay (LOS); clinical groupings (Medicare Severity Diagnosis-Related Groups (MS-DRGs), ICD-9-CM principal and secondary diagnoses, ICD-9-CM principal and secondary procedures); hospital identification; admission source and type; present on admission (POA) indicators; and discharge status. Hospital characteristics are obtained by linking each hospital's identification number with American Hospital Association and Medicare Cost Report data.

Excluded patient groups are neonates, cases coded as palliative care (ICD-9- CM code V66.7), cases transferred to other short-term hospitals, and cases with stays shorter than one day. Also, clinical groupings such as psychiatry/mental illness, substance abuse, rehabilitation, obstetrics, and pediatrics (under 17 years of age) require special consideration with regard to outcomes and so are excluded from the general risk-adjusted mortality measure.

***Note**: This section details the methods used to produce the 100 Top Hospitals® award winners. For details on the methods used to find the Everest Award winners, please see the special Everest Awards section of this document.*

A standard logistic regression model is used to estimate the risk of mortality or complications for each patient. This is done by weighting the patient records of the client hospital by the logistic regression coefficients associated with the corresponding terms in the model and the intercept term. This produces the expected probability of an outcome for each eligible patient (numerator) based on the experience of the norm for patients with similar characteristics (age, clinical grouping, severity of illness, and so forth) at similar institutions (hospital bed size, census division, teaching status, urban or rural community setting).[26–30] This methodology also ensures that facilities are compared to other facilities with similar characteristics.

Thomson Reuters staff physicians have suggested important clinical patient characteristics that were also incorporated into the models. After assigning the predicted probability of the outcome for each patient, the patient-level data can then be aggregated across a variety of groupings, including hospital, service, or the DRGs and RDRGs classification systems, which were developed at Yale University in the 1980s.

Expected Complications Rate Index Models

Risk-adjusted complications refer to outcomes that may be of concern when they occur at a greater than expected rate among groups of patients, possibly reflecting systemic quality of care issues.

The Thomson Reuters complications model uses clinical qualifiers to identify complications that have occurred in the inpatient setting. The complications used in the model are:

COMPLICATION	PATIENT GROUP
Post-operative complications relating to urinary tract	Surgical only
Post-operative complications relating to respiratory system except pneumonia	Surgical only
GI complications following procedure	Surgical only
Infection following injection/infusion	All patients
Decubitus ulcer	All patients
Post-operative septicemia, abscess, and wound infection	Surgical, including cardiac
Aspiration pneumonia	Surgical only
Tracheostomy complications	All patients
Complications of cardiac devices	Surgical, including cardiac
Complications of vascular and hemodialysis devices	Surgical only
Nervous system complications from devices/complications of nervous system devices	Surgical only
Complications of genitourinary devices	Surgical only
Complications of orthopedic devices	Surgical only
Complications of other and unspecified devices, implants, and grafts	Surgical only
Other surgical complications	Surgical only
Miscellaneous complications	All patients
Cardio-respiratory arrest, shock, or failure	Surgical only
Post-operative complications relating to nervous system	Surgical only
Post-operative acute myocardial infarction	Surgical only
Post-operative cardiac abnormalities except AMI	Surgical only
Procedure-related perforation or laceration	All patients
Post-operative physiologic and metabolic derangements	Surgical, including cardiac
Post-operative coma or stupor	Surgical, including cardiac
Post-operative pneumonia	Surgical, including cardiac
Pulmonary embolism	All patients
Venous thrombosis	All patients
Hemorrhage, hematoma or seroma complicating a procedure	All patients
Post-procedure complications of other body systems	All patients
Complications of transplanted organ (excludes skin and cornea)	Surgical only
Disruption of operative wound	Surgical only

A normative database of case-level data including age, sex, LOS, clinical grouping (MS-DRG), comorbid conditions, POA indicators, and hospital identification is constructed using our PIDB national all-payer database. Hospital characteristics are obtained by linking each hospital's identification number with American Hospital Association and Medicare Cost Report data. The method includes patients from approximately 2,500 short-term, general, nonfederal hospitals that are generally representative of short-term, general, nonfederal hospitals in the United States. Excluded groups are neonates, cases transferred to other short-term hospitals, and cases with stays shorter than one day. Also, clinical groupings such as psychiatry/mental illness, substance abuse, rehabilitation, obstetrics, and pediatrics (under 17 years of age) require special consideration with regard to complications outcomes, and so are excluded from the general risk-adjusted complications measure.

Complications rates are calculated from normative data for two patient risk groups: medical and surgical. A standard regression model is used to estimate the risk of experiencing a complication for each patient. This is done by weighting the patient records of the client hospital by the regression coefficients associated with the corresponding terms in the prediction models and intercept term. This method produces the expected probability of a complication for each patient based on the experience of the norm for patients with similar characteristics at similar institutions. After assigning the predicted probability of a complication for each patient in each risk group, it is then possible to aggregate the patient-level data across a variety of groupings.[31–34]

Patient Safety Indicators

The Agency for Healthcare Research and Quality (AHRQ) is a public health service agency within the federal government's Department of Health and Human Services. The agency's mission includes both translating research findings into better patient care and providing policymakers and other healthcare leaders with information needed to make critical healthcare decisions. We use AHRQ's Patient Safety Indicators (PSIs) in calculating our risk-adjusted patient safety index performance measure. This information on PSIs is from the AHRQ Web site (ahrq.gov):

> The AHRQ Quality Indicators measure health care quality by using readily available hospital inpatient administrative data. Patient Safety Indicators are a set of indicators providing information on potential in-hospital complications and adverse events following surgeries, procedures, and childbirth. The PSIs were developed after a comprehensive literature review, analysis of ICD-9-CM codes, review by a clinician panel, implementation of risk adjustment, and empirical analyses. The Patient Safety Indicators provide a perspective on patient safety events using hospital administrative data. Patient Safety Indicators also reflect quality of care inside hospitals, but focus on surgical complications and other iatrogenic events.[35]

For the risk-adjusted patient safety index performance measure, we began our research with all PSIs that occurred with sufficient frequency to generate provider-specific output. Of the 20 PSIs included in the original AHRQ methodology, only 15 produced non-zero PSI rates on the Medicare data. Four measures are for birth or other obstetrical-related conditions, which do not occur in the age group under study here. Transfusion reactions generated rates that were too low for the AHRQ PSI software to generate provider-specific output. Due to the unreliability of E coding, we also exclude complications of anesthesia (PSI 1), foreign body left in during procedure (PSI 5), postoperative hip fracture (PSI 8), and accidental puncture and laceration (PSI 15), which rely on E codes. Since the original analysis was done, PSI 2 (death in low-mortality DRGs) no longer has risk values in the model. We also exclude decubitis ulcer (PSI 3) and postoperative pulmonary embolism or deep vein thrombosis (PSI 12). Exclusion of these two PSIs will be reevaluated when we have more data that use POA coding. The AHRQ model version used in this study was Version 4.2, published September 2010. The model used POA coding in 2009 MedPAR data and imputed POA in 2008 MedPAR data.

The final set of eight PSIs included in this study was:

- Death among surgical inpatients with serious, treatable complications (PSI 4)
- Iatrogenic pneumothorax (PSI 6)
- Selected infections due to medical care (PSI 7)
- Postoperative hemorrhage or hematoma (PSI 9)
- Postoperative physiologic and metabolic derangement (PSI 10)
- Postoperative respiratory failure (PSI 11)
- Postoperative sepsis (PSI 13)
- Postoperative wound dehiscence (PSI 14)

ECRI and PSI: Complementary Methodologies

Given its high level of importance, we chose to increase our emphasis on patient safety by using both the PSI (AHRQ) and expected complications rate index (ECRI) methodologies to calculate two separate outcome measures. Both PSI and ECRI are methodologies for identifying complications of care. Although the definitions have some similarities, there are enough differences that the two are useful complements to each other. ECRI is an overall complication methodology in which the outcome is the occurrence of one or more of 30 complications of care. Whereas the AHRQ PSIs used in our study are based on eight separate models that evaluate the occurrence of eight distinct complications of care, one of which is mortality related — an adverse outcome that is not included in ECRI.

Index Interpretation

An outcome index is a ratio of an observed number of outcomes to an expected number of outcomes in a particular population. This index is used to make normative comparisons and is standardized in that the expected number of events is based on the occurrence of the event in a normative population. The normative population used to calculate expected numbers of events is selected to be similar to the comparison population with respect to relevant characteristics, including age, sex, region, and case mix.

The index is simply the number of observed events divided by the number of expected events and can be calculated for outcomes that involve counts of occurrences (e.g., deaths or complications). Interpretation of the index relates the experience of the comparison population relative to a specified event to the expected experience based on the normative population.

Examples:
10 events observed ÷ 10 events expected = 1.0: The observed number of events is equal to the expected number of events based on the normative experience.

10 events observed ÷ 5 events expected = 2.0: The observed number of events is twice the expected number of events based on the normative experience.

10 events observed ÷ 25 events expected = 0.4: The observed number of events is 60 percent lower than the expected number of events based on the normative experience.

Therefore, an index value of 1.0 indicates no difference between observed and expected outcome occurrence. An index value greater than 1.0 indicates an excess in the observed number of events relative to the expected based on the normative experience. An index value less than 1.0 indicates fewer events observed than would be expected based on the normative experience. An additional interpretation is that the difference between 1.0 and the index is the percentage difference in the number of events relative to the norm. In other words, an index of 1.05 indicates 5 percent more outcomes, and an index of 0.90 indicates 10 percent fewer outcomes than expected based on the experience of the norm. The index can be calculated across a variety of groupings (e.g., hospital, service, and DRG).

CORE MEASURES

Core measures were developed by the Joint Commission and endorsed by the National Quality Forum (NQF), the non-profit public-private partnership organization that endorses national healthcare performance measures, as minimum basic care standards. They are a widely accepted method for measuring quality of patient care that includes specific guidelines for heart attack (acute myocardial infarction (AMI)), heart failure (HF), pneumonia, pregnancy and related conditions, and surgical-infection prevention. Our composite core measures mean percent is based on the AMI, HF, pneumonia, and surgical-infection prevention areas of this program, using Hospital Compare data reported on the Centers for Medicare and Medicaid Services (CMS) Web site.

AMI Core Measures

1. Patients given angiotensin-converting (ACE) inhibitor or angiotensin II receptor (ARB) for left ventricular systolic (LVS) dysfunction*
2. Patients given aspirin at discharge*
3. Patients given beta blocker at discharge*
4. Patients given percutaneous coronary intervention within 90 minutes of arrival

HF Core Measures

5. Patients given ACE inhibitor or ARB for LVS dysfunction
6. Patients given discharge instructions
7. Patients given an evaluation of LVS function
8. Patients given smoking cessation advice/ counseling*

Pneumonia Core Measures

9. Patients given initial antibiotic(s) within six hours after arrival
10. Patients whose initial emergency room blood culture was performed before the administration of the first hospital dose of antibiotic(s)
11. Patients given the most appropriate initial antibiotic(s)
12. Patients assessed and given pneumococcal vaccination
13. Patients assessed and given influenza vaccination
14. Patients given smoking cessation advice/ counseling

Surgical Infection Prevention Core Measures

15. Patients who were given an antibiotic at the right time (within one hour before surgery) to help prevent infection
16. Patients whose preventative antibiotics were stopped at the right time (within 24 hours after surgery)
17. Patients who were given the right kind of antibiotic to help prevent infection
18. Patients who got treatment at the right time (within 24 hours before or after their surgery) to help prevent blood clots after certain types of surgery
19. Patients whose doctors ordered treatments to prevent blood clots after certain types of surgeries
20. All heart surgery patients whose blood sugar (blood glucose) was kept under good control in the days right after surgery*
21. Patients needing hair removed from the surgical area before surgery, who had hair removed using a safer method (electric clippers or hair removal cream – not a razor)
22. Patients who were taking beta blocker before coming to the hospital, who were kept on the beta blockers during the period just before and after their surgery

We excluded three AMI measures due to under-reporting in the Hospital Compare database. The excluded AMI measures are:

- Patients given aspirin at arrival
- Patients given smoking cessation advice/ counseling
- Patients given fibrinolytic medication within 30 minutes of arrival

In addition, for all hospitals in the small community hospital comparison group, we excluded several core measures due to non-reporting. These are footnoted in the list above.

In calculating each hospital's core measures mean percent, the comparison group median core measure value was substituted for a missing core measure. In addition, the comparison group median core measure value was substituted when the hospital reported core measures with patient counts less than or equal to 25 or with relative standard error values greater than or equal to 0.30. This was done because the original reported values were considered statistically unreliable.

30-DAY RISK-ADJUSTED MORTALITY RATES AND 30-DAY RISK-ADJUSTED READMISSION RATES

This study currently includes two extended outcome measures — 30-day mortality and 30-day readmission rates, as defined by the CMS Hospital Compare dataset (third quarter, 2010). The longitudinal data period contained in this analysis is July 1, 2006, through June 30, 2009. The Hospital Compare Web site and database were created by CMS, the Department of Health and Human Services, and other members of the Hospital Quality Alliance. The data on the Web site comes from hospitals that have agreed to submit quality information that will be made public. Both of the measures used in this study have been endorsed by the NQF.

CMS calculates the 30-day mortality and 30-day readmission rates from Medicare enrollment and claims records using sophisticated statistical modeling techniques that adjust for patient-level risk factors and account for the clustering of patients within hospitals. Both rates are based on heart attack, heart failure, and pneumonia patients.

CMS' three mortality models (heart attack, heart failure, and pneumonia) estimate hospital-specific, risk-standardized, all-cause 30-day mortality rates for patients hospitalized with a principal diagnosis of heart attack, heart failure, and pneumonia. All-cause mortality is defined as death from any cause within 30 days after the index admission date, regardless of whether the patient dies while still in the hospital or after discharge.

* We did not include this measure for small community hospitals due to very low reporting.

CMS' three readmission models estimate hospital-specific, risk-standardized, all-cause 30-day readmission rates for patients discharged alive to a nonacute-care setting with a principal diagnosis of heart attack, heart failure, or pneumonia. Patients may have been readmitted back to the same hospital or to a different hospital or acute-care facility. They may have been readmitted for the same condition as their recent hospital stay or for a different reason (this is to discourage hospitals from coding similar readmissions as different readmissions).[23]

HCAHPS OVERALL HOSPITAL RATING

To measure patient perception of care, this study uses the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) patient survey. HCAHPS is a standardized survey instrument and data collection methodology for measuring patients' perspectives of hospital care. HCAHPS is a core set of questions that can be combined with customized, hospital-specific items to produce information that complements the data hospitals currently collect to support internal customer service and quality-related activities.

HCAHPS was developed through a partnership between CMS and AHRQ that had three broad goals:

- Produce comparable data on patients' perspectives of care that allow objective and meaningful comparisons among hospitals on topics that are important to consumers.
- Encourage public reporting of the survey results to create incentives for hospitals to improve quality of care.
- Enhance public accountability in healthcare by increasing the transparency of the quality of hospital care provided in return for the public investment.

The HCAHPS survey has been endorsed by the NQF and the Hospital Quality Alliance. The federal government's Office of Management and Budget has approved the national implementation of HCAHPS for public reporting purposes.

Voluntary collection of HCAHPS data for public reporting began in October 2006. The first public reporting of HCAHPS results, which encompassed eligible discharges from October 2006 through June 2007, occurred in March 2008. HCAHPS results are posted on the Hospital Compare Web site, found at *hospitalcompare.hhs.gov*, or through a link on *medicare.gov*. A downloadable version of HCAHPS results is available.[36]

For this study edition, we used Hospital Compare data from the third quarter 2010 database. This database contains the HCAHPS results for data period January 1, through December 31, 2009. Although we are reporting hospital performance on all HCAHPS questions, only performance on the Overall Hospital Rating question, "How do patients rate the hospital, overall?" is used to rank hospital performance. Patient responses could fall into three categories, and the number of patients in each category was reported as a percent:

- Patients who gave a rating of 6 or lower (low)
- Patients who gave a rating of 7 or 8 (medium)
- Patients who gave a rating of 9 or 10 (high)

For each answer category, we assigned a scale as follows: 3 equals high or good performance, 2 equals medium or average performance, and 1 equals low or poor performance. We then calculated a weighted score for each hospital by multiplying the HCAHPS answer percent by the scale value. For each hospital, we summed the weighted percent values for the three answer categories. Hospitals were then ranked by this weighted percent sum. The highest possible HCAHPS score is 300 (100 percent of patients rate the hospital high).

LENGTH OF STAY METHODOLOGIES

The study's LOS performance measure uses the Thomson Reuters propriety, severity-adjusted resource demand methodology. This model now includes POA data that was reported in the 2009 MedPAR dataset. Under the Deficit Reduction Act of 2005, as of federal fiscal year 2008, hospitals do not receive payment for cases in which certain conditions -- like falls, surgical site infections, and pressure ulcers -- were not present on the patient's admission but occur during their hospitalization. As a result, CMS now requires all inpatient prospective payment system hospitals to document whether a patient has these conditions when admitted.[14]

Our severity-adjusted resource demand model allows us to produce risk-adjusted performance comparisons on LOS between or across virtually any subgroup of inpatients. These patient groupings can be based on MS-DRGs, hospitals, product lines, geographic regions, physicians, etc. The methodology adjusts for differences in diagnosis type and illness severity, based on ICD-9-CM coding. It also adjusts for patient age, gender, and admission status, in addition to selected hospital characteristics such as bed size, census division, teaching status, and urban or rural community setting. Its associated LOS weights allow group comparisons on a national level, and in a specific market area. These weights are calculated from the PIDB. PIDB discharges are statistically weighted to represent the universe of all short-term, general, nonfederal hospitals in the United States.

Compared with the RDRG grouper-based methodologies we used previously, this regression-based model incorporates more information, such us hospital characteristics, and provides more accuracy in predicting results. The POA component allows us to determine appropriate adjustments based on previous conditions versus complications. We calculate expected values from model coefficients that are normalized to the clinical group and transformed from log scale. The model further adjusts for hospital factors to ensure accurate comparisons.

PERFORMANCE MEASURE NORMALIZATION

The mortality, complications, patient safety index, and LOS measures are normalized, based on the in-study population, by comparison group, to provide a more easily interpreted comparison among hospitals. To address the impact of bed size and teaching status, including extent of residency program involvement, and compare hospitals to other like hospitals, we assign each hospital in the study to one of five comparison groups (major teaching, teaching, large community, medium community, and small community hospitals). (Detailed descriptions of the patient and hospital comparison groups can be found in the Methodology section of this document.)

For the mortality and complications measures, we base our scoring on the difference between observed and expected events, expressed in standard deviation units (z-scores) that have been normalized. We normalize the individual hospital z-scores by finding the difference between the hospital z-score and the mean z-score for their comparison group. The difference is then divided by the standard deviation of the comparison group's z-scores to produce the normalized z-score for the hospital.

For length of stay measure, we base our scoring on the severity-adjusted LOS index. This index is the ratio of the observed and the normalized expected values for each hospital, where the expected values are the sum of the weights for the hospital cases included in the measure. We normalize the individual hospital expected values by multiplying them by the ratio of the observed to expected values for the comparison group. The hospital's normalized index is then calculated by dividing the hospital's observed value by its normalized expected value to produce the normalized index for the hospital.

WHY WE HAVE NOT CALCULATED PERCENT CHANGE IN SPECIFIC INSTANCES

Percent change is a meaningless statistic when the underlying quantity can be positive, negative, or zero. The actual change may mean something, but dividing it by a number that may be zero or of the opposite sign does not convey any meaningful information because the amount of change is not proportional to its previous value.[37]

We also do not report percent change when the metrics are already percentages. In these cases, we report the simple difference between the two percentage values.

PROTECTING PATIENT PRIVACY

In accordance with patient privacy laws, we do not report any individual hospital data that are based on 11 or fewer patients. This affects the following measures:

- Risk-adjusted mortality index
- Risk-adjusted complications index
- 30-day mortality rates for acute myocardial infarction (AMI), heart failure, and pneumonia
- 30-day readmission rates for AMI, heart failure, and pneumonia
- Average LOS

MEDICARE COST REPORT LINE ITEMS USED IN THE PERFORMANCE MEASURES CALCULATIONS

A number of our calculations include data from the Medicare Cost Report. Below you will find our calculations and the Cost Report locations (worksheet, line, and column) for all of these items. The following apply to the 100 Top Hospitals study and the hospital Medicare Cost Report for the hospital fiscal year ending in 2008. Please note that the locations of the elements will sometimes vary between Cost Reports. The line and column references are the standard based on CMS Form 2552-96. Any deviations from this standard are checked by system and manual data analysis to ensure that the coding has been done properly.

Case Mix- and Wage-Adjusted Inpatient Expense per Discharge

[((0.62 × Acute Inpatient Expense ÷ CMS Wage Index) + 0.38 × Acute Inpatient Expense) ÷ Acute Inpatient Discharges] ÷ Medicare Case Mix Index

Acute Inpatient Expense = Inpatient Expense — (Subprovider Expense — Nursery Expense — Skilled Nursing Facility Expense — Intermediate-Care Facility Expense — Other Long- Term Care Facility Expense — Cost Centers Without Revenue (e.g. organ procurement, outpatient therapy, other capital-related costs, etc.)

Inpatient Expense = Sum Over All Departments [(Inpatient Department Charges ÷ Department Charges) × Department Cost]

Individual Element Locations in the Medicare Cost Report:

- Acute Inpatient Discharges — Worksheet S-3, Line 12, Column 15
- Inpatient Department (cost center) elements:
  - Fully Allocated Cost — Worksheet C, Part 1, Column 1
  - Total Charges — Worksheet C, Part 1, Column 8
  - Inpatient Charges — Worksheet C, Part 1, Column 6
- Medicare Case Mix Index — Federal Register: CMS Inpatient Prospective Payment System (IPPS) Fiscal Year 2009 Final Rule
- CMS Wage Index — CMS Federal Register: CMS IPPS Fiscal Year 2009 Final Rule

Adjusted Operating Profit Margin

[(Net Patient Revenue + Other Operating Revenue — (Total Operating Expense + Related Organization Expense)) ÷ (Net Patient Revenue + Other Operating Revenue)] ×100

Other Operating Revenue = [Total Other Income — Other Income: Contributions, Donations, etc. — Other Income From Investments]

Individual Element Locations in the Medicare Cost Report:

- Net Patient Revenue — Worksheet G-3, Line 3, Column 1
- Total Other Income — Worksheet G-3, Line 25, Column 1
- Other Income: Contributions, Donations, Etc. — Worksheet G-3, Line 6, Column 1
- Other Income from Investments — Worksheet G-3, Line 7, Column 1
- Total Operating Expense — Worksheet G-3, Line 4, Column 1
- Related Organization Expense — Worksheet A-8, Line 14, Column 2

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20. We obtain ACGME program involvement data annually from the American Medical Association (AMA). This year's study is based on the ACGME file received from the AMA in May 2010.

21. AOA residency information was collected from the AOA Web site (*http://opportunities.osteopathic.org/*) in May 2010.

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