

# 50 Top Cardiovascular Hospitals, 2019

## A National Benchmarks Report

Prepared for:  
Sample Hospital  
City, ST  
Medicare ID: 999999

# Report Methodology Notes

## COMPARISON GROUPS

So that we can compare your hospital with others most like it, we assign each hospital to one of three comparison groups according to size, teaching status, and residency/fellowship program involvement:

- Teaching hospitals with cardiovascular residency programs (CARDIO TEACHING)
- Teaching hospitals without cardiovascular residency programs (TEACHING)
- Community hospitals (COMMUNITY)

## BENCHMARK AND PEER GROUPS

In the Watson Health™ 50 Top Cardiovascular Hospitals study, we select 50 **Benchmark hospitals** (winners) based on overall performance in the most recent year of data available:

CARDIO TEACHING	15
TEACHING	15
COMMUNITY	20

**Peer group hospitals** include all U.S. hospitals in our study database, *excluding* benchmark hospitals.

## INCLUDED PATIENT GROUPS

The focus of the study is on hospitals that offer both medical and surgical treatment options for patients with two of the most common cardiovascular conditions — coronary atherosclerosis and heart failure. We include data for acute myocardial infarction (AMI), heart failure (HF), coronary artery bypass graft (CABG) and primary percutaneous coronary intervention (PCI) patients in our analysis. Patients are assigned to mutually exclusive groups, as follows:

- CABG patients (primary or secondary)
- PCI patients (excludes open chest coronary artery angioplasty)
- AMI patients (restricted to non-surgical)
- HF patients (restricted to non-surgical)

Patients with both PCI and CABG are grouped as CABG. Patients with both AMI and HF are excluded.

## POA METHODOLOGY NOTES

Present on Admission (POA) coding is used in risk models for inpatient mortality, complications, average LOS, and cost per case. Due to increasing numbers of diagnoses with invalid POA code ‘0’, we made the following

adjustments to the MEDPAR data:

- 1) Original, valid (Y, N, U, W, or 1) POA codes assigned to diagnoses were retained
- 2) Where a POA code of ‘0’ appeared, we took the next four steps:
  - a. We treated all principal diagnoses (dx) as ‘present on admission’
  - b. We treated all secondary dx on the CMS exempt list as ‘exempt’
  - c. We treated secondary diagnoses for which the POA code ‘Y’ or ‘W’ appeared more than 50 percent of the time in Watson Health’s all-payer database, as ‘present on admission’
  - d. All others were treated as ‘not present’

## RANK WEIGHTS AND PUBLIC DATA SOURCES

Ranked Performance Metric	Current Wt	Trend Wt	Source
Risk-Adjusted IP Mortality (AMI, HF, CABG, PCI)	1/2 ea	1/2 ea	MEDPAR FFY <sup>1</sup> 2012 - 2017
Risk-Adjusted Complications (CABG, PCI)	1/4 ea	1/4 ea	MEDPAR FFY <sup>1</sup> 2012 - 2017
Percent CABG Patient with IMA Use	1/2	1/2	MEDPAR FFY <sup>1</sup> 2012 - 2017
30-Day Mortality <sup>2</sup> Rate (AMI, HF, CABG)	1/6 ea	1/6 ea	CMS Hospital Compare: 3-yr datasets ending Jun 30 in 2014, 2015, 2016, 2017
30-Day Readmission <sup>2</sup> Rate (AMI, HF, CABG)	1/6 ea	1/6 ea	CMS Hospital Compare: 3-yr datasets ending Jun 30 in 2014, 2015, 2016, 2017
Severity-Adjusted ALOS (AMI, HF, CABG, PCI)	1/4 ea	1/4 ea	MEDPAR FFY <sup>1</sup> 2013 - 2017
Wage- and Severity-Adjusted Average Cost per Case (AMI, HF, CABG, PCI)	1/4 ea	1/4 ea	MEDPAR FFY <sup>1</sup> 2013 - 2017
30-Day Episode Payment <sup>2</sup> (AMI, HF)	1/2 ea	1/2 ea	CMS Hospital Compare: 3-yr datasets ending Jun 30 in 2014, 2015, 2016, 2017

<sup>1</sup> Federal Fiscal Year is Oct 1 through Sep 30.

<sup>2</sup> 30-day mortality, readmission and payment measures are trended on 4 data points.

## FOR MORE INFORMATION

**For a Study Overview, with full details on performance measures, methods used and winner list, visit [www.100tophospitals.com](http://www.100tophospitals.com).**

# 50 Top Cardiovascular Hospitals Performance Matrix

## INTEGRATED HOSPITAL PERFORMANCE COMPARISON

The 50 Top Cardiovascular Hospitals Performance Matrix, in a single view, compares your hospital's current level of performance achievement and five-year rate of improvement in percentiles. These percentiles are based on your hospital's rank, overall and by measure, within your comparison group. This integrated performance comparison provides insight into the success of hospital performance improvement strategies relative to other similar hospitals.

## INTERPRETING HOSPITAL PERFORMANCE

The matrix "Overall" dot displays your national rank percentile for current overall performance with your national rank percentile for five-year overall rate of improvement. Rank percentiles for each individual measure are also graphed. Measures may fall into any one of four quadrants: Declining (lower left), Improving (upper left), Leading (upper right), or At-Risk (lower right).

Overall hospital performance in the most current year is a composite score based on the weighted sum of the ranks of individual measures. This sum is used to rank your hospital within your comparison group and produce your 2017 Performance Percentile.

Overall hospital performance on five-year rate of improvement is also a composite score based on the sum of the weighted ranks of individual measures on improvement. This sum is used to rank your hospital within your comparison group and produce your 2013-2017 Rate of Improvement Percentile.

50 Top Cardiovascular Hospitals award winners are selected based on highest **current** overall performance. Winners fall into either the "Leading" or "At-Risk" quadrants, depending on their five-year rate of improvement. Those with a high rate of improvement will be "Leading" performers, and those who have fallen behind their comparison group mean are "At Risk" for falling out of the winner circle, if performance improvement continues to be stalled.

## PERFORMANCE MATRIX NOTES

### Overall Dot

Due to the number of individual measures in this study, two matrix graphs are provided to better visualize the performance of each measure. One graph shows the medical patient group measures (AMI and HF) and the other shows the surgical patient group measures (CABG and PCI). **However**, the "Overall" dot on each matrix graph represents the hospital overall performance and rate of improvement based on **all** measures and patient groups, combined (AMI, HF, CABG, PCI). Therefore, it is identical on each matrix graph.

### Missing Matrix Graphs

The matrix graphs will be missing if your hospital did not have enough years of data to be trended. A minimum of four years of data, including the most current year, are required. There also will be no trend graphs in the report.

If there were too few years of data for one or more measures, but not all, there will be no matrix graphs; but there will be trend graphs for the measures that were not missing. Notes on excluded data points are in the Appendix following the Trend Profile.

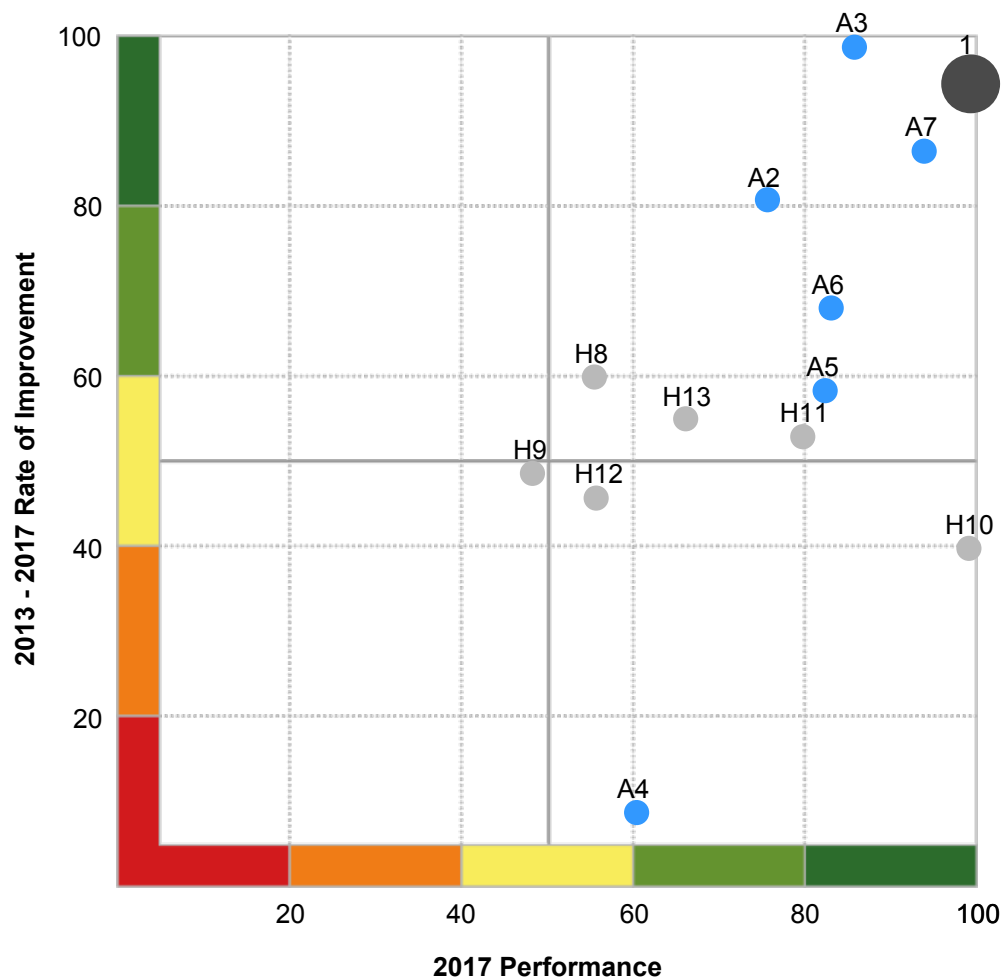
### Missing Measure Dots

A measure dot will be missing from the matrix if your hospital had too few usable data points (after outlier exclusions) to calculate a regression line t-statistic, which is the ranked variable. If this occurs, the dot for the affected measure(s) will be missing on the matrix graph **and** there will be no "Overall" dot. In addition, data points will be missing from the affected trend measure graphs. Notes on excluded data points are in the Appendix following the Performance Matrix graph and the current and trend graphs.

# 50 Top Cardiovascular Hospitals Performance Comparison Group

**Profiled hospital compared to Community hospitals**

# AMI and HF patients: 2017 Performance and Five-Year Rate of Improvement Matrix



**DATA POINT KEY**

- 1 **OVERALL\***
- A2 AMI IP Mortality
- A3 AMI 30-Day Mortality
- A4 AMI 30-Day Readmit
- A5 AMI Avg LOS
- A6 AMI Cost per Case
- A7 AMI 30-Day Payment
- H8 HF IP Mortality
- H9 HF 30-Day Mortality
- H10 HF 30-Day Readmit
- H11 HF Avg LOS
- H12 HF Cost per Case
- H13 HF 30-Day Payment

**QUINTILES**

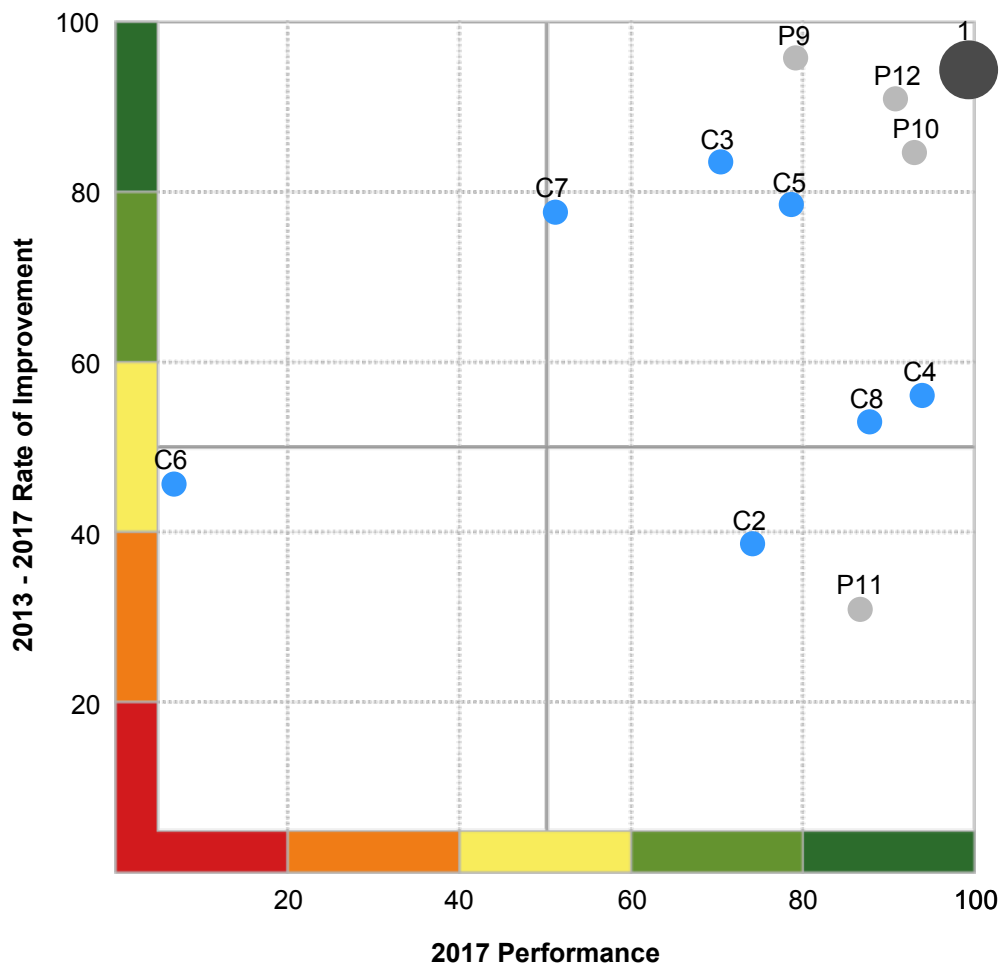
- 80 TO 100
- 60 TO 80
- 40 TO 60
- 20 TO 40
- 0 TO 20

\*Overall Measure includes all 4 patient groups of measures: AMI, HF, CABG, PCI

**PROFILED HOSPITAL compared to:**

- 2017 Community hospitals: n = 463
- 2013 - 2017 Community hospitals: n = 442

# CABG and PCI patients: 2017 Performance and Five-Year Rate of Improvement Matrix



**DATA POINT KEY**

- 1 **OVERALL\***
- C2 CABG IP Mortality
- C3 CABG Complications
- C4 CABG w IMA
- C5 CABG 30-Day Mortality
- C6 CABG 30-Day Readmit
- C7 CABG Avg LOS
- C8 CABG Cost per Case
- P9 PCI IP Mortality
- P10 PCI Complications
- P11 PCI Avg LOS
- P12 PCI Cost per Case

**QUINTILES**

- 80 TO 100
- 60 TO 80
- 40 TO 60
- 20 TO 40
- 0 TO 20

\*Overall Measure includes all 4 patient groups of measures: AMI, HF, CABG, PCI

**PROFILED HOSPITAL compared to:**

- 2017 Community hospitals: n = 463
- 2013 - 2017 Community hospitals: n = 442

# Performance and Improvement – Rank Percentiles Graphs

## UNDERSTANDING THE GRAPHS

### 2017 Performance Rank Percentiles

This bar graph shows your hospital's performance on each measure, in the most current year of data we analyzed, reported as rank percentiles. Individual measure percentiles are calculated by dividing your measure rank within your comparison group by the number of hospitals in the group and multiplying by 100.

### 2013-2017 Rate of Improvement Rank Percentiles

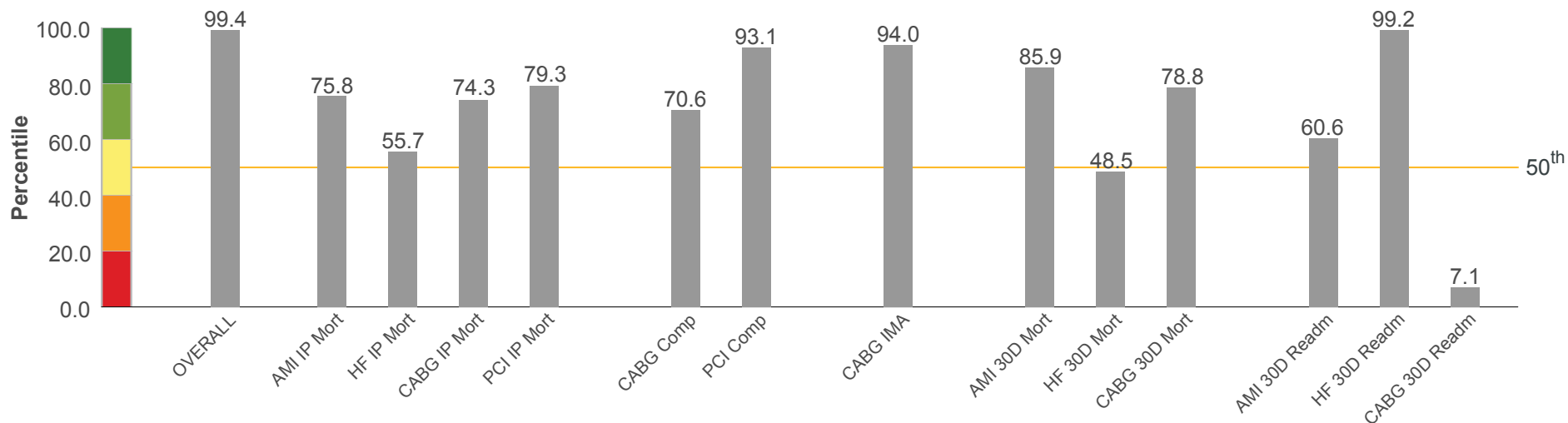
This bar graph shows your hospital's relative rate of improvement on each measure, and overall, reported as rank percentiles. Individual measure percentiles are calculated by dividing your measure rank within your comparison group by the number of hospitals in the group and multiplying by 100. The overall rank percentile is based on the sum of your individual measure ranks, re-ranked by comparison group. The overall rank sum is then converted into a percentile. The overall rank percentile is not the average of the individual measure percentiles.

Hospitals with overall and measure-specific rank percentiles above the median are likely to move ahead of peers on performance in the future, if those rates of improvement have continued.

Hospitals with overall and measure-specific rank percentiles below the median are likely to fall behind peers on performance in the future, if those low rates of improvement have continued. And, winners with a low overall rate of improvement are at future risk of dropping out of the winner circle entirely.

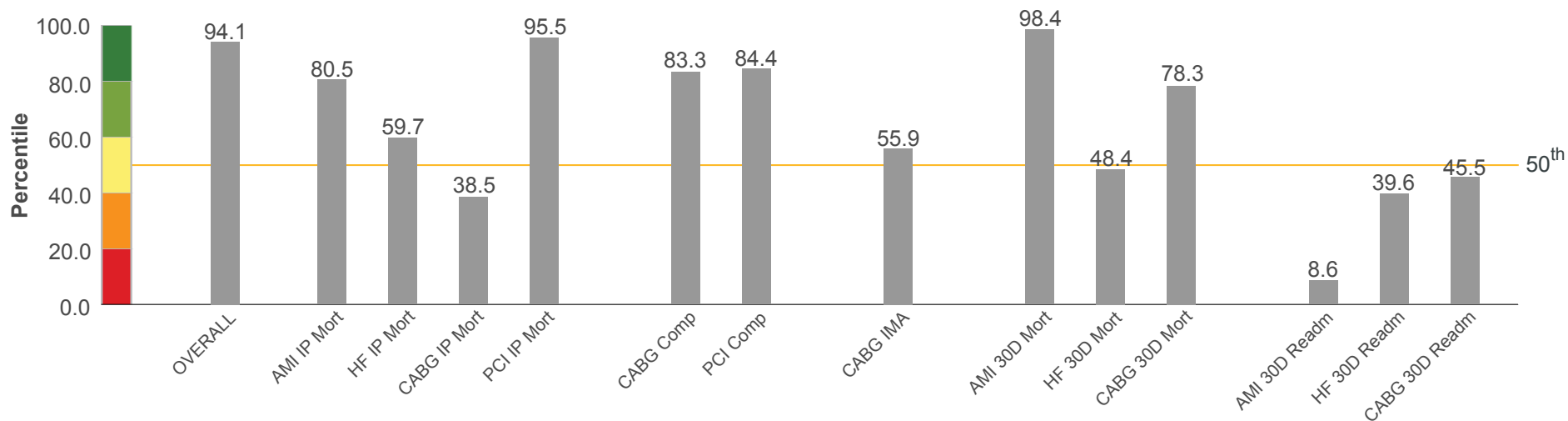
**The 50 Top Cardiovascular Hospitals benchmark hospitals (winners) are selected based only on 2017 performance.**

## 2017 Clinical Performance Rank Percentiles



Profiled hospital compared to Community hospitals: n = 463

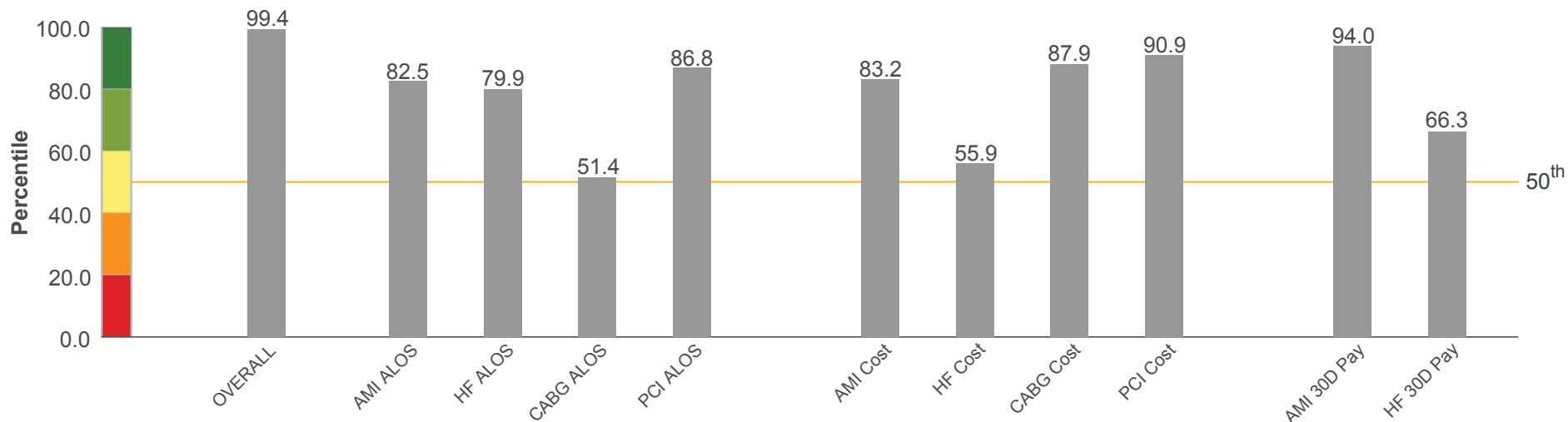
## 2013 - 2017 Clinical Rate of Improvement Rank Percentiles



Profiled hospital compared to Community hospitals: n = 442

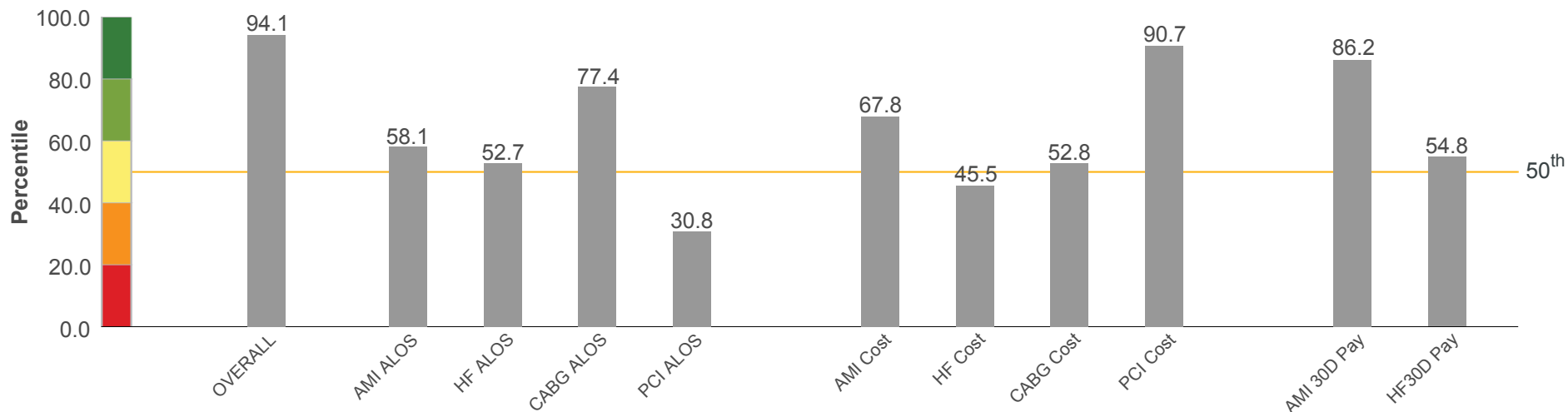


## 2017 Operational Performance Rank Percentiles



Profiled hospital compared to Community hospitals: n = 463

## 2013 - 2017 Operational Rate of Improvement Rank Percentiles



Profiled hospital compared to Community hospitals: n = 442

# 50 Top Cardiovascular Hospitals Current Profile Notes

## CURRENT PROFILE

**The 50 Top Cardiovascular Hospitals winners are selected based on performance in the most current year of the Study (Current Profile).**

The Current Profile analyzes your hospital's performance in the most recent year available, using a national balanced scorecard of critical performance metrics:

- Risk-Adjusted Inpatient Mortality Index
- Risk-Adjusted Complications Index
- Percent CABG Patient with IMA Use
- 30-Day Mortality Rate (AMI, HF, CABG)
- 30-Day Readmission Rate (AMI, HF, CABG)
- Severity-Adjusted Average Length of Stay
- Wage- and Severity-Adjusted Average Cost per Case
- 30-Day Episode Payment (AMI, HF)

Using this Profile, you can identify your hospital's level of performance achievement by individual measure and overall, and target higher performance. In addition, the Profile shows the median level of achievement of national **award-winning** ("benchmark") hospitals and the median performance of **non-winning** ("peer") hospitals in your comparison group.

## UNDERSTANDING THE GRAPHS

### Profiled Hospital Compared with Benchmark and Peer

The hospital's current performance is represented by individual bar graphs for each of the performance measures included in the 50 Top Cardiovascular Hospitals balanced scorecard, organized by patient group. **Each bar graph shows performance achievement levels for three groups: your hospital, the benchmark group median, and the peer group median.**

## Binomial Measures

The graphs for the binomial measures – inpatient mortality and complications – have a statistical significance note that indicates whether your hospital's performance is better than expected, as expected, or worse than expected (99% confidence). For binomial measures, we rank your hospital on the z-score calculated from your observed and normalized expected values. Z-scores take statistical significance into account. If your note indicates your performance is "as expected," your performance is 'normal', regardless of how high or low the index value.

## Missing Bars and Measure Rank Percentiles

A measure's performance bar and its associated rank percentile value are not displayed if one or more of the following conditions apply:

- Measure data for a specific year was missing in the source data file (CMS Hospital Compare; HCRIS hospital cost reports)
- Measure was in calculable due to insufficient MEDPAR POA coding (impacts inpatient mortality, complications, ALOS, cost per case)
- Measure was based on fewer than 11 patient records (HIPAA)

## Measure Data Periods

Measure	Data Period Used for 2017 Performance
Inpatient Mortality, Complications and % CABG w IMA	FFY 2016-2017
30-Day Mortality, Readmissions and Episode Payment	July 1, 2014-June 30, 2017
ALOS; Cost per Case	FFY 2017

# 50 Top Cardiovascular Hospitals Current Profile Notes

## USE OF MEDIAN VALUES

When individual measures are missing or the reported value is insufficiently precise (patient count too low), we substitute class median values so your hospital can be ranked. This was done only for the following measures:

- 30-day mortality rates (AMI, HF, CABG)
- 30-day readmission rates (AMI, HF, CABG)

*Note: Hospitals missing all 30-day mortality rates or all 30-day readmission rates are excluded from the study.*

## WINNER EXCLUSIONS

A hospital was not eligible to be a winner if one of the following applied in the most current year:

- Statistically poor performance on any inpatient mortality or complications measure (99% confidence interval).
- One or more outliers for the cost per case measures (IQR methodology).
- Less than 11 cases in any of the patient groups (AMI, HF, CABG, PCI) in the most current year.

## NEW MEASURES FOR INFORMATION ONLY

We are including new measures in this report, to allow you to compare your performance relative to your peer and benchmark groups. These measures are **not** included in your overall performance rating and are not used to select the 50 Top award-winning hospitals. You will find these measures in a separate section of this Current Profile.

## MORE INFORMATION ON METHODOLOGIES

The Methodology and Appendix sections of the 50 Top Cardiovascular Hospitals Study Overview provide more detail on the calculation of each performance measure. The Overview also describes the methodology used to calculate IQR outliers and to determine statistically poor performance on the inpatient mortality and complications measures.

See **Study Overview for more details. Visit [www.100tophospitals.com](http://www.100tophospitals.com).**

# 50 Top Cardiovascular Hospitals Trend Profile Notes

## TREND PROFILE

The Trend analysis is intended to provide insight into progress toward performance improvement. Its results are **not** used to select winners.

The 50 Top Cardiovascular Hospitals Trend Profile analyzes your hospital's rate of performance improvement over five years (4 years for 30-day measures), using a balanced scorecard of critical performance metrics:

- Risk-Adjusted Inpatient Mortality Index
- Risk-Adjusted Complications Index
- Percent CABG Patient with IMA Use
- 30-Day Mortality Rate (AMI, HF, CABG)
- 30-Day Readmission Rate (AMI, HF, CABG)
- Severity-Adjusted Average Length of Stay
- Wage- and Severity-Adjusted Average Cost per Case
- 30-Day Episode Payment (AMI, HF)

## UNDERSTANDING THE GRAPHS

### Five Year Trend Graphs – Profiled Hospital and Comparison Group Quintiles

The hospital's rate of improvement for each of the individual performance measures is represented by graphs showing your hospital's actual data points for each year. These data points are displayed against a background of quintile ranges for the data points of all hospitals in your comparison group. Each range is color-coded to indicate level of performance, from dark green (best quintile) to red (worst quintile). You can use these graphs to see whether you are moving ahead of or falling behind other similar hospitals.

## Missing Data Points

Data points will be missing from a trend graph if one or more of the following conditions apply:

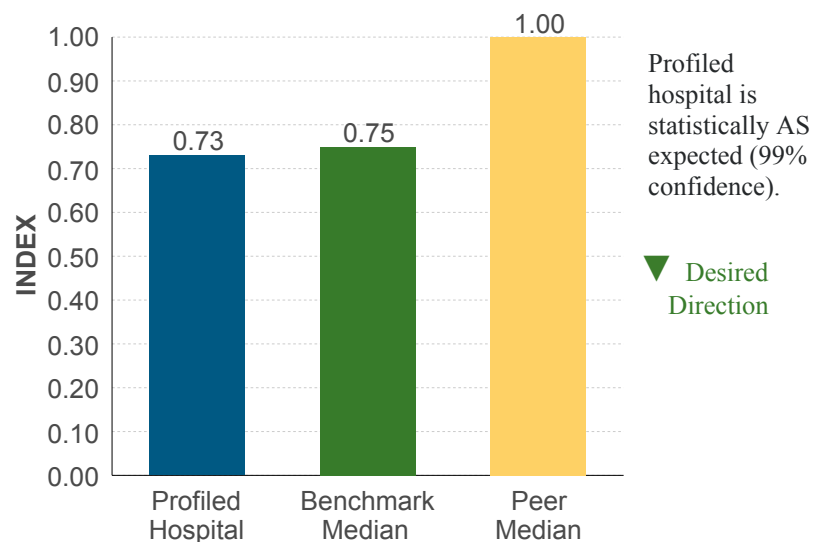
- Measure data for a specific year was missing in the source data file (CMS Hospital Compare; HCRIS hospital cost reports)
- Measure was incalculable due to insufficient MEDPAR POA coding (impacts inpatient mortality, complications, ALOS, cost per case)
- Measure was excluded from trend analysis as a high or low outlier. We apply an interquartile range ("IQR") methodology to identify high and low outlier trim points (impacts cost per case measures).
- Measure was based on 11 or fewer patient records (HIPAA Privacy Rule-based exclusion applied to MEDPAR as a Limited Data Set)

## Measure Data Periods

Measure	Data Point	Data Period
Inpatient Mortality, Complications and % CABG w IMA	2017	FFY 2016-2017
	2016	FFY 2015-2016
	2015	FFY 2014-2015
	2014	FFY 2013-2014
	2013	FFY 2012-2013
30-Day Mortality, Readmissions and Episode Payment	2017	July 1, 2014-June 30, 2017
	2016	July 1, 2013-June 30, 2016
	2015	July 1, 2012-June 30, 2015
	2014	July 1, 2011-June 30, 2014
ALOS, Cost per Case	2013 - 2017	FFY 2013-2017

# AMI patients: Risk-adjusted inpatient mortality index

## 2017 IP MORTALITY PERFORMANCE

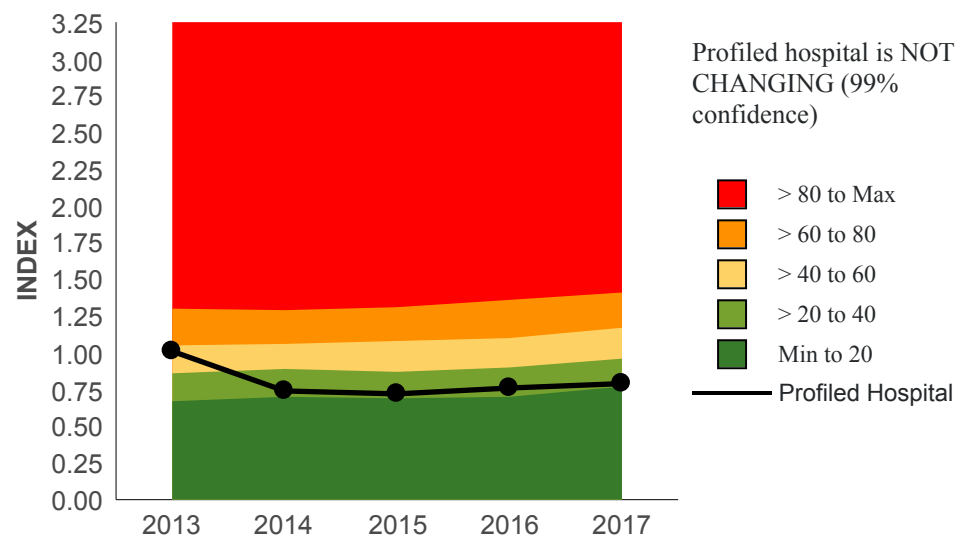


Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

## 2013 - 2017 IP MORTALITY RATE OF IMPROVEMENT

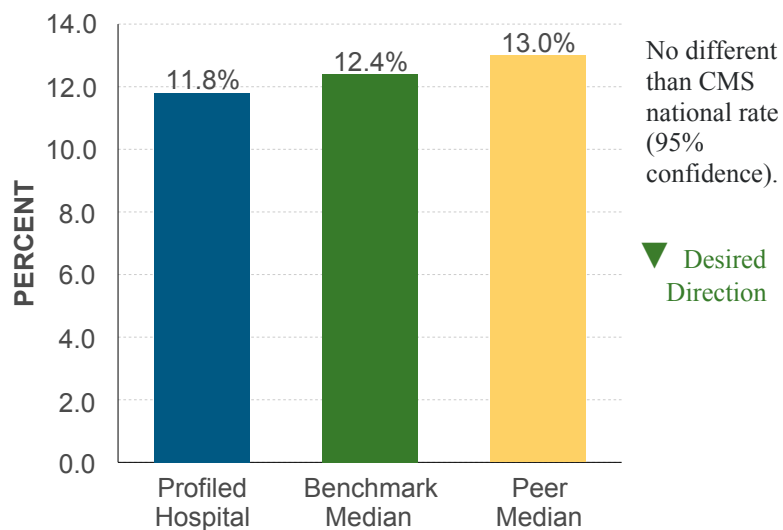


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL		
		20th	40th	60th	80th	Value	Upper C.I.	Lower C.I.
YEARS	2013	0.67	0.86	1.05	1.30	1.01	1.99	0.44
	2014	0.70	0.89	1.06	1.29	0.74	1.66	0.26
	2015	0.69	0.87	1.08	1.31	0.72	1.70	0.23
	2016	0.70	0.90	1.10	1.36	0.76	2.27	0.15
	2017	0.77	0.96	1.17	1.41	0.79	2.14	0.19

# AMI patients: 30-day mortality rate

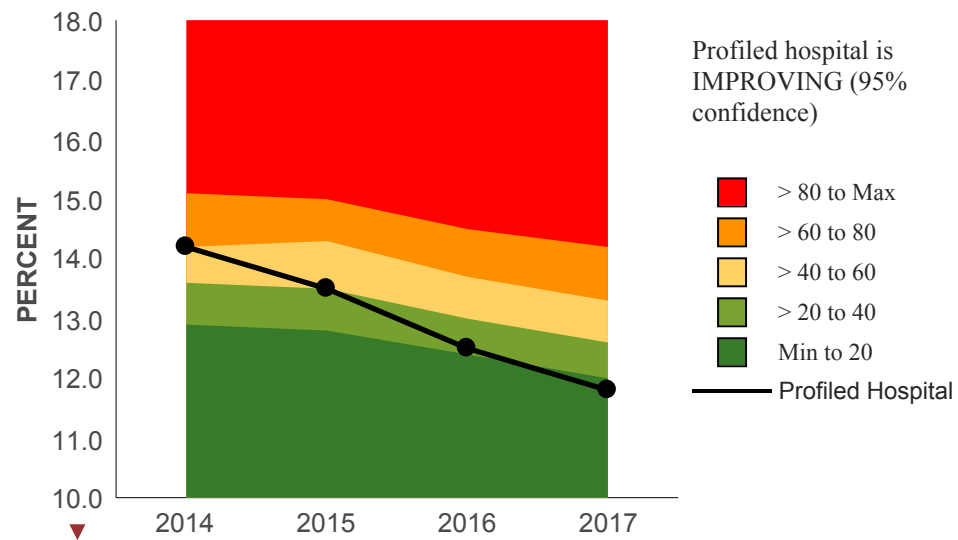
## 2017 30D MORTALITY PERFORMANCE



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

## 2014 - 2017 30D MORTALITY RATE OF IMPROVEMENT

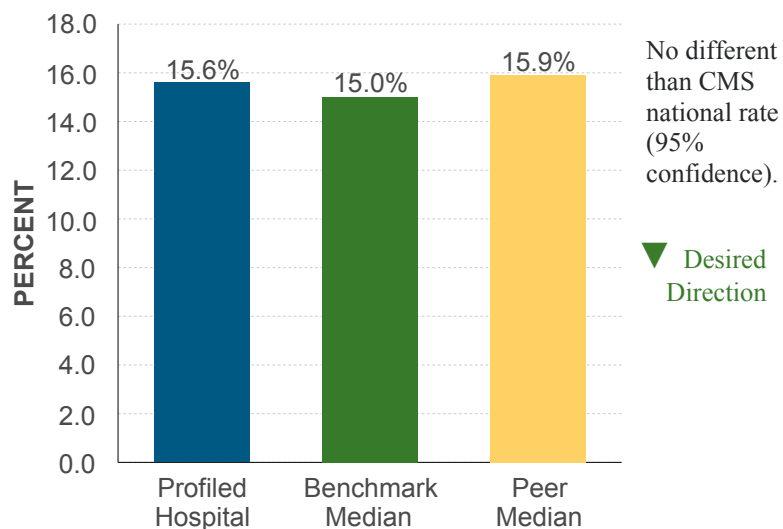


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2014	12.9	13.6	14.2	15.1	14.2
	2015	12.8	13.5	14.3	15.0	13.5
	2016	12.4	13.0	13.7	14.5	12.5
	2017	12.0	12.6	13.3	14.2	11.8

# AMI patients: 30-day readmission rate

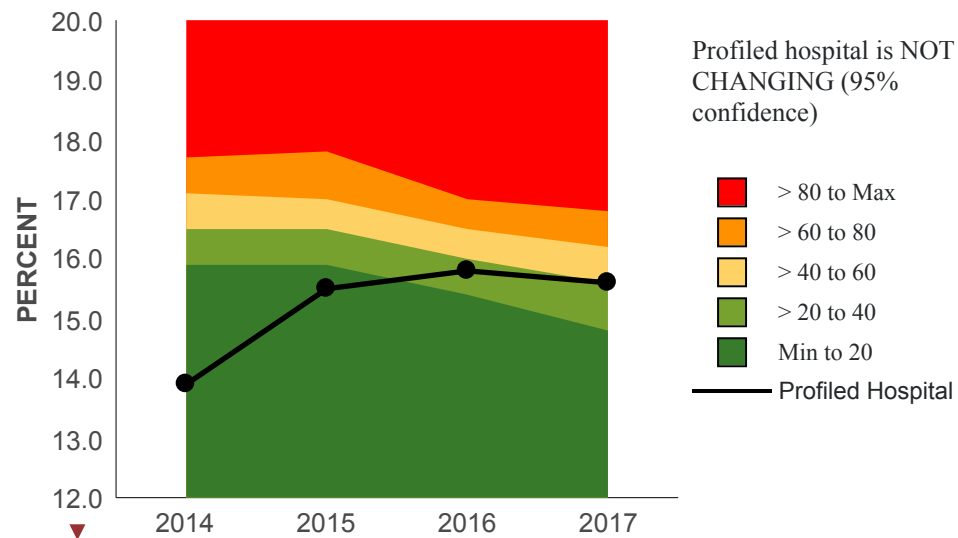
## 2017 30D READMISSION PERFORMANCE



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

## 2014 - 2017 30D READMISSION RATE OF IMPROVEMENT

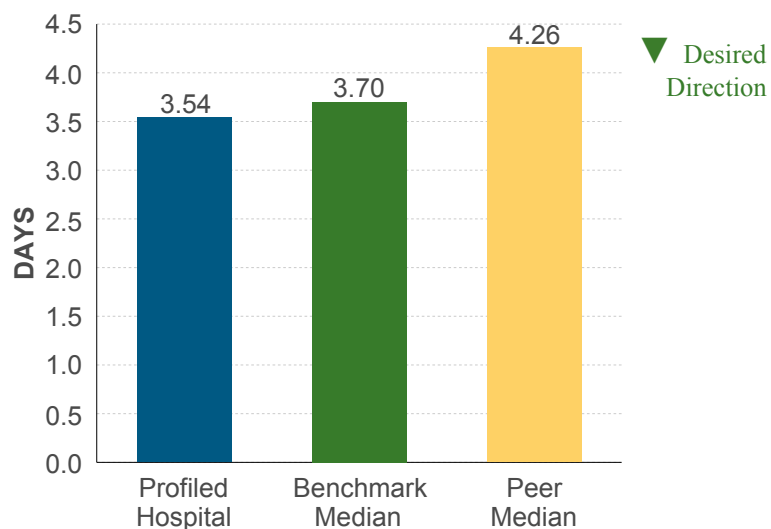


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2014	15.9	16.5	17.1	17.7	13.9
	2015	15.9	16.5	17.0	17.8	15.5
	2016	15.4	16.0	16.5	17.0	15.8
	2017	14.8	15.6	16.2	16.8	15.6

# AMI patients: Severity-adjusted average length of stay

## 2017 ALOS PERFORMANCE

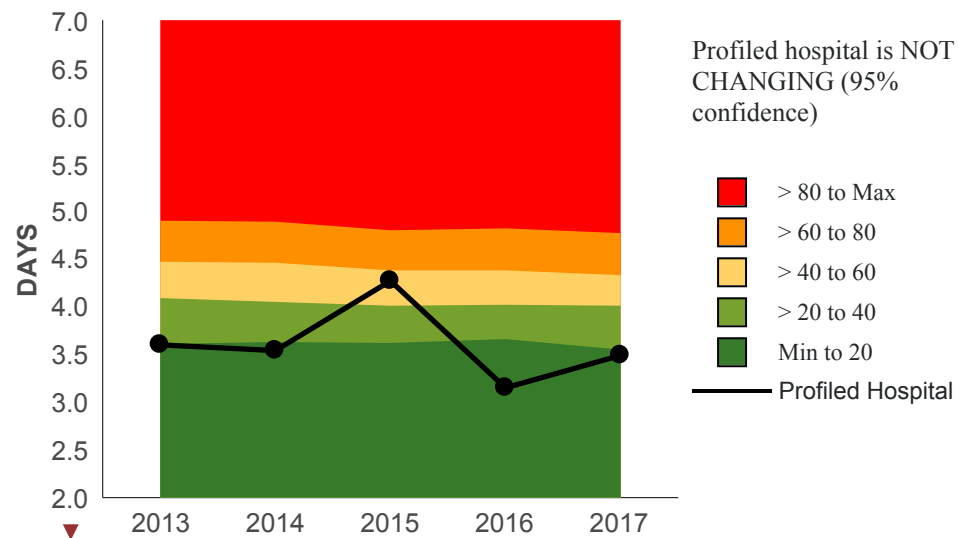


Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

## 2013 - 2017 ALOS RATE OF IMPROVEMENT



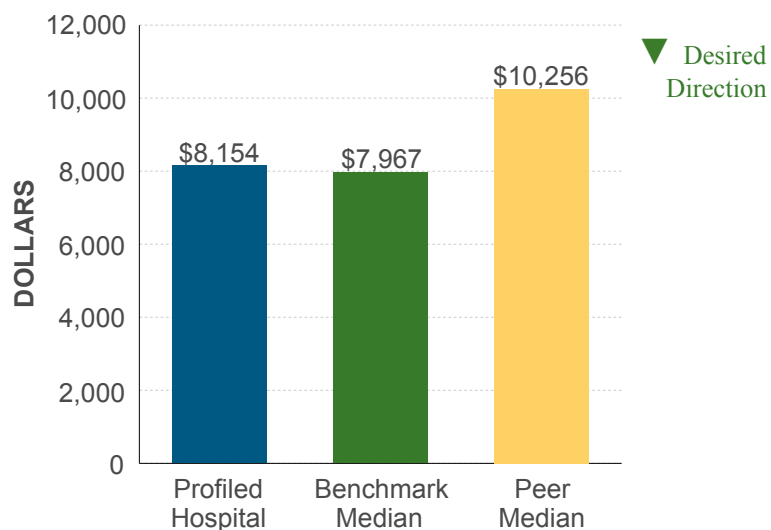
Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2013	3.61	4.09	4.47	4.90	3.60
	2014	3.63	4.05	4.46	4.89	3.54
	2015	3.62	4.01	4.38	4.80	4.27
	2016	3.66	4.02	4.38	4.82	3.15
	2017	3.55	4.01	4.33	4.77	3.49



# AMI patients: Wage- and severity-adjusted cost per case

## 2017 COST PER CASE PERFORMANCE

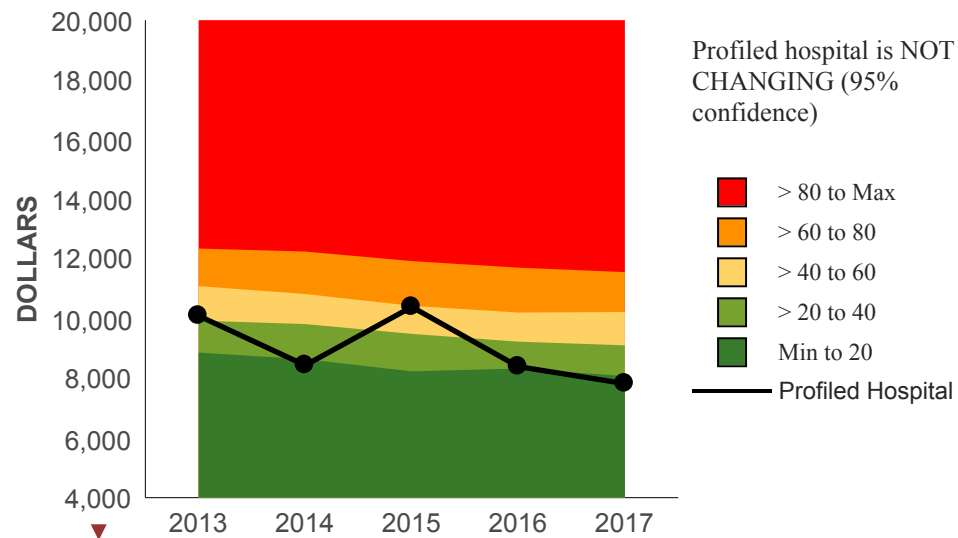


Benchmark hospitals are the winners in the comparison group: n = 20

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## 2013 - 2017 COST PER CASE RATE OF IMPROVEMENT

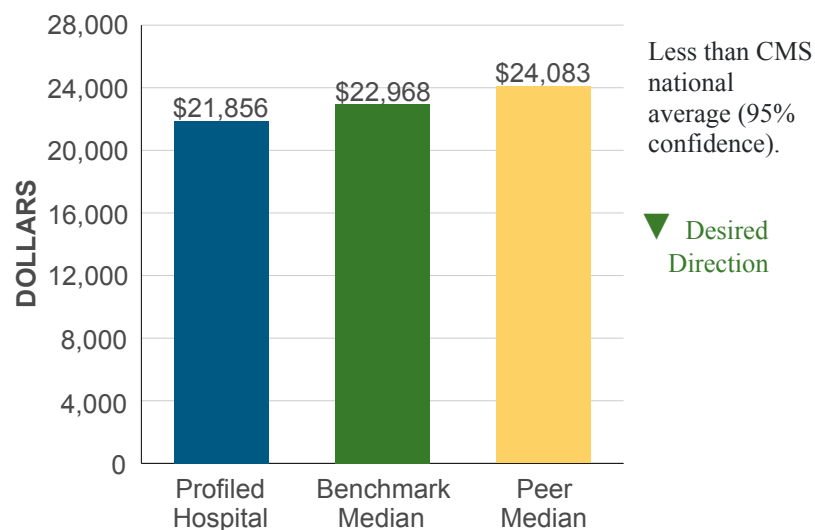


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2013	8,860	9,932	11,088	12,347	10,092
	2014	8,641	9,818	10,824	12,247	8,436
	2015	8,233	9,488	10,428	11,927	10,390
	2016	8,327	9,227	10,204	11,706	8,391
	2017	8,075	9,105	10,220	11,558	7,820

# AMI patients: 30-day episode payment

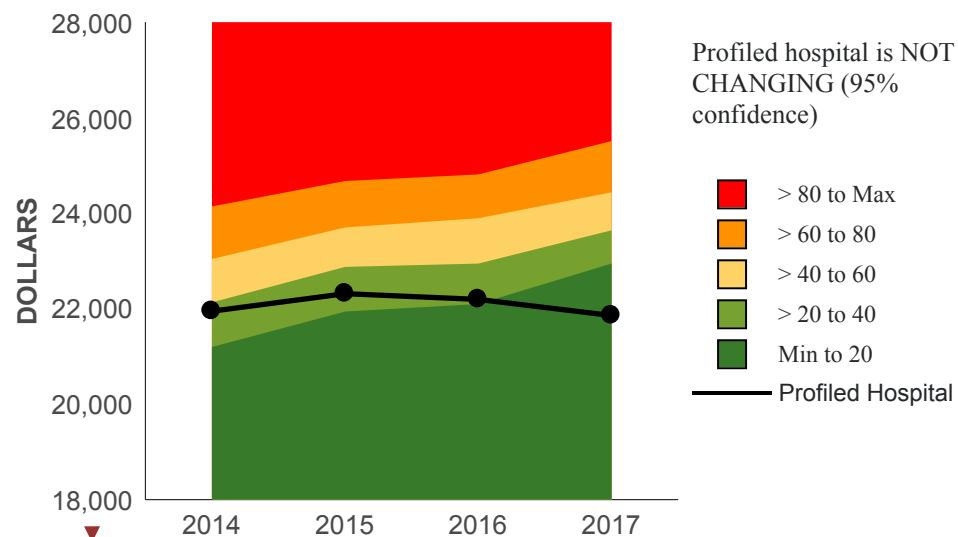
## 2017 30D EPISODE PAYMENT PERFORMANCE



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

## 2014 - 2017 30D EPISODE PAYMENT RATE OF IMPROVEMENT

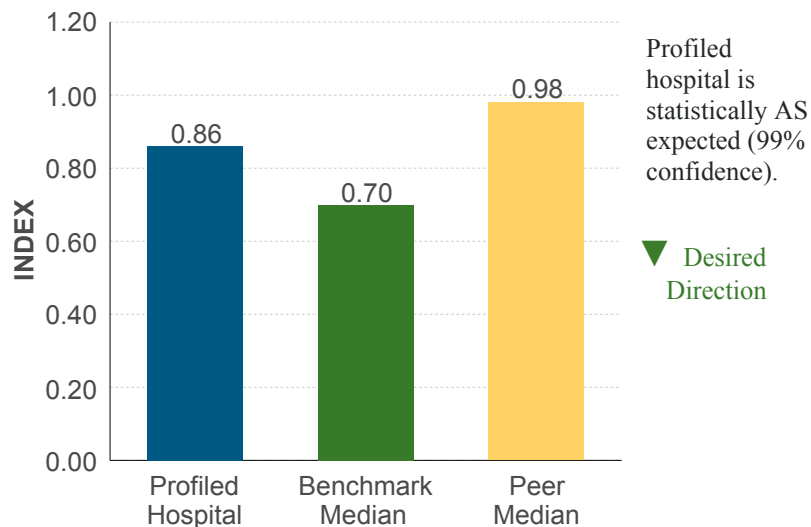


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2014	21,197	22,131	23,040	24,140	21,947
	2015	21,939	22,875	23,701	24,673	22,314
	2016	22,098	22,944	23,893	24,811	22,194
	2017	22,946	23,641	24,437	25,510	21,856

# HF patients: Risk-adjusted inpatient mortality index

## 2017 IP MORTALITY PERFORMANCE

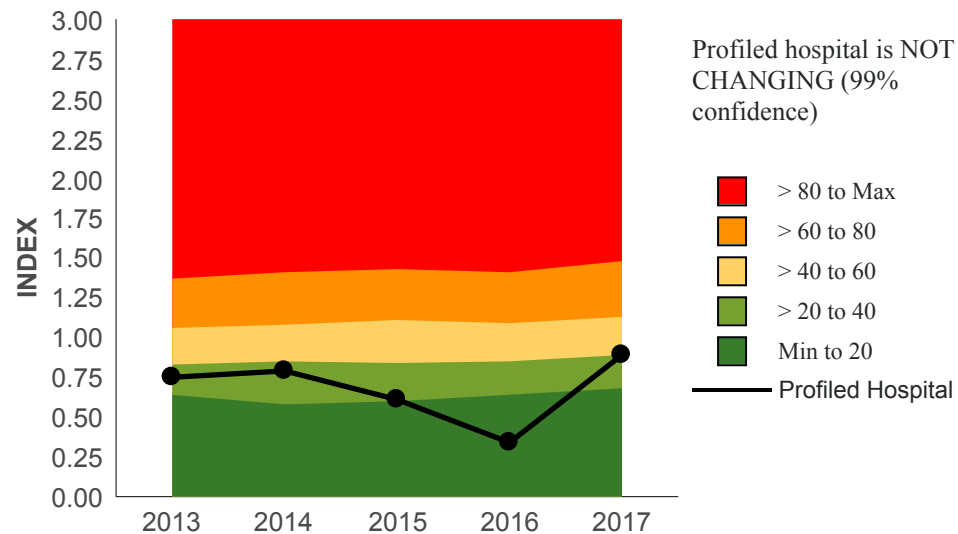


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Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

## 2013 - 2017 IP MORTALITY RATE OF IMPROVEMENT

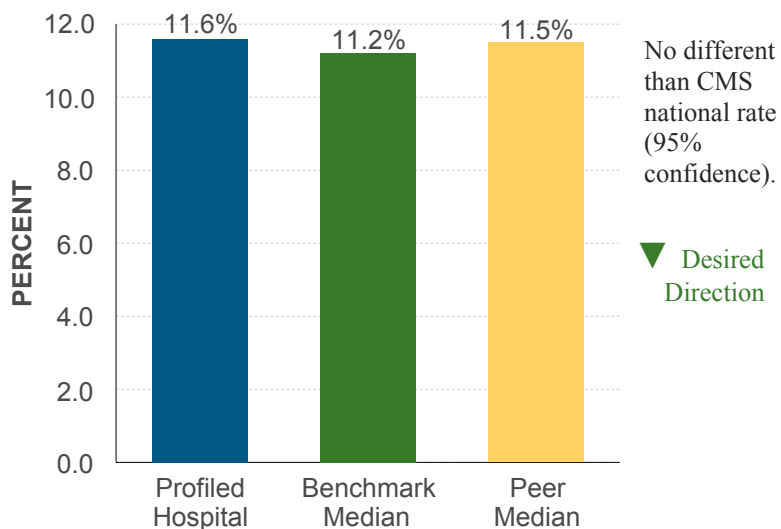


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL		
		20th	40th	60th	80th	Value	Upper C.I.	Lower C.I.
YEARS	2013	0.64	0.83	1.06	1.37	0.75	1.78	0.24
	2014	0.58	0.85	1.08	1.41	0.79	1.97	0.22
	2015	0.60	0.84	1.11	1.43	0.61	1.82	0.12
	2016	0.64	0.85	1.09	1.41	0.34	1.47	0.02
	2017	0.68	0.89	1.13	1.48	0.89	2.24	0.25

# HF patients: 30-day mortality rate

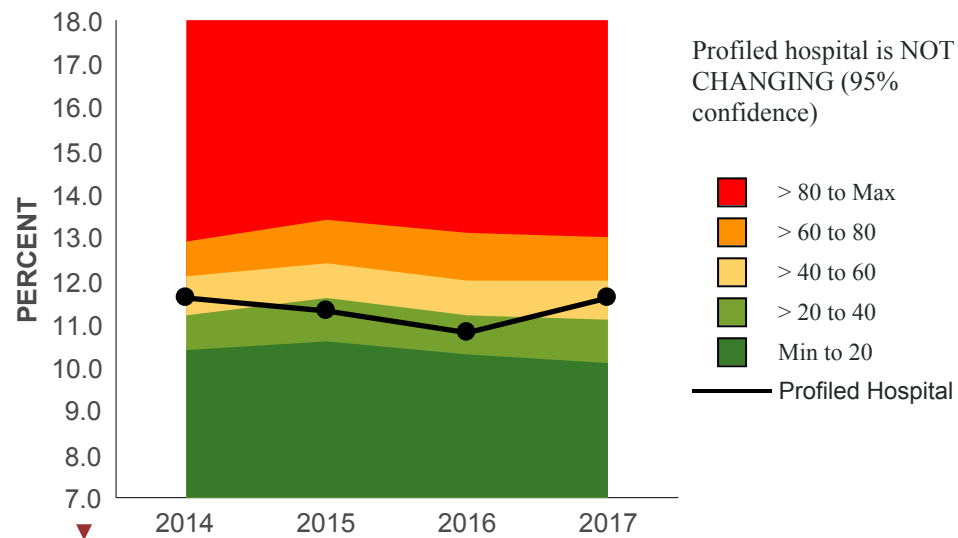
## 2017 30D MORTALITY PERFORMANCE



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

## 2014 - 2017 30D MORTALITY RATE OF IMPROVEMENT

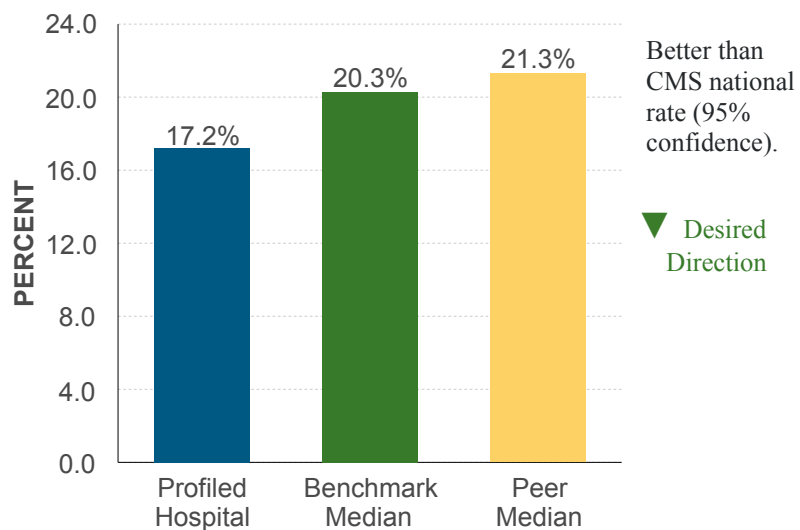


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2014	10.4	11.2	12.1	12.9	11.6
	2015	10.6	11.6	12.4	13.4	11.3
	2016	10.3	11.2	12.0	13.1	10.8
	2017	10.1	11.1	12.0	13.0	11.6

# HF patients: 30-day readmission rate

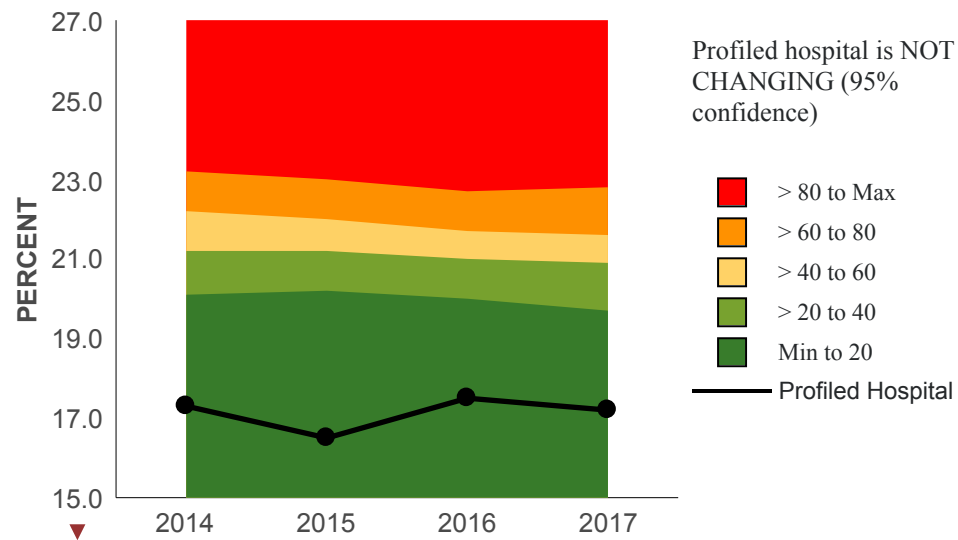
## 2017 30D READMISSION PERFORMANCE



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

## 2014 - 2017 30D READMISSION RATE OF IMPROVEMENT

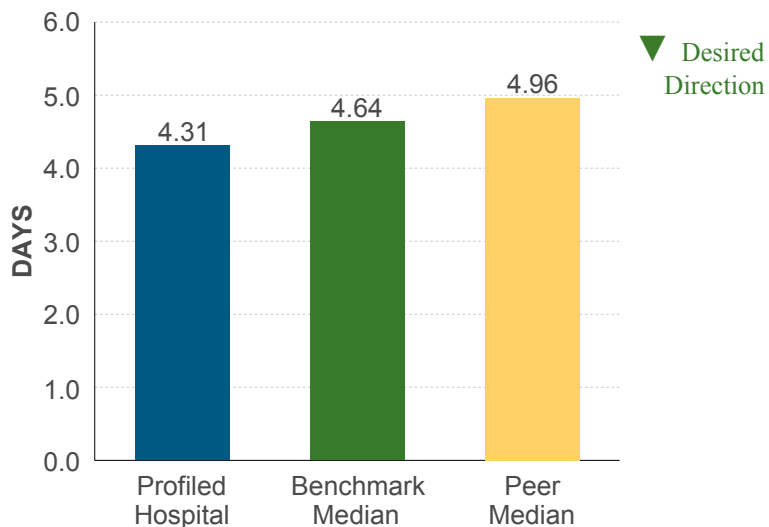


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2014	20.1	21.2	22.2	23.2	17.3
	2015	20.2	21.2	22.0	23.0	16.5
	2016	20.0	21.0	21.7	22.7	17.5
	2017	19.7	20.9	21.6	22.8	17.2

# HF patients: Severity-adjusted average length of stay

## 2017 ALOS PERFORMANCE

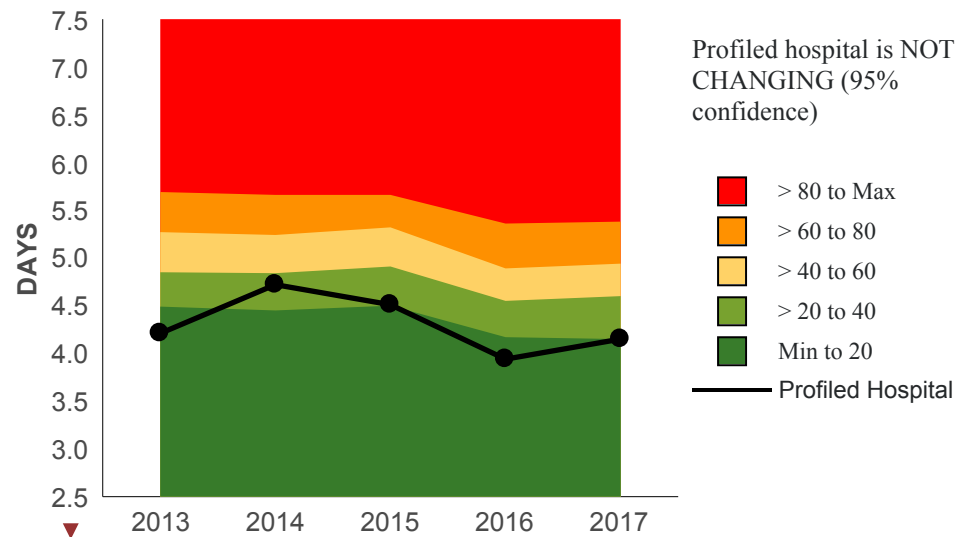


Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

## 2013 - 2017 ALOS RATE OF IMPROVEMENT

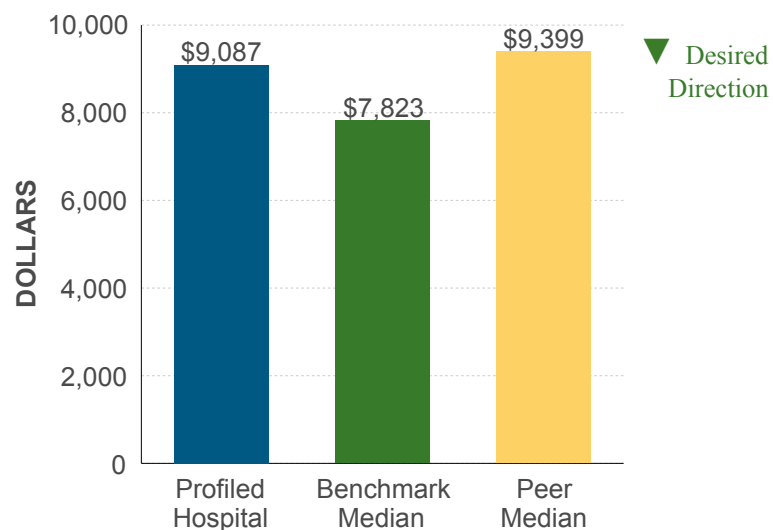


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2013	4.49	4.85	5.27	5.69	4.21
	2014	4.45	4.84	5.24	5.66	4.72
	2015	4.50	4.91	5.32	5.66	4.51
	2016	4.17	4.55	4.89	5.36	3.94
	2017	4.15	4.60	4.94	5.38	4.15

# HF patients: Wage- and severity-adjusted cost per case

## 2017 COST PER CASE PERFORMANCE

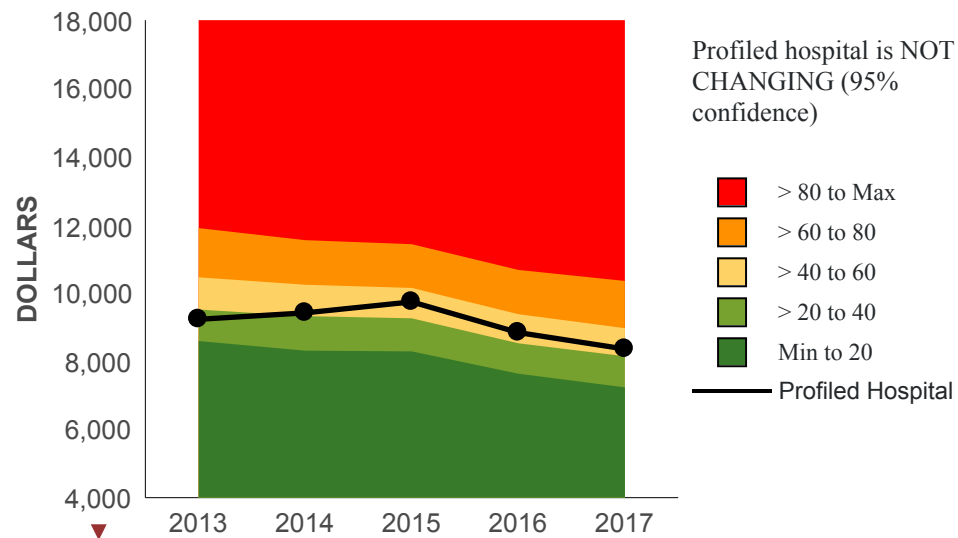


Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

## 2013 - 2017 COST PER CASE RATE OF IMPROVEMENT

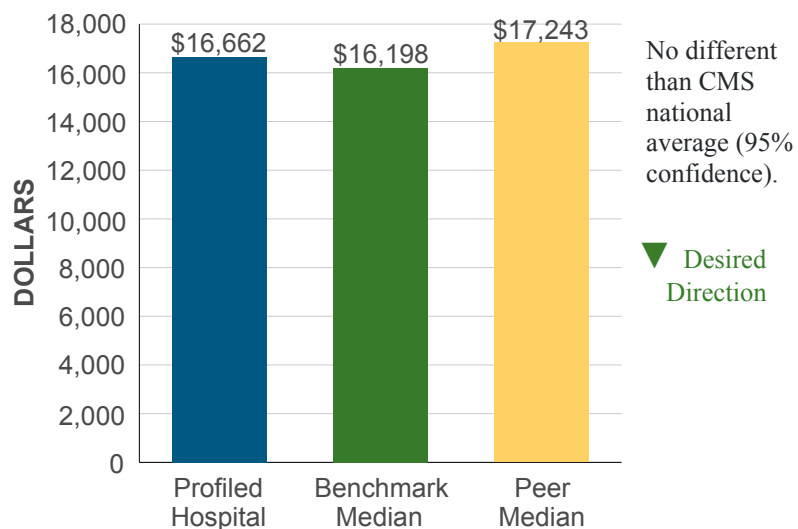


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2013	8,592	9,516	10,461	11,904	9,229
	2014	8,310	9,322	10,243	11,550	9,418
	2015	8,289	9,259	10,149	11,432	9,740
	2016	7,635	8,526	9,380	10,677	8,840
	2017	7,234	8,147	8,969	10,354	8,358

# HF patients: 30-day episode payment

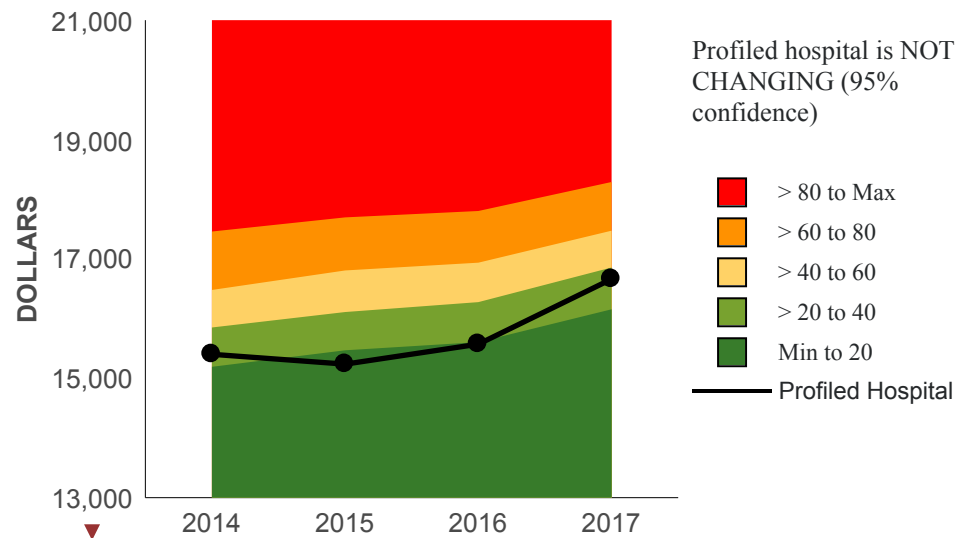
## 2017 30D EPISODE PAYMENT PERFORMANCE



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

## 2014 - 2017 30D EPISODE PAYMENT RATE OF IMPROVEMENT



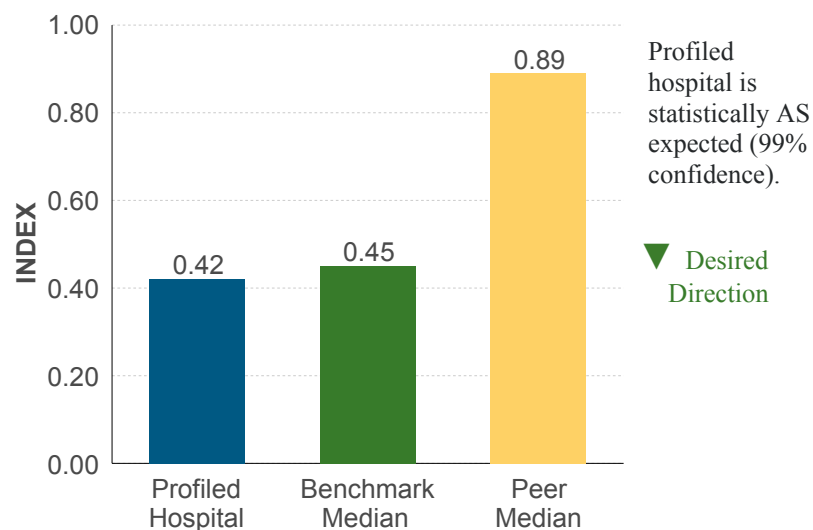
Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2014	15,192	15,851	16,480	17,459	15,402
	2015	15,469	16,110	16,807	17,696	15,237
	2016	15,606	16,276	16,937	17,803	15,572
	2017	16,156	16,856	17,473	18,289	16,662



# CABG patients: Risk-adjusted inpatient mortality index

## 2017 IP MORTALITY PERFORMANCE

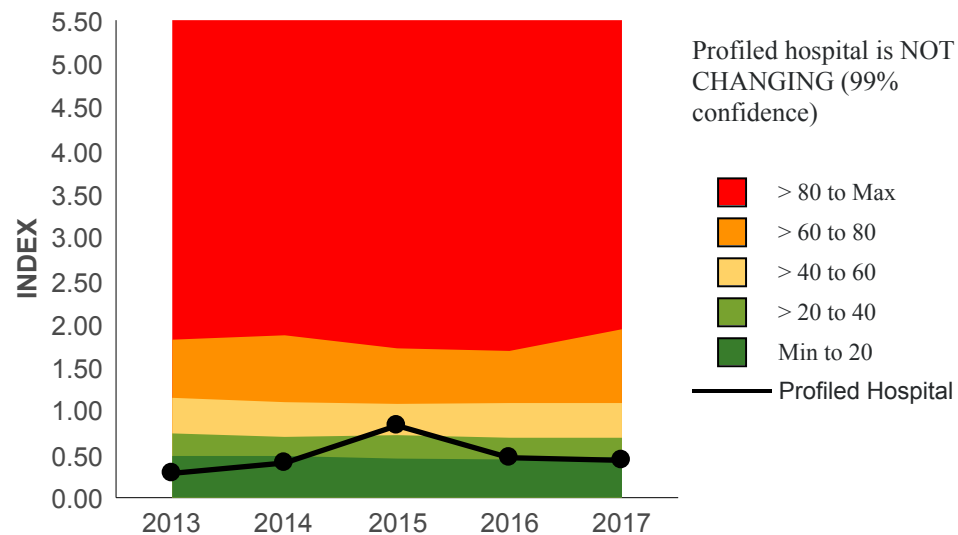


Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

## 2013 - 2017 IP MORTALITY RATE OF IMPROVEMENT

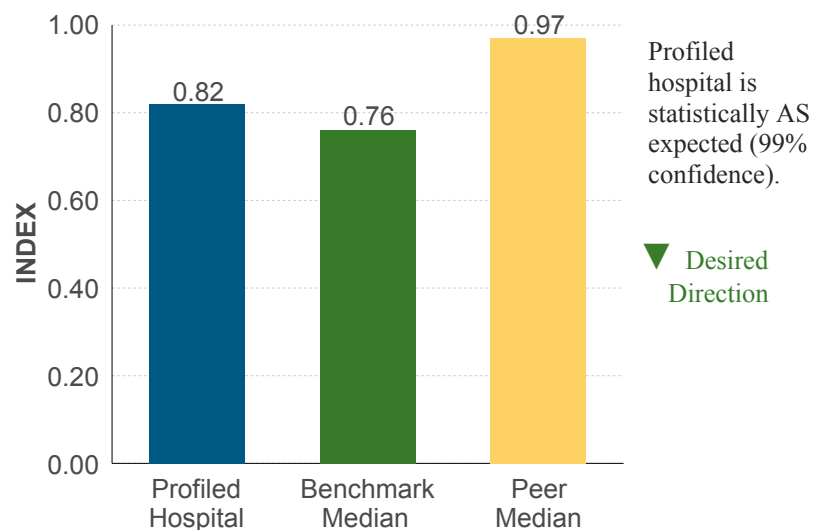


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL		
		20th	40th	60th	80th	Value	Upper C.I.	Lower C.I.
YEARS	2013	0.48	0.74	1.15	1.82	0.28	1.92	0.00
	2014	0.48	0.70	1.10	1.87	0.40	2.69	0.00
	2015	0.45	0.72	1.08	1.72	0.83	5.65	0.01
	2016	0.44	0.69	1.09	1.69	0.46	3.12	0.00
	2017	0.47	0.69	1.09	1.94	0.43	2.88	0.00

# CABG patients: Risk-adjusted complications index

## 2017 COMPLICATIONS PERFORMANCE

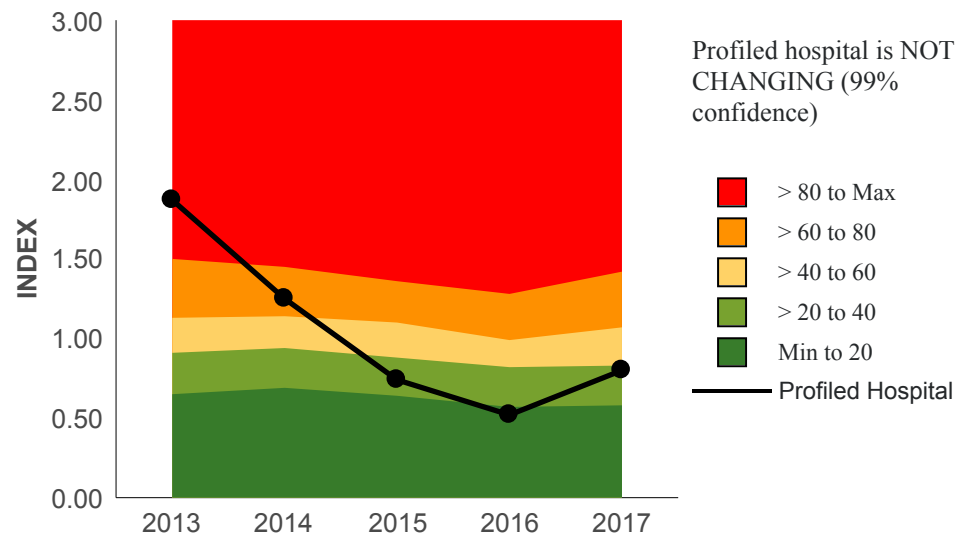


Benchmark hospitals are the winners in the comparison group: n = 20

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Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

## 2013 - 2017 COMPLICATIONS RATE OF IMPROVEMENT

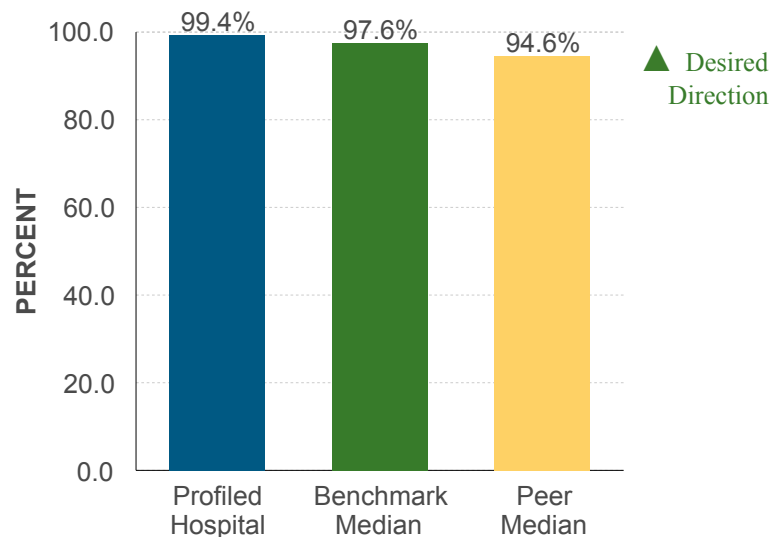


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL		
		20th	40th	60th	80th	Value	Upper C.I.	Lower C.I.
YEARS	2013	0.65	0.91	1.13	1.50	1.87	3.38	0.92
	2014	0.69	0.94	1.14	1.45	1.25	2.45	0.54
	2015	0.64	0.88	1.10	1.36	0.74	1.61	0.28
	2016	0.57	0.82	0.99	1.28	0.52	1.12	0.19
	2017	0.58	0.83	1.07	1.42	0.80	1.50	0.37

## CABG patients with internal mammary artery use (%)

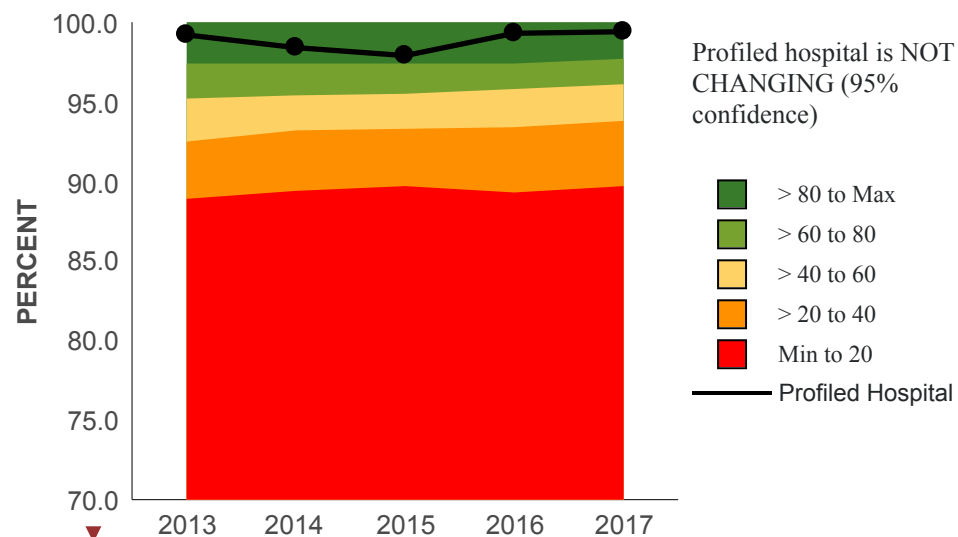
2017 CABG W IMA PERFORMANCE



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

2013 - 2017 CABG W IMA RATE OF IMPROVEMENT

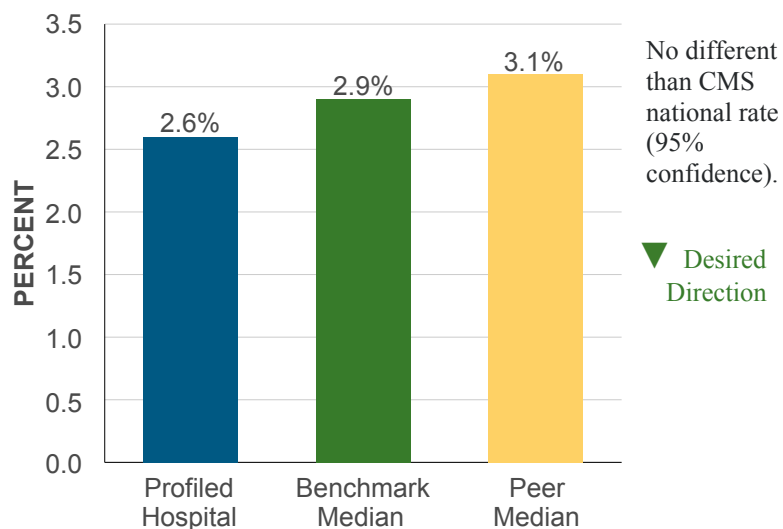


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2013	88.9	92.5	95.2	97.4	99.2
	2014	89.4	93.2	95.4	97.4	98.4
	2015	89.7	93.3	95.5	97.4	97.9
	2016	89.3	93.4	95.8	97.4	99.3
	2017	89.7	93.8	96.1	97.7	99.4

# CABG patients: 30-day mortality rate

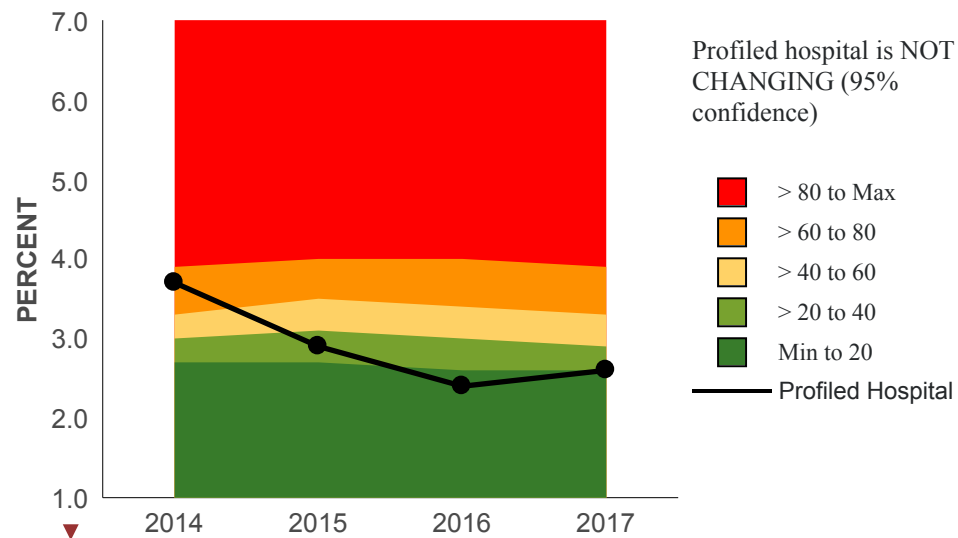
## 2017 30D MORTALITY PERFORMANCE



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

## 2014 - 2017 30D MORTALITY RATE OF IMPROVEMENT

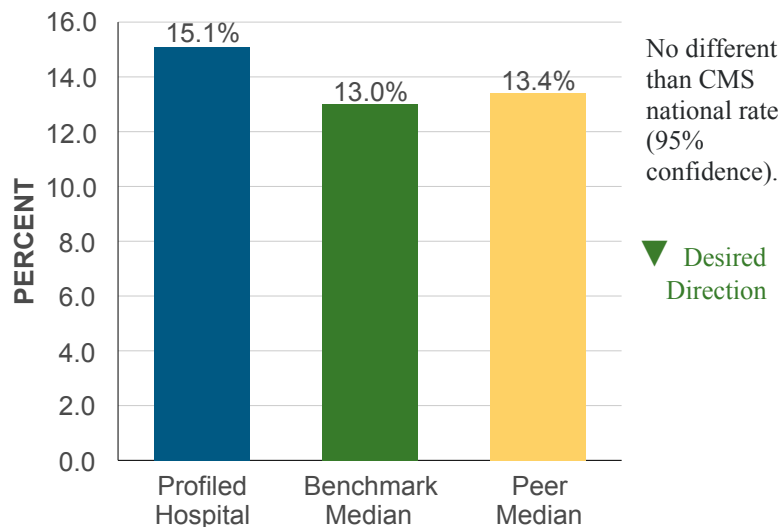


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2014	2.7	3.0	3.3	3.9	3.7
	2015	2.7	3.1	3.5	4.0	2.9
	2016	2.6	3.0	3.4	4.0	2.4
	2017	2.6	2.9	3.3	3.9	2.6

# CABG patients: 30-day readmission rate

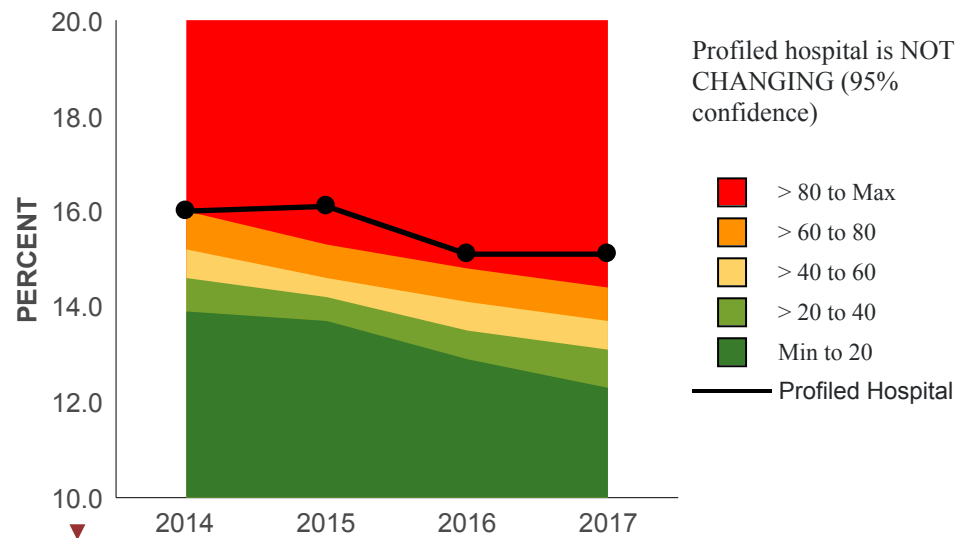
## 2017 30D READMISSION PERFORMANCE



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

## 2014 - 2017 30D READMISSION RATE OF IMPROVEMENT

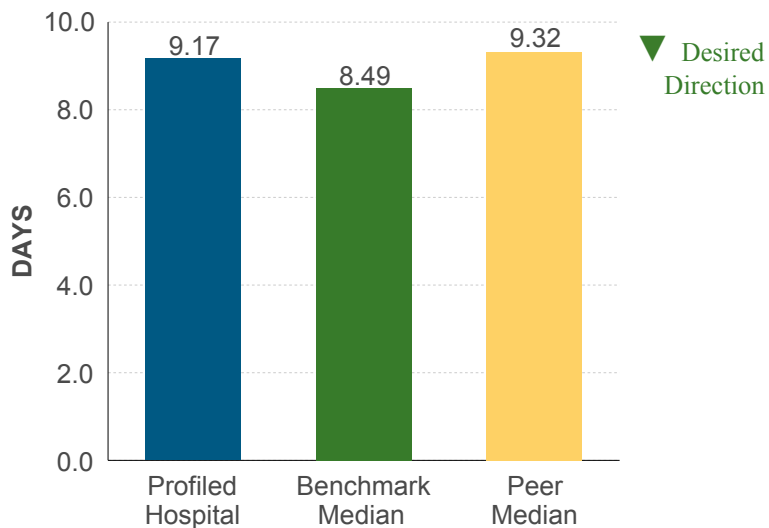


Hospital performance compared to peer hospital quintiles: n = 442

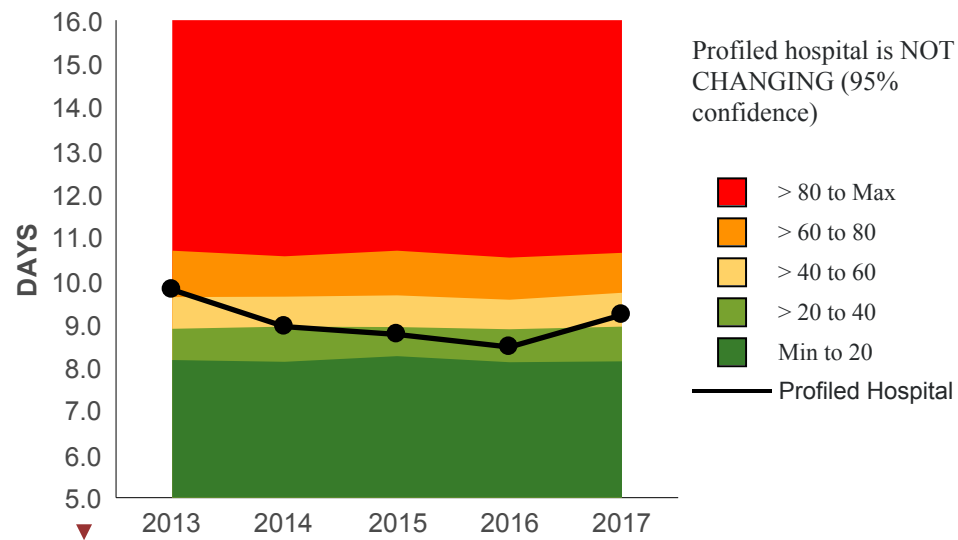
PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2014	13.9	14.6	15.2	16.0	16.0
	2015	13.7	14.2	14.6	15.3	16.1
	2016	12.9	13.5	14.1	14.8	15.1
	2017	12.3	13.1	13.7	14.4	15.1

# CABG patients: Severity-adjusted average length of stay

## 2017 ALOS PERFORMANCE



## 2013 - 2017 ALOS RATE OF IMPROVEMENT



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

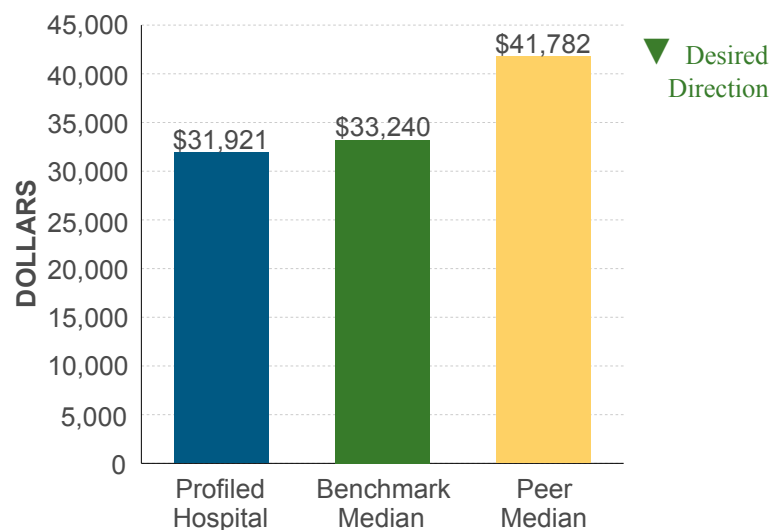
Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2013	8.17	8.89	9.62	10.69	9.79
	2014	8.13	8.94	9.63	10.56	8.94
	2015	8.26	8.93	9.66	10.69	8.76
	2016	8.12	8.88	9.56	10.53	8.47
	2017	8.14	8.94	9.72	10.64	9.21

# CABG patients: Wage- and severity-adjusted cost per case

## 2017 COST PER CASE PERFORMANCE

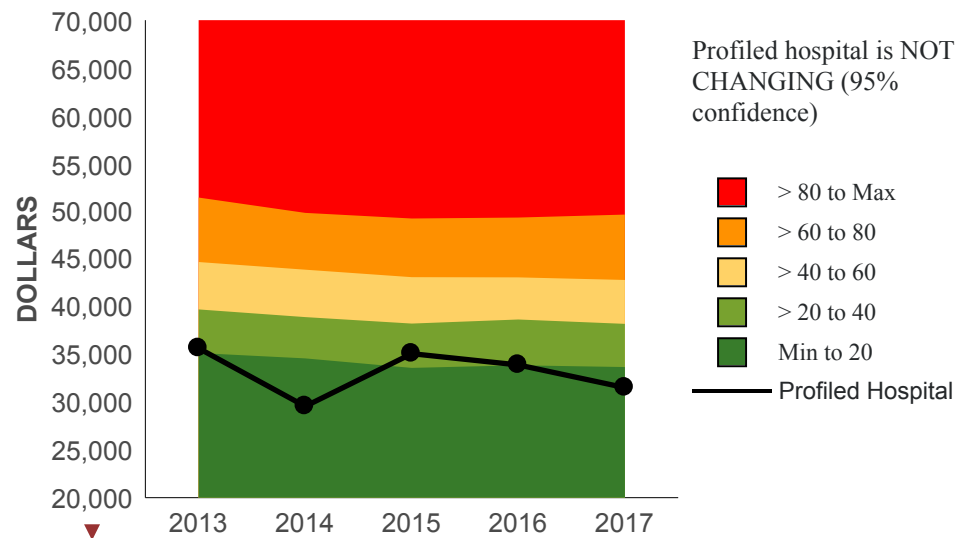


Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

## 2013 - 2017 COST PER CASE RATE OF IMPROVEMENT

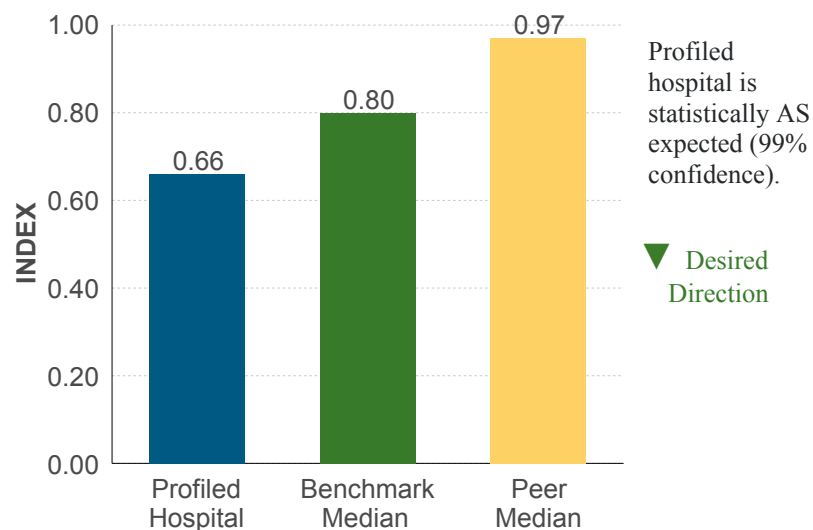


Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2013	35,144	39,709	44,675	51,423	35,641
	2014	34,584	38,909	43,871	49,819	29,567
	2015	33,587	38,229	43,090	49,233	35,077
	2016	33,862	38,656	43,066	49,332	33,898
	2017	33,678	38,200	42,795	49,643	31,520

# PCI patients: Risk-adjusted inpatient mortality index

## 2017 IP MORTALITY PERFORMANCE

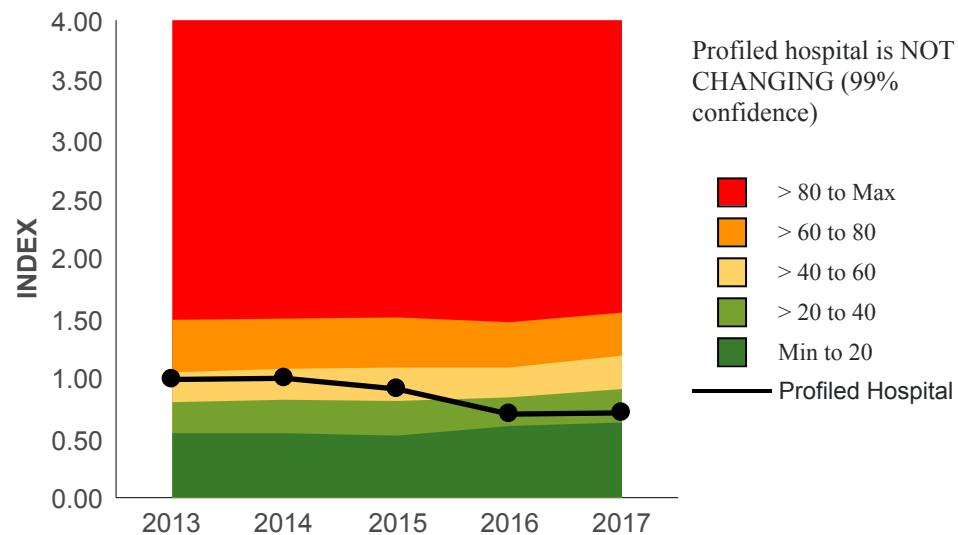


Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

## 2013 - 2017 IP MORTALITY RATE OF IMPROVEMENT



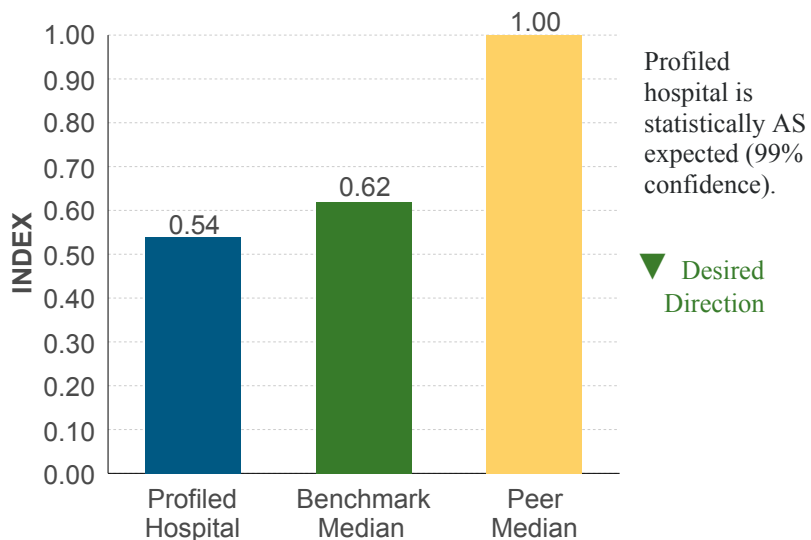
Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL		
		20th	40th	60th	80th	Value	Upper C.I.	Lower C.I.
YEARS	2013	0.54	0.80	1.05	1.49	0.99	2.24	0.34
	2014	0.54	0.82	1.08	1.50	1.00	2.08	0.39
	2015	0.52	0.81	1.09	1.51	0.91	2.15	0.29
	2016	0.60	0.84	1.09	1.47	0.70	1.90	0.17
	2017	0.63	0.91	1.19	1.55	0.71	2.12	0.14



# PCI patients: Risk-adjusted complications index

## 2017 COMPLICATIONS PERFORMANCE

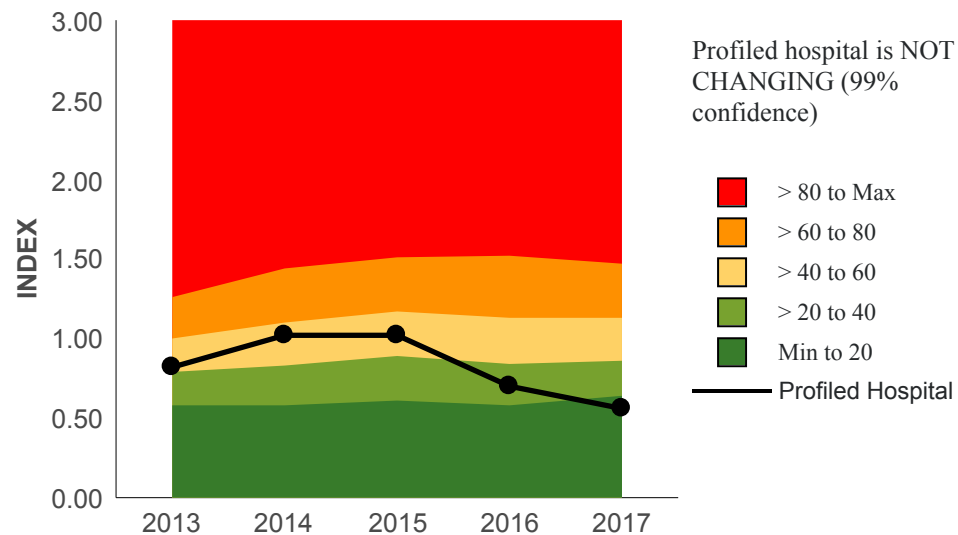


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Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

## 2013 - 2017 COMPLICATIONS RATE OF IMPROVEMENT

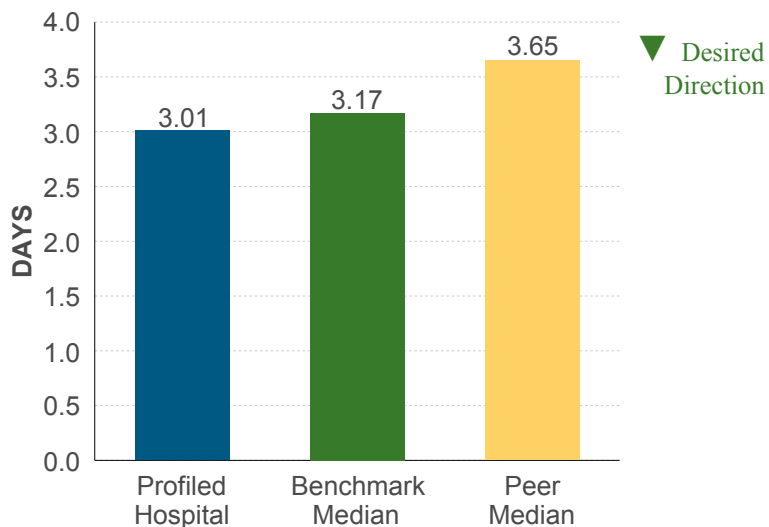


Hospital performance compared to peer hospital quintiles: n = 442

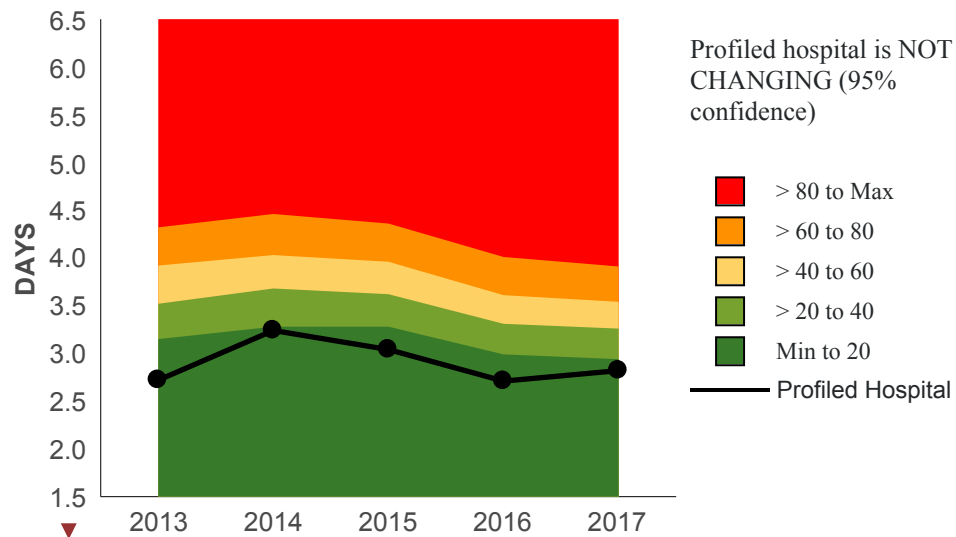
PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL		
		20th	40th	60th	80th	Value	Upper C.I.	Lower C.I.
YEARS	2013	0.58	0.79	1.00	1.26	0.82	1.76	0.30
	2014	0.58	0.83	1.10	1.44	1.02	1.95	0.46
	2015	0.61	0.89	1.17	1.51	1.02	1.92	0.47
	2016	0.58	0.84	1.13	1.52	0.70	1.46	0.28
	2017	0.64	0.86	1.13	1.47	0.56	1.33	0.18

# PCI patients: Severity-adjusted average length of stay

## 2017 ALOS PERFORMANCE



## 2013 - 2017 ALOS RATE OF IMPROVEMENT



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

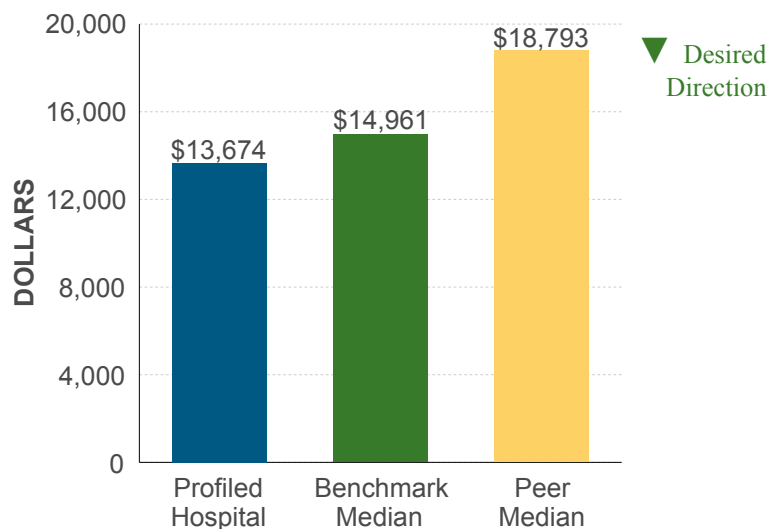
Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

Hospital performance compared to peer hospital quintiles: n = 442

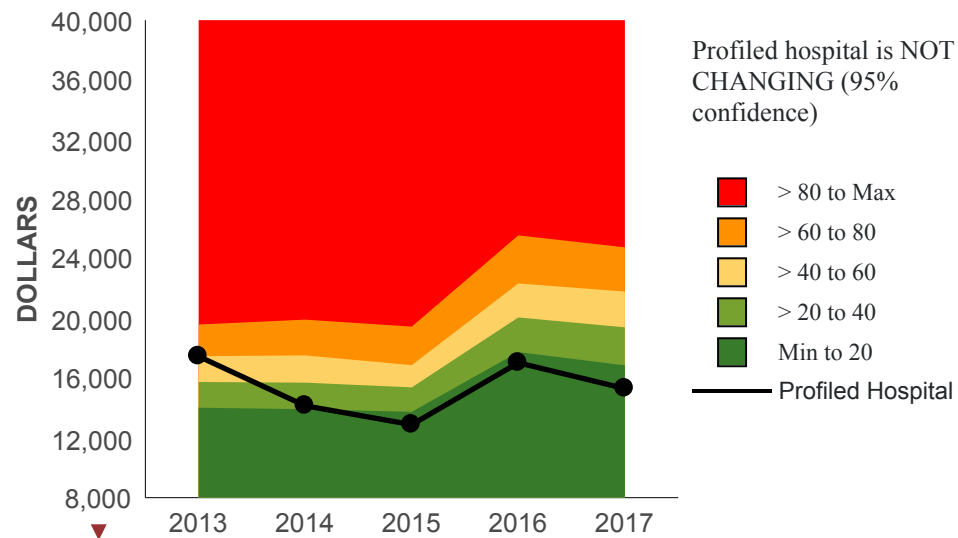
PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2013	3.15	3.52	3.92	4.32	2.72
	2014	3.28	3.68	4.03	4.46	3.24
	2015	3.28	3.62	3.96	4.36	3.04
	2016	2.99	3.31	3.61	4.01	2.71
	2017	2.94	3.26	3.54	3.91	2.82

# PCI patients: Wage- and severity-adjusted cost per case

2017 COST PER CASE PERFORMANCE



2013 - 2017 COST PER CASE RATE OF IMPROVEMENT



Benchmark hospitals are the winners in the comparison group: n = 20

Peer hospitals are the non-winners in the comparison group: n = 443

Note: 2017 values on the current and trend graphs will not match due to different norm factors used to normalize the expected values.

Hospital performance compared to peer hospital quintiles: n = 442

PERCENTILE POINTS ►		HOSPITAL COMPARISON GROUP				PROFILED HOSPITAL
		20th	40th	60th	80th	Value
YEARS	2013	14,029	15,753	17,482	19,603	17,467
	2014	13,929	15,707	17,534	19,932	14,158
	2015	13,752	15,391	16,882	19,464	12,893
	2016	17,756	20,079	22,355	25,579	17,037
	2017	16,867	19,416	21,813	24,777	15,311

## Supplemental information-only measures

This section of your report contains measures that we are profiling only for informational purposes; they were not included in ranking or determination of winners. We welcome your comments and feedback on the usefulness and relevance of these measures in assessing leadership's ability to drive high-level, balanced performance.

- **Excess days in acute care (EDAC) measures:**
  - 30-day excess days in acute care for AMI patients
  - 30-day excess days in acute care for HF patients

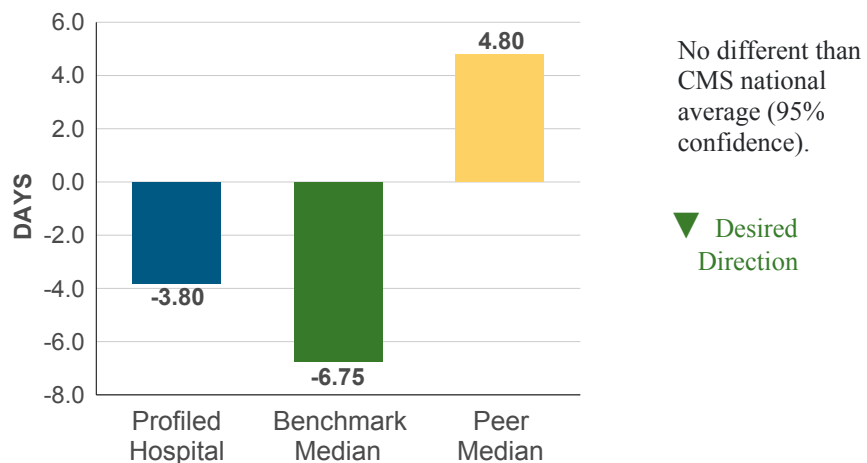
As defined by the Centers for Medicare & Medicaid Services (CMS), the “EDAC measures capture excess days that a hospital’s patients spent in acute care within 30 days after discharge.”

The values of these measures are the number of risk-adjusted days a hospital’s patients spend in an emergency department (ED), a hospital observation unit, or a hospital inpatient unit (“days in acute care”) during 30 days following a hospitalization for AMI or HF.”

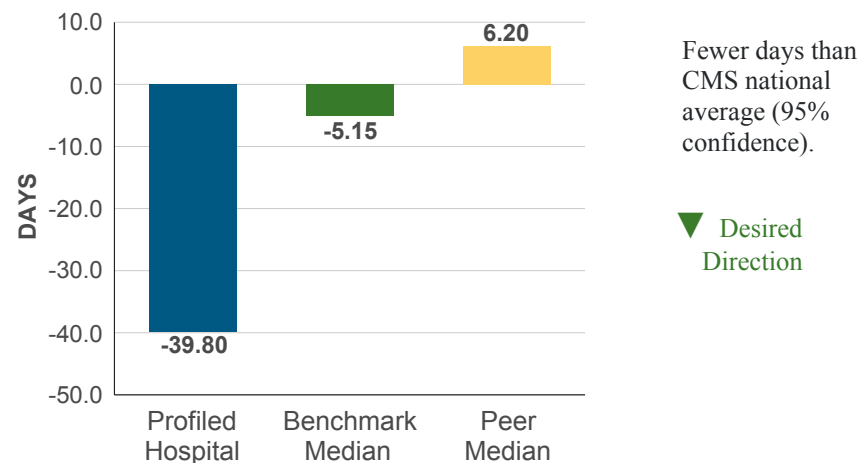
The measures report the difference (“excess”) between each hospital’s average days in acute care (“predicted days”) and the number of days in acute care that each hospital’s patients would have been expected to spend if discharged from an average-performing hospital (“expected days”). The measure is reported as excess days per 100 discharges.

# AMI and HF patients: 2017 Performance Compared to Benchmark<sup>1</sup> and Peer<sup>2</sup> Hospitals

**AMI 30D EXCESS DAYS IN ACUTE CARE**



**HF 30D EXCESS DAYS IN ACUTE CARE**



*Note: Profiled hospital compared to Community hospitals*

<sup>1</sup> Benchmark hospitals are the winners in the comparison group: n = 20

<sup>2</sup> Peer hospitals are the non-winners in the comparison group: n = 443

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