

100 Top Hospitals, 2020

Competitor Report

Prepared for:
Sample Hospital

Date

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Background and approach

In this analysis, Sample Hospital's performance and rate of improvement are compared to that of seven client-selected competitors, using the 100 Top Hospitals® measures and methodologies

Measures included in the analysis:

- OVERALL performance score
- Inpatient mortality
- Complications
- Healthcare-associated infections
- Immunization for influenza (IMM-2)
- Mean 30-day mortality
- 30-day hospital-wide readmissions
- Average length of stay
- Emergency department throughput
- Inpatient expense per discharge
- Operating profit margin
- HCAHPS score (Overall rating question – Top Box %)

Results are displayed as the rank percentile of each hospital's performance and rate of improvement compared to all U.S. hospitals within each hospital's 100 Top peer group. Conversion to percentiles allows direct comparison of all selected hospitals, without regard to peer group.

Profiled client hospital and competitors

- **Profiled Hospital**
- Profiled Competitor 1
- Profiled Competitor 2
- Profiled Competitor 3
- Profiled Competitor 4
- Profiled Competitor 5
- Profiled Competitor 6
- Profiled Competitor 7

Overall national performance

Sample Hospital falls into the ____ Percentile nationally for both 2018 performance and 2014-2018 rate of improvement

Competitor _____ and _____ facilities lead this group based on performance on all 100 Top Hospitals measures

Where Sample Hospital is strong among peers, and improving

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Where Sample Hospital might have significant opportunity to improve nationally, and compared to these competitors

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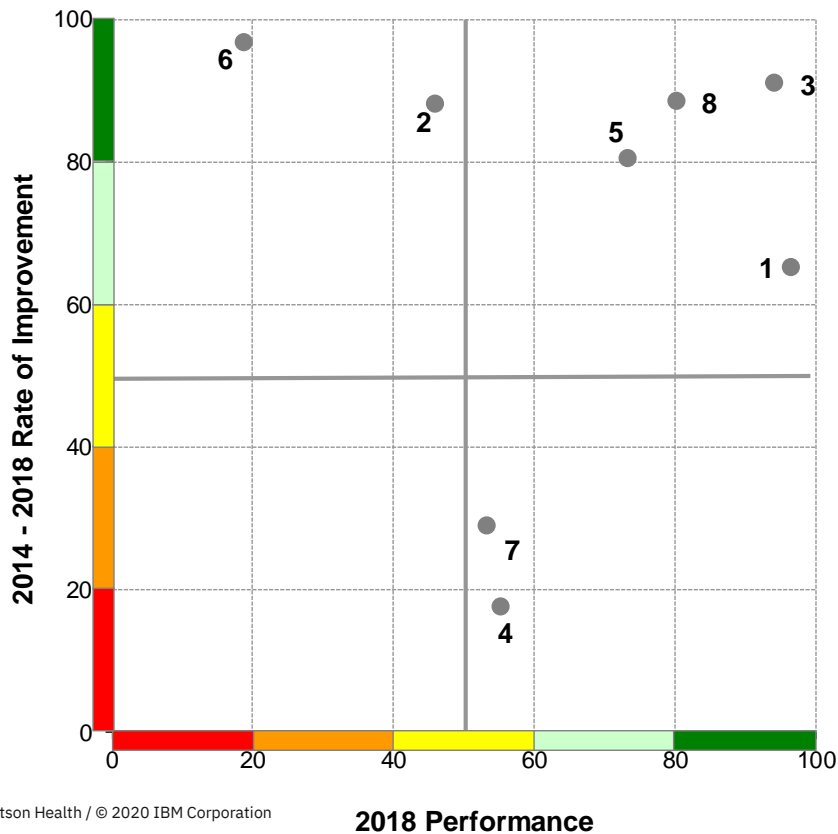
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Overall performance

100 Top Hospitals, 2020

Overall performance comparison

2018 Performance and 2014-2018 Rate of Improvement



Hospital Key

- 1 Client Hospital
- 2 Competitor 1
- 3 Competitor 2
- 4 Competitor 3
- 5 Competitor 4
- 6 Competitor 5
- 7 Competitor 6
- 8 Competitor 7

Quintile Key

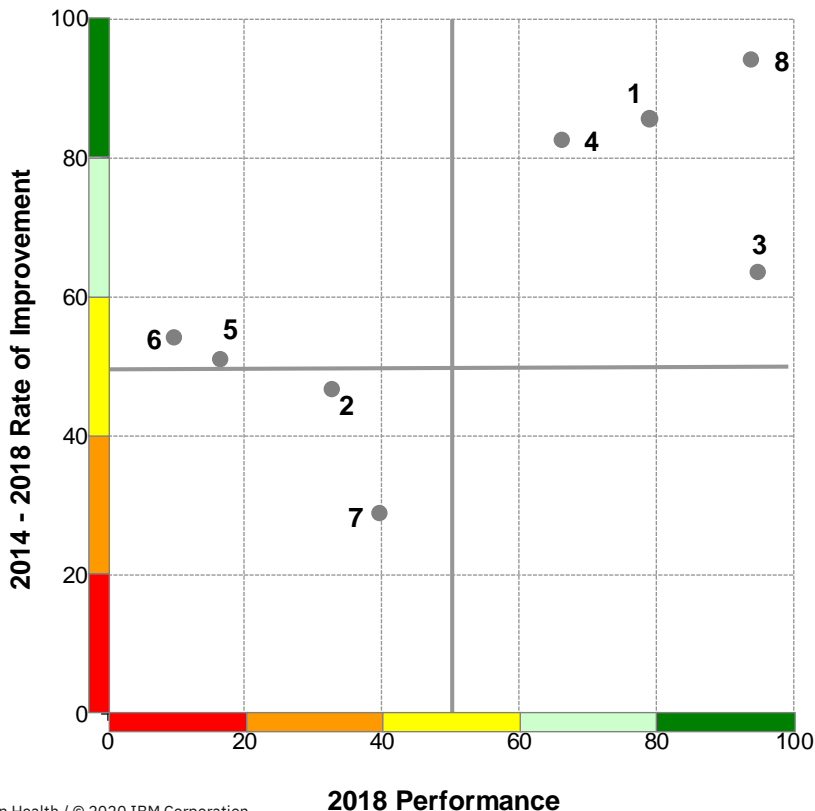
- > 80 to 100
- > 60 to 80
- > 40 to 60
- > 20 to 40
- > 0 to 20

Performance by measure

100 Top Hospitals, 2020

Risk-adjusted inpatient mortality

2018 Performance and 2014-2018 Rate of Improvement



Hospital Key

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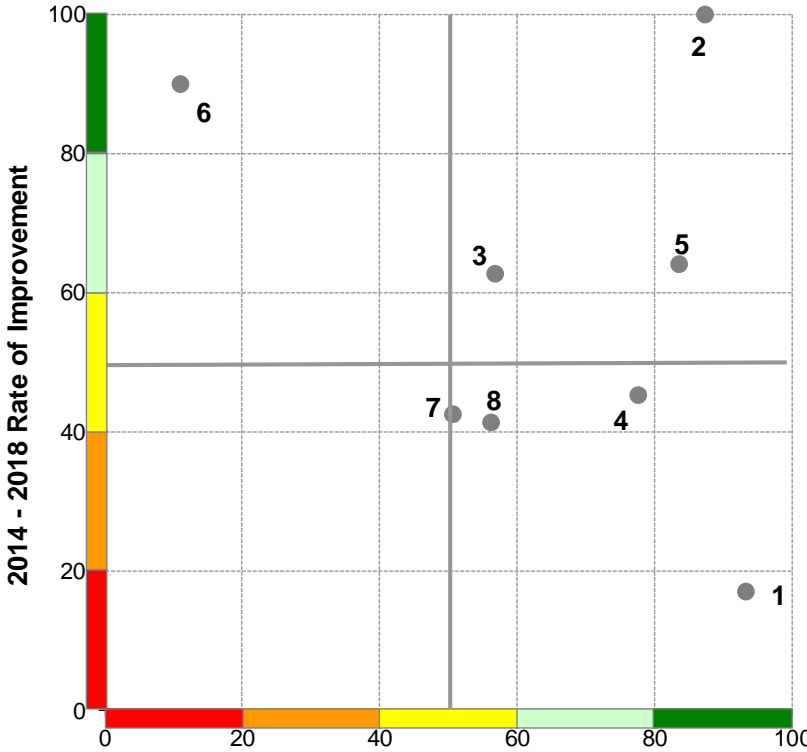
Quintile Key

- > 80 to 100
- > 60 to 80
- > 40 to 60
- > 20 to 40
- > 0 to 20

100 Top Hospitals, 2020

Risk-adjusted complications

2018 Performance and 2014-2018 Rate of Improvement



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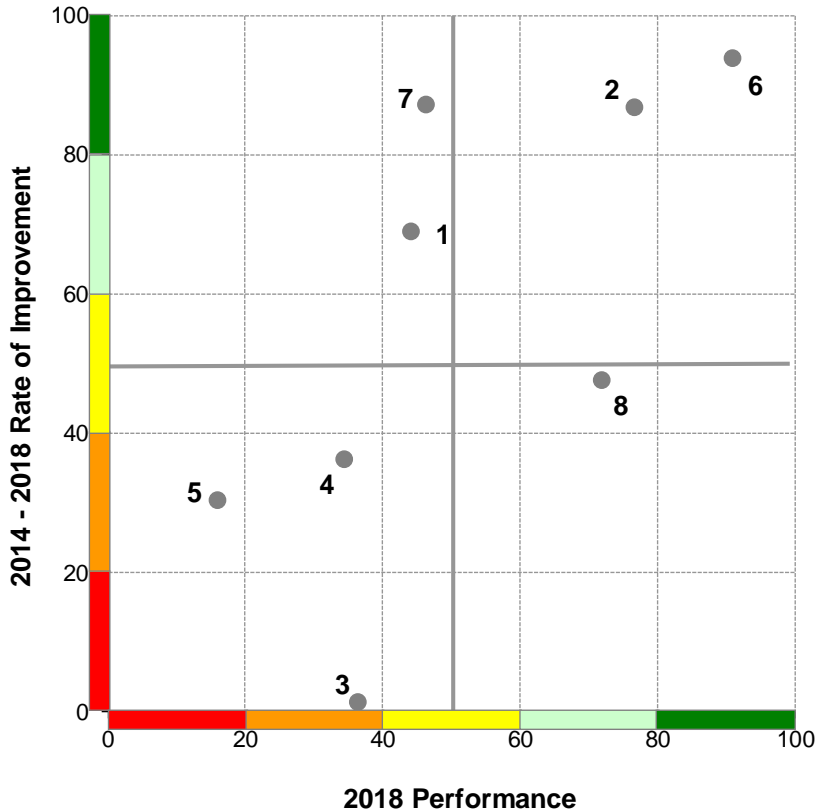
Quintile Key

- > 80 to 100
- > 60 to 80
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100 Top Hospitals, 2020

Healthcare-associated infections

2018 Performance and 2014-2018 Rate of Improvement



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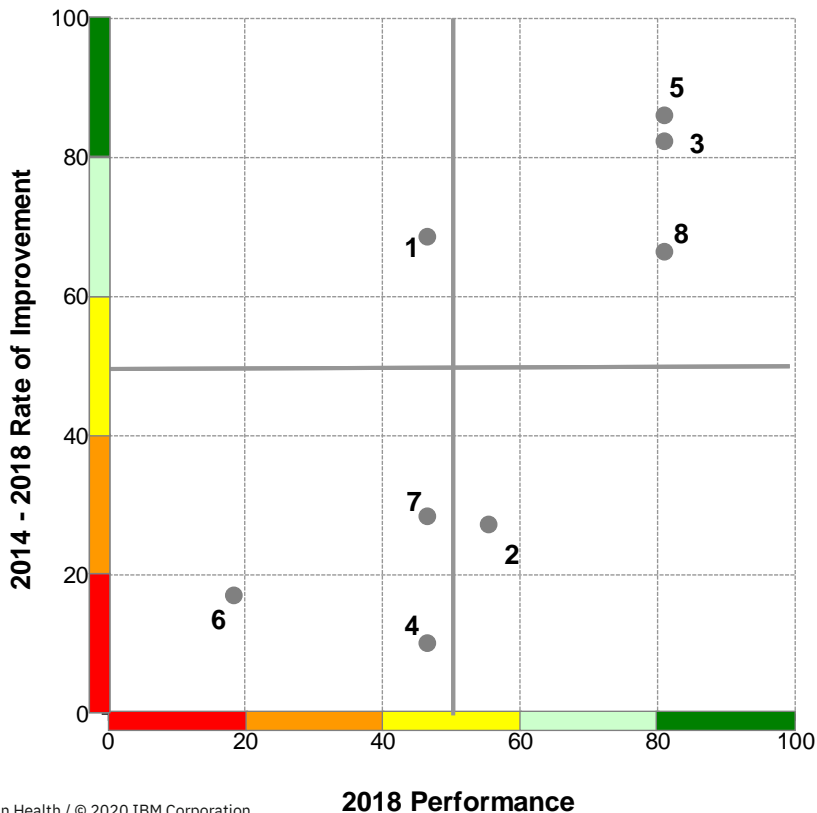
Quintile Key

- > 80 to 100
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- > 0 to 20

100 Top Hospitals, 2020

Immunization for influenza (IMM-2)

2018 Performance and 2014-2018 Rate of Improvement



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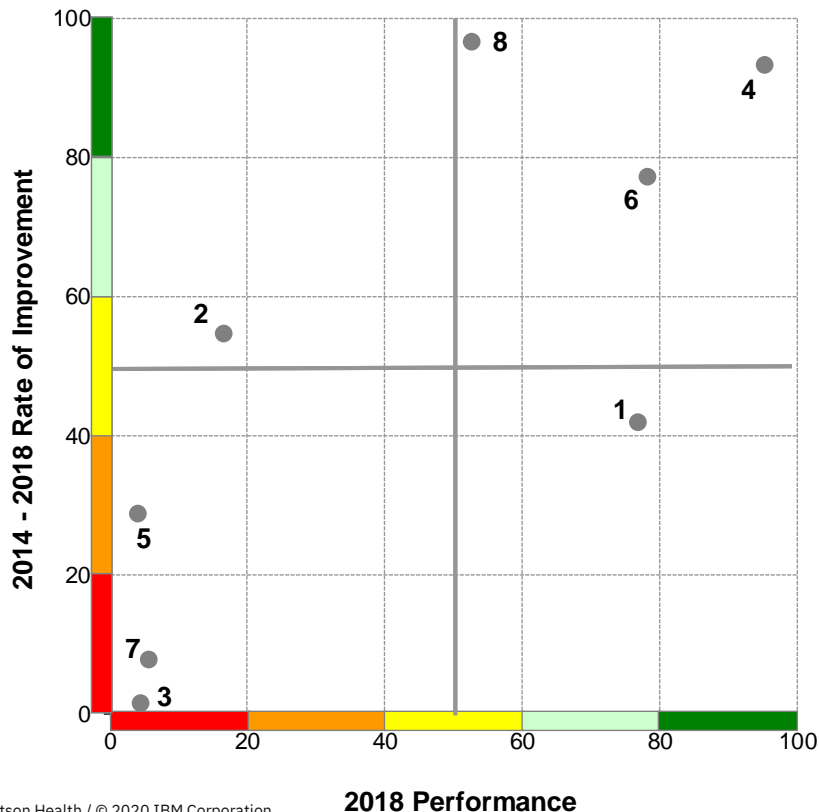
Quintile Key

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100 Top Hospitals, 2020

Mean 30-day mortality*

2018 Performance and 2014-2018 Rate of Improvement



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Quintile Key

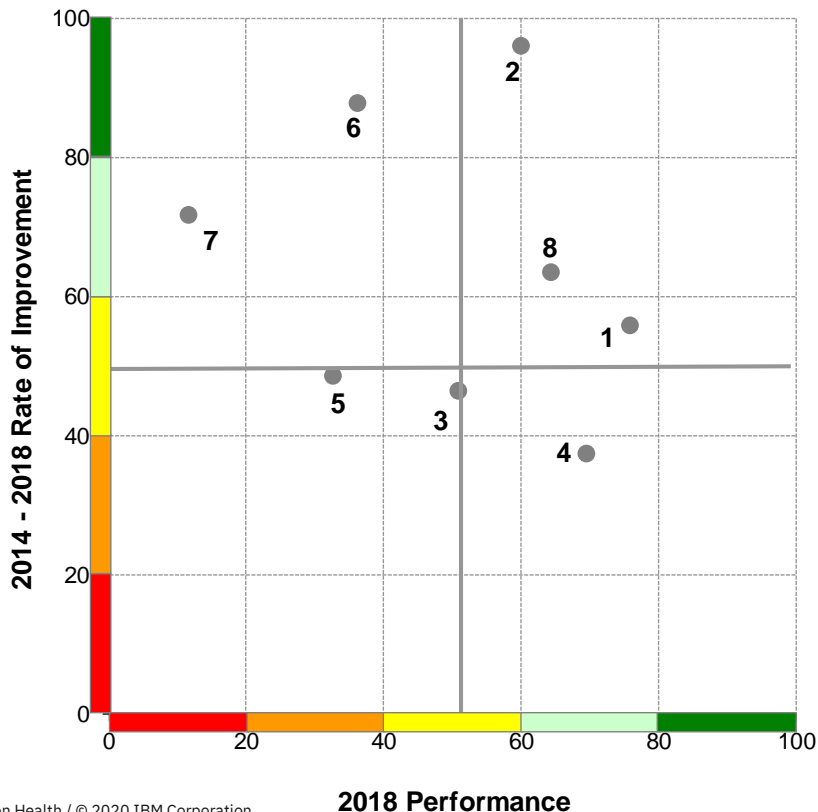
- > 80 to 100
- > 60 to 80
- > 40 to 60
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- > 0 to 20

*includes AMI, HF, PN, COPD, STK

100 Top Hospitals, 2020

30-day hospital-wide readmissions

2018 Performance and 2014-2018 Rate of Improvement



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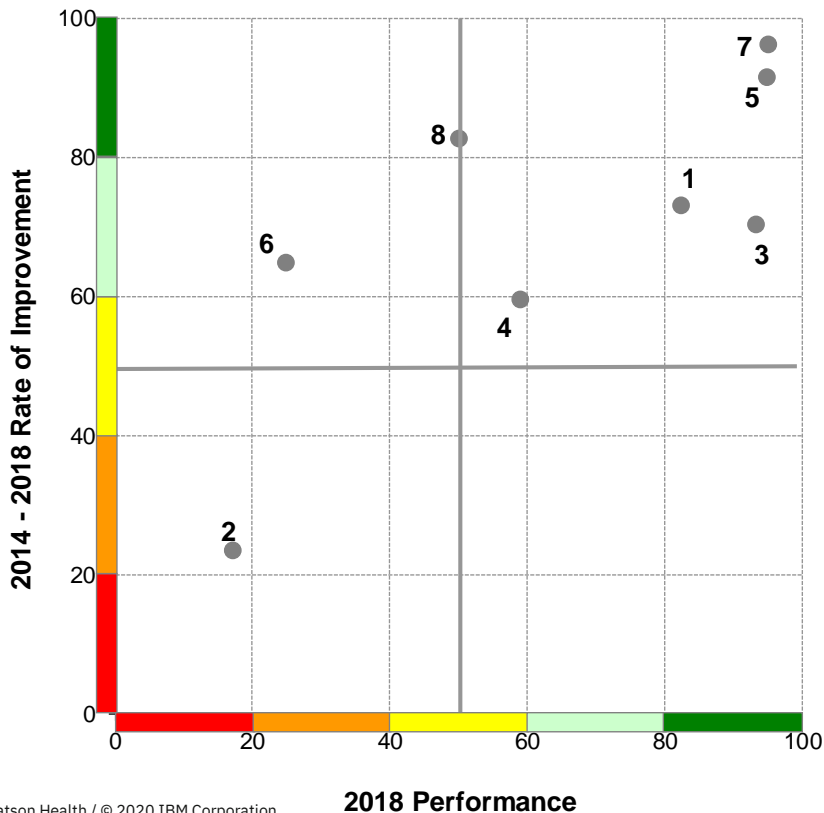
Quintile Key

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100 Top Hospitals, 2020

Severity-adjusted average length of stay

2018 Performance and 2014-2018 Rate of Improvement



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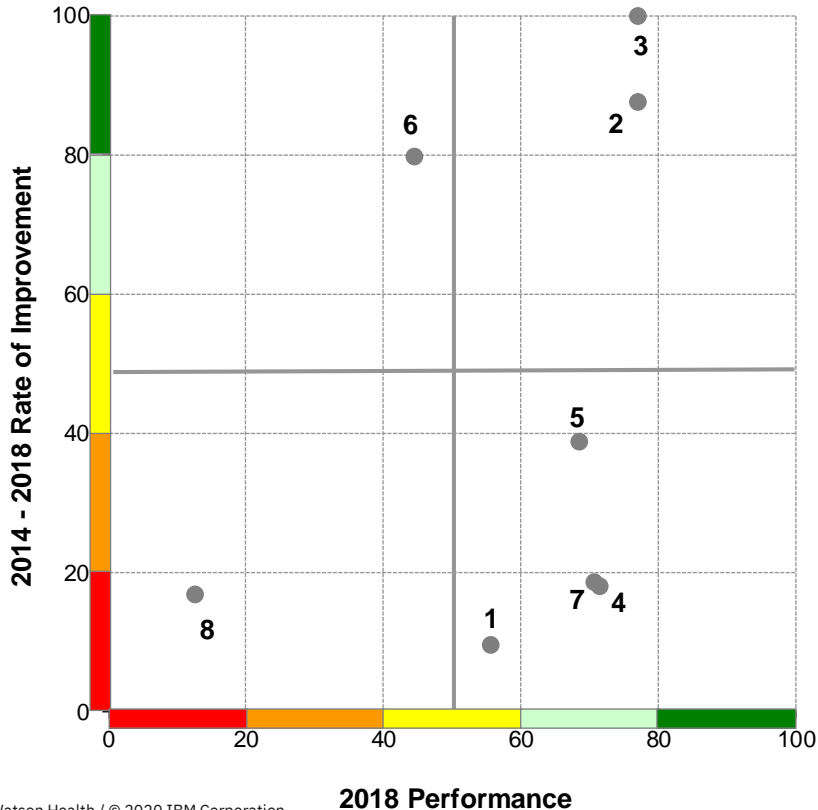
Quintile Key

- > 80 to 100
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100 Top Hospitals, 2020

Mean emergency department throughput*

2018 Performance and 2014-2018 Rate of Improvement



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Quintile Key

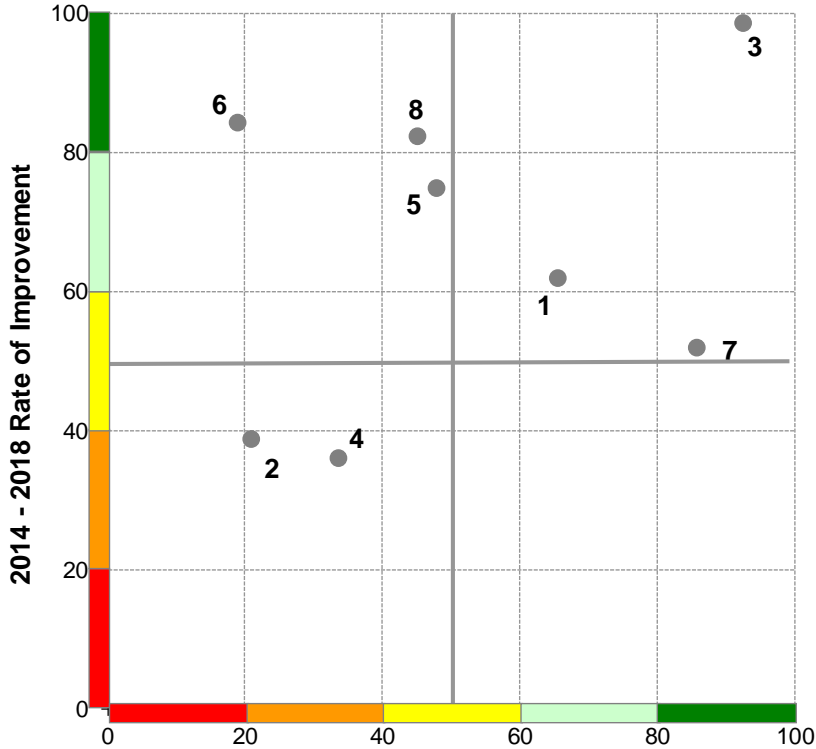
- > 80 to 100
- > 60 to 80
- > 40 to 60
- > 20 to 40
- > 0 to 20

*includes median time to admission; median time to discharge / home for non-admitted patients

100 Top Hospitals, 2020

Inpatient expense per discharge*

2018 Performance and 2014-2018 Rate of Improvement



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Quintile Key

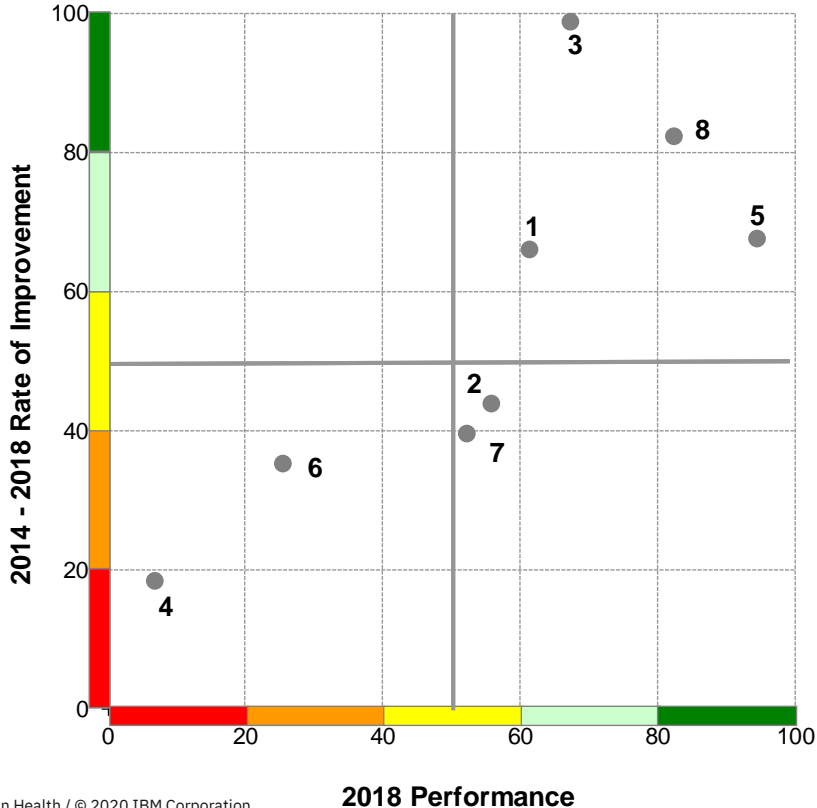
- > 80 to 100
- > 60 to 80
- > 40 to 60
- > 20 to 40
- > 0 to 20

*adjusted for CMS area wage index and case mix index

100 Top Hospitals, 2020

Adjusted operating profit margin*

2018 Performance and 2014-2018 Rate of Improvement



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Quintile Key

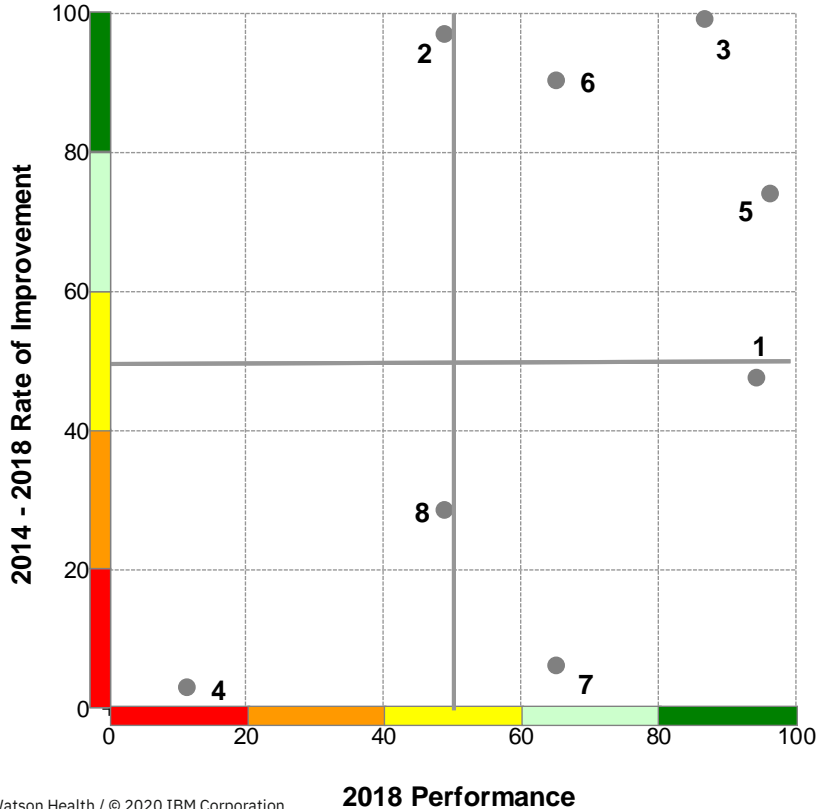
- > 80 to 100
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**adjusted for net related organization expense*

100 Top Hospitals, 2020

HCAHPS Overall rating question*

2018 Performance and 2014-2018 Rate of Improvement



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Quintile Key

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- > 60 to 80
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*ranked on percent of top box responses

Methodology overview

IBM Watson Health 100 Top Hospitals® study eligibility

All non-federal U.S. acute care hospitals are eligible

- Must have Medicare patient claims with valid POA coding (2017-2018)
- Must have a complete 2018 cost report
- Must have data for all included measures

Specialty and Critical Access hospitals are not included

Note: This year we continue to offer a separate analysis and reports for CAHs

We exclude hospitals with the following characteristics:

- Federally-owned
- Non-U.S.
- Fewer than 25 beds
- Fewer than 100 Medicare discharges
- Medicare average length of stay greater than 30 days
- No Medicare deaths reported

Hospital comparison groups

100 Top Hospitals® Comparison Groups	Winners	Total
Major Teaching Hospitals – 3 ways to qualify: <ul style="list-style-type: none"> – 400+ acute beds, 0.25 GME student to acute beds ratio, 10 GME sponsored programs or 20 GME affiliated programs – 30 GME affiliated programs – 0.6 GME student to acute beds ratio 	15	207
Teaching Hospitals – meet at least 2 of the following: <ul style="list-style-type: none"> – 200 acute beds or more – 0.03 GME student to acute beds ratio + at least 1 GME prog – 3 or more GME programs + student to acute beds ratio >0 • All teaching hospitals must have at least 99 beds 	25	560
Large Community Hospitals – 250+ beds	20	270
Medium Community Hospitals – 100 to 249 beds	20	812
Small Community Hospitals – 25 to 99 beds	20	831
Totals	100	2680

SOURCES: 2018 cost report – acute beds in service; GME student FTEs. AMA & AOA residency program lists.

Scorecard domains, measures, and rank weights

	Domain	Performance Measure	2018 Weight*	Trend Weight
Quality	Clinical Outcomes	Risk-adjusted inpatient mortality	1	1
		Risk-adjusted complications	1	1
		Healthcare-associated infections	1	1
	Clinical Process	Influenza immunization	1	1
	Extended Outcomes	Mean 30-day mortality rate (AMI, HF, PN, COPD, stroke)	1	1
		30-day hospital-wide readmission rate	1	1
Operations	Efficiency	Severity-adjusted average length of stay	1	1
		Mean emergency department throughput	1	1
		Inpatient expense per discharge, case mix- and area wage index-adjusted	1	1
	Financial	Adjusted operating profit margin	1	1
	Patient Experience	HCAHPS overall hospital rating – top box %	1	1

*Healthcare-associated infections (HAI) are **not ranked for small community hospitals** due to insufficient national public data for meaningful ranking. Their current profile (2018) weights for inpatient mortality, complications, 30-day mortality, and 30-day hospital-wide readmission ranks were increased to 1.25 to help balance quality and operational group totals.

Data sources

Performance Measure	2018 Performance (100 Top Award)	5-Year Trend
Risk-adjusted IP mortality Risk-adjusted complications	MEDPAR Federal Fiscal Year (FFY) 2017 and 2018 ¹	MEDPAR FFY 2013-2018 ¹
Healthcare-associated infections	CMS Hospital Compare (CMSHC) CY 2018	CMSHC CY 2014-2018
Influenza immunization	CMSHC Flu Season 2018 (October-March)	CMSHC 2014, 2015, 2016, 2017, 2018 6-mo datasets
30-day mortality rates	CMSHC July 1, 2015-June 30, 2018	CMSHC 2014, 2015, 2016, 2017, 2018 3-yr datasets
30-day hospital-wide readmission rate	CMSHC July 1, 2017-June 30, 2018	CMSHC 2014, 2015, 2016, 2017, 2018 1-yr datasets
Average length of stay	MEDPAR FFY 2018	MEDPAR FFY 2014-2018
ED throughput	CMSHC CY 2018	CMSHC CY 2014-2018
IP expense per discharge Operating profit margin	CMS HCRIS 2019 Q3 Hospital 2018 cost reports	CMS HCRIS 2019 Q3 Hospital 2014, 2015, 2016, 2017, 2018 cost reports
HCAHPS overall hospital rating	CMSHC CY 2018	CMSHC CY 2014-2018

1. *Two years of MedPAR data are combined to calculate each study year data point.*

Winner exclusion rules

Hospitals are ineligible to be considered 100 Top Hospitals winners if any of the following apply:

- An observed inpatient mortality or complications rate that is statistically worse than expected (99% confidence) and above the outlier group 75th percentile trim point
- An outlier value for inpatient expense or operating profit margin (*Interquartile Range (IQR) Methodology*)
- A negative operating profit margin

- Hospital had data for only 1 of the 3 HAI measures included in the medium community hospital comparison group (*See HAI for details*)
- Hospital has had a 100 Top Hospitals award rescinded by the Watson Health 100 Top Program within 3 years

Note: If a hospital meets a winner exclusion rule, this does NOT mean the hospital would have been a winner. It means they are excluded from consideration when final ranking and selection of winners occurs.

General ranking methodology

2018 performance

- Uses most current public data (various data set ending in 2018)
- Each measure ranked independently by peer comparison group
- Ranks are weighted, summed and the sum is re-ranked by comparison group to determine each hospital's overall performance score
- Winners are the top scoring overall performers in each comparison group

2014-2018 rate of improvement

- Regression line t-statistic is produced for each measure
- Each measure ranked independently by peer comparison group
- Ranks are weighted, summed and the sum is re-ranked by comparison group to determine each hospital's overall rate of improvement score
- Trend results are presented to guide leadership decision-making. They are not used in the selection of winners.

Inpatient mortality and complications

Two years of MedPAR data are combined for each data point (2017, 2018)

– Includes Medicare Advantage (HMO) encounter records

Watson Health risk models are used to produce expected values (*See methodology notes for details*)

Normalized z-score is the ranked metric

– Indicates whether the observed is significantly different than the expected value; takes into account the effect of small numbers

Risk-adjusted index is reported (*Ratio of observed to normalized expected value*)

Hospitals with statistically bad performance on one or more of these metrics are winner excluded (*See winner exclusions*)

Healthcare-associated infections

CY 2018 data from CMS Hospital Compare 2019 Q3 Release

- Standardized Infection Ratio (SIR) for six healthcare-associated infections (HAIs)
- Observed HAI count for all eligible inpatient days of service or procedures for all inpatients (*eligible days/procedures vary by HAI*)
- CDC NHSN risk models are used to produce expected values*

**In January 2017, Hospital Compare started to report updated SIR values that were created using re-baselined data from the CDC's National Healthcare Safety Network (using data from 2015 as the reference set)*

Composite measure used for ranking is the mean of reported HAI data across the 6 measures

- For each HAI, we calculate a normalized z-score
- The mean of the normalized z-scores is the ranked composite metric
- We report the simple mean of the included HAI SIRs; also the individual HAI SIRs

Included HAIs vary by comparison group, due to data availability

- A hospital must have data for the study minimum required number of HAIs to be in-study (*See table next page*)
- Medium community hospitals with only 1 of the 3 required HAIs are in-study but winner excluded

Included healthcare-associated infections by comparison group

Compare Group	Included HAIs	Min # HAIs
Major Teaching	HAI-1, HAI-2, HAI-3, HAI-4, HAI-5, HAI-6	4
Teaching	HAI-1, HAI-2, HAI-3, HAI-5, HAI-6 (<i>SSI:Hyst excluded</i>)	4
Large Community	HAI-1, HAI-2, HAI-3, HAI-5, HAI-6 (<i>SSI:Hyst excluded</i>)	4
Medium Community*	HAI-1, HAI-2, HAI-6 (<i>CLABSI, CAUTI, C. diff INCLUDED</i>)	1
Small Community	<i>HAIs NOT RANKED for Small Community Hospitals</i>	NA

* Medium community hospitals with only 1 of the 3 included HAIs are in-study but winner excluded

HAI	Name	Definition
HAI-1	CLABSI	Central line-associated bloodstream infections in ICUs and select wards
HAI-2	CAUTI	Catheter-associated urinary tract infections in ICUs and select wards
HAI-3	SSI: Colon	Surgical site infection from colon surgery
HAI-4	SSI: Hyst	Surgical site infection from abdominal hysterectomy
HAI-5	MRSA	Methicillin-resistant Staphylococcus aureus blood laboratory-identified events
HAI-6	C. diff	Clostridium difficile laboratory-identified events (intestinal infections)

Immunization for influenza (IMM-2)

All inpatients age 6 months and older discharged during October, November, December, January, February or March are *screened for influenza vaccine status and vaccinated prior to discharge if indicated.*

Defined as a percentage “success of screening” rate, using these numerator / denominator definitions.

Numerator: Inpatient discharges who were screened for influenza vaccine status and were vaccinated prior to discharge if indicated*

Denominator: Inpatients age 6 months and older discharged during the months of October, November, December, January, February or March

Denominator exclusions: Patients who expire prior to hospital discharge; patients with an organ or bone marrow transplant during the current hospitalization; patients who are discharged to another acute care hospital; patients who leave Against Medical Advice (AMA)

***Included Populations** - Patients who received the influenza vaccine during this inpatient hospitalization - Patients who received the influenza vaccine during the current year's flu season but prior to the current hospitalization - Patients who were offered and declined the influenza vaccine - Patients who have an allergy/sensitivity to the influenza vaccine, anaphylactic latex allergy or anaphylactic allergy to eggs, or for whom the vaccine is not likely to be effective because of bone marrow transplant within the past 6 months, or history of Guillain-Barre Syndrome within 6 weeks after a previous influenza vaccination.

CMS measure inventory tool desc:
https://cmit.cms.gov/CMIT_public/ViewMeasure?MeasureId=5588

30-day mortality and hospital-wide readmission rates

CMS Hospital Compare 2019 Q3 Release

– July 1-June 30: 1-year period readmits; 3-year period mortality

– **Medicare Fee For Service ONLY**

CMS determines pre-existing conditions for risk-adjustment from documentation in patient claims history*

- 30-day mortality: rates for 5 patient groups are included in simple mean (heart attack, heart failure, pneumonia, COPD, stroke)
- 30-day hospital-wide readmissions: rate based upon FFS claims data from all Medicare patients who qualified from a one-year period starting in July of each year (excludes planned readmissions)

**CMS pneumonia rate includes patients with a principal discharge diagnosis of sepsis (not including severe sepsis) that have a secondary diagnosis of pneumonia (including aspiration pneumonia) coded as POA and no secondary diagnosis of severe sepsis coded as POA.*

Severity-adjusted average length of stay

One year of MedPAR data is used for each data point (2018)

– Includes Medicare Advantage (HMO) encounter records

Watson Health risk models are used to produce expected values ([See methodology notes for details](#))

Expected values are normalized by comparison group

We convert each LOS index (*observed/normalized expected*) to average length of stay in days (ALOS) by multiplying the index by the Grand Mean LOS of all in-study hospitals

ALOS is the ranked and reported metric

Emergency department throughput measures

CY 2018 data on emergency department (ED) patients*, from CMS Hospital Compare 2019 Q3 Release

We include two ED throughput metrics that are reported in median minutes

- Time to admission
- Time to discharge for non-admitted patients

We calculate the unweighted mean of the two included ED metrics to produce the mean ED throughput measure, which is the ranked and reported measure

We also report the individual ED measures for information only

**Note: CMS requires hospitals to meet a minimum sample size of submitted records based on average ED population per quarter*

Inpatient expense per discharge

HCRIS cost report data for hospital fiscal years ending in 2018

We calculate inpatient expense for each hospital department, sum the results and divide by acute inpatient discharges

- Department-level inpatient expense is calculated by multiplying fully allocated cost by the ratio of inpatient charges to total charges for that department
- Expense is adjusted for area wage index and case mix index (*Sourced from CMS*)
- Research, non-reimbursable and subacute cost centers are excluded

We rank and report wage- and casemix-adjusted inpatient expense per discharge

Hospitals that are high or low outliers for this measure are not eligible to be benchmark hospitals (*IQR methodology*)

Operating profit margin

HCRIS cost report data for hospital fiscal years ending in 2018

We calculate the difference between a hospital's total operating revenue and total operating expense, divided by the total operating revenue

We adjust operating expense by adding the net related organization expense (*this can be a negative number*)

Where a hospital reports expense additions on worksheet G-2 lines 30-35, with titles containing home office, related org, or other corporate allocation text, we remove the lesser of 'net related organization expense' or 'expense additions' from total operating expense to avoid double counting net related organization expense (*Exception: where reported net related organization expense is negative, we subtract it from total operating expense and do not make any further adjustments*)

We rank and report adjusted operating profit margin

Hospitals that are high or low outliers for this measure are not eligible to be benchmark hospitals (*IQR methodology*)

HCAHPS: Hospital Consumer Assessment of Healthcare Providers and Systems inpatient survey public data set

CMS Hospital Compare 2019 Q3 release

– All-payer dataset: January 1 - December 31, 2018

Only one datapoint ranked to determine winners - HCAHPS top box percent (%) for the overall hospital rating question (“How do patients rate the hospital, overall?”)

For each hospital, the percentage of patients who rated the hospital 9 or 10 is the value we ranked and reported starting with the 2020 study edition:

- **TOP BOX** = Patients who gave their hospital a rating of 9 or 10 on a scale from 0 (lowest) to 10 (highest)

We also report benchmark data from all individual HCAHPS survey questions for information only (available in full 100 Top Hospitals report)

Methodology Notes

Watson Health risk-adjustment models used to develop expected values for inpatient mortality and complications; severity-adjustment model for average length of stay

– Inpatient mortality model only

- Excludes records with ‘Do Not Resuscitate’ (Z66; V49.86) coded as POA
- Excludes patients admitted to hospice care (discharged from acute care)

– All models

- Include palliative care patient records (Z515; V66.7)

All models use Agency for Healthcare Research & Quality (AHRQ) Clinical Classifications Software (CCS) grouping to develop rate tables for calibrating risk and severity adjustment models

Methodology Notes

Inpatient mortality and complications expected values are normalized by multiplying them by the observed/expected ratio for each hospital's comparison group. A z-score is calculated from each observed and normalized expected value. The z-score is the ranked metric.

Inpatient mortality and complications high outliers, used for winner exclusions, are determined by finding the hospitals with statistically worse than expected results at 99% confidence that are also above the outlier group 75th percentile trim point.

Length of stay (LOS) expected values are normalized by multiplying them by the observed/expected ratio for each hospital's comparison group.

The LOS Index (*observed/normalized expected*) is converted into average length of stay in days by multiplying by the mean LOS of the in-study population.

Methodology Notes

Due to high frequency of invalid POA indicator code '0' in MEDPAR, we have modified our MEDPAR data processing.

Note: This reduces false positives for complications and more accurately determines the risk of death and complications, and expected length of stay.

- Valid POA codes are retained (N,Y,W,U,1)
- Where invalid POA code '0' appears records are processed as follows:
 - All principal diagnosis codes (dx) are treated as 'present on admission'
 - All secondary dx on the CMS exempt list are treated as exempt
 - Secondary dx coded 'Y' or 'W' more than 50 percent of the time in the Watson Health all-payer data base are treated as 'present on admission'
 - All others are treated as not present on admission

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