



## HOSPITAL PERFORMANCE ON QUALITY MEASURES: APPROACHES TO FAIR CROSS-HOSPITAL COMPARISONS AND VALUE BASED PAYMENTS

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### BACKGROUND

- The Hospital Compare database maintained by the Centers for Medicare and Medicaid Services (CMS) to facilitate comparisons across hospitals contains a large number of measures intended to serve as inputs to determining value-based payments
- The data collected from hospitals fall into a number of distinct categories (e.g., structural, timeliness and effectiveness of care, deaths and readmissions, complications, and patient experience surveys)
- Hospital comparisons from this data can be challenging and potentially misleading because cross-hospital differences may reflect inherent differences in the underlying patient populations served and the types of services provided rather than differences in the quality of care being delivered.
- Quality and patient experience metrics, in particular, are difficult to compare for these reasons.

### OBJECTIVES

- Develop segments of hospitals that treat similar underlying patient populations and that perform a similar set of services
- Profile segments on the set of measures they report to CMS
- Examine differences between the hospital segments in terms of the underlying distribution of scores for select sets of measures
- Propose approaches for making cross-hospital comparisons meaningful for various measures

### METHODOLOGY

- A master database of 5,344 hospitals was created by combining the CMS hospital compare data with the CMS Provider of Services file and data on the case mix index (CMI)
- Categorical variables capturing the presence/absence of various quality measures as well as other hospital characteristics were created
- Latent Class segmentation methods were applied to create 6 distinct groups of hospitals that were then compared on those quality measures

### RESULTS

#### DATA

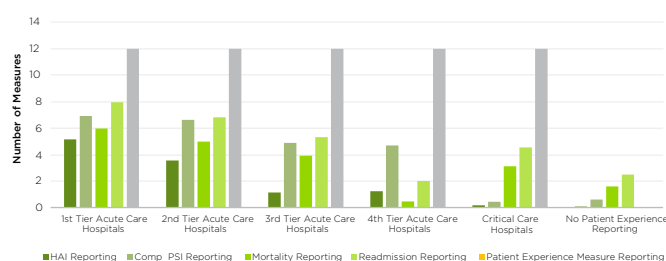
- 5,344 hospitals from the Provider of Services file as described above
- Metrics identifying the following were included
  - Hospital type (Short term, critical care, children's, VA, psychiatric, Rehab)
  - Bed Size, Residency Program and Medical School Affiliation information
  - CMI Index for each hospital
  - Hospital Compare metrics in the following categories
    - Hospital Acquired Infections (HAI) – 6 measures
    - Patient Safety Indicators (PSI) following surgeries, procedures, and childbirth – 7 measures
    - Mortality (MORT) – 6 measures
    - Readmissions (READM) – 8 measures
    - Patient Experience (COMP) – 12 measures

#### LATENT CLASS ANALYSIS

- The measures were leveraged in a Latent Class analysis that produced 6 distinct segments, called Tiers, differentiated by level of patient & service

	1st Tier Acute Care Hospitals	2nd Tier Acute Care Hospitals	3rd Tier Acute Care Hospitals	4th Tier Acute Care Hospitals	Critical Care Hospitals	No Patient Experience Reporting
Number of Hospitals	1,484	1,138	786	246	447	1,243
Average Bed count	542.1	221.4	99	94.3	27.3	100.2
CMI Index	1.76	1.47	1.27	1.91	NA	1.21
Percentage Acute Care	91%	99%	99%	100%	0%	23%
Percentage Critical care	0%	0%	0%	0%	100%	64%
Percentage with Residency Program	45.70%	20.40%	7.90%	17.60%	4.70%	5.10%
Percentage With Medical School Affiliation	59.20%	32.60%	15.40%	23.10%	8.10%	19.50%

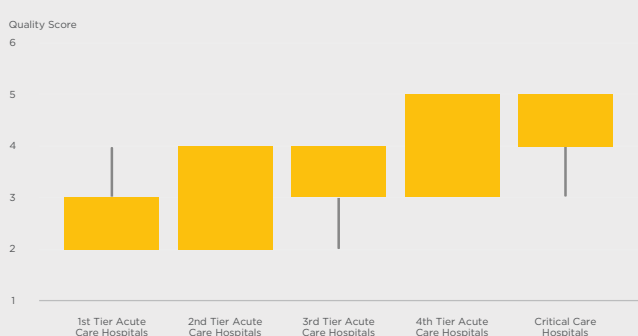
**Average Number of Measures Reported**  
An indication of breadth of patient mix & service offering



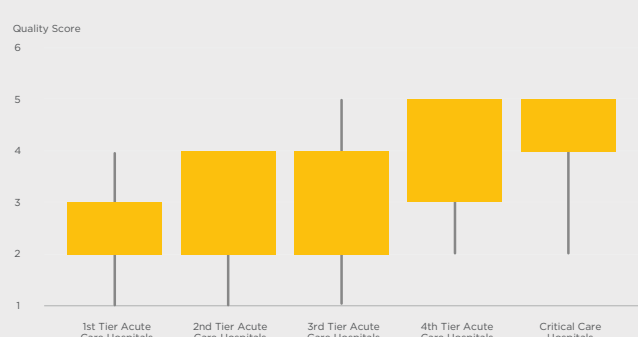
#### PATIENT SATISFACTION MEASURES CORRELATE TO TYPE OF HOSPITAL

- The "Cleanliness" and "Doctor Communication" patient satisfaction measures (quality measures on a scale of 1-6 and represented on the Y-axis below) exhibit a strong relationship to the type of hospital
- A similar pattern can be observed with the composite Hospital Star Ratings calculated by CMS based on the individual measures

**Distribution of "Cleanliness" Measure by Segments (Percentiles 10%, 25%, 75%, and 90%)**



**Distribution of "Doctor Communication" Measure by Segments (Percentiles 10%, 25%, 75%, and 90%)**



#### CHALLENGES AND RECOMMENDATIONS

- Differences across Hospital Compare metrics may simply reflect underlying differences in offerings and patient mix, rather than meaningful differences in performance on quality
- Within-segment comparisons control better for patient and service mix; and therefore better reflect difference in performance on comparable elements.
- The development, collection and dissemination of readily comparable hospital quality and patient satisfaction scores may require CMS to consider establishing hospital segments or categories that reflect similar underlying service offerings and patient case mix.

### CONCLUSIONS

- Hospitals in the United States vary considerably in terms of the types of services offered and the types of patients treated.
- This analysis shows that many quality and service metrics correlate strongly with patient mix and service offering and therefore broad comparisons of these metrics across all hospitals may not accurately represent differences in performance as intended.
- These differences make general cross hospital comparisons on some metrics (including those on patient experience measures) questionable
- If these data are to be utilized for decisions as critical to hospital sustainability as value-based payments, additional consideration must be given to controlling for the underlying differences in patient and service mix. Creating comparable hospital segments may allow for more meaningful and transparent comparisons.