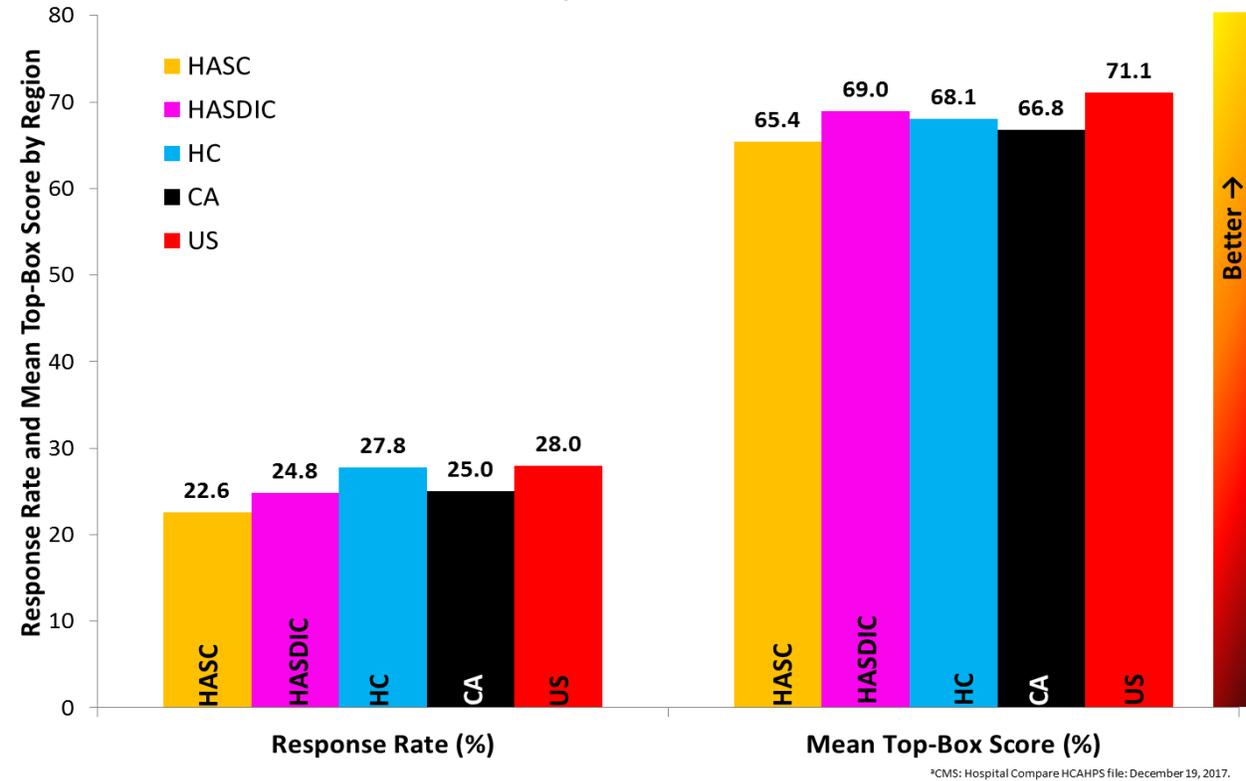


Association of HCAHPS Mean Top-Box Scores and Response Rates

In an effort to help California hospitals improve their HCAHPS scores, HQI has started exploring factors associated with variation in HCAHPS scores across hospitals. As a first step we looked at how hospital HCAHPS response rates and mean top-box scores vary across regions, and how response rates and mean top-box scores are related to each other across California hospitals.

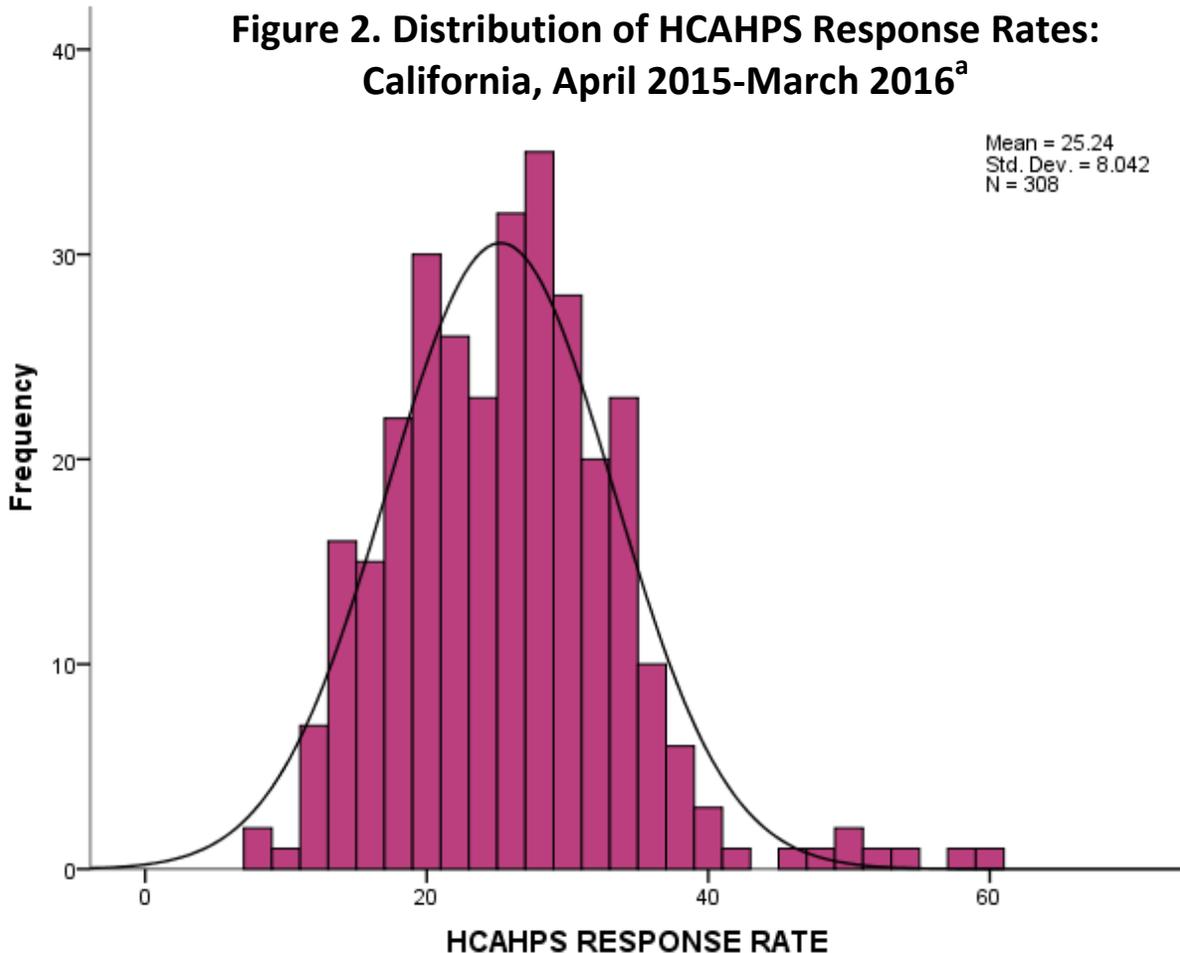
- Figure 1 shows that HCAHPS response rates and mean top-box scores both differ across regions ($p < .05$). Specifically, the mean response rate for HASC is significantly lower than that for HC, and the mean HCAHPS top-box score for HASC is lower than those for both HASDIC and HC.
- The response rate for HASC is lower than the California statewide rate, whereas that for HC is higher than the statewide rate ($p < .05$).
- The response rates for HASC and HASDIC are both lower than the national rate ($p < .05$).
- The mean top-box score for HASC is lower than the California statewide mean, whereas that for HC is significantly higher ($p < .05$).
- The mean HCAHPS top-box scores for HASC and HC are lower than the national mean top-box score ($p < .05$).
- Note that the small number of hospitals in HASDIC makes it difficult to deem differences in response rates and mean HCAHPS scores to be statistically significant.
- California hospitals have a lower response rate overall and lower mean HCAHPS top-box score overall than is the case nationally ($p < .05$).

Figure 1. HCAHPS Response Rate and Mean Top-Box Scores by Region: California, April 2015-March 2016^a



Association of HCAHPS Mean Top-Box Scores and Response Rates

- Figure 2 shows that HCAHPS response rates vary widely across California hospitals, ranging from 8% to 60% (25th percentile = 19%, 50th percentile = 25%, 75th percentile = 30%).
- Note the 8 outlier hospitals to the right of the distribution that have particularly high response rates. HQI will be contacting these hospitals as a next step to try to determine whether there are processes or practices they are using that result in their high response rates, and if so, to share those with the other hospitals in the California.

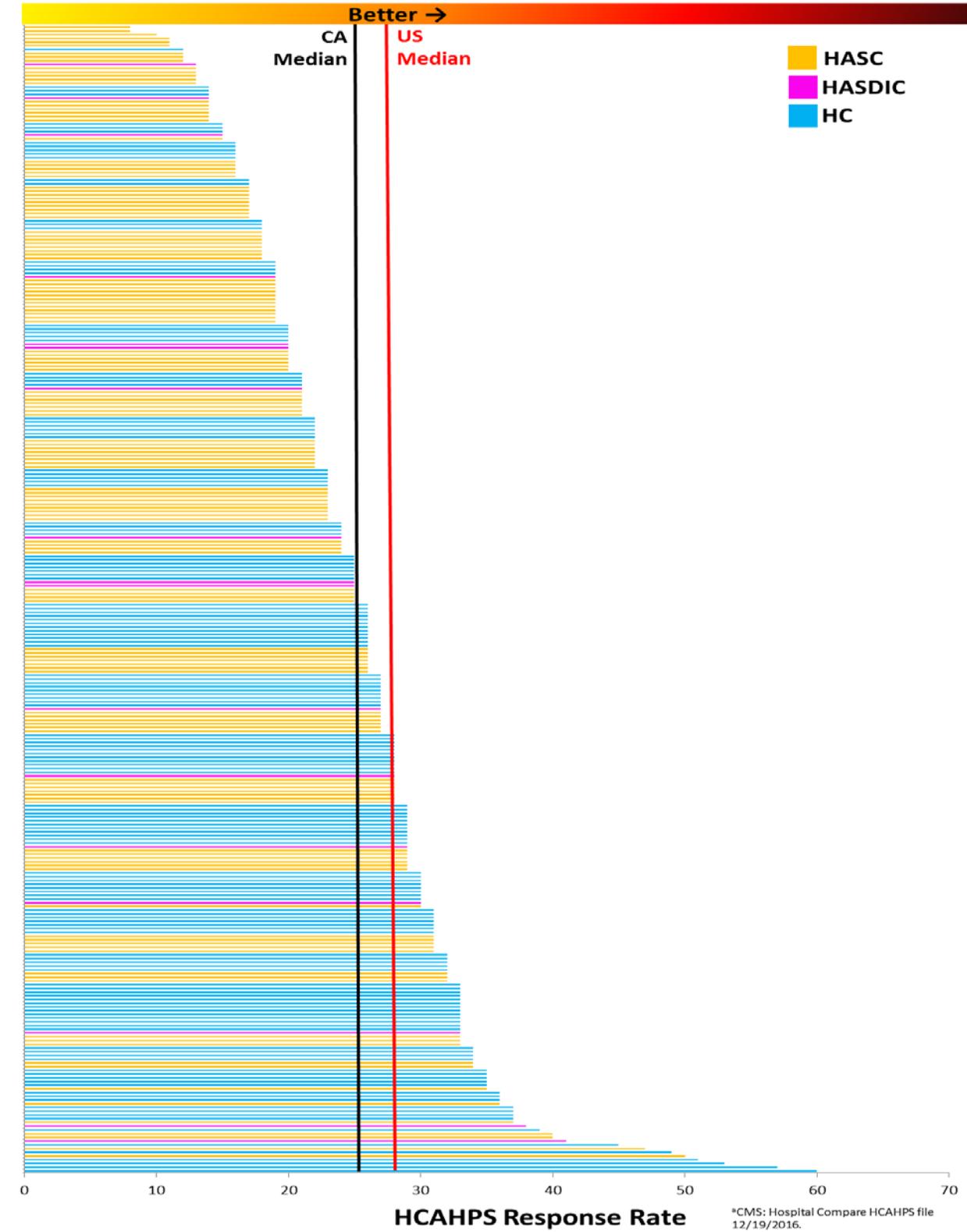


^a CMS: Hospital Compare HCAHPS file 12/19/2016.

The variability across California hospitals in HCAHPS response rates (Figure 3) and mean HCAHPS top-box scores (Figure 4) are shown in the figures on the following pages. Confidential unblinded (to hospital name) versions of these figures for each region will be distributed at the Regional Association Board meetings.

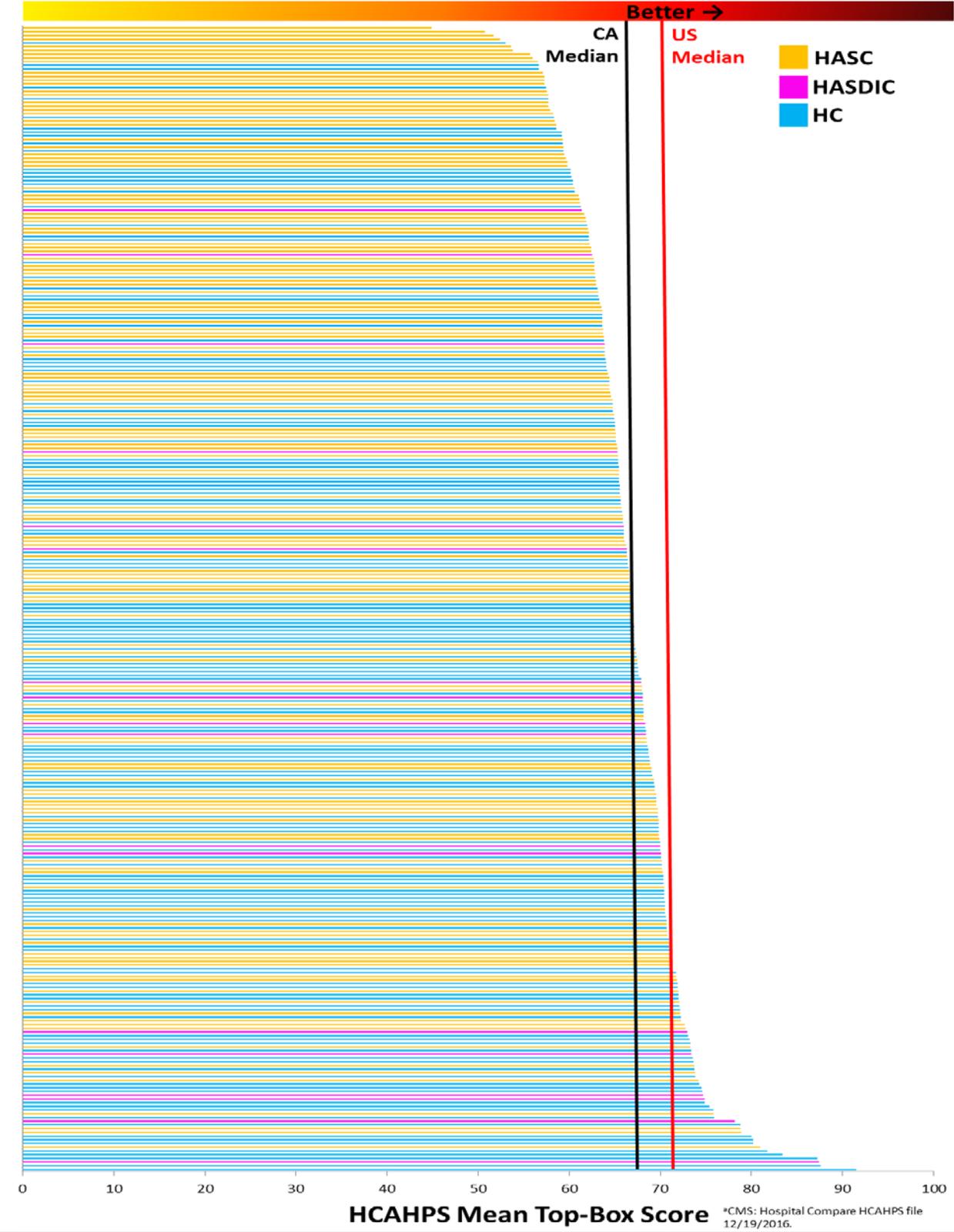
Association of HCAHPS Mean Top-Box Scores and Response Rates

Figure 3. HCAHPS Survey Response Rate by Hospital:
California, April 2015-March 2016^a



Association of HCAHPS Mean Top-Box Scores and Response Rates

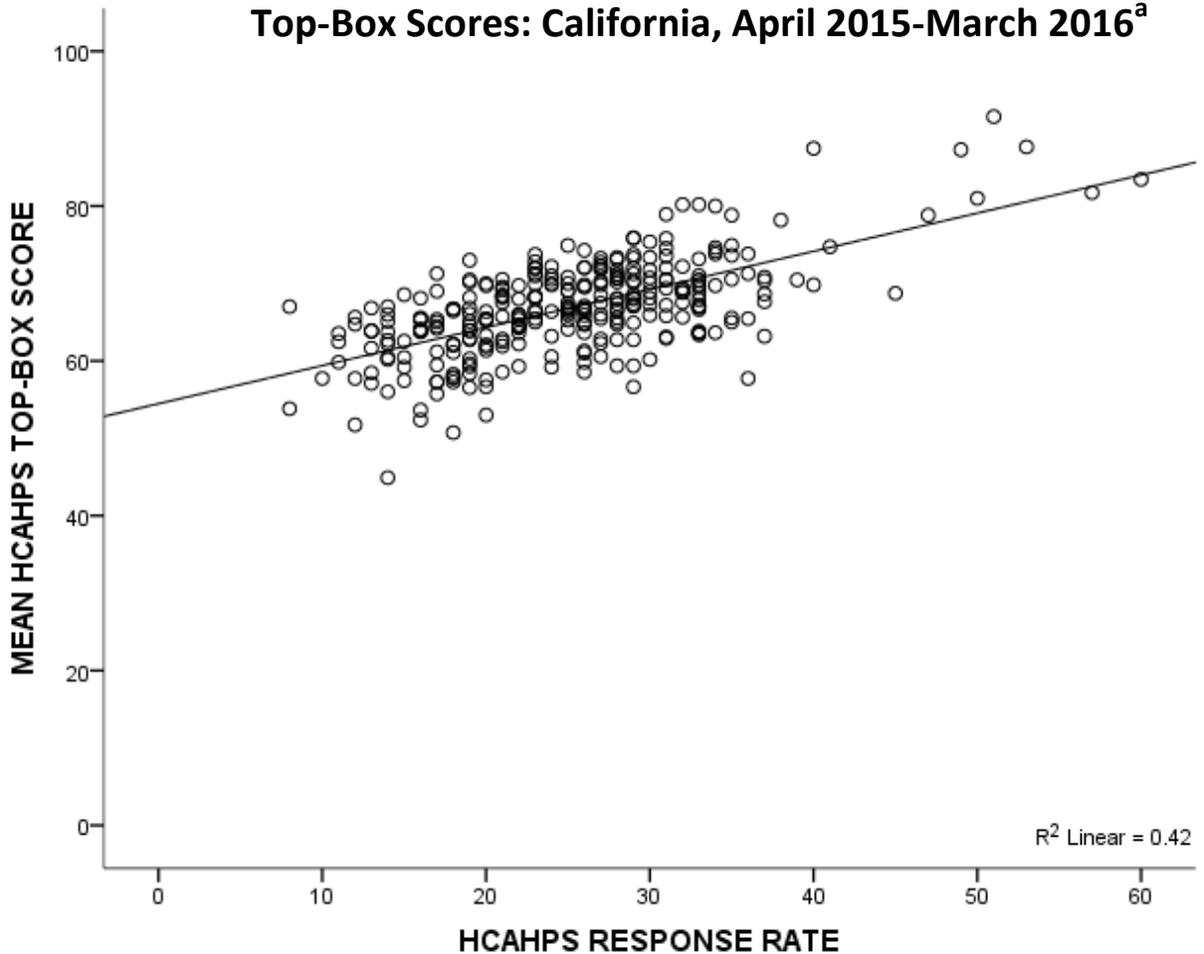
**Figure 4. HCAHPS Mean Top-Box Score by Hospital:
California, April 2015-March 2016^a**



Association of HCAHPS Mean Top-Box Scores and Response Rates

- HCAHPS response rates and mean top-box scores are strongly positively correlated ($r = .65$, $p < .05$). In fact, 42% of the variability in hospital top-box scores across California can be predicted by hospital response rates. Figure 5 shows the strength of the correlation for California Hospitals, though a strong correlation also exists at the national level ($r = .54$, $p < .05$).

Figure 5. Correlation of HCAHPS Response Rates and Top-Box Scores: California, April 2015-March 2016^a



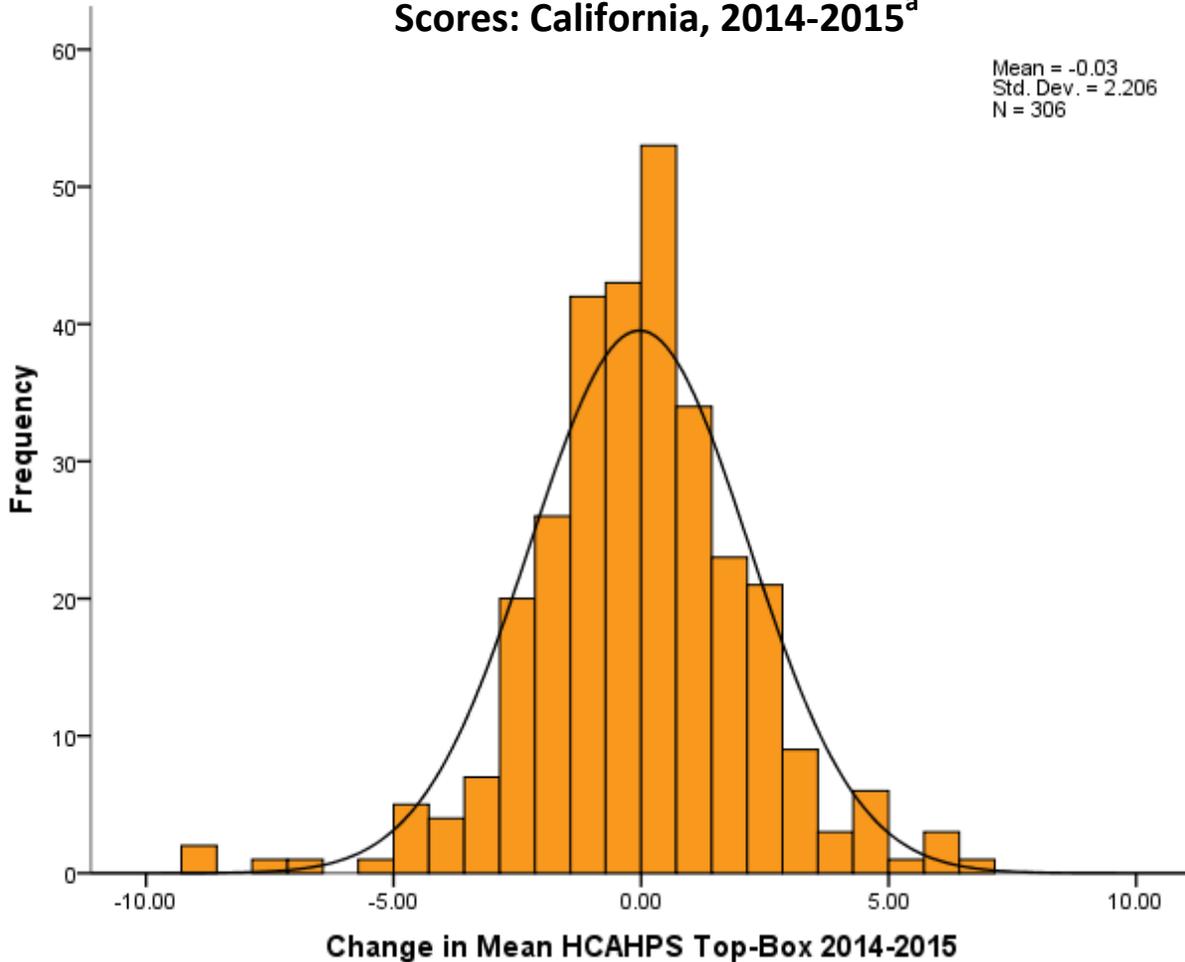
^a CMS: Hospital Compare HCAHPS file 12/19/2016.

Figure 6 shows the change in California hospitals' mean HCAHPS top-box scores from 2014-2015 (the two latest full calendar years available). The mean change statewide from 2014-2015, after removing two extreme outliers (± 10 percentage-points) was no different from zero ($M = -0.03$ percentage-points, $p > .05$). The mean change during this time period at the national level was an increase of about 0.21 percentage-points $M = 0.21$ percentage-points, $p < .05$).

- Nonetheless, there was clearly change for individual hospitals from 2014-2015 both up and down—is this variation around zero just random? One hypothesis is that the variation can be predicted by changes in the hospitals' HCAHPS response rates.

Association of HCAHPS Mean Top-Box Scores and Response Rates

Figure 6. Change in Hospital Mean HCAHPS Top-Box Scores: California, 2014-2015^a



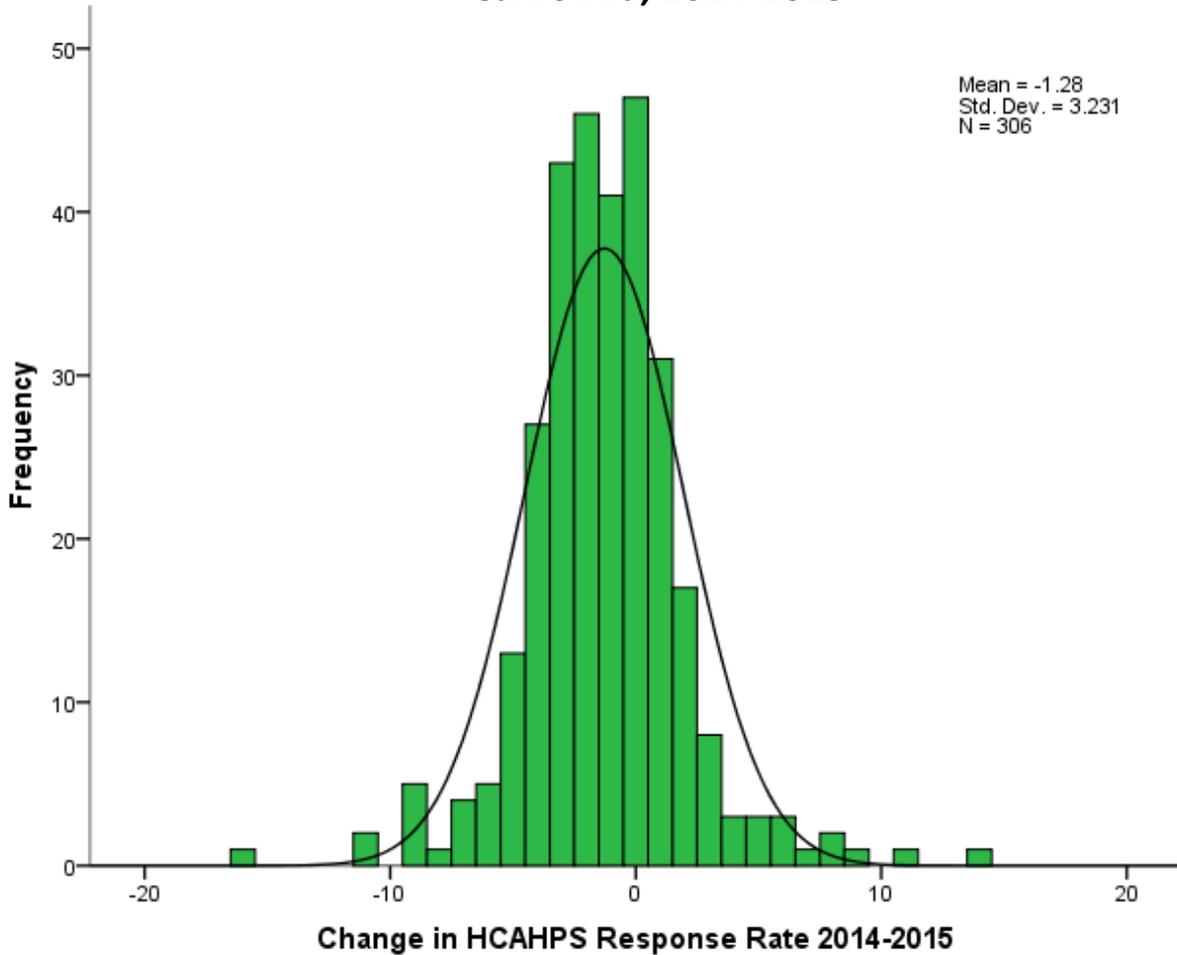
^a CMS: Hospital Compare HCAHPS files 10/08/2015 (2014 calendar year) and 11/10/2016 (2015 calendar year).

Figure 7 shows the change in California hospitals' HCAHPS response rates from 2014-2015. The mean change statewide from 2014-2015 was a reduction of 1.3 percentage-points in the response rate ($M = -1.28$ percentage-points, $p < .05$). This was similar to the reduction of about 1.6 percentage-points during this time period seen at the national level ($M = -1.56$ percentage-points, $p < .05$).

- Although there was no change statewide in the average HCAHPS top-box score from 2014-2015, response rates decreased. This is odd given the strong positive correlation noted earlier. What happens when we correlate response rates and changes in HCAHPS performance at the individual hospital level?

Association of HCAHPS Mean Top-Box Scores and Response Rates

Figure 7. Change in Hospital HCAHPS Response Rates: California, 2014-2015^a



^a CMS: Hospital Compare HCAHPS files 10/08/2015 (2014 calendar year) and 11/10/2016 (2015 calendar year).

Shown in Table 1 are crude correlations between California hospital HCAHPS response rates and top-box scores for each of the 11 HCAHPS measurement areas, along with those for the hospital star ratings and mean overall HCAHPS top-box scores. Also shown is the expected increase in hospital top-box scores for each HCAHPS measure associated with a 1-percentage-point increase in their HCAHPS response rate, based on crude linear regression analyses. The final column shows the percentage of variability for each HCAHPS measure predicted by the HCAHPS response rate.

- 42% of the variability in hospital mean HCAHPS top-box scores can be predicted by HCAHPS response rates ($r = .65, p < .05$).

Association of HCAHPS Mean Top-Box Scores and Response Rates

Table 1. Crude Correlations of HCAHPS Measures with Changes in Response Rates, California 2014-2015

HCAHPS Measure	Pearson Correlation Coefficient	Increase in Measure for 1PP Increase in Response Rate	% of Variability Predicted
Nurse Communication (NC)	.64	0.45	41%
Doctor Communication (DC)	.65	0.42	43%
Help Timely (HT)	.61	0.60	38%
Pain Controlled (PC)	.59	0.41	35%
Medicines Explained (ME)	.55	0.40	30%
Clean Environment (CE)	.43	0.36	18%
Quiet Environment (QE)	.39	0.44	16%
Received Discharge Info (RI)	.61	0.30	37%
Understood Discharge Info (UI)	.48	0.47	23%
Rated Hospital 9 or 10 (9/10)	.62	0.75	38%
Recommend Hospital (RH)	.60	0.82	35%
HCAHPS Summary Star Rating (SS)	.62	0.07	38%
CMS Hospital Overall Star Rating (CMS)	.34	0.04	11%
Mean HCAHPS Top-Box Score	.65	0.49	42%

Note: All correlations $p < .05$.

- Each 1-percentage-point increase in a hospital's HCAHPS response rate could be expected to result in about a half point increase (0.49 percentage-points) in their mean HCAHPS top-box score.
- Increases in a hospital's HCAHPS response rate would also be expected to be associated with increases in the top-box scores for all of the 11 HCAHPS measurement areas.
- Is this just an artifact from better rated hospitals also having higher response rates?

Table 2 presents the results of a linear regression analysis of changes between calendar years 2014-2015 in mean hospital HCAHPS top-box scores for California hospitals. The results indicate that even after accounting for differences in mean baseline HCAHPS scores in 2014 (i.e., starting levels of patient experience), increases in HCAHPS response rates were independently associated with changes in mean HCAHPS top-box scores in 2015.

Association of HCAHPS Mean Top-Box Scores and Response Rates

Table 2. Summary Table of Linear Regression Analysis Predicting Changes in Mean HCAHPS Top-Box scores, California 2014-2015

Predictors	<i>b</i>	SE	β	<i>r</i>	r_{sp}^2
Hospital Baseline Mean Top-Box 2014	-0.05	0.02	-0.15*	-0.13	.02
Hospital Change in Response Rate 2014-2015	0.16	0.04	0.23*	0.22	.05
(Constant)	3.72	1.38			

* $p < .05$. r_{sp}^2 = squared semi-partial correlation (% unique variance accounted).

- In fact, changes in response rates were a *more important* predictor of improvement in a hospital's mean HCAHPS top-box score in 2015 than was their baseline patient experience level in 2014.
- Having a higher baseline top-box score in 2014 was associated with having less improvement in top-box scores in 2015, possibly suggesting a ceiling effect.

Summary

- The analyses presented here do not rule out the hypothesis that better patient experiences result in both higher HCAHPS top-box scores (which they should) and *also* higher HCAHPS response rates (which they indeed might).
- However, the results suggest that increases in HCAHPS response rates are associated with increases in HCAHPS top-box scores *independently* of baseline patient experience scores.
- Each 1-percentage-point increase in a hospital's HCAHPS response rate is expected to result in about a half point increase in their mean HCAHPS top-box score.
- Hence, one practical, concrete path through which individual hospitals may be able to improve their HCAHPS scores is to implement processes for improving their HCAHPS response rates.

Take Home

After adjusting for preexisting differences across California hospitals in their HCAHPS patient experience scores during 2014, increases in survey response rates were a strong predictor of them having higher patient experience scores during 2015.