

Findings from the HCAHPS Mode Experiment

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Policy Objectives

- CMS will employ adjustments derived from a Mode Experiment
- that allow hospitals to administer the HCAHPS Survey
 - in any of four modes
 - to any patient population
- without affecting the comparability of their scores with
 - other hospitals
 - national or regional averages, or
 - their own past performance

Research Objective

To determine the effects of

- mode of survey administration
- patient mix
- selective patient nonresponse

on patient responses to the CAHPS®
Hospital (HCAHPS) Survey

2006 HCAHPS Mode Experiment Design

- 45 randomly sampled hospitals
 - General acute care US hospitals with at least 1200 annual discharges
- 27,229 patients
- Randomized in equal proportions to four modes of survey administration
 - Mail Only
 - Telephone Only
 - Mixed Mode (mail with telephone follow-up), or
 - Active IVR (interactive voice response, with patient response via telephone keypads)
- All were administered the HCAHPS Survey by a single vendor

Patient Characteristics

- Eligible patients
 - English- or Spanish-speaking adults
 - with non-psychiatric primary diagnoses
 - discharged alive after at least one overnight, in-patient stay, February-May 2006
 - within each of 45 randomly sampled hospitals,
- Participants
 - 35% male, median age 55-64, 52% with at least some college
 - 51% medical line, 36% surgical line, 12% maternity line
 - 39% admitted through ER

Mode Experiment Response Rates

- Response rates varied strongly by randomized mode ($p < 0.0001$)
- Eligible response rates
 - 42.2% Mixed
 - 38.0% Mail Only
 - 27.3% Telephone Only
 - 20.7% Active IVR
- These patterns were consistent across hospitals

Mode Effect Outcomes

- As noted previously, the 9 HCAHPS outcomes consist of
 - 2 overall ratings
 - 6 composites constructed from 14 report items.
 - 2 stand alone report items
 - Clean, Quiet

Mode Effect Methods

- Linear regression was used to model each HCAHPS outcome from fixed effects for
 - Mode
 - hospital identifiers, and
 - patient characteristics
 - Also examined without Patient-Mix Adjustment
- Scored as top-boxes (% most positive responses)

Mode Results

- Substantial and statistically significant ($p < 0.05$) mode effects were found for
 - Recommend this hospital
 - 5 of 6 composites (All but Communication with doctors)
 - Both stand-alone report items
- More positive evaluations in the Telephone Only and Active IVR modes than in Mail Only and Mixed modes
 - Telephone Only and Active IVR responses similar
 - Mail Only and Mixed mode responses similar
- Significant mode differences were 0.4-1.1 hospital-level standard deviations
 - Could have a major impact on comparisons of hospitals
 - Mode effects varied little by hospital

Patient-Mix Analysis (PMA) Methods

- HCAHPS 3-State Pilot recommended PMA variables:
 - service line (medical, surgical, maternity), age, education, self-reported health status, primary language not English, and age x service
- We tested these and 2 new candidates
 - ER Admission
 - Time between discharge and survey completion
- Assessed importance of PMA variables
 - (1) Importance at individual level
 - (2) Variation across hospitals
 - (1) and (2) jointly determine total impact

Patient-Mix Results

- Most important PMA variables
 - More positive with better health
 - More positive with less education
 - Service line (maternity most positive)
 - Age (seniors most positive)
- Moderately important
 - ER Admissions less positive
 - Early responders more positive
- Overall, adjustments are of moderate importance; smaller than mode adjustments

Nonresponse Methods

- Logistic regression was used to model response among eligibles as a function of available administrative variables
 - age
 - gender
 - service line
 - ER admission
 - discharge status (sick, left against medical advice, or standard)
- Hospital-level residuals (after PMA) were correlated with weights to test for nonresponse bias corrected by the weights

Nonresponse Results

- Individual predictors of response rates
 - Age (RR **increased** from 18-24 to a plateau at 65-79, then dropped at 80 to the level seen for 45-54)
 - Females and those in the surgical line were **more likely** to respond
 - ER admissions and those discharged other than healthy to home were **less likely** to respond
- After PMA, there is little evidence of nonresponse bias
 - Nonresponse weighting would not reduce Mean-Squared Error
 - Follow-ups in survey protocol and use of response lag may be important factors

Conclusions

- Because a hospital's choice of vendor or survey mode may be confounded with factors related to underlying quality, an external mode experiment was necessary to estimate mode effects for subsequent fieldings of the survey
- Adjustments for mode effects based on this experiment are necessary to make reported scores comparable
 - In the absence of such adjustments a hospital that would have ranked at the **50th percentile in the Mail Only** mode would be ranked at the **66th to 84th percentile in the Telephone Only mode** for a majority of outcomes
- The patient-mix model described here, including the two new PMA variables, is necessary to adjust for differences in hospital patient mix
- Although there is selective nonresponse, the PMA model removes the small amount of nonresponse bias that results

Comments?

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