DRIVERS OF PATIENT SATISFACTION AND EFFECTS OF DEMOGRAPHICS ON THE HCAHPS SURVEY

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ABSTRACT

Catherine K. Madigan: Drivers of Patient Satisfaction and Effects of Demographics on the HCAHPS Survey (Under the direction of G. Rumay Alexander)

Although patient satisfaction has traditionally been a quality indicator measured by most hospitals, it has taken on greater importance in light of the recent inclusion of this metric as a component of Medicare's hospital inpatient Value-Based Purchasing (VBP) program. Acute-care hospitals are financially rewarded or penalized based on the quality of care that they provide to Medicare patients with payments starting at 1.25% of hospitals' base operating diagnosis-related groups (DRG) payment for Federal Fiscal Year (FFY) 2014 and increasing incrementally over the next three years. How patients respond to the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) overall rating question, in which they choose a number from 0 to 10 to "rate this hospital during your stay," can have tremendous ongoing financial implications. The objectives of this Doctor of Nursing Practice project were to: 1) analyze HCAHPS discharge data from 7/1/13 to 12/31/13 for inpatient acute care units at UNC Hospitals (UNCH) to identify the drivers of patient satisfaction specific to UNCH, and 2) explore the potential effects of demographic differences on perceptions and ratings of the care provided. Decision-tree analytics were used to identify which survey items are most influential in framing the patient's total experience and the effect of demographical differences on these scores. Based on the analysis, potential strategies are suggested to improve patient satisfaction scores for key drivers of patient satisfaction on the survey.

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CHAPTER 1. DRIVERS OF PATIENT SATISFACTION AND EFFECTS OF DEMOGRAPHICS ON THE HCAHPS SURVEY

There are three major stakeholders in a patient's hospitalization: the patient, the healthcare providers, and the hospital. Satisfaction with the care and hospital experience is important to the patient because evidence suggests satisfied patients are more likely to adhere to self-care instructions and have better clinical outcomes (Boulding, Glickman, Manary, Schulman, & Staelin, 2011; Boulding, Manary, Staelin, & Roe, 2010; Glickman et al., 2010). Hospitals have aimed to provide care and service that is highly satisfying to patients because it is the right thing to do and because reputation affects volume and revenues that impact the fiscal bottom line. Now, however, there is a strong direct financial incentive.

The Hospital Value-Based Purchasing (VBP) Program is an initiative instituted by the Centers for Medicare and Medicaid Services (CMS) that rewards acute-care hospitals with incentive payments or penalties for the quality of care they provide to patients. Hospital incentives are based on the quality of care provided to these patients as measured by clinical outcomes, how closely best clinical practices are followed, and how well hospitals enhance patients' experiences of care during hospital stays. Hospitals are no longer paid solely based on the quantity of services they provide (CMS, 2013). With recent Medicare payment reforms, financial incentives are now included for hospitals that report patient satisfaction data using the HCAHPS survey (Kutney-Lee et al., 2009).

Background and Significance

Although patient satisfaction has traditionally been an indicator measured by most hospitals, it has taken on even greater import in light of the recent inclusion of this metric as a piece of Medicare's hospital inpatient VBP program. Value-based purchasing is a broad term for programs aimed at taking quality as well as cost into account when evaluating consumer healthcare services, and this approach moves Medicare from a passive payer to an active purchaser of higher quality, more efficient health care. The possible financial impact to hospitals is considerable, which has led to an even greater focus on patient satisfaction metrics as measured by the HCAHPS survey (Wolosin, Ayala, & Fulton, 2012). Though many hospitals routinely assess patient satisfaction for internal use, HCAHPS provides a national standard for collecting and publicly reporting information that allows comparisons to be made locally, regionally, and nationally (Bush, 2012). Unlike the clinical process measures of VBP, patients themselves are the final judge of satisfaction (Wolosin et al., 2012).

VBP incentive payments to hospitals come from the regular fees Medicare pays hospitals through its Diagnosis-Related Group (DRG) system. Hospitals participating in VBP have their base operating DRG payments for each patient discharge across all hospitals reduced by a small percentage each year. That money is then used to fund incentive payments for hospitals participating in the program (CMS, 2014). For Federal Fiscal Year (FFY) 2014, which began October 1, 2013, the amount of payment at risk was 1.25% of hospitals' base operating DRG payment, and outcome measures drove 45% of the score. For FFY 2015, the amount at risk rises to 1.5%, then to 1.75% for FY 2016, and to 2% for FY 2017 under the current law. Participating hospitals contribute this amount of money into a pool and are then either rewarded by receiving more than contributed or penalized by receiving less than contributed based on performance on

variables included in a formula that weighs each of the three domains, as shown in Figure 1. These domains are tallied to arrive at a total performance score, which translates into the amount of financial gain or loss (i.e., payment) for an organization.



Figure 1. Components of value-based purchasing scores.

Clearly, VBP and the connection with the HCAHPS patient satisfaction survey will continue to have a significant impact on hospital quality outcomes and finances. Given the increasing focus on this metric, the purpose of this DNP study was to examine inpatient HCAHPS survey results from a large academic medical center to determine specific drivers of patient satisfaction and the effects of patient demographics on survey results.

Review of the Literature

A comprehensive search of the literature for evidence regarding patient satisfaction, the HCAHPS survey, and demographics was completed. The following databases were used: Cochrane, PubMed of the National Library of Medicine, Cumulative Index of Nursing and Allied Health Literature (CINAHL), and Google Scholar. Search terms included patient satisfaction, inpatients, hospitalized patients, HCAHPS, demographics, diversity, value-based purchasing, and health care providers. Initially, the limitations imposed on all searched articles included full-text articles, published within the last ten years, and written in the English language. The search was expanded to remove the 10-year timeline filter because the original yield was not inclusive of the long-term work on the derivation of the HCAHPS tool.

Patient Satisfaction

The concept of *patient satisfaction* is central to the DNP project. Patient satisfaction has been defined as an individual's evaluation of distinct dimensions of health care (Linder-Pelz, 1982). Pascoe (1983) postulated patient satisfaction as both a cognitive evaluation and an emotional reaction to the structure, process, and outcomes of services, not based only on patient reports about objective characteristics of care. There is no common approach to the definition of patient satisfaction in the literature, but there is general agreement that this is an important, measurable dimension of quality of care (Manary, Boulding, Staelin & Glickman, 2013).

Over the past 20 years this metric has gained widespread recognition as an indicator of quality (Williams, 1994; Sequist et al., 2008) and is now regarded as an important outcome measure for healthcare services. Based in sociological observations of the doctor-patient relationship from the 1950s (Szasz & Hollender, 1956; Parsons, 1951) that first linked satisfaction with doctor-patient interactions and compliance, the patient perspective has become an important focus. More recently, a patient's satisfaction with healthcare experiences as measured by the HCAHPS survey has been positively linked to the patient's compliance with treatment and healthcare outcomes (Boulding, Glickman, Manary, Schulman, & Staelin, 2011; Glickman et al., 2010).

Patient Satisfaction and Quality Outcomes

There are several studies that have shown that higher hospital-level patient satisfaction scores were associated with lower hospital inpatient mortality rates and negatively correlated with a hospital's 30-day readmission rates (Boulding, Glickman, Manary, Schulman, & Staelin,

2011; Boulding, Manary, Staelin, & Roe, 2010). Indeed, Boulding et al. (2011) showed that in cases ranging from 1,798 hospitals for acute myocardial infarction to 2,562 hospitals for pneumonia, higher hospital-level patient satisfaction scores (overall and for discharge planning) were independently associated with lower 30-day readmission rates for acute myocardial infarction, heart failure, and pneumonia. Additionally, Jha (2008) and associates showed that overall satisfaction with care, defined as the top quartile of performance on the HCAHPS survey, is positively correlated with adherence to clinical treatment plans, and patient adherence to treatment plans leads to fewer readmissions overall. A lowered readmission rate is good for patients because hospitalization is disruptive to an individual's and significant others' lives and there are inherent risks for hospital-acquired conditions such as infections, falls, and pressure ulcers, as well as the potential for medical error. It is also good for hospitals financially with the recent addition of the Medicare readmission penalty program that began in October 2012, part of Medicare's efforts to pay hospitals for the quality of their performance rather than just the number of patients they admit.

Patient Satisfaction and Demographics

Prior research on the link between patient satisfaction and demographic data has focused on the association between patient race/ethnicity, age, health status, and gender differences and patient satisfaction with care in health plans (Haviland, Morales, Dial, & Pincus, 2005; Weech-Maldonado et al., 2004) or on patient experiences in an outpatient setting (Rodriguez, von Glahn, Grembowski, Rogers & Safran, 2008). It is only in the past few years that studies have examined the association of these variables with the inpatient experience and patient satisfaction outcomes. Even then, however, the findings are inconclusive. Of the studies, Asian/Pacific Islanders and American Indian/Alaska Natives are reported to have lower satisfaction scores than other groups (Elliott et al., 2009; Goldstein, Elliott, Lehrman, Hambarsoomian, & Giordano, 2010), although the small sample numbers for these populations is to be noted. A recent study found that women report lower satisfaction scores via HCAHPS surveys than men (Elliott et al., 2012), although this is in contrast to studies based in the outpatient setting that have shown few differences by gender (Hall & Dornan, 1990; Sitzia & Wood, 1997).

There remains a paucity of information in the literature that examines the link between patient satisfaction and specific demographic differences for the inpatient population. Thus the relationship between higher patient satisfaction scores as an expression of patient experience, the effects of demographic variables on those scores, and decreasing costs while positively impacting health outcomes is important to further explore.

HCAHPS Survey

In March 2008, the first results of the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, also known as the CAHPS Hospital survey, were posted on the U. S. Department of Health and Human Services Web site *Hospital Compare*. It was the first large-scale report of a national, standardized survey of patients' perspective of inpatient care and included data from almost 2,600 voluntarily reporting hospitals (Girodano, Elliot, Goldstein, Lehrman, & Spencer, 2010). Initial data was collected from patients surveyed after hospital stays that occurred from October 2006 through June 2007. This was the culmination of a multiyear effort to design, develop, and implement the HCAHPS tool (Giordano et al., 2010).

Three broad goals shaped the survey: first, to produce comparable data on the patient's perspective that would enable objective and meaningful comparisons among hospitals in areas that are important to consumers; second, to enable public reporting of the survey results that

would create incentives for hospitals to improve their quality of care; and third, to enhance accountability in health care by increasing the transparency of the quality of hospital care provided in return for the investment (Goldstein et al., 2005; p1978). In May 2005, the HCAHPS Survey was endorsed by the National Quality Forum.

The HCAHPS survey contains 21 patient perspectives on care and patient rating items that encompass nine key topics: communication with doctors, communication with nurses, responsiveness of hospital staff, pain management, communication about medicines, discharge information, cleanliness of the hospital environment, quietness of the hospital environment, and transition of care. The items are phrased to ask "how often" or whether patients experienced a critical aspect of hospital care rather than whether certain aspects of care met their expectations and/or they were "satisfied" with their care. Patients rate each item on a scale of 1 to 10. The survey also includes four screener questions and seven demographic items, which are used for adjusting the mix of patients across hospitals for analytical purposes. The survey is 32 questions in length, and hospitals may include additional questions of interest to follow these standard HCAHPS items (hcahpsonline.org).

The survey is administered to a random sample of hospitalized adult inpatients between 48 hours and six weeks after discharge. Patients admitted to medical, surgical, and maternity care services are eligible for the survey, and their participation is not limited to Medicare beneficiaries. Hospitals may use an authorized survey vendor or collect their own HCAHPS data if the vendor is approved by CMS to do so. There are four approved modes of administration for the CAHPS® Hospital Survey: 1) mail only, 2) telephone only, 3) mixed (mail followed by telephone), and 4) active interactive voice response. UNCH uses the Press Ganey vendor to collect their data via the mail only option.

The percentage of a hospital's patients who chose the most positive survey response is used to calculate the Patient Experience of Care Domain score. This percentage is based on the percentage of patients who rated the hospital a 9 or 10; this score is then labeled as a top box score. The composites summarize how well nurses and physicians communicate with patients, how responsive hospital staff members are to patients' needs, how well hospital staff help patients manage pain, how well the staff communicates with patients about medications, and whether key information is provided at discharge. HCAHPS scores are based on four consecutive quarters of patient surveys and are publicly reported on the *Hospital Compare* Web site. Ten measures are reported on the Web site for each participating hospital (U.S. Dept of Health & Human Services, 2013). Rather than report responses to each question, there are six summary measures constructed from two or three survey questions.

Public reporting occurs four times each year, with the oldest quarter of surveys rolling off as the newest quarter rolls on. The rapid adoption of the HCAHPS survey by hospitals can be viewed through the number of results in *Hospital Compare*: in March 2008, 2,421 hospitals publicly reported HCAHPS scores based on 1.1 million completed surveys and in July 2013, 3,928 hospitals publicly reported HCAHPS scores based on 3.1 million completed surveys (HCAHPS Fact Sheet, 2013).

Theoretical Framework

The Donabedian Structure-Process-Outcome (SPO) model provides a flexible framework for examining health services and evaluating quality of care (Donabedian, 1988). Donabedian conceptualized the model as a linear, sequential progression that includes three quality of care dimensions: structure, process, and outcomes (McDonald, 2007). Good organizational structure works in tandem with effective processes to lead to better patient outcomes.

Structures of Care \rightarrow Processes of Care \rightarrow Health Outcomes

In the model, *structure* includes all of the physical and organizational components of the care setting, such as equipment and personnel. *Process* focuses on the care delivered, those that are performed to improve patient health and are the sum of actions that make up health care, such as ways in which healthcare is delivered. *Outcome* is the effects of health care on patients and populations and includes health status, healthcare quality of life, and patient satisfaction (Donabedian 2003, 1980). An outcome can be chosen to measure performance or a process.

The interpretation of the Donabedian model as a sequential progression from structure to process to outcome has been described by some as too rigid or linear of a framework (Mitchell, Ferketich, & Jennings, 1998) for the healthcare setting, because it has a somewhat limited ability to depict how the three domains influence and interact with each other in a more fluid manner (Carayon et al, 2006). Using the Donabedian framework as a starting point, the model can be adapted to depict the impact that both structure and process have on the outcome of patient satisfaction, specifically in the hospital setting.



Figure 2. Quality of care dimensions in patient satisfaction. Adapted from Donabedian, 1988.

Methodology

Retrospective HCAHPS satisfaction data and demographics were reviewed to assess the key drivers of patient satisfaction at UNCH and demographic differences on perceptions and ratings of the care provided. Patient satisfaction is an established goal for both UNC Hospitals and the UNCH Division of Nursing. The project aligns closely with the 2014 UNC Health Care patient satisfaction goal to be overall at the 66th percentile for patient satisfaction on the HCAPHS survey. The innovation aligns with the hospital's mission, vision, and values, as well as the Nursing Division Professional Practice Model and Relationship-Based Care delivery system for nursing staff.

The HCAHPS survey asks patients 32 questions about their experiences in the hospital and about their demographic features (Jha, Orav, Zheng, & Epstein, 2008). Answers to 14 of the questions are summarized by CMS and reported in 8 domains as composites: 1) Nurse Communication, 2) Doctor Communication, 3) Hospital Staff Responsiveness, 4) Pain Management, 5) Medicine Communication, 6) Hospital Cleanliness and Quietness, 7) Discharge Information, and 8) Overall Hospital Rating.

HCAHPS data and demographic information as collected and reported by Press Ganey from July 1, 2013, to December 31, 2013, were reviewed for primary drivers of inpatient satisfaction delineated by "top box" scores. Top box is defined by CMS as the most positive response on the survey (CMS, 2014). Specifically, a top box score is a rating of 9 or 10, and, as one example, only these top box scores are included in the numerator in calculating the percentage of patients who rated the hospital highly overall. The HCAHPS patient satisfaction benchmark group for comparison was all participating hospitals greater than 600 inpatient beds.

Setting

UNCH is a large, 830 bed quaternary care academic medical center located in Chapel Hill, NC. It includes the North Carolina Memorial Hospital, North Carolina Neurosciences Hospital, North Carolina Children's Hospital, North Carolina Women's Hospital, and North Carolina Cancer Hospital. UNCH is located in Orange County and is the cornerstone of the UNC Health Care System, serving the people of North Carolina and the Southeast.

Sample

UNCH HCAHPS patient satisfaction survey data, collected by Press Ganey Associates, was analyzed for patients discharged from 13 inpatient units from July 1, 2013, to December 31, 2013. Service lines included medical, surgical, oncology, cardiac/telemetry, and women's services. A total of 1,328 HCAHPS surveys were analyzed.

Variables examined included: CMS Ratings Items, Discharge Unit, Service Line, Major Diagnostic Category (MDC), Age, Race, Gender, Educational Level, Payor, Overall Health, Overall Mental Health, and Emergency Department Admission (whether or not the patient was admitted through the ED).

IRB Approval

Prior to initiating this project human subjects review was obtained by the University of North Carolina (UNC) Institutional Review Board, which determined that this study did not constitute human subjects research as defined under federal regulations and did not require IRB approval. There was no risk to the subjects and the data collected did not identify the subject.

Results

Regression analysis was used to identify the variable(s) that displayed the most variance in the population and to delineate the key drivers. This involved measuring the association

between a set of predictors and an overall indicator of success or performance. Regression analysis examines a number of predictor variables that are combined to forecast a dependent or target variable such as overall satisfaction (Guyatt et al, 1995). The regression model was used to gain an understanding of the importance of each of the key drivers to focus on those items that make the most difference.

Overall Rating

Previously delineated variables were examined and key drivers were identified for the overall aggregate hospital survey. The HCAHPS driver questions found in the analysis of the UNCH data were in five domains: Nurse Communication, Care Transition, Doctor Communication, Pain Management, and Hospital Environment. Questions associated with each domain are summarized in Figure 3.

HCAHPS Domain	Question	
New Commission	Nurses listen carefully to you	
Nurse Communication	Nurses treat you with courtesy and respect	
Care Transition Domain	Hospital Staff took preferences into account	
Doctor Communication	Doctors listen carefully to you	
Dain Monogoment	Staff do everything to help with pain	
Pain Management	Pain well controlled	
Hospital Environment	Room and bathroom kept clean	

Figure 3. HCAHPS driver questions in UNCH analysis.

For the 1,328 responses included in the analysis, 77.9% of patients gave an overall Top Box hospital rating (n = 1035). There were three statistically significant driver questions for "Overall rating of the hospital:" Nurses listen carefully to you, Hospital staff took preferences into account, and Doctors listen carefully to you. These are listed in descending order of significance in Figure 4.

Analysis of the surveys showed that 896 patients (86.5%) gave a Top Box score for "Nurses listen carefully to you," which was the key driver of overall rating of the hospital. Of those 896 patients, 87.5% also gave a Top Box score for overall rating of the hospital. While 139 patients did not give a Top Box rating on the "Nurses listen carefully to you" category, 45.7% of those (n=64) still gave an overall Top Box rating for the hospital. Further, 75 patients who did not give "Nurses listen carefully to you" a Top Box score also did not give a Top Box score for overall rating of the hospital.

Of the 896 patients who gave a Top Box score for "Nurses listen carefully to you," 621 also gave a Top Box score for "Hospital staff took preferences into account." Although this was the second most significant driver for overall rating of the hospital, 275 of the 896 (31%) did not give a Top Box score for that question. Of the 275 surveys, 25.7% also did not give a Top Box score for overall rating of the hospital.

Finally, "Doctors listen carefully to you" was the third statistically significant driver for overall rating of the hospital. 247 of the respondents who did not give a Top Box score for "Hospital staff took preferences into account" gave a Top Box score for this category, and 78.7% (n = 195) also gave a Top Box score for overall rating of the hospital.

Communication with Nurses has been identified by Press Ganey as a "rising tide measure" for hospitals among the eight HCAHPS dimensions of care (2013), so it is not surprising that this is a key driver for overall rating of the hospital for UNCH. A rising tide measure is one for which change and curve of development in performance correlates with other

measures. As the score of a rising tide measure improves, the scores of the associated measures are also likely to improve (Press Ganey, 2013).



Figure 4. UNCH HCAHPS data analysis: overall rating of hospital.

Analysis by Gender

When the HCAHPS data is analyzed by gender, it shows some interesting differences in key drivers compared to the overall hospital responses, as well as male responses versus female responses. HCAHPS data compares the demographic of sex against like groups (i.e., females against the national benchmark for females, males against the national benchmark for males)

Females. There were three statistically significant driver questions for "Overall rating of the hospital" for females (n = 722): Nurses listen carefully to you, Hospital staff took preferences into account, and Staff do everything to help with pain. These are listed in descending order of significance in Figure 5.

Data analysis showed that 77.4% of females (n = 559) gave the hospital a Top Box score for overall rating of the hospital, and of those who did 85.6% (n = 479) gave a Top Box score for "Nurses listen carefully to you." This question was the key driver of patient satisfaction on the HCAHPS survey for women. Of the 479 who gave a Top Box score for "Nurses listen carefully to you," 87.6% (n = 420) gave a Top Box score for overall rating of the hospital. 54.3% of females who did not give a Top Box score for "Nurses listen carefully to you" did not give a Top Box score for overall rating of the hospital.

For female patients who gave a Top Box score on "Nurses listen carefully to you", 335 also gave a Top Box score for "Hospital staff took preferences into account." These first 2 key drivers for females align with the key drivers for the hospital; however, the third statistically significant key driver for females is "Staff do everything to help with pain" as compared to "Doctors listen carefully to you" for the hospital overall. Of the 144 female patients who did not give a Top Box score on "Hospital staff took preferences into account," 99 gave a Top Box score for "Staff do everything to help with pain" while 45 did not.

Males. The key drivers for male patients are different from those for the hospital overall, as well as those for female patients. There were only two statistically significant driver questions for overall rating of the hospital for males (n = 606): Nurses treat you with courtesy and respect, and Doctors listen carefully to you. This is the only demographic group examined in the DNP project that did not have "Nurses listen carefully to you" as the most statistically significant driver of a Top Box overall rating of the hospital. The key drives are listed in descending order of significance in Figure 6.

Data analysis showed that 78.5% of males (n = 476) gave the hospital a Top Box score for overall rating of the hospital, and of those who did 461 gave a Top Box score for "Nurses

treat you with courtesy and respect." For males who did not give a Top Box score for that question, 75% also did not give a Top Box score for overall rating of the hospital. This question is a strong driver of the overall rating of the hospital for males.

The second key driver for males for Top Box scores on overall rating of the hospital was "Doctors listen carefully to you." 70% (n = 424) of male patients gave a Top Box score for that question, and 88.3% of those (n = 374) gave a Top Box score for overall rating of the hospital. Responses to the questions "Nurses treat you with courtesy and respect" and "Doctors listen carefully to you" are closely aligned when looking at key drivers for Top Box scores for overall rating of the hospital for males.



July 1, 2013- December 31, 2013

Figure 5. UNCH HCAHPS data analysis: females.



Figure 6. UNCH HCAHPS Data Analysis: Males July 1, 2013- December 31, 2013

Figure 6. UNCH HACHPS data analysis: males.

Analysis by Race

When the HCAHPS data is disaggregated and analyzed by race, it shows some interesting differences in key drivers compared to the overall hospital responses as well as to the two group responses. HCAHPS data compares the demographic of sex against like groups (i.e., females matched against the national benchmark for females, males against the national benchmark for males). Because racial data is not a part of the mandatory data elements collected for the survey by hospitals, HCAHPS does not compare like groups to like groups but rather uses the entire database as the benchmark for comparison. The HCAHPS data analyzed for this project was broken down into two ethnic groups consistent with Press Ganey available demographic categories: Caucasian and patients of all other races.

Caucasian Patients. There were three statistically significant driver questions for "Overall rating of the hospital" for Caucasian patients (n = 919): Nurses listen carefully to you, Hospital staff took preferences into account, and Room and bathroom were kept clean. These are listed in descending order of significance in Figure 7.

Data analysis showed that 75.8% of Caucasian patients (n = 697) gave a Top Box score for overall rating of hospital. Of those, 85.4% (n = 595) gave a Top Box score for "Nurses listen carefully to you," a key driver for this group and similar to the overall results for the hospital. 14.2% of Caucasian patients (n = 102) who gave a Top Box score for overall rating of the hospital did not give a Top Box score for "Nurse listen carefully to you," and 55% of that subgroup also did not give a Top Box score for overall rating of the hospital. Further, 59.8% of Caucasian patients gave a Top Box score on "Hospital staff took preferences into account," the second statistically significant driver for this group. 93.9% of this segment gave a Top Box score for overall rating of the hospital.

The third statistically significant driver for the Caucasian population was "Room and bathroom were kept clean" with 133 patients rating this item a Top Box. 47% of those who did not give a Top Box score on this question also did not give the hospital an overall Top Box score.

Patients of All Other Races. There were three statistically significant driver questions for "Overall rating of the hospital" for patients of all other races (n = 409): Nurses listen carefully to you, Hospital staff took preferences into account, and Pain was well controlled. These are listed in descending order of significance in Figure 8.

Data analysis showed that 77.4% of patients of all other races gave a Top Box score for overall rating of the hospital, comparable to the overall Top Box rating of the hospital for all

patients (77.9%). 89% of this group (n = 301) gave a Top Box score for "Nurses listen carefully to you," the primary key driver for this demographic. Of the 301patients who gave a Top Box score for "Nurses listen carefully to you", 208 (69.1%) also gave a Top Box score for "Hospital staff took preferences into account," while 93 of the 301 (30.1%) patients did not give a Top Box score for "Hospital staff took preferences into account," the second driver in this analysis. Additionally, 40 of the 93 patients who did not give a Top Box score on "Hospital staff took preferences into account" did not give a Top Box score for "Pain was well controlled," the third statistically significant driver for this group. Overall, 13.3% of patients of all other races who gave a Top Box score on "Nurses listen carefully to you" did not do so for "Hospital staff took preferences into account" or "Pain was well controlled." This third driver is not found in other subgroup analysis.



Figure 7. UNCH HCAHPS data analysis: Caucasian patients.



Figure 8. UNCH HCAHPS data analysis: all other races.

Discussion

There are several interesting findings from this analysis. First, "Nurses listen carefully to you" is clearly the most statistically significant driver for Top Box scores for overall hospital rating at UNCH; however, this is not true for male patients, where "Nurses treat you with courtesy and respect" is the most significant driver. Additionally, "Hospital staff took preferences into account" is the second most significant driver of Top Box scores for overall rating of the hospital, again with the exception of male patients, where "Doctors listen carefully to you" was a statistically significant driver. Furthermore, for male patients there was no significant driver beyond the two that were mentioned.

The third statistically significant driver was different for the demographic groups examined in this project. For females, the third most influential question in the survey was "Staff do everything to help with pain." For Caucasian patients, the third most significant driver was "Room and bathroom were kept clean." Finally, patients of all other races, the third driver question was centered on "Pain was well controlled." This is important to note as the literature suggests (Todd, Deaton, D'Adamo & Goe, 2000; Chapman, Kaatz, & Carnes, 2013) that certain populations, including Hispanic and black patients, are at risk for under-treatment of pain when hospitalized.

The data shows that it is incorrect to assume that all demographic groups have the same key drivers of patient satisfaction as measured by the HCAHPS survey. Analysis of the UNCH data suggests that to improve patient satisfaction and HCAHPS scores the most, attention must be paid to statistically significant drivers for each population. A one-size-fits-all approach will not yield desired outcomes for this important metric. Hospitals seeking to improve their HCAHPS scores in the VBP model may benefit from analyzing their data based on demographic differences.

Potential advantages to a more specific level of analysis include: (1) gaining a better understanding of what is important beyond the drivers in the total sample, and (2) using it to craft population-specific interventions where possible and appropriate. Although this does not suggest that different groups be treated differently when being cared for on the same unit, there are opportunities for potential population-specific interventions on certain units, such as a maternity unit where the patients are all female. In this scenario, it would be helpful to talk with a focus group of women who had been patients on that unit recently about what staff could do to demonstrate that they were doing everything they could to help with the patient's pain, such as asking about the patient's pain level during hourly rounding and giving medication as needed rather than waiting for patients to ask and thereby anticipating versus reacting to needs. If further

study indicated that these findings are generalizable to outpatient settings, this would underscore the already important need to carefully assess the level to which pain is controlled and strive to find a set of interventions most helpful for each patient in such places as in a sickle cell clinic, where patients are African American and potentially being under-treated for pain.

Limitations and Recommendations

The narrow scope of demographic information available on the HCAHPS survey is a limitation for the purpose of this analysis. The 1,328 surveys analyzed for this project were not a random sampling but were all surveys collected for a six-month period of time. Further analysis should include a broader time period range.

Additionally, the HCAHPS survey is administered to a random sample of adult patients between 48 hours and six weeks after discharge who voluntarily complete the survey. UNCH utilizes the mail form of the survey, and there is a wide level of nonresponse rates for each quarter of data collection. This is also a limitation for this project.

Although this study used the Press Ganey HCAHPS data available for UNCH, it is a problem that the racial data is broken down into only two categories—Caucasian patients and patients of all other races. Reasons for this may include having a small number of certain ethnic populations in the data set; however, future research should focus on breaking down this category into more specific subsets so as to include tailored recommendations for individual ethnic groups.

Conclusion

For the foreseeable future, patients' perception of care will play a significant role in determining VBP scores and incentive payments. This creates an imperative for hospitals to focus on the practices and behaviors that drive HCAHPS patient satisfaction scores (Dempsey,

Reilly, & Buhlman, 2014). It is important for hospitals to recognize the need to look beyond the global Top Box scores for overall rating of the hospital and to demographically disaggregate and analyze differences for the population served. Given the most recent U.S. census data and the global nature of our world, patient diversity will continue to grow and cultural due diligence, including the data used for quality and safety measures, would be prudent.

Finally, further exploration of this topic will add to the small but growing body of information that is pertinent to all hospitals reporting patient satisfaction results. Interventions that improve the patient experience and positively affect satisfaction scores, especially for patients from diverse backgrounds, will continue to be of great importance across healthcare settings.

APPENDIX



SURVEY INSTRUCTIONS

- □ You should only fill out this survey if you were the patient during the hospital stay named in the cover letter. Do not fill out this survey if you were not the patient.
- □ Answer <u>all</u> the questions by checking the box to the left of your answer.
- □ You are sometimes told to skip over some questions in this survey. When this happens you will see an arrow with a note that tells you what question to answer next, like this:
 - □ Yes
 ☑ No → If No, Go to Question 1

You may notice a number on the survey. This number is used to let us know if you returned your survey so we don't have to send you reminders. Please note: Questions 1-25 in this survey are part of a national initiative to measure the quality of care in hospitals. OMB #0938-0981

Please answer the questions in this survey about your stay at the hospital named on the cover letter. Do not include any other hospital stays in your answers.

YOUR CARE FROM NURSES

- 1. During this hospital stay, how often did nurses treat you with <u>courtesy and respect</u>?
 - ¹ Never
 - ² Sometimes
 - ³Usually
 - ⁴ Always
- 2. During this hospital stay, how often did nurses <u>listen carefully to</u> you?
 - ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always

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- During this hospital stay, how often did nurses <u>explain things</u> in a way you could understand?
 - ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always
- 4. During this hospital stay, after you pressed the call button, how often did you get help as soon as you wanted it?
 - ¹ Never
 - ² Sometimes
 - ³Usually
 - ⁴ Always
 - ⁹ I never pressed the call button

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YOUR CARE FROM DOCTORS

- 5. During this hospital stay, how often did doctors treat you with <u>courtesy and respect</u>?
 - ¹ Never
 - ² Sometimes
 - ³Usually
 - ⁴ Always
- 6. During this hospital stay, how often did doctors <u>listen carefully</u> to you?
 - ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴□ Always
- 7. During this hospital stay, how often did doctors <u>explain things</u> in a way you could understand?
 - ¹ Never
 - ² Sometimes
 - ³Usually
 - ⁴ Alwavs

THE HOSPITAL ENVIRONMENT

- 8. During this hospital stay, how often were your room and bathroom kept clean?
 - ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always
- 9. During this hospital stay, how often was the area around your room quiet at night?
 - ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always

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YOUR EXPERIENCES IN THIS HOSPITAL

- 10. During this hospital stay, did you need help from nurses or other hospital staff in getting to the bathroom or in using a bedpan?
 - ¹ Yes
 - ² No \rightarrow If No, Go to Question 12
- 11. How often did you get help in getting to the bathroom or in using a bedpan as soon as you wanted?
 - ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always
- 12. During this hospital stay, did you need medicine for pain?
 - ¹ Yes
 - ² No \rightarrow If No, Go to Question 15
- 13. During this hospital stay, how often was your pain well controlled?
 - ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always
- 14. During this hospital stay, how often did the hospital staff do everything they could to help you with your pain?
 - ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always

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- 15. During this hospital stay, were you given any medicine that you had not taken before?
 - ¹ Yes
 - ² No \rightarrow If No, Go to Question 18
- 16. Before giving you any new medicine, how often did hospital staff tell you what the medicine was for?
 - ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always
- 17. Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?
 - ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always

WHEN YOU LEFT THE HOSPITAL

- 18. After you left the hospital, did you go directly to your own home, to someone else's home, or to another health facility?
 - ¹ Own home
 - ² Someone else's home
 - ³ Another health facility → If Another, Go to Question 21

- 19. During this hospital stay, did doctors, nurses or other hospital staff talk with you about whether you would have the help you needed when you left the hospital?
 - ¹D Yes
 - ² No
- 20. During this hospital stay, did you get information in writing about what symptoms or health problems to look out for after you left the hospital?
 - ¹ Yes
 - ² No

OVERALL RATING OF HOSPITAL

Please answer the following questions about your stay at the hospital named on the cover letter. Do not include any other hospital stays in your answers.

- 21. Using any number from 0 to 10, where 0 is the worst hospital possible and 10 is the best hospital possible, what number would you use to rate this hospital during your stay?
 - $^{0}\Box$ 0 Worst hospital possible
 - ¹□ 1
 - $^{2}\square 2$ $^{3}\square 3$
 - ⁴ 4
 - ⁵**□** 5
 - ⁶□ 6

 - °П 8
 - °□ 9

- 22. Would you recommend this hospital to your friends and family?
 - ¹ Definitely no
 - ² Probably no
 - ³ Probably yes
 - ⁴ Definitely yes

UNDERSTANDING YOUR CARE WHEN YOU LEFT THE HOSPITAL

- 23. During this hospital stay, staff took my preferences and those of my family or caregiver into account in deciding what my health care needs would be when I left.
 - ¹ Strongly disagree
 - ² Disagree
 - ³ Agree
 - ⁴ Strongly agree
- 24. When I left the hospital, I had a good understanding of the things I was responsible for in managing my health.
 - ¹ Strongly disagree
 - ² Disagree
 - ³ Agree
 - ⁴ Strongly agree
- 25. When I left the hospital, I clearly understood the purpose for taking each of my medications.
 - ¹ Strongly disagree
 - ² Disagree
 - ³ Agree

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- ⁴ Strongly agree
- ⁵□ I was not given any medication when I left the hospital

ABOUT YOU

There are only a few remaining items left.

- 26. During this hospital stay, were you admitted to this hospital through the Emergency Room?
 - ¹ Yes
 - ² No
- 27. In general, how would you rate your overall health?
 - ¹ Excellent
 - ² Very good
 - ³ Good
 - ⁴ Fair
 - ⁵ Poor
- 28. In general, how would you rate your overall <u>mental or emotional</u> <u>health</u>?
 - ¹ Excellent
 - ² Very good
 - ³ Good
 - ⁴□ Fair
 - ⁵□ Poor
- 29. What is the highest grade or level of school that you have <u>completed</u>?
 - ¹ \square 8th grade or less
 - ² Some high school, but did not graduate
 - ³ High school graduate or GED
 - ⁴ Some college or 2-year degree
 - ⁵ 4-year college graduate
 - ⁶ More than 4-year college degree

30.	Are you of Spanish, Hispanic or Latino origin or descent?	32.	What language do you <u>mainly</u> speak at home?
31.	 ¹ No, not Spanish/Hispanic/Latino ² Yes, Puerto Rican ³ Yes, Mexican, Mexican American, Chicano ⁴ Yes, Cuban ⁵ Yes, other Spanish/Hispanic/Latino What is your race? Please choose one or more. ¹ White ² Black or African American 		 ¹ □ English ² □ Spanish ³ □ Chinese ⁴ □ Russian ⁵ □ Vietnamese ⁶ □ Portuguese ⁹ □ Some other language (please print):
	 ³ Asian ⁴ Native Hawaiian or other Pacific Islander ⁵ American Indian or Alaska Native 		

THANK YOU

Please return the completed survey in the postage-paid envelope.

[NAME OF SURVEY VENDOR OR SELF-ADMINISTERING HOSPITAL]

[RETURN ADDRESS OF SURVEY VENDOR OR SELF-ADMINISTERING HOSPITAL]

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