# TRICARE INPATIENT SATISFACTION SURVEY (TRISS)

Annual Report of Findings for Year 2017 (April 2016–March 2017)

# TRICARE Inpatient Satisfaction Survey (TRISS)

## Annual Report of Findings for Year 2017 (April 2016-March 2017)

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# 1  EXECUTIVE SUMMARY

The current Annual Report of Findings presents TRICARE Inpatient Satisfaction Survey (TRISS) results from adult beneficiaries, eligible for Department of Defense (DoD) health care services, who completed a survey from April 2016 to March 2017. The purpose of the TRISS is to monitor and report on the experience of Military Health System's (MHS) beneficiaries that were admitted to MHS Direct Care (DC) military treatment facilities (MTFs) or its civilian network/Purchased Care (PC) civilian hospitals.

The Executive Summary summarizes survey content, defines the total population surveyed, summarizes the survey methodology and presents an overview of results. The results are interpreted in the context of trends, challenges, and lessons learned in patient experience to develop the conclusions and recommendations presented here. In this way, the report offers an in-depth understanding of the perceptions and experiences of MHS healthcare services within the military community.

The goal of the TRISS report is to provide MTF or PC hospitals performance feedback that is actionable and that will aid in improving the overall experience of care among MHS beneficiaries.

**REVIEW OF PUBLISHED FINDINGS**

- What drives patient experience in the general population?
- What are the patient experience issues unique to the military community?
- What approaches can facilities use to optimize patient experience?

**ANALYSIS OF YEAR 2017 TRISS**
- What aspects of patient experience are doing well?
  - *Who* does well?
  - *What measures* have high scores?
- What measures of patient experience need improvement?
  - *Who* needs improvement?
  - *What measures* need improvement?
- How has patient experience changed from Year 2016 to Year 2017?
- What drives patient experience in the TRISS project?

**SUMMARY OF MILITARY HEALTH SYSTEM PATIENT EXPERIENCE**

**RECOMMENDATIONS FOR IMPROVEMENT**

## 1.1  Project Overview

The report summarizes TRISS responses from April 1, 2016 to March 31, 2017, referred to as "Year 2017". DHA administers the TRISS instrument to understand perceptions of inpatient care among adult MHS users. The survey instrument incorporates methodological and analytical protocols and many questionnaire items from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) protocol developed by the Centers for Medicare

and Medicaid Services (CMS) and the Agency for Healthcare Research and Quality (AHRQ). More information about HCAHPS can be found at http://www.hcahpsonline.org.

Details concerning the TRISS methodology can be found in Section 5 of this report. The survey is administered to MHS users and their dependents after a recent discharge from either a Military Treatment Facility (MTF) or a civilian hospital. MTF care is referred to here as "Direct Care" (DC), and civilian hospital care is referred to as "Purchased Care" (PC). DC facilities are classified by Service Branch (i.e., Army, Navy, or Air Force) and National Capital Region (NCR). PC facilities are classified by MHS regional offices (including North Region, South Region, and West Region). Within each facility, analyses are conducted by product line (i.e., type of care received by patient), age, beneficiary, gender, and health status.

Section 5.3.6 and Appendix D shows the TRISS instrument and its measures are described in Section 5.3.2. Questionnaire items are aggregated into 11 principal HCAHPS measures, which are the focus of these analyses. The HCAHPS measures pertain to key aspects of patient experience. The measures are as follows:

- Overall Hospital Rating.
- Recommend the Hospital.
- Communication with Nurses.
- Communication with Doctors.
- Responsiveness of Hospital Staff.
- Pain Management.
- Communication about Medicines.
- Discharge Information.
- Care Transition.
- Cleanliness of Hospital Environment.
- Quietness of Hospital Environment.

In addition, the Department of Defense (DoD) added the following eight questions to the TRISS survey to assess areas of interest for military health:

- Staff Introduced Self.
- Communication among Staff.
- Family Member Stayed.
- OB Repeat Care.
- Education on Breastfeeding.
- Staff Washed Hands.
- Staff Check ID.
- Overall Nursing Care.

## 1.2    Respondent Overview

The Year 2017 dataset includes responses from 67,648 MHS users who visited MTFs or a PC network facility between April 1, 2016, and March 31, 2017.

Notable differences exist between the DC and PC survey populations in terms of age and beneficiary category distribution. Compared to the DC sample, the PC sample includes more respondents 65 years of age or older (49.8% and 21.0% for PC and DC, respectively). Accordingly, there are more respondents in the beneficiary category "retirees and dependents 65+" in PC than in DC (49.7% and 20.9%, respectively). These values are parallel to the age proportions.

The TRISS sample consists of a higher proportion of white respondents than any other race (73.5% and 84.4% among DC and PC, respectively) and includes more women than men (65.0% and 60.2% women among DC and PC, respectively).

Results reported here have been adjusted for differences in demographic profiles among facilities. Therefore, differences in age and gender between facilities or care type should not impact results when considered at a facility level or care type level. See Section 5.3.4 for how data were adjusted for differences in patient profiles among facilities.

## 1.3   Key Findings

❖ **BENCHMARK COMPARISON**: Patient experience scores reported by DC respondents met or exceeded the HCAHPS benchmarks for all 11 HCAHPS measures, while scores reported by PC respondents met or exceeded benchmarks for all measures except for Quietness of the Hospital Environment (see Table 1 in Section 4.2.1).

❖ **HCAHPS MEASURES:** DC respondents reported higher satisfaction than PC respondents on eight of the 11 HCAHPS measures (see Table 1 in Section 4.2.1).

❖ **PRODUCT LINE:** Medical care, Surgical care, and Obstetrics care respondent scores were significantly higher than the benchmark on most measures for both DC and PC (see  Table 3 and Table 4 in Section 4.2.3).

❖ **SATISFACTION TRENDS:** Both DC and PC had respondent scores that improved or remained stable between Year 2016 and Year 2017, with no measure experiencing significant decreases (see Figure 25 through Figure 39 in Section 4.6).

❖ **AGE:** Among both DC and PC respondents, patient experience ratings generally increased with age (i.e., older respondents reported higher experience ratings than younger respondents) (see Appendix J).

❖ **BENEFICIARY CATEGORY:** Retirees and their dependents reported higher experience ratings than Active Duty (AD) members and Active Duty Family Members (ADFMs). Note that beneficiary category and age are highly correlated (see Appendix J).

❖ **GENDER:** Male respondents generally reported higher patient experience ratings than female respondents (see Appendix J).

❖ **STAR RATINGS:** All DC facilities received at least three stars for the HCAHPS Summary Star Rating (see Table 5 in Section 4.2.4).

❖ **DRIVERS:** The top driver of high hospital ratings and recommendations was Overall Nursing Care. The second and third largest drivers were Care Transition and Communication with Doctors (see Figure 4 in Section 4.3).

❖ **INDIVIDUAL FACILITIES:** A total of 9 DC facilities and 19 PC facilities stand out as "top performers," receiving respondent scores in the 75th percentile or higher on **both** the Overall  Hospital Rating and Recommend the Hospital HCAHPS measures (see Figure 6, Figure 7, Figure 9, and Figure 10 in Section 4.2.2).

**I. Scores among DC and PC respondents met or exceeded the HCAHPS benchmarks on most experience measures (see Table 1 below and in Section 4.2.1).**

Table 1. Comparisons of HCAHPS Scores by Care Type.

| Measure | DC (%) | PC (%) | Benchmark Scores (%) | Significant Difference Between DC and PC |
|---|---|---|---|---|
| Overall Hospital Rating | 73.0 | 72.1 | 72 | *n.s* |
| Recommend the Hospital | 75.2 | 74.3 | 72 | *n.s* |
| Communication with Doctors | 86.5 | 82.0 | 81 | DC > PC |
| Communication with Nurses | 85.5 | 81.2 | 80 | DC > PC |
| Pain Management | 73.1 | 72.3 | 71 | DC > PC |
| Responsiveness of Hospital Staff | 77.3 | 68.6 | 68 | DC > PC |
| Communication about Medicines | 74.8 | 69.8 | 64 | DC > PC |
| Discharge Information | 90.6 | 90.3 | 87 | DC > PC |
| Care Transition | 60.8 | 58.4 | 52 | *n.s* |
| Cleanliness of Hospital Environment | 75.9 | 73.7 | 74 | DC > PC |
| Quietness of Hospital Environment | 65.2 | 60.5 | 62 | DC > PC |

*n.s.* = Not significant.
Note: Green shading indicates that the respondent score is significantly higher than the benchmark. Cells that have green shading include 75.2, 86.5, 85.5, 73.1, 77.3, 74.8, 90.6, 60.8, and 75.9 from the DC (%) column and 74.3, 72.3, 69.8, 90.3, and 58.4 from the PC (%) column. Red shading indicates that the respondent score is significantly lower than the benchmark. Cells that have red shading include 60.5 from the PC (%) column. All statistical tests use α = 0.05 as the threshold for significance.

**DC** respondent scores were significantly *higher* than the HCAHPS benchmarks on nine of the 11 HCAHPS measures as follows:

- Recommend the Hospital.
- Communication with Nurses.
- Communication with Doctors.
- Responsiveness of Hospital Staff.
- Pain Management.
- Communication about Medicines.
- Discharge Information.
- Care Transition.
- Cleanliness of Hospital Environment.

The remaining two measures, Overall Hospital Rating and Quietness of Hospital Environment, did not significantly differ from the benchmark.

**PC** respondent scores were significantly *higher* than the HCAHPS benchmark on five measures: Recommend the Hospital, Pain Management, Communication about Medicines, Discharge Information, and Care Transition.

Five of the remaining measures did not differ from the benchmark. These measures include: Overall Hospital Rating, Communication with Nurses, Communication with Doctors, Responsiveness of Hospital Staff, and Cleanliness of Hospital Environment. One measure, Quietness of Hospital Environment, was significantly **below** the benchmark for PC respondents.

II. **Scores from DC respondents were significantly higher than scores from PC respondents on most measures (see Table 1 above and in Section 4.2.1).**

Scores from DC respondents were significantly **higher** than PC respondents on eight of the 11 HCAHPS measures:

- Communication with Nurses.
- Communication with Doctors.
- Responsiveness of Hospital Staff.
- Pain Management.

- Communication about Medicines.
- Discharge Information.
- Cleanliness of Hospital Environment.
- Quietness of Hospital Environment.

DC and PC respondent scores did not differ significantly on the remaining three HCAHPS measures.

III. **Medical care scores were higher for DC respondents compared to PC respondents. Surgical care and Obstetric care respondent scores were significantly higher than the benchmark on most measures for both DC and PC (see Table 3 and Table 4 Section 4.2.3).**

Among **DC** respondents, Surgical respondents had the most measures significantly higher than the benchmark. Scores from Surgical respondents were higher than benchmarks for all 11 HCAHPS measures. Scores from Medical care respondents were higher than benchmarks on nine of 11 HCAHPS measures. Scores from Obstetric care respondents were higher than benchmarks on eight of the measures, and lower than benchmarks on two of the measures - Overall Hospital Rating and Recommend the Hospital.

Among **PC** respondents, both Surgical and Obstetric care respondents reported high patient experience scores, scoring above the benchmark on nine of 11 HCAHPS measures. Medical respondents reported scores lower than the benchmark on four of 11 HCAHPS measures, and reported scores higher than the benchmark for Care Transition.

IV. **Trend analyses show either an increase or stable scores in both DC and PC respondent experience compared to the previous four quarters (see Figure 25 through Figure 39 in Section 4.6).**

We compared results from Year 2017 (the current dataset) to those from Year 2016 (the previous TRISS report dataset). Year 2016 includes responses from 83,276 users who visited MTFs or a PC network facility between April 1, 2015, and March 31, 2016.

Scores from both DC and PC respondents improved or remained stable between Year 2016 and Year 2017, with no measure experiencing significant decreases.

Scores from DC respondents were higher than in the previous four quarters on five of 11 HCAHPS measures: Recommend the Hospital, Overall Hospital Rating, Discharge Information, Communication about Medicines, and Quietness of Hospital Environment. This information is displayed in Figure 25.

Scores from PC respondents were higher than in the previous four quarters on five of 11 HCAHPS measures: Recommend the Hospital, Overall Hospital Rating, Communication with Doctors, Discharge Information, and Communication about Medicines. This information can be found in Figure 26.

Detailed trends by Service Branch, Region, and Product Line can be found in Section 4.6
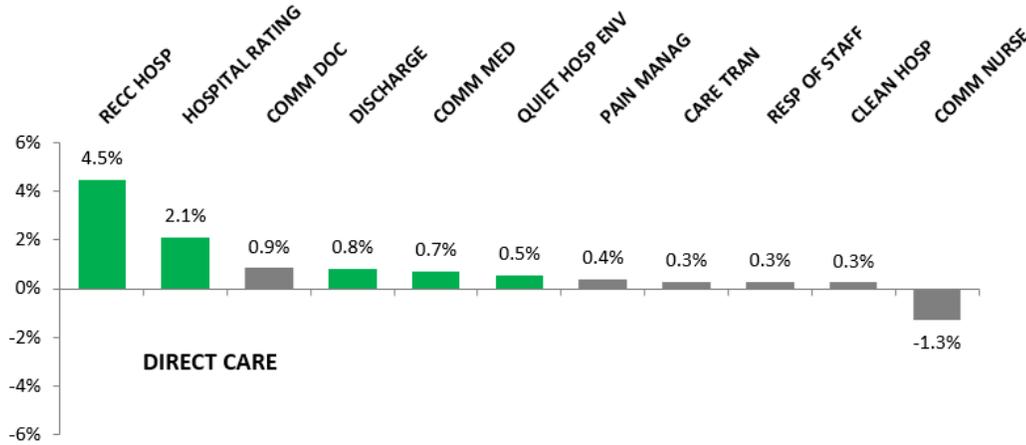


Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.

**Figure 25. Difference in Scores for DC HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**
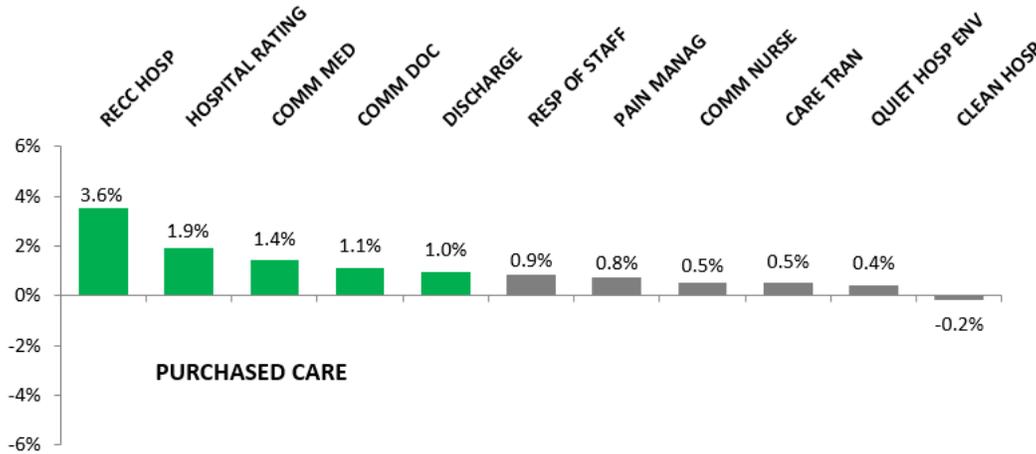


Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.

**Figure 26. Difference in Scores for PC HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

V.   **HCAHPS scores varied by age, gender, and beneficiary category among DC and PC respondents (see Appendix J).**

Ratings generally increased with age among both DC and PC respondents. In addition, DC retirees and their dependents gave higher ratings than Active Duty members and their families; note that these beneficiary categories correlate with age, as younger users are more likely to be AD and ADFMs. Male respondents tend to report higher experience scores than female respondents among both DC and PC facilities.

VI.   **All DC facilities received at least three stars for the HCAHPS Summary Star Rating (see Table 5 in Section 4.2.4).**

The HCAHPS Summary Star Rating, created to enable consumers to more easily interpret and compare hospital patient experience information, is calculated as an average of the respondent scores for each of the 11 HCAHPS measures.

All facilities received at least three stars for the HCAHPS Summary Star Rating. Seven facilities received five-star ratings: Keesler Medical Center (81st Medical Group), Wright-Patterson Medical Center (88th Medical Group), Brian Allgood Army Community Hospital (Seoul), Keller Army Community Hospital (West Point), Landstuhl Regional Medical Center, Reynolds Army Community Hospital (Ft. Sill), and Naval Hospital Pensacola. Thirty-one facilities received a four-star rating, and four facilities received a three-star rating, and 11 facilities did not have enough completed responses to calculate star ratings.

VII.   **Overall Nursing Rating, Care Transition, and Communication with Doctors measures are strong determinants of satisfaction among both DC and PC respondents (see Figure 4 below and Section 4.3).**

Drivers of patient experience were analyzed to understand the impact of the HCAHPS measures on the two global measures: Overall Hospital Rating and Recommend the Hospital. The analyses included HCAHPS measures as well as questions added to the TRISS survey by DoD. See Figure 4 for results.

**The DoD-specific Overall Nursing Care measure is the single greatest driver for both global measures among both DC and PC respondents**. This measure accounts for anywhere between 38% and 66% of the variance observed in global measure user scores. This finding is consistent with the general population literature which finds that nurse communication and nursing care have a significant impact on overall patient satisfaction (see Section 3.3.2 for more details).

**Care Transition is also a top driver for Recommend the Hospital (for both PC and DC) and Overall Hospital Rating (for DC only).** Currently there is little mention of this measure in existing general population literature, as the Care Transition measure was only recently introduced to the HCAHPS instrument (data were first reported by HCAHPS in December 2014). **Communication with Doctors** measure also emerged as a top driver for

both global measures, reinforcing findings that highlight the importance of communication on overall patient satisfaction (see Section 3.3.1 through Section 3.3.4 for more details).
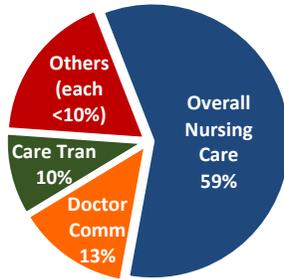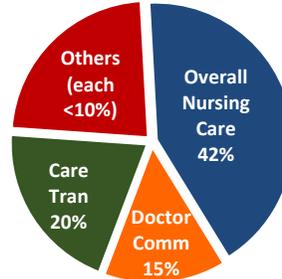
**DC Overall Hospital Rating**

**DC Recommend the Hospital**

**PC Overall Hospital Rating**
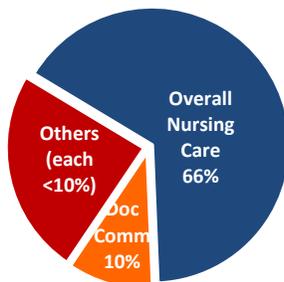
**PC Recommend the Hospital**
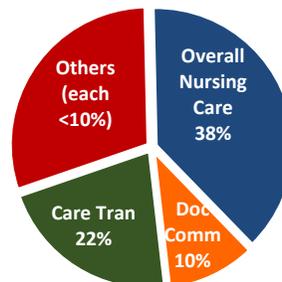
**Figure 4. Drivers of Overall Hospital Rating and Recommend the Hospital among DC and PC Users.**

**VIII.** **A total of nine DC facilities and 19 PC facilities stand out as "top performers," receiving scores in the 75th percentile or higher of HCAHPS national ratings on both global measures (see Figure 6, Figure 7, Figure 9, and Figure 10 in Section 4.2.2).**

Percentile rankings of DC facilities are shown in Figure 6 (Overall Hospital Rating; see Section 4.4.1.5) and Figure 9 (Recommend the Hospital; see Section 4.4.2.5). DC facilities with respondent scores in the 75th percentile or higher of national HCAHPS ratings on **both** Overall Hospital Rating and Recommend the Hospital include the following:

- Keesler Medical Center (81st Medical Group) (Air Force)*.
- Naval Hospital Rota (Navy).
- Aviano Air Base (31st Medical Group) (Air Force)*.
- Naval Hospital Guam (Navy).
- Brooke Army Medical Center (Army).
- Wright-Patterson (88th Medical Group) (Air Force).
- Naval Hospital Pensacola (Navy).
- Fort Belvoir Community Hospital (NCR).
- Brian Allgood Army Community Hospital (Army).

*Facility scores in the 90th percentile for both Overall Hospital Rating and Recommend the Hospital.*

Percentile rankings of PC facilities are shown in Figure 7 (Overall Hospital Rating; see Section 4.4.1.5) and Figure 10 (Recommend the Hospital; see Section 4.4.2.5). PC facilities with respondent scores in the 75th percentile or higher of HCAHPS national ratings on **both** Overall Hospital Rating and Recommend the Hospital include the following:

- University of Colorado Hospital (West Region)**.
- University of Alabama Hospital (South Region)*.
- Vanderbilt University Hospital (South Region)*.
- University of North Carolina Hospitals (North Region)*.
- Scripps Memorial Hospital (West)*.
- Sharp Memorial Hospital (West Region)*.
- Sentara Leigh Hospital (North Region).
- St. Luke's Regional Medical Center (West Region).
- Providence Alaska Medical Center (West Region)
- Inova Fairfax Hospital (North Region).
- Bellevue Medical Center (West Region).
- Memorial Hospital (West Region).
- Sacred Heart Medical Center (West Region).
- Penrose Hospital (West Region).
- Providence St. Peter Hospital (West Region).
- New Hanover Regional Medical Center (North Region).
- Mercy Hospital Springfield (West Region).
- Baptist Memorial Hospital (South Region).
- FirstHealth Moore Regional Hospital (North Region).

*Facility scores in the 90th percentile for both Overall Hospital Rating and Recommend the Hospital.*
**Facility scores in the 95th percentile for both Overall Hospital Rating and Recommend the Hospital.*

## 1.4    Recommendations

Recommendations for optimizing user experience within the MHS are presented in this section. Recommendations are based on (1) the analysis of the TRISS data, (2) a thorough literature review, and (3) a drivers of patient experience rating analysis.

**Recommendation 1: Conduct additional research on factors within Obstetrics that drive the two HCAHPS global measures: Overall Hospital Rating and Recommend the Hospital.**

The data analyses revealed an interesting discrepancy between the global scores and the remaining HCAHPS scores for Obstetric care. For DC Obstetric care, respondent scores for the global measures, Overall Hospital Rating and Recommend the Hospital, were below the benchmarks, whereas most of the non-global scores were above the benchmarks (see Table 3). The results were similar for PC Obstetric care, where one global score, Overall Hospital Rating, was below the benchmark and most of the other scores were above the benchmark (see Table 4). This suggests that there may be outside factors not included in the TRISS survey that are influencing the respondent scores on the global measures.

Patients in maternal health and OB-GYN units have unique needs and metrics to consider when rating provider and facility services. A study by Sawyer et al. (2013) examined nine patient-experience questionnaires to identify satisfaction metrics for maternal healthcare, specifically during labor and birth. Respondent data were analyzed and a positive association was found between social support and higher experience ratings for medical staff during labor and birth. Although the HCAHPS includes measures of care continuity and communication with doctors and nurses, this may not fully capture the social support that new mothers are seeking. Other factors from the literature that affect maternal satisfaction include (Teijlingen, Hundley, Rennie, Graham, & Fitzmaurice, 2003):

Personal Factors

- Having immediate contact with baby.
- Involvement in prenatal classes.
- Choice about place of prenatal care/delivery, type of care, labor positions.
- Having a realistic expectation of the birth experience.
- Patients having undergone fewer obstetrical/medical interventions in the past.
- Availability of social support – permanent partners.

Communication Factors

- Having continuity of care from midwife.
- Short length of stay in hospital.
- Early discharge.
- Expectant mother's perceived control/involvement in decision making.
- Quality of relations and communications between expectant mother and healthcare staff.

Due to the unique needs of Obstetric patients, factors outside of the TRISS survey may play a more important role in global satisfaction with care. Exploration of these factors could be accomplished through qualitative research, such as analysis of patient comments or focus groups with patients.

## Recommendation 2: Gather lessons learned from the care facilities that became high performers.

Both DC and PC facilities grew in the number of "top performers" throughout Year 2016 and Year 2017 as compared to the previous four quarters. Three additional DC facilities and five additional PC facilities received respondent scores in the 75th percentile or higher of HCAHPS national ratings on both the Overall Hospital Rating and Recommend the Hospital measures. In addition, more DC facilities received four and five- star ratings as compared to the previous four quarters. Five additional facilities received five-star ratings, and seven additional facilities received four-star ratings.

Learning how these facilities received better scores could help other facilities improve their scores as well. "Lessons learned" could be gathered from these facilities by speaking with leadership, providers, nurses, receptionists and other staff members. Lessons learned may include topics such as training, policies, staff-buy-in, overcoming barriers, and administrative support. Gathering information from a wide variety of facilities could be useful as well since the lessons learned may differ depending on the facility characteristics, such as size and composition. In addition, having staff reflect on their experience could have the secondary effect of creating stronger resolve to continue improving the patient experience.

## Recommendation 3: Encourage communications training for healthcare providers.

Communication training for hospital staff may be beneficial to patient experience scores both directly (by increasing communication-specific scores) and indirectly (by increasing global experience scores). Both existing literature and the analyses show that doctor and nurse communication are among the greatest determinants of overall patient experience.

The following list highlights interventions that have been proven effective in improving patient-staff communication (Radtke, 2013; Robinson and Watters, 2010; Stahel and Butler, 2014; Singh et al., 2010):

- Providers should avoid using clinical language as much as possible with patients and their families.
- Providers should formally introduce themselves, knock on the door before entering, never look at their watch, and end conversations with a summary of key points. At the end of the conversation, providers should thank patients and their families and ask if there are any questions or other needs. Providers should make notepads available to patients and their families.
- Bedside shift reports can be used to pass information from a nurse to his/her successor at shift change; by having this discussion in the patient's presence, nurses provide valuable context for care. This approach has been shown to produce higher HCAHPS scores on nursing communication.
- Whiteboards can be used in patient rooms to track assigned physicians' names, scheduled tests, outline care goals, list patient questions and concerns, and note anticipated discharge date.

- Even when information is communicated clearly, some patients may not be able to understand it or follow complex regimens. Hospitals can provide Patient Navigators to work with patients and their families throughout their visit to ensure they understand what doctors and nurses tell them, particularly about activities patients must perform.
- To ensure they understand information communicated to them, physicians and nurses should ask patients to repeat back what they have said. This can provide an effective measure of their comprehension.
- Several formal protocols (e.g., Acknowledge, Introduce, Duration, Explanation, Thank You protocol) teach communication skills to doctors and nurses and may be implemented at a facility level.

### Recommendation 4: Increase awareness among PC providers of the military community's unique healthcare needs.

The statistically significant differences between DC and PC respondent scores (Table 1 and Figure 3) are noteworthy in the current report. Discrepancy between DC and PC respondent scores may be due to differences in the hospital personnel profiles: DC has far more military staff than PC. The dynamics between military users and military healthcare personnel may have an important impact on user experience. This review of military health research emphasizes the military community's special needs, some that stem from socio-cultural factors and some that stem from contextual factors of the military (see Section 3.2). DC providers may be more familiar with these issues, as they are embedded within the military community. Increasing awareness among PC providers of the military community's unique healthcare needs may allow these facilities to optimize their care. For instance, some researchers suggest including military status on intake forms to ensure staff is aware of the patient's military experience. In addition, MHS beneficiaries should be encouraged to share their military status with their providers, along with any associated healthcare information (injuries, behavioral health concerns, etc.).

### Recommendation 5: Encourage practices that optimize care transition.

Care Transition was found to have a large impact on respondent experience in the current dataset (see Section 4.3). Effective care transition to an outpatient setting is dependent on provider and patient communication and communication about medication management. Approximately half of hospital-related medication errors and 20% of all adverse drug events have been attributed to poor communication at care transitions and interfaces (Dudas et al., 2001). Effective communication with inpatient providers and pharmacists may enhance the success of care transition. Pharmacists, although not directly responsible for day-to-day patient care in the in-hospital setting, play a significant role in reducing readmissions by monitoring inpatient medication regimen effectiveness and adherence. Medication management in consultation with a pharmacist has been found to be useful in identifying drug duplications, drug interactions and reactions, and medication errors (Wiggins et al., 2013).

In addition, Wiggins et al. (2013) identified the following educational techniques to improve patient understanding of health management once discharged from the hospital:

- **Discharge counseling:** Education on discharge should be viewed as a continuous effort from the onset of the inpatient experience, including the patient's participation in disease management.
- **Emphasis on self-care:** Ensure a patient's active participation in management of their disease by encouraging healthy lifestyle choices, adherence to medication management, and self-identifying signs and symptoms of disease progression.
- **Employment of teach-back methods:** Encourage patients to repeat discharge information to ensure retention of information.

## 2   ABOUT TRISS

### 2.1   Approach



The TRICARE Inpatient Satisfaction Survey (TRISS) is managed by the Defense Health Agency (DHA). The DHA is a joint, integrated Combat Support Agency that enables the Army, Navy, and Air Force medical services to provide a ready medical force to Combatant Commands in both peacetime and wartime. The DHA supports the delivery of integrated, affordable, and high quality health services to Military Health System (MHS) users and, as a part of these efforts, oversees TRISS.

TRISS is designed to provide actionable performance feedback to improve overall quality of health care for adult users. The main goals of the TRISS are to:

- Provide feedback from MHS users to Department of Defense (DoD) leadership so they may implement process improvements.
- Establish a uniform measure of user satisfaction with received healthcare services.
- Provide high-quality survey data for evaluating the satisfaction of MHS users and access to healthcare services utilizing the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) protocol.
- Satisfy Congressional requirements to measure perceptions of user satisfaction and access to care.

Assessing patient experience with hospital care is complex. A myriad of factors can affect a user's perception of his or her hospital experience and of the hospital's quality of healthcare.

The MHS strives to make each user's inpatient experience the best it can be. HCAHPS is a nationally recognized Centers for Medicare and Medicaid Services (CMS)-sponsored survey that assesses patients' perceptions of their recent hospital experiences. By using this standardized patient experience survey, the MHS can compare its results directly with other hospitals.

### 2.2   About this Report

This report presents results for all TRISS surveys administered in April 2016 to March 2017. The report describes the design of the TRISS survey and compares military treatment facilities (MTFs) and MHS user subgroups on a wide array of dimensions and where applicable compares results with previous surveys. The report includes responses from a census sample of all users world-wide who received care in the Direct Care (DC) system, and from a random sample of users eligible for MHS benefits who received inpatient care at selected civilian network hospitals in the United States.

HCAHPS was developed by the CMS and the Agency for Healthcare Research and Quality (AHRQ). Please note that TRISS results may differ slightly from official CMS Hospital Compare results, because the case-mix adjustment that CMS applies to survey results may vary slightly from the simulated case-mix adjustment DHA used to generate this data.

## 3 REVIEW OF PATIENT EXPERIENCE AND MILITARY HEALTH RESEARCH

Patient experience has become a major component in defining and measuring healthcare quality. This is exemplified by the Centers for Medicare and Medicaid Services (CMS) initiative to create a national standard for collecting and reporting information on patient experience, measured through the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey. This survey provides a nationally representative means of comparing hospital experiences across a variety of domains, such as provider communication and environmental cleanliness. Given the multifaceted definition of patient experience and the challenge with defining it, a variety of research studies have been conducted to understand what drives patient experience ratings and how it relates to the goal of improving overall healthcare quality.

For special populations such as military personnel, general results on the drivers of patient experience ratings need proper context to understand how to improve that populations' health. In this review, we explore themes related to the military health experience, drivers of patient experience ratings, and the connection between patient experience and health outcomes to better understand military personnel health needs.

Because little research exists specifically focused on military patient experience, we review research here on patient experience in both military and civilian settings. Unless otherwise noted, findings refer to the civilian population. In addition, we incorporate findings from both inpatient and outpatient experiences. Special considerations for healthcare within the military community are addressed, and conclusions are based on a synthesis of civilian patient experience findings and knowledge of healthcare issues specific to the military community.

### 3.1 Overview of HCAHPS

The TRICARE Inpatient Satisfaction Survey (TRISS) is modeled after the HCAHPS program. CMS and Agency for Healthcare Research and Quality (AHRQ) developed HCAHPS to provide the first national, standardized, publicly-reported survey of patients' perspectives of hospital care. HCAHPS created a common metric and national standard for collecting and publicly reporting information about patient experiences of care.

Eleven HCAHPS measures (seven composite measures, two individual items, and two global items) are publicly reported (see Section 5.3.2.1 and Section 5.3.2.2 for details on TRISS scoring and calculation of composites). HCAHPS scores are based on four consecutive quarters of patient surveys and are publicly reported on the Hospital Compare website, www.medicare.gov/hospitalcompare.

CMS provides "benchmark" scores for each of the 21 core survey items, derived from the average performance of civilian facilities in the CMS database. Benchmarks are the standard target of performance against which hospitals are compared. Benchmarks for the 11 primary HCAHPS measures (seven composite measures, two individual items and two global items) are shown in Table 1 of Section 4.2.1.

CMS also developed the HCAHPS Star Ratings to provide a summary of each HCAHPS measure in a format more familiar to consumers. HCAHPS Star Ratings are reported using a five-star

scale, allowing consumers to quickly and easily assess hospital patient experience data. The TRISS star ratings apply the method used to create the HCAHPS measures (See Section 5.3.2.3 for details on HCAHPS Star Ratings calculations). The TRISS report includes star ratings for each Direct Care (DC) facility.

Because the TRISS program is modeled after HCAHPS, an understanding of the HCAHPS structure helps in understanding TRISS. HCAHPS is a standardized survey instrument commissioned in 2006 to assess hospital care experience. The survey was modeled after the Consumer Assessment of Healthcare Providers and Systems (CAHPS), which measures patient experience in settings other than hospitals. It is believed that proper assessment of patient experience is necessary to improve patient care and experience. The HCAHPS survey provides a standard instrument to achieve this goal, allowing hospital comparisons on a variety of metrics related to patient experience. CMS provides a downloadable HCAHPS Fact Sheet at http://www.hcahpsonline.org/Facts.aspx. The three main goals of the HCAHPS program are:

1. Large-scale data collection to provide a nationally representative dataset of patient perspectives of care that can provide comparisons among hospitals.
2. Public reporting that incentivizes quality of care measure improvement.
3. Public reporting for accountability and an increase in transparency.

The HCAHPS survey asks recently discharged patients about various aspects of their hospital care experience. It is administered to a random sample of patients 48 hours to six weeks after hospital discharge. Over 4,000 hospitals participate in HCAHPS, and each aims for 300 completed surveys per year. Respondents typically receive healthcare at short-term, acute, non-specialty hospitals.

Eleven HCAHPS measures are calculated from survey responses, including:

Two global measures of patient experience:

1. Overall Hospital Rating.
2. Recommend the Hospital.

Seven composite measures constructed from two to three survey questions:

1. Communication with Nurses.
2. Communication with Doctors.
3. Responsiveness of Hospital Staff.
4. Pain Management.
5. Communication about Medicines.
6. Discharge Information.
7. Care Transition.

Two individual measures:

1. Quietness of Hospital Environment.
2. Cleanliness of Hospital Environment.

Section 5.3.6 and Appendix D shows the TRISS survey instrument. The questionnaire is four pages and is closely modeled on the HCAHPS survey. In addition to HCAHPS questions, the Department of Defense (DoD) added several questions to assess and address specific areas of the military population's user experience. These survey items are referred to as "DoD-specific questions" (Q26-35).

The surveys are administered by mail, telephone, and interactive voice response (IVR; HCAHPS Online, 2013). The HCAHPS protocol permits mail survey administration in English, Spanish, Chinese, and Russian. The protocol also permits telephone and IVR surveys to be administered in English and Spanish (CMS: The HCAHPS Survey-Frequently Asked Questions, 2013). The TRISS is administered in English only.

The survey must be administered by an authorized HCAHPS vendor trained by the Federal Government in standardized HCAHPS procedures, thus ensuring data consistency and quality (the contracted vendor is an authorized HCAHPS vendor).

Authorized vendors submit HCAHPS data to CMS, where it is checked for consistency, adjusted, scored, and analyzed. CMS publishes HCAHPS scores for participating hospitals on the publicly accessible Hospital Compare website (www.medicare.gov/hospitalcompare). Results are reported quarterly.

## 3.2    Military Health System

To understand military health complexities, it is essential to consider the unique culture and environment associated with military service. Even within the military system, healthcare needs and experiences between different types of Military Health System (MHS) beneficiaries may differ. Combat soldiers are more likely to experience negative health outcomes than noncombatants, (Bedard & Deschenes, 2006) and are more likely to report multiple physical symptoms such as pain in various parts of the body, digestion issues, and trouble sleeping (McCutchan et al., 2016).

It is important to consider factors such as beneficiary type when comparing military health status and overall patient experience to civilian populations. Active Duty and their immediate families face cycles of deployment and varying post assignments that impacts their health. Those who are deployed (and their families) may be more likely to have poorer health than a matched civilian group (Harris, 2011). Related to status change is the frequent relocation of some Active Duty. Continuity of care has a positive impact on patient and healthcare satisfaction (Fan, Burman, McDonell, & Fihn, 2005). Thus, because many Active Duty and their beneficiaries move so often, they may have difficulties receiving care from the same provider (Drummet, Coleman & Cable, 2003).

The military health experience is dynamic due to the many potential life changes many members face. For instance, Active Duty can experience changes in geography, changes in status within the service, and changes in Service Branch, which all have the potential to impact their experience with healthcare. Thus, it is important for members of an Active Duty family to be recognized as such when receiving care. Kudler and Porter (2013) suggest that public and private institutions, from schools to clinics, inquire about the military connections of families in order to properly serve this unique and oftentimes invisible population. To be effective, interventions designed to improve patient satisfaction scores should account for military families' unique cultural experience. Having explored the unique health needs of people connected to the military, we can properly contextualize general findings on patient satisfaction and better understand their connection to health outcomes.

## 3.3    Drivers of Civilian Patient Experience Ratings

Research on patient experience consistently highlights the importance of provider communication and interpersonal relationships in driving improvements in overall healthcare satisfaction (Rothman, Park, Hays, Edwards & Dudley, 2008; Johnson, Russell, & White, 2016). Studies examining what patients value most in care continually reference the importance of provider respect, adequate time to properly discuss health issues, clear medical instructions, and genuine interest in the patient's health.

Nursing communication is also among the strongest drivers of overall patient experience ratings among the civilian population (Iannuzzi et al., 2015). This remains true even when accounting for the contributions of other measures like Pain Management, Cleanliness of Hospital Environment, and Quietness of Hospital Environment.

## 3.3.1 The Role of Doctors

Research on doctors' roles in patient experience emphasizes the need for effective communication (Rothman et al., 2008). Finney et al. (2015) found that the use of ***patient-centered communications***, characterized by responsiveness to patient needs and incorporation of patient perspectives and experiences in care planning and decision-making (National Cancer Institute, 2014), was associated with higher patient ratings of care quality. Furthermore, primary-care physician communication is an important factor in patients' overall care experience and their perception of physician professionalism/competency (Platonova & Schewchuk, 2015). Patients highly satisfied with their care experience believed that their primary care doctors showed genuine interest in their health, provided comprehensive description of their problem, and gave ample opportunity to speak about their health.

***Empathy*** is another dimension of patient-provider communication that can impact patients' overall care experience. Menendez et al. (2015) found that greater physician empathy was associated with higher provider experience ratings and satisfaction. Indeed, when patients are distressed or when their relationship with a physician is strong, display of genuine emotion is positively associated with higher patient experience ratings (Yagil & Shnapper-Cohen, 2016). These findings underscore the importance of utilizing effective, genuine communication to make patients feel cared for and heard.

## 3.3.2 The Role of Nurses

Nurses' communication with patients also has a significant impact on patient experience ratings. Iannuzzi et al. (2015) found that surgical patients who perceived that their nurses treated them with respect were ten times more likely to report higher experience ratings. Another study found similar results, linking better nurse communication with higher ratings of patient experience (Negi, Kaur, Singh, & Pugazhendi, 2017). One study analyzing HCAHPS data from 2,984 hospitals found that the communication with nurses domain accounted for approximately 75% of the variance in hospitals' overall patient experience scores (Carter & Silverman, 2016).

Lake, Germack, and Viscardi (2015) found that hospitals with frequently missed nursing care (defined as any aspect of required care that is omitted or delayed, either in part or in whole) had lower overall patient experience ratings. Nurses in hospitals that missed care frequently

reported being unable to find time to comfort or talk with their patients, indicating they had trouble finding time to teach or counsel patients and their family. On the other hand, Stimpfel, Sloane, McHugh, and Aiken (2016) found that patients who were cared for in Magnet Hospitals, recognized by the American Nurses Credentialing Center as demonstrating excellence in nursing management and practice through empirical outcomes, tended to give higher overall ratings, were more satisfied with nurse communication, and were more likely to recommend the hospital.

Craig, Otani, and Hermann (2015) evaluated whether a patient's perceived level of pain control influenced the relationship of nurse, doctor, staff communications, and environments on overall experience ratings. The authors found that no matter what the level of pain control, nursing care always remained the most influential attribute in a patient's overall experience ratings.

Mazurenko and Menachemi (2016) hypothesized that using more foreign-educated nurses in a hospital would lead to lower care experience ratings, because effective communication with patients would be compromised. Survey findings indicated that the use of foreign-educated nurses was indeed associated with lower average scores on Overall Hospital Rating, Recommend the Hospital, Communication with Nurses, Communication with Doctors, Communication about Medicines, and Discharge Information. All the remaining measures did not have statistically significant differences between facilities with foreign nurses and those without. These findings highlight the importance of effective communication for improving overall patient experience.

### 3.3.3 Provider Communications and Collaboration

Fostering a culture that emphasizes communication and collaboration between providers and patients can drive improvements in overall care experience. Meterko, Mohr, and Young (2004) found a significant and positive relationship between a teamwork culture and patient experience ratings for inpatient care in the Veterans Health Administration (VHA). Hospitals with collaborative cultures were also found to have higher patient experience ratings than hospitals with non-collaborative cultures (Manary, Staelin, Kosel, Schulman, & Glickman, 2014). Patients are also more likely to recommend a practice when the staff works well together to address patients' needs (Johnson et al., 2016). Wang et al. (2015) reported a positive association between care coordination scores and satisfaction with care such that chronically ill patients who gave high care coordination ratings were found to be more satisfied with their doctors, the organization of their care, and their overall care. Effective communication about new medicines is also important in caring for patients. Ellis, Bakoyannis, Haase, Boyer, and Carpenter (2016) found in a correlational analysis of HCAHPS measures that higher doctor and nurse communication scores were positively correlated with communication about new medicines. Thus, shifting the culture of a healthcare practice to promote effective communications and collaboration may be an effective means for improving inpatient satisfaction.

### 3.3.4 Interventions

Some studies measured improvements in HCAHPS scores following implementation of interventions designed to improve provider-patient communication. Banka et al (2015)

evaluated the effectiveness of an intervention to improve internal medicine resident physicians' communication with patients. This was done through an educational conference, frequent individualized patient feedback, and an incentive program. The department that implemented this intervention received higher patient experience ratings for physician-related HCAHPS questions than comparable departments that did not. The addition of provider-patient communication education led to greater increases in HCAHPS scores.

Kennedy, Craig, Wetsel, Reimels, and Wright (2013) evaluated the impact of three nursing interventions on patients' ratings of their care. The interventions involved the nurse manager beginning daily rounding of new admissions, post-discharge phone calls, and implementation of an online program that generates personalized instructions for patient care. These interventions led to a steady upward trend in patient experience ratings in the eighteen months following implementation.

## 3.3.5 Facility Factors

The relationship between hospital-improvement efforts and patient perceptions of provider communication and their overall patient experience has also been explored. HCAHPS places importance on environmental factors like cleanliness and quietness to evaluate patient satisfaction.

McFarland, Omstein, and Holcombe (2015) assessed the drivers of HCAHPS scores in almost 4,000 US hospitals. They found that hospital size was negatively associated with HCAHPS scores. Mazurenko and Menachemi (2016) found that hospitals with fewer beds and those with teaching status received higher overall care experience ratings. Hospitals defined as being high-technology (a summary measure that captures the use of such high-tech services as organ/tissue transplant and open heart surgery) received lower care experience ratings.

Some hospital leaders believe that patients are unable to distinguish positive experiences due to a pleasing healthcare environment from positive experiences due to physician/provider care (Swan, 2003). In other words, offering a pleasing healthcare environment may be enough to mask deficiencies in physician/provider care. However, research from Siddiqui, Zuccarelli, Durkin, Wu, and Brotman (2015) suggests that this may not be the case. They compared care experience ratings of patients located in a standard hospital setting with experience ratings from patients that moved to a new clinical building emphasizing patient-centered features, like reduced noise, improved natural light, visitor friendly facilities, and well-decorated rooms. Improvements associated with the move to the patient-centered facility were limited to categories of quietness, cleanliness, temperature, room décor, and visitor-related satisfaction. There were no significant improvements in experience ratings related to physicians, nurses, housekeeping, or other service staff. This suggests that patients were able to differentiate their positive experience with the hospital environment from their experience with physicians/providers.

## 3.3.6 Obstetrics

Understanding elements of beneficiary satisfaction is integral in improving patient experience ratings. Specifically, patients in maternal health and OB-GYN units have unique needs and metrics to consider when rating provider and facility services. Particularly with the military population, patients may have higher standards of care continuity and communication that could be negatively impacted by the highly mobile lifestyles of active military families.

A study by Sawyer et al. (2013) examined nine patient satisfaction questionnaires to identify satisfaction metrics for maternal healthcare, specifically during labor and birth. Respondent data were analyzed and a positive association was found between social support and higher care experience ratings for medical staff during labor and birth. The literature agrees that patient experience ratings are based on a variety of factors that may include care that the patient receives, personal preferences, values of respondents, and expectations (Teijlingen, Hundley, Rennie, Graham, & Fitzmaurice, 2003). More specifically, maternal care experience ratings are dependent on factors such as:

Personal Factors

- Having immediate contact with baby.
- Involvement in prenatal classes.
- Choice about place of prenatal care/delivery, type of care, labor positions.
- Having a realistic expectation of the birth experience.
- Patients having undergone fewer obstetrical/medical interventions in the past.
- Availability of social support – permanent partners.

Communication Factors

- Having continuity of care from midwife.
- Short length of stay in hospital.
- Early discharge.
- Expectant mother's perceived control/involvement in decision making.
- Quality of relations and communications between expectant mother and healthcare staff.

Women who had continuous care from a midwife were more likely to be pleased with prenatal, intrapartum, and postnatal care compared to patients who had more standard care. Women who had one or two caregivers were more likely to be satisfied with their care compared to those who had experience with many caregivers during pregnancy. About 88 percent of patients believed it was important to have one person responsible for providing prenatal care, though only 66 percent of those women did have one of these primary persons (Teijlingen et al. 2003). While evidence and patient attitudes agree with the value of having continuity of care, there appear to be barriers present preventing receptive patients from receiving care from a primary person. The literature supports the association of higher patient experience ratings with continuity of care, provider seniority, availability of social support, and shared decision-making in aspects of delivery and care (Teijlingen et al, 2003; Sawyer et al. 2013). Focusing efforts on improving continuity of care for maternal patients may be key to improving care experience in this population.

## 3.4 Patient Experience Ratings Impact on Healthcare

Patient experience is not measured simply for regulatory purposes; it is believed that pursuit of higher patient experience ratings will push healthcare facilities to provide higher quality care. Two systematic literature reviews will act as the base for discussing how patient experience is connected to clinical safety, effective outcomes, and healthcare quality (Doyle, Lennoz, & Bell, 2013; Anhang Price et al. 2014).

Overall positive patient experience is associated with patient safety and clinical effectiveness for a wide range of disease treatments, population groups, and outcome measures. Benefits of improved patient experience include higher adherence to medication and treatments, lower inefficient healthcare utilization, improved patient safety within hospitals, use of preventative and screening services, and better clinical outcome-both self-reported and objectively measured (Doyle, Lennoz, & Bell, 2013; Anhang Price et al. 2014). One study looking at HCAHPS summary star ratings, which reflect a summary score on across all HCAHPS domains, found that a higher star rating was associated with more favorable clinical outcomes, including lower rates of various medical complications (Trzeciak, Gaughan, Bosire, & Mazzarelli, 2016). Even further, research has also demonstrated Medicare saves money on patients in higher-quality hospitals, defined as having low mortality rates and high HCAHPS scores (Tsai et al., 2016).

More often than not, patient experience and clinical outcomes are positively associated, regardless of whether clinical outcomes are self-rated or provider-measured. Doyle et al. (2013) found that positive associations between patient experience and clinical-outcomes assessments outweigh no-association results for studies examining patient-rated health outcomes (~2:1) and objective, clinically-verified measures of health outcomes (~2.5:1). Two studies (Isaac, Zaslavsky, Cleary, & Landon, 2010; Jha, Oray, Zheng, & Epstein, 2008) examining acute care were able to show positive associations between patient experience and the technical quality-of-care ratings for myocardial infarction, congestive heart failure, pneumonia, and surgery complications.

Adherence to medical treatment is also strongly associated with certain aspects of the patient experience. Zolnierek and DiMatteo (2010) found that patients were more likely to adhere to medications when physicians had communication training. The most effective interventions to improve adherence focused on helping patients understand the need for treatment, promoting effective communication, and improving the provider-patient relationship (Nieuwlaat et al., 2014).

Patient experience is also associated with greater healthcare safety through the reduction of hospital borne infections and complications. Cleanliness of Hospital Environment scores is associated with lower prevalence of infections due to medical care (Isaac et al., 2010); and a patient-safety culture has been linked to more positive satisfaction experiences from patients (Lyu, Wick, Housman, Freischlag, & Makary, 2013; Sorra, Khanna, Dyer, Mardon, & Famolaro, 2012). Higher scores on the Overall Hospital Rating and Discharge Information measures are associated with lower 30-day readmission rates for acute myocardial infarction, heart failure, and pneumonia (Boulding, Glickman, Maray, Schulman, & Staelin, 2011). Additionally, higher HCAHPS star ratings are associated with lower readmission rates and lower patient mortality rate (Wang, Tsugawa, Figueroa, & Jha, 2016; Trzeciak et al., 2016).

## 3.5    Conclusions

The literature highlights unique attributes of military personnel that adds nuance to our understanding of the relationship between drivers of patient experience and good health outcomes. Military personnel, veterans, and military families deal with health issues and barriers not experienced by the general population, including challenges with care continuity because of changing deployments.

Studies of the drivers of overall patient experience find that doctor and nurse communications are among the most important aspects. This remains true even after attempts to control for other domains like Pain Management, Cleanliness of the Hospital Environment, and Quietness of the Hospital Environment. If provider communication is the domain with the greatest potential to improve patient experience, then efforts to improve care within military facilities should pay particular attention to lifestyle factors impacting continuity of care.

Because the military healthcare experience is not static, facilities should pay particular attention to how individual providers engage with patients without the luxury of an in-depth, long-term personal relationship. The positive association between patient experience and good clinical outcomes is well documented. Striving to improve patient experience among military beneficiaries will lead to changes that make the overall healthcare system more clinically efficient and effective.

# 4   RESULTS

Results are reported for survey responses from 67,648 MHS users who visited MTFs or a PC-network facility between April 1, 2016, and March 31, 2017. We refer to this period as "Year 2017" for brevity.

All scores reported here have been weighted (Section 5.3.4 discusses data weighting). In addition, Patient and Mode Mix (PMM) Adjustments are applied to HCAHPS measures reported at the facility level, care type level (i.e., DC or PC aggregated), or across the entire MHS. Adjustments are not possible for data reported below the facility level, such as means by product line, age group, or other demographic variables. Adjustments are not applied to data reported for supplemental DoD questions. Section 5.3.5 discusses adjustments and under what circumstances they are applied.

The following sections provide a detailed review of the current dataset. Sections are organized as follows:

- **Section 4.1** includes a description of the survey population's demographic variables.
- **Section 4.2** provides a broad overview of patient experience ratings.
- **Section 4.3** describes analyses on determinants of patient experience ratings.
- **Section 4.4** describes TRISS survey respondent scores and Star Ratings for the 11 primary HCAHPS measures organized by MHS categories (product line, Service Branch, and TRICARE Region).
- **Section 4.5** describes TRISS survey respondent scores for the eight supplemental DoD questions in the TRISS questionnaire.
- **Section 4.6** provides a comparison of Year 2017 results (current results) to Year 2016 results. Year 2016 refers to responses from 83,276 MHS users who visited MTFs or a PC-network facility between April 1, 2015, and March 31, 2016.

## 4.1    Demographics of the Survey Population

Figure 1 and Figure 2 show the demographic distribution for the DC and PC respondents. Across both care types, the TRISS sample population is mostly white and includes more women than men. The majority of respondents received at least some post-high-school education. As outlined in the following subsections, notable differences exist between the DC and PC survey populations in terms of age and beneficiary category distribution. The PC sample includes more respondents 65 years of age or older. Accordingly, there are more retirees and dependents over the age of 65 in the PC survey population than in the DC survey population.

### 4.1.1    DC Survey Respondents

The DC inpatient population consists of a wide distribution of age groups, with the largest proportion in the 25–34 age group. Slightly over half of the respondents are either on Active Duty or are family members of Active Duty personnel (55.5%). Most DC respondents are female, and almost three-fourths are white. For education, a majority received education past the high-school level.

Figure 1 depicts the demographic distribution of the DC sample.

### 4.1.2    PC Survey Respondents

The PC population has a higher percentage of older respondents than the DC population, as almost half of PC respondents fall in the 65+ age group compared to 21.0% of the DC respondents. As such, PC respondents are also more likely to be in the retirees or dependents beneficiary category—about three-fourths are retirees or dependents. As with the DC sample, a majority of PC respondents identify as female, and most are white. Additionally, most received at least some post-high-school education.

Figure 2 depicts the demographic distribution of the PC sample.

**AGE GROUP**

- 18-24 15.4%
- 25-34 27.6%
- 35-44 12.4%
- 45-64 23.6%
- 65+ 21.0%

**BENEFICIARY CATEGORY**

- Active Duty 23.9%
- Active Duty Family Members 31.6%
- Retirees and Dependents < 65 23.6%
- Retirees and Dependents 65+ 20.9%

**GENDER**

- Female 65.0%
- Male 35.0%

**RACE**

- Black or African-American 19.1%
- Asian 8.0%
- Native Hawaiian or Pacific Islander 3.3%
- American Indian or Alaska native 4.7%
- White 73.5%

**EDUCATION**

- High school graduate or GED 19.8%
- Some high school 1.7%
- 8th grade or less 0.6%
- More than 4-year college degree 18.9%
- Some college or 2-year degree 41.8%
- 4-year college graduate 17.2%

**PRODUCT LINE**

- Obstetric 31.3%
- Surgical 29.6%
- Medical 39.1%

**HEALTH STATUS**

- Fair 12.6%
- Good 30.7%
- Poor 3.0%
- Excellent 21.0%
- Very Good 32.7%

**Figure 1. Demographics of the Direct Care Population.**

## AGE GROUP

- 18-24: 6.1%
- 25-34: 15.3%
- 35-44: 5.6%
- 45-64: 23.2%
- 65+: 49.8%

## BENEFICIARY CATEGORY

- Active Duty: 5.4%
- Active Duty Family Members: 19.0%
- Retirees and Dependents < 65: 25.9%
- Retirees and Dependents 65+: 49.7%

## GENDER

- Female: 60.2%
- Male: 39.8%

## RACE

- Black or African-American: 11.8%
- Asian: 3.8%
- Native Hawaiian or Pacific Islander: 1.3%
- American Indian or Alaska Native: 3.1%
- White: 84.4%

## EDUCATION

- High school graduate or GED: 22.7%
- Some high school: 2.9%
- 8th grade or less: 0.8%
- More than 4-year college degree: 18.5%
- Some college or 2-year degree: 39.6%
- 4-year college graduate: 15.5%

## PRODUCT LINE

- Medical: 44.0%
- Obstetric: 18.4%
- Surgical: 37.6%

## HEALTH STATUS

- Fair: 17.2%
- Good: 33.6%
- Poor: 4.2%
- Excellent: 15.2%
- Very Good: 29.8%

**Figure 2. Demographics of the Purchased Care Population.**

## 4.2　HCAHPS Scores: A Broad Overview

This section provides a broad overview of HCAHPS results. Section 5.3.2 offers an overview of the TRISS measures, and Section 5.3.6 and Appendix D shows the survey instrument. Appendix E has comprehensive tables of HCAHPS scores aggregated by care type (DC and PC), TRICARE Region and facility (for HCAHPS measures). Appendix F shows the scores for the DoD-specific questions.

### 4.2.1　HCAHPS Measures Scores

**Patient experience scores reported by DC respondents met or exceeded the HCAHPS benchmarks for all 11 HCAHPS measures, while scores reported by PC respondents met or exceeded benchmarks for all measures except for Quietness of Hospital Environment.** Table 1 shows adjusted respondent scores for the 11 HCAHPS measures. Figure 3 displays the data from Table 1 in graph form.

**DC** respondent scores were significantly higher than the HCAHPS benchmarks on nine of the 11 HCAHPS measures (Recommend the Hospital, Communication with Doctors, Communication with Nurses, Pain Management, Responsiveness of Hospital Staff, Communication about Medicines, Care Transition, Discharge Information, and Cleanliness of Hospital Environment).

Patient experience scores among **PC** respondents were significantly higher than the HCAHPS benchmark on five measures: Recommend the Hospital, Pain Management, Communication about Medicines, Discharge Information, and Care Transition. PC respondent scores were lower than the benchmark on one measure: Quietness of Hospital Environment.

DC respondents reported significantly higher satisfaction than PC respondents on eight measures: Communication with Doctors, Communication with Nurses, Pain Management, Responsiveness of Hospital Staff, Communication about Medicines, Discharge Information, Cleanliness of Hospital Environment, and Quietness of Hospital Environment.

**Table 2. Comparisons of HCAHPS Scores by Care Type.**

| Measure | DC (%) | PC (%) | Benchmark Scores (%) | Significant Difference Between DC and PC |
|---|---|---|---|---|
| Overall Hospital Rating | 73.0 | 72.1 | 72 | *n.s* |
| Recommend the Hospital | 75.2 | 74.3 | 72 | *n.s* |
| Communication with Doctors | 86.5 | 82.0 | 81 | DC > PC |
| Communication with Nurses | 85.5 | 81.2 | 80 | DC > PC |
| Pain Management | 73.1 | 72.3 | 71 | DC > PC |
| Responsiveness of Hospital Staff | 77.3 | 68.6 | 68 | DC > PC |
| Communication about Medicines | 74.8 | 69.8 | 64 | DC > PC |
| Discharge Information | 90.6 | 90.3 | 87 | DC > PC |
| Care Transition | 60.8 | 58.4 | 52 | *n.s* |
| Cleanliness of Hospital Environment | 75.9 | 73.7 | 74 | DC > PC |
| Quietness of Hospital Environment | 65.2 | 60.5 | 62 | DC > PC |

*n.s.* = Not significant.
Note: Green shading indicates that the respondent score is significantly higher than the benchmark. Cells that have green shading include 75.2, 86.5, 85.5, 73.1, 77.3, 74.8, 90.6, 60.8, and 75.9 from the DC (%) column and 74.3, 72.3, 69.8, 90.3, and 58.4 from the PC (%) column. Red shading indicates that the respondent score is significantly lower than the benchmark. Cells that have red shading include 60.5 from the PC (%) column. All statistical tests use α = 0.05 as the threshold for significance.



Note: A plus (+) sign above a bar indicates that the score is significantly higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark. All statistical tests use α = 0.05 as the threshold for significance.

**Figure 3. HCAHPS Scores by Care Type.**

## 4.2.2    Top-Performing Facilities

**A total of nine DC facilities and 19 PC facilities stand out as "top performers," receiving respondent scores in the 75th percentile or higher of HCAHPS national ratings on both global measures, i.e. Overall Hospital Rating and Recommend the Hospital**. CMS publishes percentiles reports quarterly that encompass the results of all civilian hospitals that report HCAHPS survey data. Facility respondent scores, categorized by care type, were compared to these CMS percentiles to identify "top performers." More information on CMS percentiles can be found at http://www.hcahpsonline.org/SummaryAnalyses.aspx#percentile.

Table 2 lists percentile thresholds for Overall Hospital Rating and Recommend the Hospital for several percentile categories, published in April 2017. Appendix E provides a comprehensive table of respondent HCAHPS scores aggregated by care type (DC and PC), TRICARE Region, and facility. Appendix F provides the same aggregations for respondent scores for DoD-specific questions.

**Table 3. HCAHPS Percentiles from April 2017 Public Report (July 2015–June 2016 Discharges).**

| Hospital Percentile | Overall Hospital Rating (%) | Recommend Hospital (%) |
|---|---|---|
| 95th (near best) | 87 | 88 |
| 90th | 83 | 84 |
| 75th | 78 | 78 |
| 50th | 72 | 72 |
| 25th | 67 | 65 |
| 10th | 61 | 59 |
| 5th (near worst) | 57 | 55 |

### 4.2.2.1   DC

Nine DC facilities stand out as "top performers," receiving scores from respondents in the 75th percentile or higher of HCAHPS national ratings on both Overall Hospital Rating and Recommend the Hospital:

- Keesler Medical Center (81st Medical Group) (Air Force)*.
- Naval Hospital Rota (Navy).
- Aviano Air Base (31st Medical Group) (Air Force)*.
- Naval Hospital Guam (Navy).
- Brooke Army Medical Center (Army).
- Wright-Patterson (88th Medical Group) (Air Force).
- Naval Hospital Pensacola (Navy).
- Fort Belvoir Community Hospital (NCR).
- Brian Allgood Army Community Hospital (Army).

*Facility scores in the 90th percentile for both Overall Hospital Rating and Recommend the Hospital.*

*n.b. There were no hospitals that scored in the 95th percentile for both Overall Hospital Rating and Recommend the Hospital for DC facilities.*

### 4.2.2.2  PC

A total of 19 PC facilities stand out as "top performers," with scores from respondents in the 75th percentile or higher of HCAHPS national ratings on both Overall Hospital Rating and Recommend the Hospital:

- University of Colorado Hospital (West Region)**.
- University of Alabama Hospital (South Region)*.
- Vanderbilt University Hospital (South Region)*.
- University of North Carolina Hospitals (North Region)*.
- Scripps Memorial Hospital (West)*.
- Sharp Memorial Hospital (West Region)*.
- Sentara Leigh Hospital (North Region).
- St. Luke's Regional Medical Center (West Region).
- Providence Alaska Medical Center (West Region).
- Inova Fairfax Hospital (North Region).
- Bellevue Medical Center (West Region).
- Memorial Hospital (West Region).
- Sacred Heart Medical Center (West Region).
- Penrose Hospital (West Region).
- Providence St. Peter Hospital (West Region).
- New Hanover Regional Medical Center (North Region).
- Mercy Hospital Springfield (West Region).
- Baptist Memorial Hospital (South Region).
- FirstHealth Moore Regional Hospital (North Region).

*\*Facility scores in the 90th percentile for both Overall Hospital Rating and Recommend the Hospital.*

*\*\* Facility scores in the 95th percentile for both Overall Hospital Rating and Recommend the Hospital.*

## 4.2.3  Analysis Within Product Lines

Across all HCAHPS measures, differences emerged among the Medical, Surgical, and Obstetrics product line scores.

**Surgical** care scores either met or were significantly higher than the benchmark for both DC and PC respondents.

**Medical** care scores for DC and PC respondents either met or were significantly higher than the benchmark on most measures. A few measures for PC Medical respondents were significantly lower than the benchmark.

**Obstetric** care scores either met or were significantly higher than the benchmark for both DC and PC respondents on most measures, with the exception of the global measures, Overall Hospital Rating and Recommend the Hospital. For these global measures, Obstetric care respondents reported scores that were generally significantly below the benchmark, except for PC Obstetric care respondents, who gave Recommend the Hospital score that were significantly higher than the benchmark.

### 4.2.3.1  DC

Table 3 compares DC respondent scores by product line. Within DC, **Surgical** care respondents reported scores significantly higher than the benchmarks on all 11 HCAHPs measures. **Medical** care respondents reported scores significantly higher than the benchmark on nine out of 11 measures. Obstetric care respondents reported scores significantly lower than the benchmark on both global measures. Despite not meeting the benchmark on these two global measures, **Obstetric** care respondents reported scores higher than the benchmark in eight of the nine remaining measures, including Communication with Doctors and Communication with Nurses.

**Table 4. Comparison of DC HCAHPS Scores by Product Line.**

| Measure | Medical (%) | Surgical (%) | Obstetric (%) | Benchmark Scores (%) |
|---|---|---|---|---|
| Overall Hospital Rating | 74.8 | 75.6 | 64.4 | 72 |
| Recommend the Hospital | 78.2 | 79.3 | 69.4 | 72 |
| Communication with Nurses | 86.3 | 86.7 | 84.3 | 80 |
| Communication with Doctors | 85.0 | 91.2 | 87.3 | 81 |
| Responsiveness of Hospital Staff | 76.0 | 78.0 | 80.8 | 68 |
| Pain Management | 70.0 | 77.8 | 77.0 | 71 |
| Communication about Medicines | 76.5 | 78.7 | 79.9 | 64 |
| Discharge Information | 88.3 | 94.1 | 91.6 | 87 |
| Care Transition | 64.5 | 72.0 | 66.5 | 52 |
| Cleanliness of Hospital Environment | 78.2 | 80.9 | 74.6 | 74 |
| Quietness of Hospital Environment | 67.1 | 69.8 | 77.6 | 62 |

Note: Green shading indicates that the respondent score is significantly higher than the benchmark, and red shading indicates that the respondent score is significantly lower than the benchmark. Green shading 74.8, 78.2, 86.3, 85.0, 76.0, 76.5, 64.5, 78.2, and 67.1 in the Medical (%) column, all cells in the Surgical (%) column, and 84.3, 87.3, 80.8, 77.0, 79.9, 91.6, 66.5, and 77.6 in the Obstetric (%) column. Red shading includes the first two cells (64.4 and 69.4) in the Obstetric (%) column.

## 4.2.3.2  PC

Table 4 compares PC respondent scores by product line. **Obstetric** respondents reported scores significantly higher than the benchmark on nine of 11 measures, though respondent scores for this product line were significantly lower than the benchmark for Overall Hospital Rating. **Surgical** respondents reported scores significantly higher than the benchmark in 10 of 11 measures. Unlike Obstetrics respondents, however, Surgical respondents did not report scores significantly lower than the benchmark for any measure. **Medical** respondent scores were significantly higher than the benchmark for one measure: Care Transition. For this product line, four out of 11 measures were significantly lower than the benchmark (Communication with Doctors, Responsiveness of Hospital Staff, Pain Management, and Quietness of Hospital Environment), while the remaining measures met but were not significantly different from the benchmark.

**Table 5. Comparison of PC HCAHPS Scores by Product Line.**

| Measure | Medical (%) | Surgical (%) | Obstetric (%) | Benchmark Scores (%) |
|---|---|---|---|---|
| Overall Hospital Rating | 70.4 | 78.3 | 66.9 | 72 |
| Recommend the Hospital | 71.8 | 79.7 | 75.6 | 72 |
| Communication with Nurses | 78.1 | 83.8 | 83.3 | 80 |
| Communication with Doctors | 75.8 | 86.4 | 87.3 | 81 |
| Responsiveness of Hospital Staff | 61.8 | 69.7 | 78.9 | 68 |
| Pain Management | 66.3 | 78.1 | 78.0 | 71 |
| Communication about Medicines | 64.4 | 72.9 | 77.9 | 64 |
| Discharge Information | 86.9 | 93.8 | 91.9 | 87 |
| Care Transition | 55.6 | 66.5 | 69.6 | 52 |
| Cleanliness of Hospital Environment | 72.9 | 78.5 | 75.6 | 74 |
| Quietness of Hospital Environment | 57.2 | 63.7 | 75.2 | 62 |

Note: Green shading indicates that the respondent score is significantly higher than the benchmark, and red shading indicates that the respondent score is significantly lower than the benchmark. Green shading includes 55.6 in the Medical (%) column, all cells in the Surgical (%) column (except for 69.7 and 63.7) and all cells in the Obstetric (%) column (except for the first, 66.9, which is red, and 75.6). In addition to 66.9 from the Obstetric (%) column, red shading also includes 75.8, 61.8, 66.3, and 57.2 in the Medical (%) column.

## 4.2.4   HCAHPS Summary Star Ratings

Table 5 shows HCAHPS Summary Star Ratings for DC facilities. The HCAHPS Summary Star Rating is calculated as an average of the Star Ratings for the 11 HCAHPS measures. See Section 5.3.2.3 for more information on how HCAHPS Star Ratings are calculated.

**All DC facilities received at least three stars for the HCAHPS Summary Star Rating.** A total of seven facilities received five-star ratings: two from Air Force, four from Army, and one from Navy. Thirty-one facilities received four-star ratings, and four facilities received three-star ratings. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have an HCAHPS Summary Star Ratings calculation.

**Table 6. HCAHPS Summary Star Ratings.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Five-Star | Air Force | 81st Medical Group, Keesler<br>88th Medical Group, Wright-Patterson |
| | Army | Brian Allgood Army Community Hospital, Seoul<br>Keller Army Community Hospital, West Point<br>Landstuhl Regional Medical Center<br>Reynolds Army Community Hospital, Ft. Sill |
| | Navy | Naval Hospital Pensacola |
| Four-Star | Air Force | 99th Medical Group, O'Callaghan Hospital<br>96th Medical Group, Eglin<br>673rd Medical Group, Elmendorf<br>633rd Medical Group, Langley-Eustis<br>48th Medical Group, Lakenheath<br>31st Medical Group, Aviano Air Base<br>60th Medical Group, Travis |
| | Army | Womack Army Medical Center, Ft. Bragg<br>Darnall Army Medical Center, Ft. Hood<br>Brooke Army Medical Center, Ft. Sam Houston<br>Martin Army Community Hospital, Ft. Benning<br>Madigan Army Medical Center, Ft. Lewis<br>Weed Army Community Hospital, Ft. Irwin<br>Bayne Jones Army Community Hospital, Ft. Polk<br>Bassett Army Community Hospital, Ft. Wainwright<br>Irwin Army Community Hospital, Ft. Riley<br>Blanchfield Army Community Hospital, Ft. Campbell<br>Evans Army Community Hospital, Ft. Carson<br>Eisenhower Army Medical Center, Ft. Gordon<br>L. Wood Army Community Hospital, Ft. Leonard Wood |
| | Navy | Naval Medical Center San Diego<br>Naval Hospital Yokosuka<br>Naval Hospital Twentynine Palms<br>Naval Hospital Jacksonville<br>Naval Hospital Guam<br>Naval Medical Center Portsmouth<br>Naval Hospital Okinawa<br>Naval Hospital Bremerton<br>Naval Hospital Camp Pendleton |
| | NCR | Walter Reed National Medical Center<br>Ft. Belvoir Community Hospital |
| Three-Star | Army | Tripler Army Medical Center, Ft. Shafter<br>William Beaumont Army Medical Center, Ft. Bliss<br>Winn Army Community Hospital, Ft. Stewart |
| | Navy | Naval Hospital Camp Lejeune |

## 4.3    Key Drivers of Satisfaction

This section presents the results of a key drivers analysis conducted for the two global measures: Overall Hospital Rating and Recommend the Hospital. The analysis was conducted to understand how respondent scores on the remaining HCAHPS measures and the DoD-specific questions impacted scores on the two global measures. Driver importance are presented as a percentage, which represents the total impact on the global measures explained by each measure in the analysis. The DoD-specific measures of OB Repeat Care and Education on Breastfeeding were excluded from this analysis as they pertain only to Obstetric-care respondents. Figure 4 shows the results of this analysis.

**The DoD-specific Overall Nursing Care measure is the single greatest driver for both global measures among both DC and PC respondents**. This measure accounts for anywhere between 38% and 66% of the variance observed in respondent scores on the two global measures. This finding is consistent with the general population literature which finds that nurse communication and nursing care have a significant impact on overall patient satisfaction (see Section 3.3.2 for more details).

**Care Transition is also a top driver for Recommend the Hospital (for both PC and DC) and Overall Hospital Rating (for DC only).** Currently there is little mention of this measure in existing general population literature, as the Care Transition measure was only recently introduced to the HCAHPS instrument (data were first reported by HCAHPS in December 2014). **Communication with Doctors** measure also emerged as a top driver for both global measures, reinforcing findings that highlight the importance of communication on overall patient satisfaction (see Section 3.3.1-Section 3.3.4 for more details).
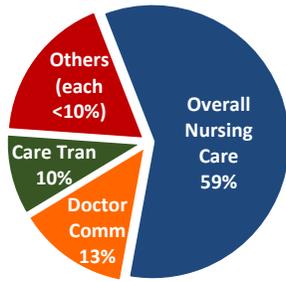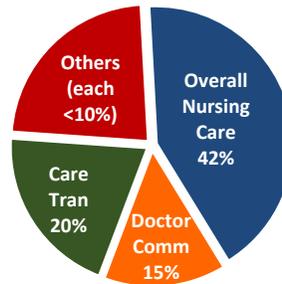
**DC Overall Hospital Rating**

**DC Recommend the Hospital**

**PC Overall Hospital Rating**
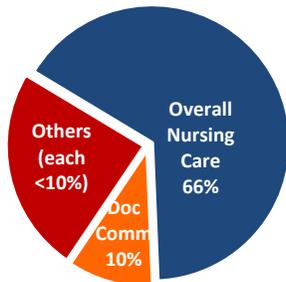
**PC Recommend the Hospital**
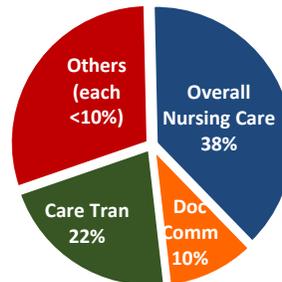
**Figure 4. Drivers of Overall Hospital Rating and Recommend the Hospital among DC and PC Respondents.**

## 4.4    HCAHPS Measures

This section breaks down findings regarding each of the 11 HCAHPS measures.

## 4.4.1 Overall Hospital Rating

Appendix J has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on this measure. Figure 5 shows Overall Hospital Rating by Care Type, Service Branch (for DC) and Region (for PC).

### 4.4.1.1 Comparison to CMS Benchmark

Scores from **DC** and **PC** respondents for Overall Hospital Rating met but were not significantly different from the benchmark of 72%.

### 4.4.1.2 Measure by Service Branch

For DC, both **Air Force** and **Navy** respondents reported scores significantly higher than the benchmark, while **Army** and **NCR** respondent scores met but were not significantly different from the benchmark.

### 4.4.1.3 Measure by Region

As for PC, **West** Region respondents reported scores significantly higher than the benchmark, while scores from respondents in the **North** and **South** Regions met but were not significantly different from the benchmark.

### 4.4.1.4 Measure by Product Line

For both DC and PC, **Obstetric** care respondents reported scores significantly lower than the benchmark. Scores from **Medical** care respondents met the benchmark for PC patients, and were significantly higher than the benchmark for DC respondents. For both DC and PC, **Surgical** care respondents reported scores significantly higher than the benchmark.

**Care Type**

Direct Care: 73.0%
Purchased Care: 72.1%

**Service Branch (DC)**

Air Force: (+) 77.0%
Army: 73.1%
NCR: 75.5%
Navy: (-) 69.9%

**Region (PC)**

North: 71.3%
South: 70.0%
West: (+) 76.4%

**Figure 5. Overall Hospital Rating Scores by Care Type, Service Branch, and Region.**

A plus (+) sign on a bar indicates that the score is significantly (p < 0.05) higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark.

### 4.4.1.5 Top-Performing Facilities

Figure 6 shows DC respondent scores for Overall Hospital Rating. Keesler Medical Center (81st Medical Group), Naval Hospital Rota, and Aviano Air Base (31st Medical Group) received respondent scores that rank between the 90th and 99th percentiles of national HCAHPS rankings. A total of eight MTFs received respondent scores between the 75th and 89th percentiles, while 20 MTFs received respondent scores between the 50th and 74th percentiles. A total of nine facilities received respondent scores between the 25th and 49th percentiles, and eight received scores below the 25th percentile benchmark.
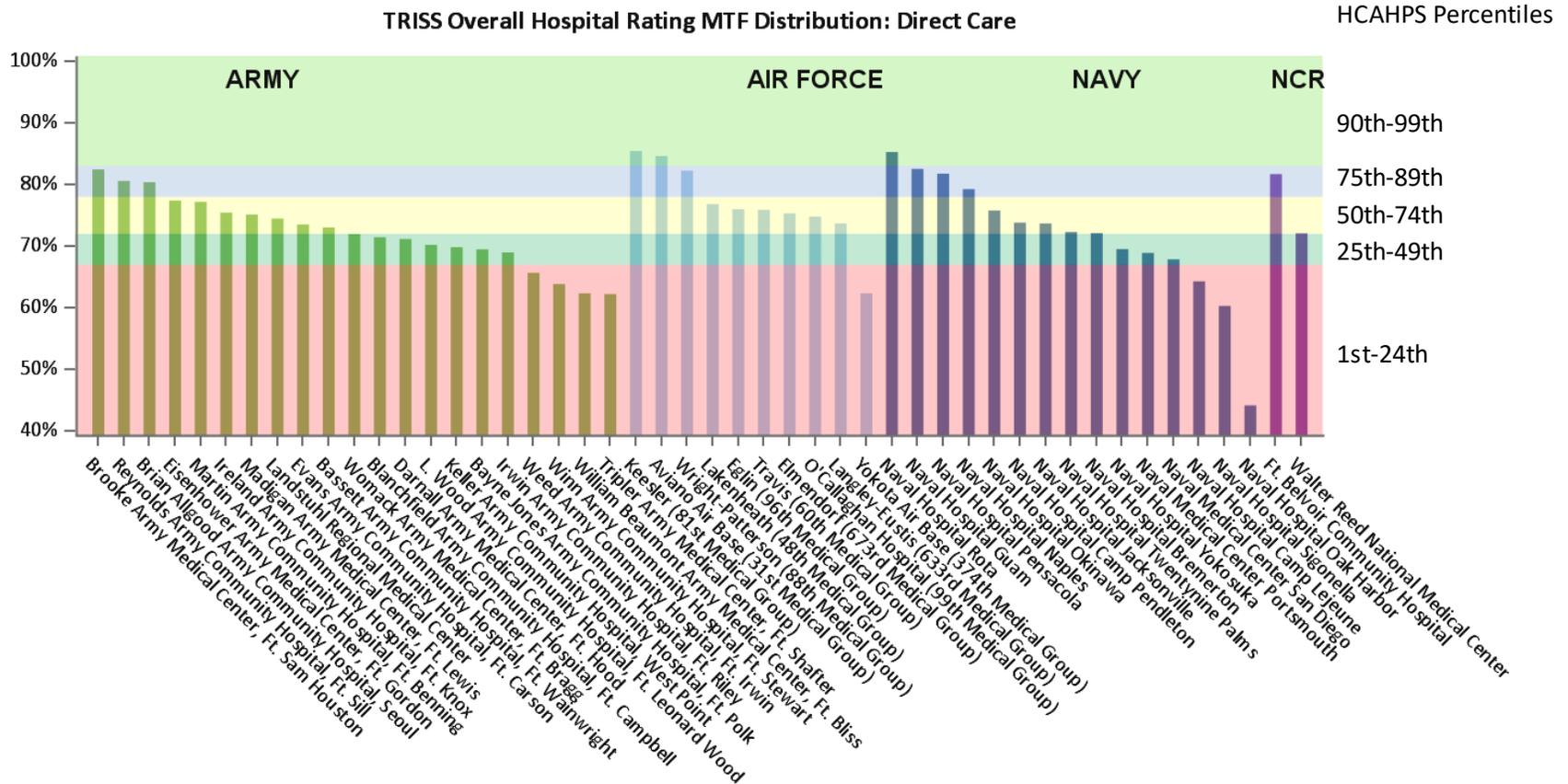


**Figure 6. Ranking of Respondent Overall Hospital Rating Score for DC Hospitals.**

**Figure 7. Ranking of Respondent Overall Hospital Rating Score for PC Hospitals.**
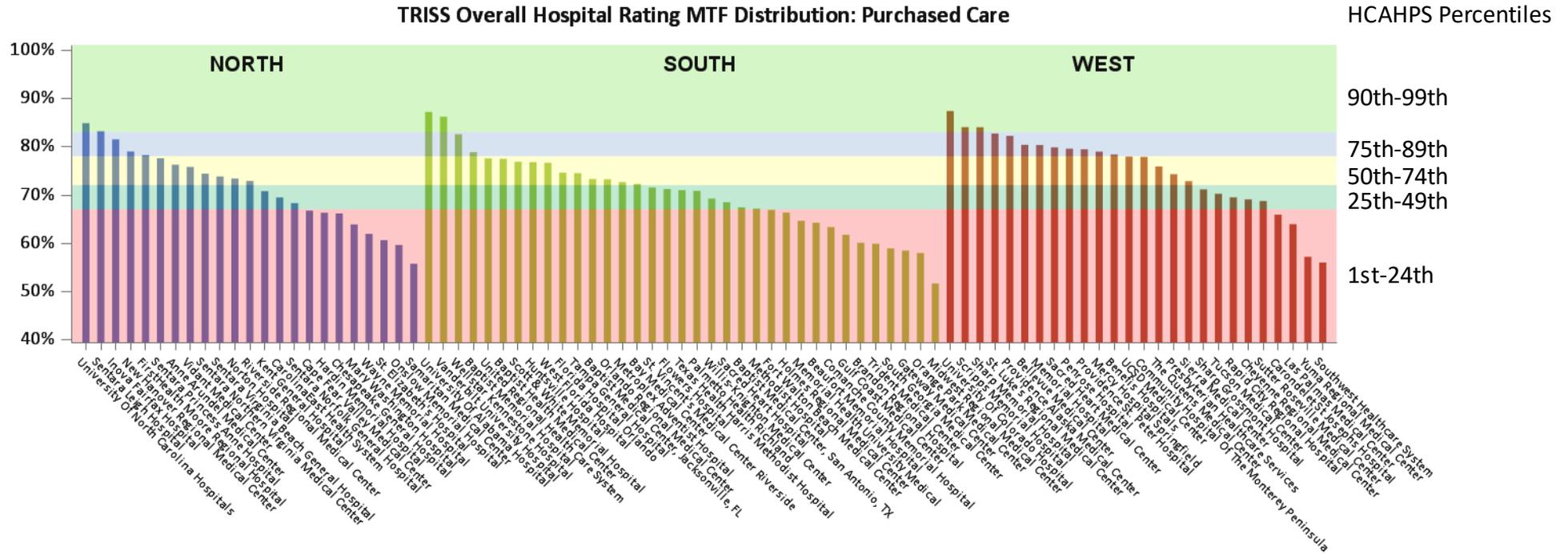
Figure 7 shows PC respondent scores for Overall Hospital Rating. Scores from respondents at University of Colorado and University of Alabama rank between the 95th and 99th percentiles of national HCAHPS ratings. Scores from Vanderbilt University Hospital, University of North Carolina Hospitals, Scripps Memorial Hospital, Sharp Memorial Hospital, and Sentara Lehigh Hospital respondents rank between the 90th and 95th percentile. A total of 14 facilities received scores between the 75th and the 89th percentiles, 23 facilities received respondent scores between the 50th and 74th percentiles, 16 received scores between the 25th and 49th percentiles, and 24 received respondent scores below the 25th percentile.

### 4.4.1.6 HCAHPS Star Ratings

Table 6 shows HCAHPS Star Ratings calculated from DC respondent scores for Overall Hospital Rating. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have a HCAHPS Star Ratings calculation.

**Table 7. HCAHPS Star Ratings for Overall Hospital Rating.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Five-Star | Air Force | 81st Medical Group, Keesler<br>88th Medical Group, Wright-Patterson<br>31st Medical Group, Aviano Air Base |
| | Army | Brooke Army Medical Center, Ft. Sam Houston |
| | | Brian Allgood Army Community Hospital, Seoul |
| | Navy | Naval Hospital Guam |
| | NCR | Ft. Belvoir Community Hospital |
| Four-Star | Air Force | 673rd Medical Group, Elmendorf |
| | | 60th Medical Group, Travis |
| | | 96th Medical Group, Eglin |
| | | 99th Medical Group, O'Callaghan Hospital |
| | | 48th Medical Group, Lakenheath |
| | Army | Bassett Army Community Hospital, Ft. Wainwright |
| | | Evans Army Community Hospital, Ft. Carson |
| | | Eisenhower Army Medical Center, Ft. Gordon |
| | | Martin Army Community Hospital, Ft. Benning |
| | | Reynolds Army Community Hospital, Ft. Sill |
| | | Madigan Army Medical Center, Ft. Lewis |
| | | Landstuhl Regional Medical Center |
| | Navy | Naval Hospital Camp Pendleton |
| | | Naval Hospital Twentynine Palms |
| | | Naval Hospital Pensacola |
| | | Naval Hospital Jacksonville |
| | | Naval Hospital Bremerton |
| | | Naval Hospital Okinawa |
| Three-Star | Air Force | 633rd Medical Group, Langley-Eustis |
| | Army | Irwin Army Community Hospital, Ft. Riley<br>Blanchfield Army Community Hospital, Ft. Campbell<br>Bayne Jones Army Community Hospital, Ft. Polk<br>L. Wood Army Community Hospital, Ft. Leonard Wood<br>Keller Army Community Hospital, West Point<br>Womack Army Medical Center, Ft. Bragg<br>Darnall Army Medical Center, Ft. Hood<br>Weed Army Community Hospital, Ft. Irwin |
| | Navy | Naval Medical Center San Diego |
| | | Naval Medical Center Portsmouth |
| | | Naval Hospital Yokosuka |
| | NCR | Walter Reed National Medical Center |
| Two-Star | Army | Winn Army Community Hospital, Ft. Stewart |
| | | Tripler Army Medical Center, Ft. Shafter |
| | | William Beaumont Army Medical Center, Ft. Bliss |
| | Navy | Naval Hospital Camp Lejeune |

## 4.4.2 Recommend the Hospital

Appendix J has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on this measure. Figure 8 shows Recommend the Hospital scores by Care Type, Service Branch (for DC) and Region (for PC).

### 4.4.2.1 Comparison to CMS Benchmark

Scores from both **DC** and **PC** respondents for Recommend the Hospital were both significantly higher from the benchmark of 72%.

### 4.4.2.2 Measure by Service Branch

For DC, the respondent scores for **all branches (Air Force, Army, NCR,** and **Navy)** were significantly higher than the benchmark.

### 4.4.2.3 Measure by Region

For PC, the respondent scores for **all Regions (North, South, West)** were significantly higher than the benchmark.

### 4.4.2.4 Measure by Product Line

**Surgical** care respondent scores were significantly higher than the benchmark for both DC and PC. However, PC **Obstetric** care respondents reported scores significantly higher than the benchmark, while DC **Obstetric** care respondents reported scores significantly lower than the benchmark. Additionally, PC **Medical** care respondents reported scores that were significantly higher than the benchmark, while DC **Medical** care respondents reported scores that met, but were not significantly different than the benchmark.

**Care Type**
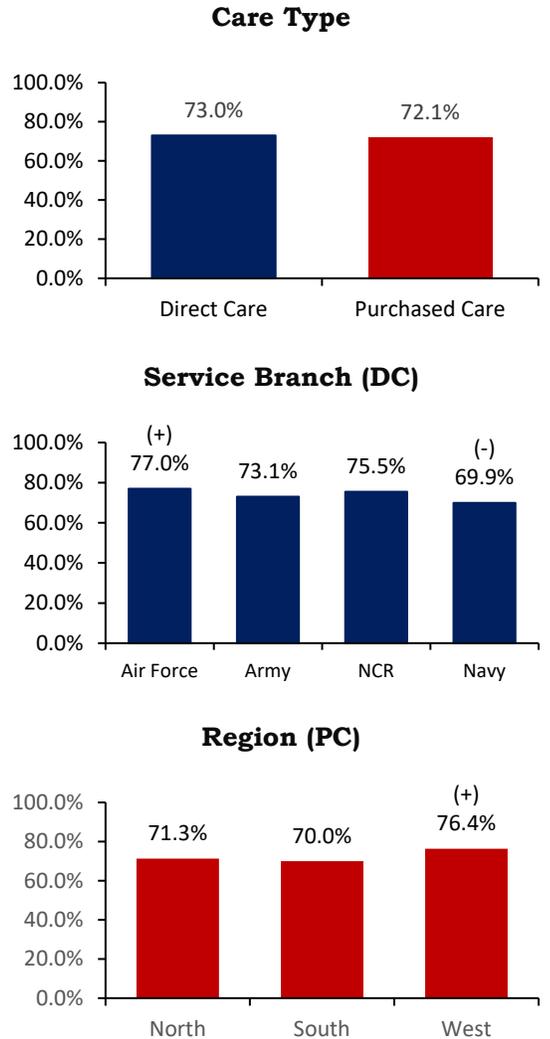


**Service Branch (DC)**



**Region (PC)**



**Figure 8. Recommend the Hospital Scores by Care Type, Service Branch, and Region.**

A plus (+) sign on a bar indicates that the score is significantly ($p < 0.05$) higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark.

### 4.4.2.5 Top-Performing Facilities

Figure 9 shows DC respondent scores for Recommend the Hospital. Aviano Air Base (31st Medical Group), Brian Allgood Army Community Hospital, Keesler (81st Medical Group), Brooke Army Medical Center, Ft. Sam Houston, Naval Hospital Guam, and Ft. Belvoir Community Hospital) received respondent scores that rank between the 90th and 99th percentiles of HCAHPS national ratings. A total of 10 MTFs received respondent scores between 75th and 89th percentiles, 17 received scores between the 50th and 74th percentiles, and 15 received scores below the 50th percentile.
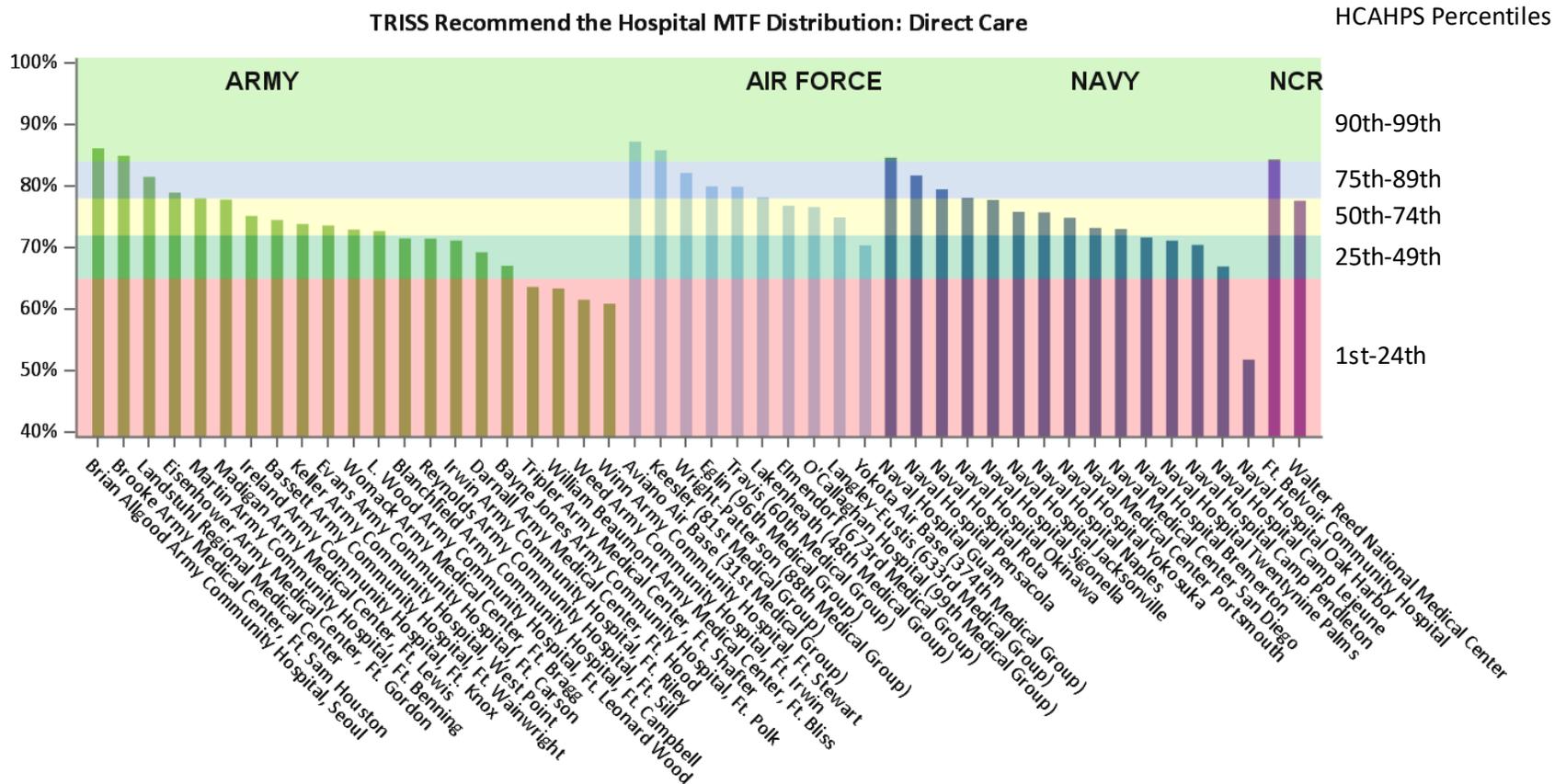


**Figure 9. Ranking of Recommend the Hospital Respondent Scores for DC Hospitals.**

Figure 10 shows PC respondent scores for Recommend the Hospital. A total of 11 hospitals (The Queens Medical Center, University Of Colorado Hospital, Vanderbilt University Hospital, Tampa General Hospital, University Of Alabama Hospital, Providence Alaska Medical Center, Sharp Memorial Hospital, University Of North Carolina Hospitals, New Hanover Regional Medical Center, Inova Fairfax Hospital, and Scripps Memorial Hospital) received respondent scores between the 90th and 99th percentiles. Eighteen scored between the 75th and 89th percentiles. Twenty-four received scores between the 50th and 74th percentiles. Twelve facilities received scores between the 25th and 49th percentiles, and 19 hospitals received scores below the 25th percentile.



**Figure 10. Ranking of Recommend the Hospital Respondent Scores for PC Hospitals.**

### 4.4.2.6 HCAHPS Star Ratings

Table 7 shows HCAHPS Star Ratings calculated from DC respondent scores for Recommend the Hospital. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have a HCAHPS Star Ratings calculation.

**Table 8. HCAHPS Star Ratings for Recommend the Hospital.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Five-Star | Air Force | 31st Medical Group, Aviano Air Base |
| | Army | Brian Allgood Army Community Hospital, Seoul |
| Four-Star | Air Force | 673rd Medical Group, Elmendorf |
| | | 60th Medical Group, Travis |
| | | 96th Medical Group, Eglin |
| | | 81st Medical Group, Keesler |
| | | 99th Medical Group, O'Callaghan Hospital |
| | | 88th Medical Group, Wright-Patterson |
| | | 48th Medical Group, Lakenheath |
| | Army | Eisenhower Army Medical Center, Ft. Gordon |
| | | Martin Army Community Hospital, Ft. Benning |
| | | Keller Army Community Hospital, West Point |
| | | Brooke Army Medical Center, Ft. Sam Houston |
| | | Madigan Army Medical Center, Ft. Lewis |
| | | Landstuhl Regional Medical Center |
| | Navy | Naval Hospital Pensacola |
| | | Naval Hospital Guam |
| | | Naval Hospital Okinawa |
| | NCR | Walter Reed National Medical Center |
| | | Ft. Belvoir Community Hospital |
| Three-Star | Air Force | 633rd Medical Group, Langley-Eustis |
| | Army | Bassett Army Community Hospital, Ft. Wainwright |
| | | Evans Army Community Hospital, Ft. Carson |
| | | Irwin Army Community Hospital, Ft. Riley |
| | | Blanchfield Army Community Hospital, Ft. Campbell |
| | | L. Wood Army Community Hospital, Ft. Leonard Wood |
| | | Womack Army Medical Center, Ft. Bragg |
| | | Reynolds Army Community Hospital, Ft. Sill |
| | | Darnall Army Medical Center, Ft. Hood |
| | Navy | Naval Hospital Camp Pendleton |
| | | Naval Medical Center San Diego |
| | | Naval Hospital Twentynine Palms |
| | | Naval Hospital Jacksonville |
| | | Naval Medical Center Portsmouth |
| | | Naval Hospital Bremerton |
| | | Naval Hospital Yokosuka |
| Two-Star | Army | Winn Army Community Hospital, Ft. Stewart |
| | | Tripler Army Medical Center, Ft. Shafter |
| | | Bayne Jones Army Community Hospital, Ft. Polk |
| | | William Beaumont Army Medical Center, Ft. Bliss |
| | | Weed Army Community Hospital, Ft. Irwin |
| | Navy | Naval Hospital Camp Lejeune |

## 4.4.3 Communication with Doctors

Appendix J has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on this measure. Figure 11 shows Communication with Doctors scores by Care Type, Service Branch (for DC) and Region (for PC).

### 4.4.3.1 Comparison to CMS Benchmark

Scores from **DC** respondents for Communication with Doctors were significantly higher than the benchmark of 81%.

On the other hand, scores from **PC** respondents met but were not significantly different from the benchmark.

### 4.4.3.2 Measure by Service Branch

For DC, respondent scores for **all branches** (**Air Force**, **Army**, **NCR**, and **Navy)** were significantly higher than the benchmark.

### 4.4.3.3 Measure by Region

As for PC, respondents from **all Regions** (**West**, **North**, and **South**) reported scores that met but were not significantly different from the benchmark.

### 4.4.3.4 Measure by Product Line

For DC, respondents in **all three product lines** (**Medical, Obstetric,** and **Surgical**) gave scores that were significantly higher than the benchmark.

For PC, **Obstetric** care and **Surgical** care respondents reported scores that were significantly higher than the benchmark. Scores from PC **Medical** care respondents were significantly lower than the benchmark.

**Care Type**



**Service Branch (DC)**
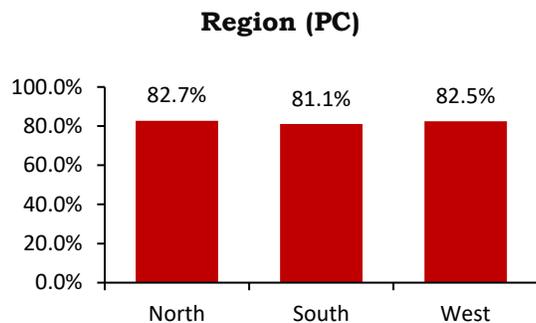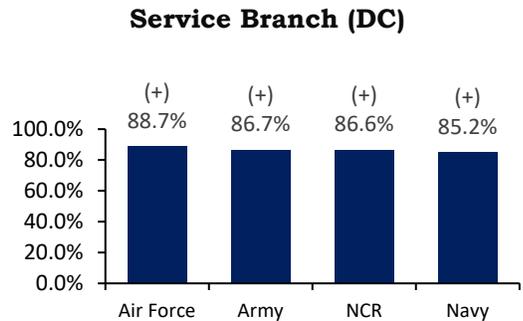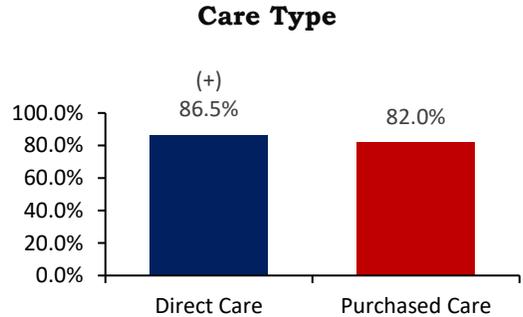


**Region (PC)**



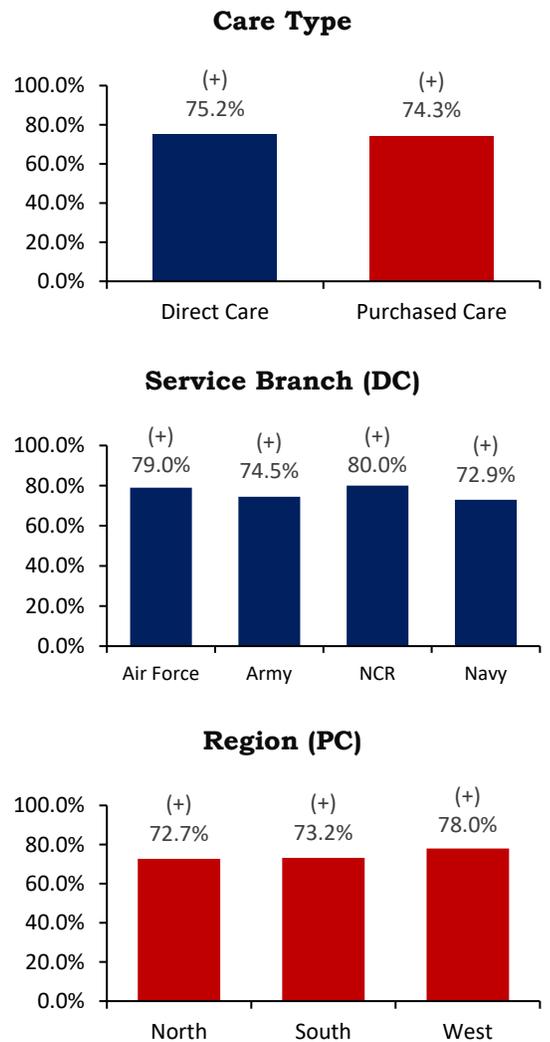**Figure 11. Communication with Doctors Scores by Care Type, Service Branch, and Region.**

A plus (+) sign on a bar indicates that the score is significantly ($p < 0.05$) higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark.

## 4.4.3.5 Top-Performing Facilities

Figure 12 shows DC respondent scores for Communication with Doctors. Respondent scores from 15 hospitals were between the 90th and 99th percentiles. An additional 23 MTFs received respondent scores between the 75th and 89th percentiles, and the remaining 10 received respondent scores between the 50th and 74th percentiles.
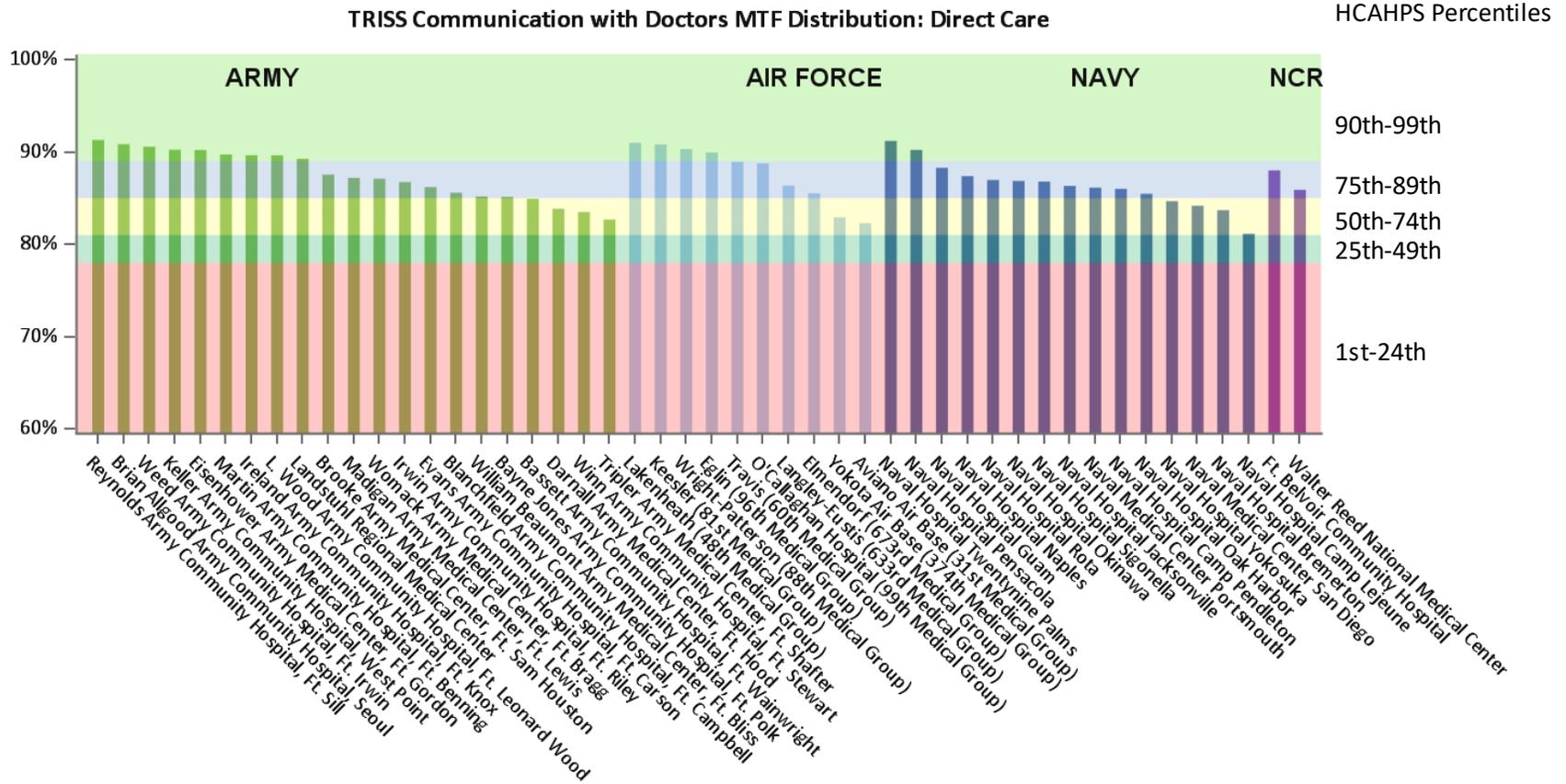


**Figure 12. Ranking of Communication with Doctor Respondent Scores for DC Hospitals.**

Figure 13 shows PC respondent scores for Communication with Doctors. Fifteen hospitals received respondent scores between the 75th and 89th percentiles. Forty-two hospitals received respondent scores between the 50th and 74th percentiles, and 27 hospitals received respondent scores below the 50th percentile.
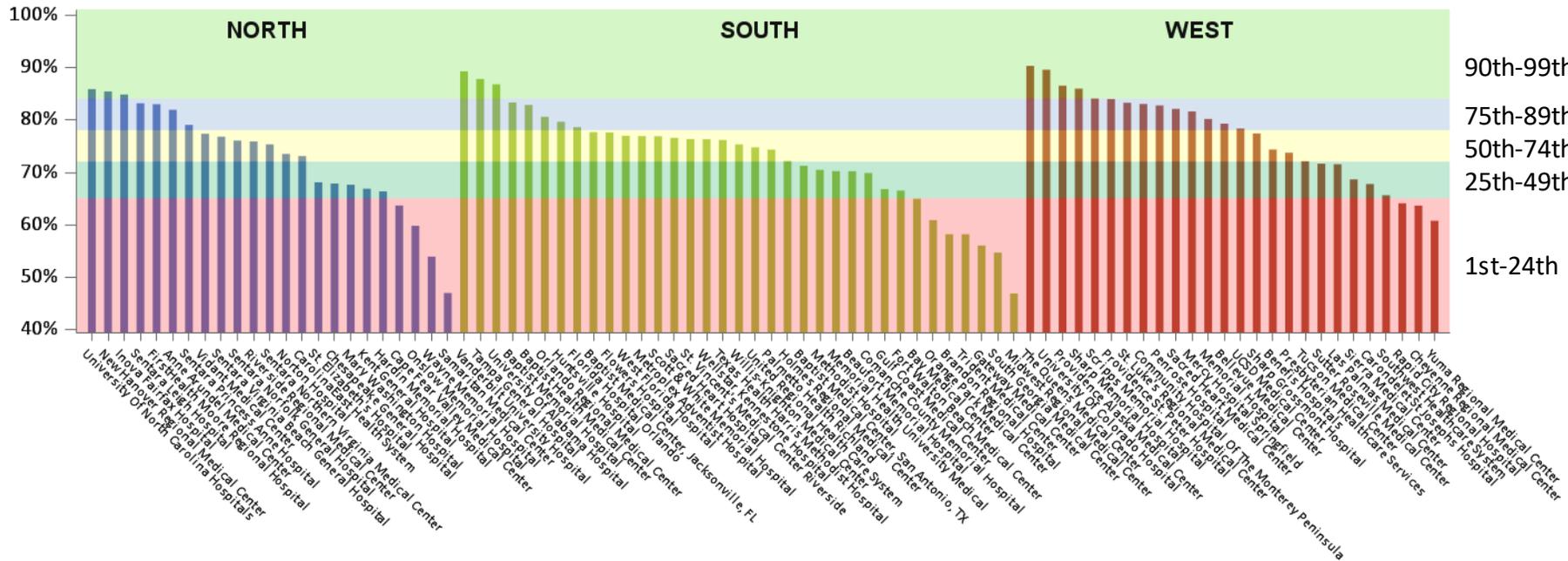


**Figure 13. Ranking of Communication with Doctor Respondent Scores for PC Hospitals.**

### 4.4.3.6 HCAHPS Star Ratings

Table 8 shows HCAHPS Star Ratings calculated from DC respondent scores for Communication with Doctors. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have a HCAHPS Star Ratings calculation.

**Table 9. HCAHPS Star Ratings for Communication with Doctors.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Five-Star | Air Force | 60th Medical Group, Travis<br>96th Medical Group, Eglin<br>81st Medical Group, Keesler<br>99th Medical Group, O'Callaghan Hospital<br>88th Medical Group, Wright-Patterson<br>48th Medical Group, Lakenheath |
| | Army | Eisenhower Army Medical Center, Ft. Gordon<br>Martin Army Community Hospital, Ft. Benning<br>L. Wood Army Community Hospital, Ft. Leonard Wood<br>Keller Army Community Hospital, West Point<br>Reynolds Army Community Hospital, Ft. Sill<br>Brooke Army Medical Center, Ft. Sam Houston<br>Madigan Army Medical Center, Ft. Lewis<br>Weed Army Community Hospital, Ft. Irwin<br>Landstuhl Regional Medical Center<br>Brian Allgood Army Community Hospital, Seoul |
| | Navy | Naval Hospital Twentynine Palms<br>Naval Hospital Pensacola<br>Naval Hospital Guam |
| | NCR | Ft. Belvoir Community Hospital |
| Four-Star | Air Force | 673rd Medical Group, Elmendorf<br>633rd Medical Group, Langley-Eustis |
| | Army | Bassett Army Community Hospital, Ft. Wainwright<br>Evans Army Community Hospital, Ft. Carson<br>Irwin Army Community Hospital, Ft. Riley<br>Blanchfield Army Community Hospital, Ft. Campbell<br>Bayne Jones Army Community Hospital, Ft. Polk<br>Womack Army Medical Center, Ft. Bragg<br>William Beaumont Army Medical Center, Ft. Bliss<br>Darnall Army Medical Center, Ft. Hood |
| | Navy | Naval Hospital Camp Pendleton<br>Naval Medical Center San Diego<br>Naval Hospital Jacksonville<br>Naval Medical Center Portsmouth<br>Naval Hospital Bremerton<br>Naval Hospital Okinawa<br>Naval Hospital Yokosuka |
| | NCR | Walter Reed National Medical Center |
| Three-Star | Air Force | 31st Medical Group, Aviano Air Base |
| | Army | Winn Army Community Hospital, Ft. Stewart<br>Tripler Army Medical Center, Ft. Shafter |
| | Navy | Naval Hospital Camp Lejeune |

## 4.4.4 Communication with Nurses

Appendix J has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on this measure. Figure 14 shows Communication with Nurses scores by Care Type, Service Branch (for DC) and Region (for PC).

### 4.4.4.1 Comparison to CMS Benchmark

Scores from **DC** respondents for Communication with Nurses were significantly higher than the benchmark of 80%.

Scores from **PC** respondents met but were not significantly different from the benchmark.

### 4.4.4.2 Measure by Service Branch

For DC, respondent scores for **all Service Branches** (**Air Force**, **Army**, **NCR**, and **Navy)** were significantly higher than the benchmark.

### 4.4.4.3 Measure by Region

For PC, scores from respondents in **all Regions** (**North**, **South**, and **West**) met but were not significantly different from the benchmark.

### 4.4.4.4 Measure by Product Line

For both DC and PC, **Obstetric** care and **Surgical** care respondents reported scores that were significantly higher than the benchmark.

For **Medical** care, DC respondents reported scores that were significantly higher than the benchmark, while PC respondents reported scores that met but were not significantly different than the benchmark.

**Care Type**



**Service Branch (DC)**



**Region (PC)**



**Figure 14. Communication with Nurses Scores by Care Type, Service Branch, and Region.**

A plus (+) sign on a bar indicates that the score is significantly (p < 0.05) higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark.

### 4.4.4.5 Top-Performing Facilities

Figure 15 shows scores from DC respondents for Communication with Nurses. A total of 22 facilities received respondent scores between the 90th and 99th percentiles of national HCAHPS ratings, led by Naval Hospital Twentynine Palms, Brian Allgood Army Community Hospital, and Landstuhl Regional Medical Center. Nineteen MTFs received respondent scores between the 75th and 89th percentiles. The remaining four facilities received respondent scores between the 50th and 74th percentiles.



**Figure 15. Ranking of Communication with Nurses Respondent Scores for DC Hospitals.**

**Figure 16. Ranking of Communications with Nurses Respondent Scores for PC Hospitals.**

Figure 16 shows scores from PC respondents for Communication with Nurses. Three hospitals received scores from respondents between the 90th and 99th percentiles of national HCAHPS ratings. These include Vanderbilt University Hospital, University of Alabama Hospital, and University of Colorado Hospital. An additional 28 facilities received scores between the 75th and 89th percentiles. Twenty-one facilities received scores between the 50th and 74th percentiles, and 20 facilities received scores between the 25th and 49th percentiles, while the remaining 12 facilities received scores below the 25th percentile.

### 4.4.4.6 HCAHPS Star Ratings

Table 9 shows HCAHPS Star Ratings calculated from DC respondent scores for Communication with Nurses. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have HCAHPS Star Ratings calculated.

**Table 10. HCAHPS Star Ratings for Communication with Nurses.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Five-Star | Air Force | 60th Medical Group, Travis<br>96th Medical Group, Eglin<br>81st Medical Group, Keesler<br>88th Medical Group, Wright-Patterson<br>48th Medical Group, Lakenheath |
| | Army | Keller Army Community Hospital, West Point<br>Reynolds Army Community Hospital, Ft. Sill<br>Landstuhl Regional Medical Center<br>Brian Allgood Army Community Hospital, Seoul |
| | Navy | Naval Hospital Twentynine Palms<br>Naval Hospital Pensacola |
| Four-Star | Air Force | 673rd Medical Group, Elmendorf<br>99th Medical Group, O'Callaghan Hospital<br>633rd Medical Group, Langley-Eustis<br>31st Medical Group, Aviano Air Base |
| | Army | Bassett Army Community Hospital, Ft. Wainwright<br>Evans Army Community Hospital, Ft. Carson<br>Eisenhower Army Medical Center, Ft. Gordon<br>Martin Army Community Hospital, Ft. Benning<br>Winn Army Community Hospital, Ft. Stewart<br>Tripler Army Medical Center, Ft. Shafter<br>Irwin Army Community Hospital, Ft. Riley<br>Blanchfield Army Community Hospital, Ft. Campbell<br>Bayne Jones Army Community Hospital, Ft. Polk<br>L. Wood Army Community Hospital, Ft. Leonard Wood<br>Womack Army Medical Center, Ft. Bragg<br>William Beaumont Army Medical Center, Ft. Bliss<br>Brooke Army Medical Center, Ft. Sam Houston<br>Darnall Army Medical Center, Ft. Hood<br>Madigan Army Medical Center, Ft. Lewis<br>Weed Army Community Hospital, Ft. Irwin |
| | Navy | Naval Hospital Camp Pendleton<br>Naval Medical Center San Diego<br>Naval Hospital Jacksonville<br>Naval Medical Center Portsmouth<br>Naval Hospital Bremerton<br>Naval Hospital Guam<br>Naval Hospital Okinawa<br>Naval Hospital Yokosuka |
| | NCR | Walter Reed National Medical Center<br>Ft. Belvoir Community Hospital |
| Three-Star | Navy | Naval Hospital Camp Lejeune |

## 4.4.5 Pain Management

Appendix J has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on this measure. Figure 17 shows Pain Management scores by Care Type, Service Branch (for DC) and Region (for PC).

### 4.4.5.1 Comparison to CMS Benchmark

Scores from both **DC** and **PC** respondents for Pain Management were significantly higher than the benchmark of 71%.

### 4.4.5.2 Measure by Service Branch

For DC, respondent scores for **all Service Branches** (**Air Force**, **Army**, **NCR**, and **Navy)** were significantly higher than the benchmark.

### 4.4.5.1 Measure by Region

For PC, scores from respondents in **all three Regions** (**North, South, West)** were significantly higher from the benchmark.

### 4.4.5.2 Measure by Product Line

**Medical** care respondents reported scores for DC that met but were not significantly different than the benchmark, while respondent scores for PC were significantly lower than the benchmark. However, **Obstetric** care and **Surgical** care respondents reported scores that were significantly higher than the benchmark for both DC and PC.

**Care Type**



**Service Branch (DC)**



**Region (PC)**



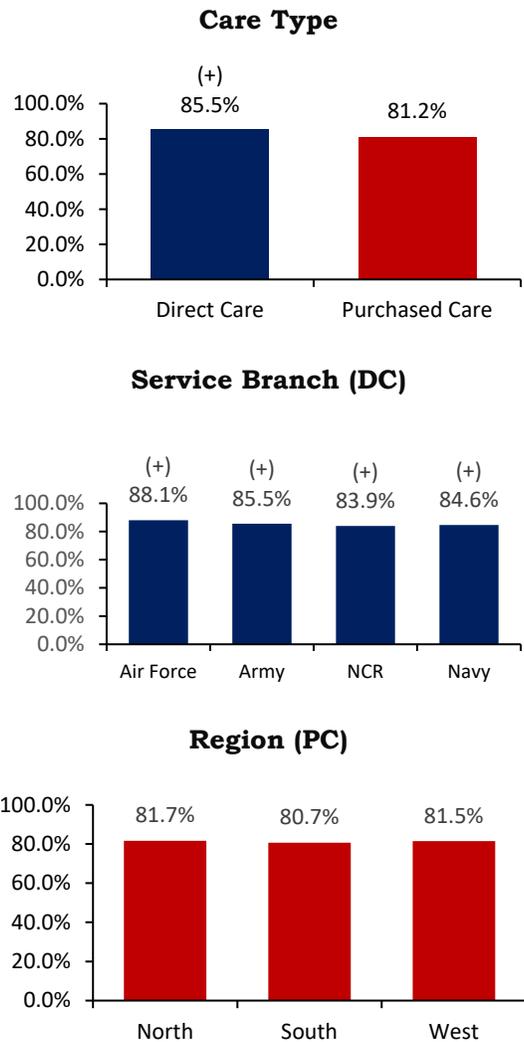**Figure 17. Pain Management Scores by Care Type, Service Branch, and Region.**

A plus (+) sign on a bar indicates that the score is significantly ($p < 0.05$) higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark.
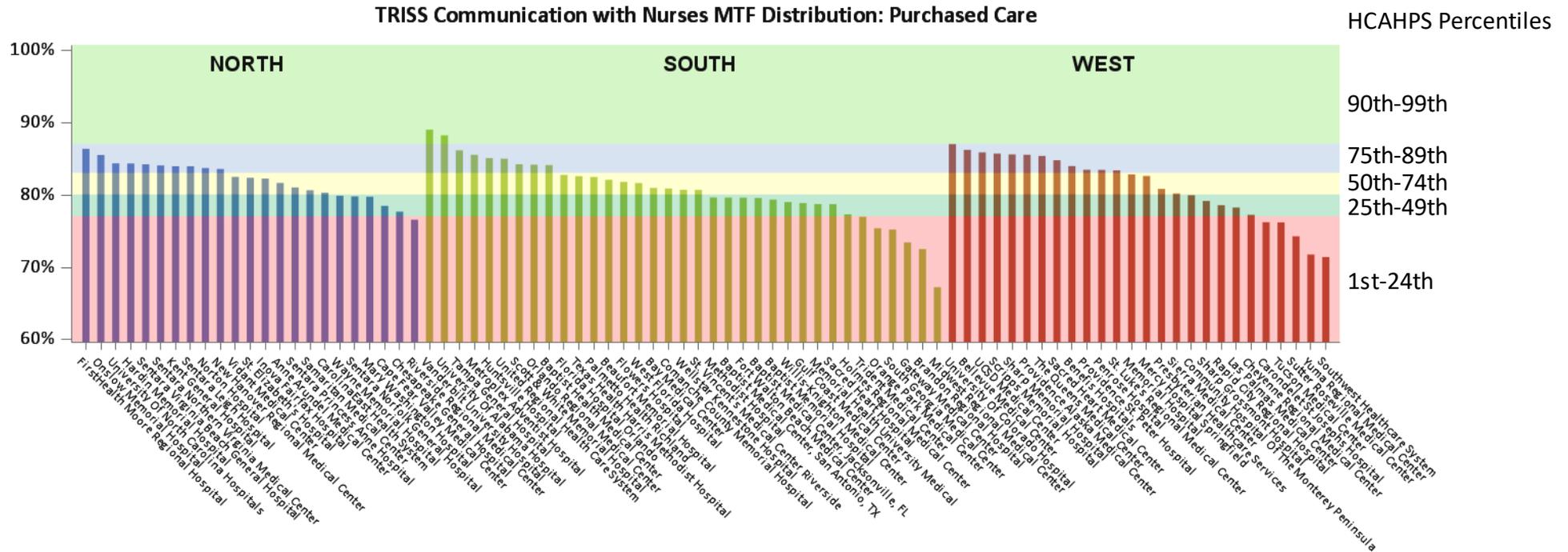
### 4.4.5.3 HCAHPS Star Ratings

Table 10 shows HCAHPS Star Ratings calculated from DC respondent scores for Pain Management. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have a HCAHPS Star Ratings calculation.

**Table 11. HCAHPS Star Ratings for Pain Management.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Five-Star | Army | Reynolds Army Community Hospital, Ft. Sill |
| Four-Star | Air Force | 673rd Medical Group, Elmendorf<br>60th Medical Group, Travis<br>96th Medical Group, Eglin<br>81st Medical Group, Keesler<br>88th Medical Group, Wright-Patterson<br>48th Medical Group, Lakenheath<br>31st Medical Group, Aviano Air Base |
| | Army | Bassett Army Community Hospital, Ft. Wainwright<br>Evans Army Community Hospital, Ft. Carson<br>Martin Army Community Hospital, Ft. Benning<br>Irwin Army Community Hospital, Ft. Riley<br>Blanchfield Army Community Hospital, Ft. Campbell<br>Keller Army Community Hospital, West Point<br>Landstuhl Regional Medical Center<br>Brian Allgood Army Community Hospital, Seoul |
| | Navy | Naval Hospital Twentynine Palms<br>Naval Hospital Pensacola<br>Naval Hospital Jacksonville<br>Naval Hospital Bremerton<br>Naval Hospital Guam<br>Naval Hospital Okinawa<br>Naval Hospital Yokosuka |
| | NCR | Ft. Belvoir Community Hospital |
| Three-Star | Air Force | 99th Medical Group, O'Callaghan Hospital<br>633rd Medical Group, Langley-Eustis |
| | Army | Eisenhower Army Medical Center, Ft. Gordon<br>Winn Army Community Hospital, Ft. Stewart<br>Tripler Army Medical Center, Ft. Shafter<br>Bayne Jones Army Community Hospital, Ft. Polk<br>L. Wood Army Community Hospital, Ft. Leonard Wood<br>Womack Army Medical Center, Ft. Bragg<br>William Beaumont Army Medical Center, Ft. Bliss<br>Brooke Army Medical Center, Ft. Sam Houston<br>Darnall Army Medical Center, Ft. Hood<br>Madigan Army Medical Center, Ft. Lewis<br>Weed Army Community Hospital, Ft. Irwin |
| | Navy | Naval Hospital Camp Pendleton<br>Naval Medical Center San Diego<br>Naval Medical Center Portsmouth |
| | NCR | Walter Reed National Medical Center |
| Two-Star | Navy | Naval Hospital Camp Lejeune |

## 4.4.6 Responsiveness of Staff

Appendix J has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on this measure. Figure 18 shows Responsiveness of Staff scores by Care Type, Service Branch (for DC) and Region (for PC).

### 4.4.6.1 Comparison to CMS Benchmark

Scores from **DC** respondents for Responsiveness of Hospital Staff were significantly higher than the benchmark of 68%.

Scores from **PC** respondents met but were not significantly different from the benchmark.

### 4.4.6.2 Measure by Service Branch

For DC, respondent scores for **all Service Branches** (**Air Force**, **Army**, **NCR**, and **Navy)** were significantly higher than the benchmark.

### 4.4.6.3 Measure by Region

For PC, scores from respondents in **all three Regions** (**North**, **South**, and **West)** met but were not significantly different from the benchmark.

### 4.4.6.4 Measure by Product Line

Both DC and PC, **Obstetric** care respondents reported scores that were significantly higher than the benchmark. For **Surgical** care, DC respondents reported scores that were significantly higher than the benchmark, while PC respondent scores met but were not significantly different from the benchmark.

For **Medical** care, DC respondents reported scores that were significantly higher than the benchmark. PC **Medical** care respondents reported scores that were significantly lower than the benchmark.

**Care Type**



**Service Branch (DC)**



**Region (PC)**



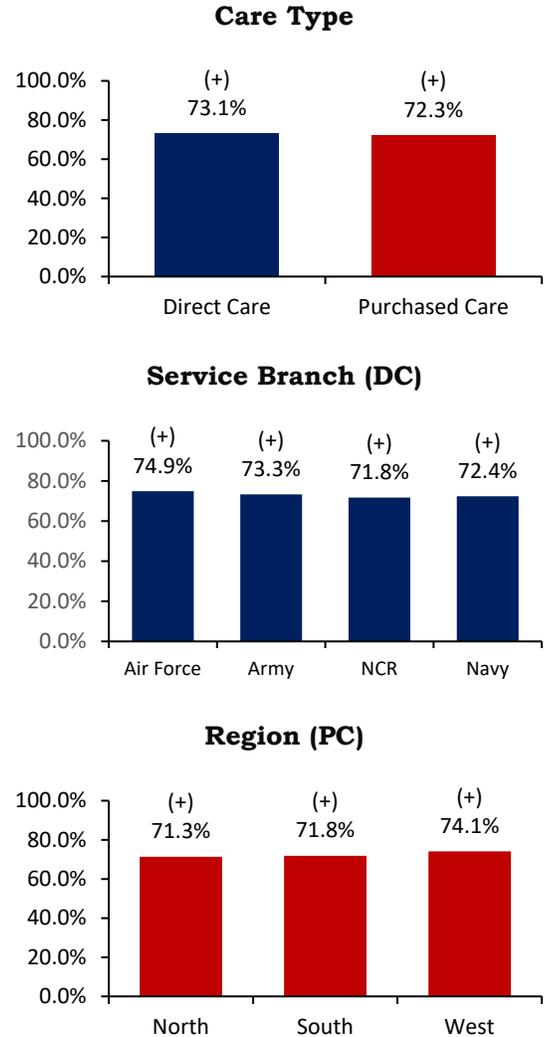**Figure 18. Responsiveness of Staff Scores by Care Type, Service Branch, and Region.**

A plus (+) sign on a bar indicates that the score is significantly ($p < 0.05$) higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark.

### 4.4.6.5 HCAHPS Star Ratings

Table 11 shows Star Ratings calculated from DC respondent scores for Responsiveness of Hospital Staff. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have a HCAHPS Star Ratings calculation.

**Table 12. HCAHPS Star Ratings for Responsiveness of Hospital Staff.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Five-Star | Air Force | 673rd Medical Group, Elmendorf |
| | | 96th Medical Group, Eglin |
| | | 81st Medical Group, Keesler |
| | | 99th Medical Group, O'Callaghan Hospital |
| | | 88th Medical Group, Wright-Patterson |
| | | 48th Medical Group, Lakenheath |
| | | 31st Medical Group, Aviano Air Base |
| | Army | Bassett Army Community Hospital, Ft. Wainwright |
| | | Bayne Jones Army Community Hospital, Ft. Polk |
| | | Keller Army Community Hospital, West Point |
| | | Reynolds Army Community Hospital, Ft. Sill |
| | | Brooke Army Medical Center, Ft. Sam Houston |
| | | Landstuhl Regional Medical Center |
| | | Brian Allgood Army Community Hospital, Seoul |
| | Navy | Naval Hospital Twentynine Palms |
| | | Naval Hospital Pensacola |
| | | Naval Hospital Jacksonville |
| | | Naval Hospital Bremerton |
| | | Naval Hospital Okinawa |
| | NCR | Ft. Belvoir Community Hospital |
| Four-Star | Air Force | 60th Medical Group, Travis |
| | | 633rd Medical Group, Langley-Eustis |
| | Army | Evans Army Community Hospital, Ft. Carson |
| | | Eisenhower Army Medical Center, Ft. Gordon |
| | | Martin Army Community Hospital, Ft. Benning |
| | | Winn Army Community Hospital, Ft. Stewart |
| | | Tripler Army Medical Center, Ft. Shafter |
| | | Irwin Army Community Hospital, Ft. Riley |
| | | Blanchfield Army Community Hospital, Ft. Campbell |
| | | L. Wood Army Community Hospital, Ft. Leonard Wood |
| | | Womack Army Medical Center, Ft. Bragg |
| | | William Beaumont Army Medical Center, Ft. Bliss |
| | | Darnall Army Medical Center, Ft. Hood |
| | | Madigan Army Medical Center, Ft. Lewis |
| | | Weed Army Community Hospital, Ft. Irwin |
| | Navy | Naval Hospital Camp Pendleton |
| | | Naval Medical Center San Diego |
| | | Naval Hospital Camp Lejeune |
| | | Naval Medical Center Portsmouth |
| | | Naval Hospital Guam |
| | | Naval Hospital Yokosuka |
| | NCR | Walter Reed National Medical Center |

## 4.4.7 Communication about Medicines

Appendix J has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on this measure. Figure 19 shows Communication about Medicines scores by Care Type, Service Branch (for DC) and Region (for PC).

### 4.4.7.1 Comparison to CMS Benchmark

Scores from both **DC** and **PC** respondents for Communication about Medicines were significantly higher than the benchmark of 64%.

### 4.4.7.2 Measure by Service Branch

For DC, respondent scores from **all Service Branches** (**Air Force**, **Army**, **NCR** and **Navy**) respondents were significantly higher than the benchmark.

### 4.4.7.3 Measure by Region

For PC, respondent scores from **all three Regions** (**North**, **South** and **West**) were significantly higher than the benchmark.

### 4.4.7.4 Measure by Product Line

Both DC and PC, **Obstetric** care and **Surgical** care respondents reported scores that were significantly higher than the benchmark.

For **Medical** care, DC respondents reported scores that were significantly higher than the benchmark, while PC respondents reported scores that met but were not significantly different from the benchmark.

**Care Type**


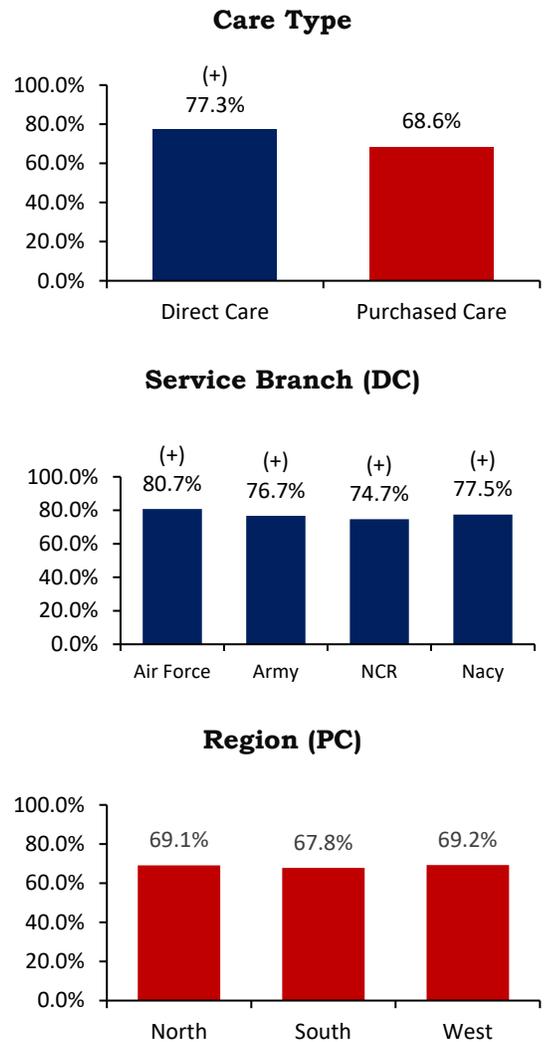
**Service Branch (DC)**



**Region (PC)**



**Figure 19. Communication about Medicines Scores by Care Type, Service Branch, and Region.**

A plus (+) sign on a bar indicates that the score is significantly (p < 0.05) higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark.

### 4.4.7.5 HCAHPS Star Ratings

Table 12 shows HCAHPS Star Ratings calculated from DC respondent scores for Communication about Medicines. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have HCAHPS Star Ratings calculated.

**Table 13. HCAHPS Star Ratings for Communication about Medicines.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Five-Star | Air Force | 673rd Medical Group, Elmendorf<br>60th Medical Group, Travis<br>96th Medical Group, Eglin<br>81st Medical Group, Keesler<br>99th Medical Group, O'Callaghan Hospital<br>88th Medical Group, Wright-Patterson<br>633rd Medical Group, Langley-Eustis<br>48th Medical Group, Lakenheath |
| | Army | Bassett Army Community Hospital, Ft. Wainwright<br>Eisenhower Army Medical Center, Ft. Gordon<br>Bayne Jones Army Community Hospital, Ft. Polk<br>Keller Army Community Hospital, West Point<br>Reynolds Army Community Hospital, Ft. Sill<br>Brooke Army Medical Center, Ft. Sam Houston<br>Madigan Army Medical Center, Ft. Lewis<br>Landstuhl Regional Medical Center<br>Brian Allgood Army Community Hospital, Seoul |
| | Navy | Naval Hospital Camp Pendleton<br>Naval Hospital Twentynine Palms<br>Naval Hospital Pensacola<br>Naval Hospital Jacksonville<br>Naval Hospital Okinawa<br>Naval Hospital Yokosuka |
| | NCR | Ft. Belvoir Community Hospital |
| Four-Star | Air Force | 31st Medical Group, Aviano Air Base |
| | Army | Evans Army Community Hospital, Ft. Carson<br>Martin Army Community Hospital, Ft. Benning<br>Winn Army Community Hospital, Ft. Stewart<br>Tripler Army Medical Center, Ft. Shafter<br>Irwin Army Community Hospital, Ft. Riley<br>Blanchfield Army Community Hospital, Ft. Campbell<br>L. Wood Army Community Hospital, Ft. Leonard Wood<br>Womack Army Medical Center, Ft. Bragg<br>William Beaumont Army Medical Center, Ft. Bliss<br>Darnall Army Medical Center, Ft. Hood<br>Weed Army Community Hospital, Ft. Irwin |
| | Navy | Naval Medical Center San Diego<br>Naval Hospital Camp Lejeune<br>Naval Medical Center Portsmouth<br>Naval Hospital Bremerton<br>Naval Hospital Guam |
| | NCR | Walter Reed National Medical Center |

## 4.4.8 Discharge Information

Appendix J has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on this measure. Figure 20 shows Discharge Information scores by Care Type, Service Branch (for DC) and Region (for PC).

### 4.4.8.1 Comparison to CMS Benchmark

Scores from both **DC** and **PC** for Discharge Information were significantly higher than the benchmark of 87%.

### 4.4.8.2 Measure by Service Branch

For DC, scores from **Air Force**, **Army**, and **Navy** respondents were significantly higher than the benchmark. Respondent scores for **NCR** met but were not significantly different than the benchmark.

### 4.4.8.3 Measure by Region

Respondents in the **North** and **West** Regions reported scores that were significantly higher than the benchmark. Respondent scores for the **South** Region met but were not significantly different than the benchmark.

### 4.4.8.4 Measure by Product Line

For both DC and PC, **Obstetric** care and **Surgical** care respondents reported scores that were significantly higher than the benchmark.

For **Medical** care, both DC and PC respondents reported scores that met but were not significantly different from the benchmark.



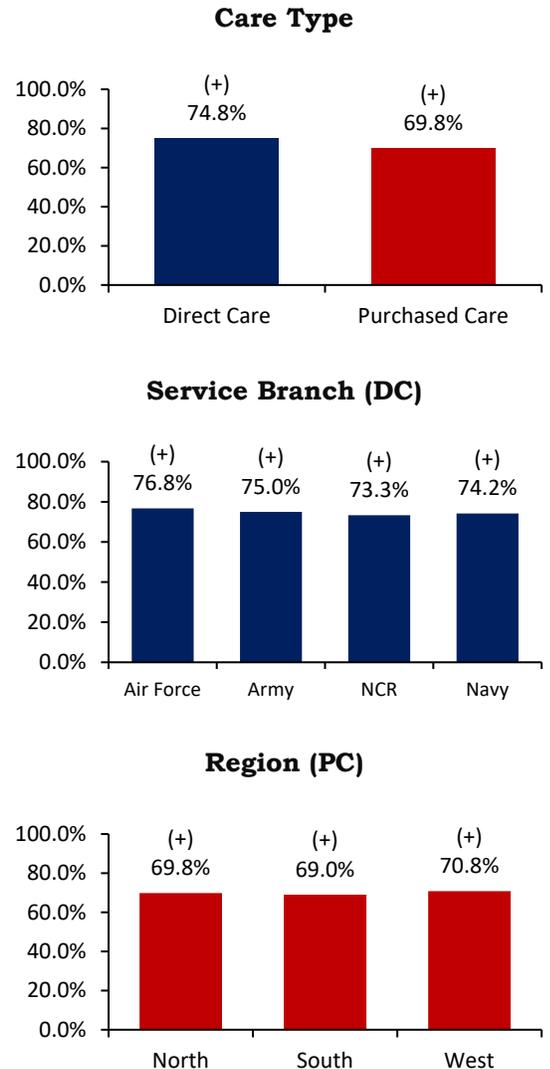**Figure 20. Discharge Information Scores by Care Type, Service Branch, and Region.**

A plus (+) sign on a bar indicates that the score is significantly (p < 0.05) higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark.

### 4.4.8.5 HCAHPS Star Ratings

Table 13 shows HCAHPS Star Ratings calculated from DC respondent scores of Discharge Information. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have a HCAHPS Star Ratings calculation.

**Table 14. HCAHPS Star Ratings for Discharge Information.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Four-Star | Air Force | 673rd Medical Group, Elmendorf<br>81st Medical Group, Keesler<br>88th Medical Group, Wright-Patterson<br>48th Medical Group, Lakenheath<br>31st Medical Group, Aviano Air Base |
| | Army | Bassett Army Community Hospital, Ft. Wainwright<br>Keller Army Community Hospital, West Point<br>Reynolds Army Community Hospital, Ft. Sill<br>Landstuhl Regional Medical Center |
| | Navy | Naval Hospital Twentynine Palms<br>Naval Hospital Pensacola |
| Three-Star | Air Force | 60th Medical Group, Travis<br>96th Medical Group, Eglin<br>99th Medical Group, O'Callaghan Hospital<br>633rd Medical Group, Langley-Eustis |
| | Army | Evans Army Community Hospital, Ft. Carson<br>Eisenhower Army Medical Center, Ft. Gordon<br>Martin Army Community Hospital, Ft. Benning<br>Winn Army Community Hospital, Ft. Stewart<br>Tripler Army Medical Center, Ft. Shafter<br>Irwin Army Community Hospital, Ft. Riley<br>Bayne Jones Army Community Hospital, Ft. Polk<br>L. Wood Army Community Hospital, Ft. Leonard Wood<br>Womack Army Medical Center, Ft. Bragg<br>William Beaumont Army Medical Center, Ft. Bliss<br>Brooke Army Medical Center, Ft. Sam Houston<br>Darnall Army Medical Center, Ft. Hood<br>Madigan Army Medical Center, Ft. Lewis<br>Weed Army Community Hospital, Ft. Irwin<br>Brian Allgood Army Community Hospital, Seoul |
| | Navy | Naval Hospital Camp Pendleton<br>Naval Medical Center San Diego<br>Naval Hospital Jacksonville<br>Naval Hospital Camp Lejeune<br>Naval Medical Center Portsmouth<br>Naval Hospital Bremerton<br>Naval Hospital Guam<br>Naval Hospital Okinawa<br>Naval Hospital Yokosuka |
| | NCR | Walter Reed National Medical Center<br>Ft. Belvoir Community Hospital |
| Two-Star | Army | Blanchfield Army Community Hospital, Ft. Campbell |

## 4.4.9 Care Transition

Appendix J has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on this measure. Figure 21 shows Care Transition scores by Care Type, Service Branch (for DC) and Region (for PC).

### 4.4.9.1 Comparison to CMS Benchmark

Scores from both **DC** and **PC** respondents for Care Transition were significantly higher than the benchmark of 52%.

### 4.4.9.2 Measure by Service Branch

For DC, respondent scores from **all Service Branches** (**Air Force**, **Army**, **NCR**, and **Navy**) were significantly higher than the benchmark.

### 4.4.9.1 Measure by Region

For PC, respondents in **all three Regions** (**North**, **South**, and **West**) also reported scores that were significantly higher than the benchmark.

### 4.4.9.2 Measure by Product Line

For both DC and PC, **Obstetric** care, **Surgical** care, and **Medical** care respondents reported scores that were significantly higher than the benchmark.

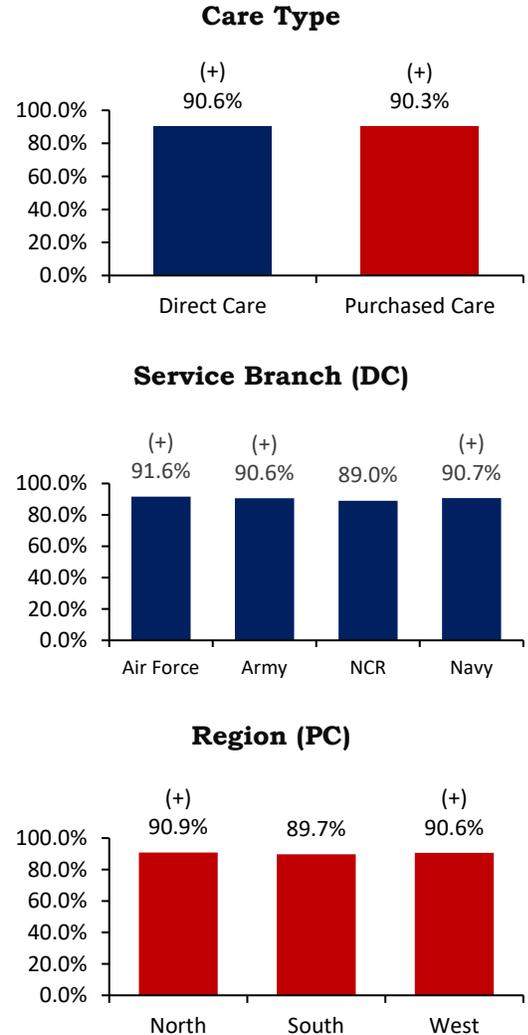**Care Type**



**Service Branch (DC)**



**Region (PC)**



**Figure 21. Care Transition Scores by Care Type, Service Branch, and Region.**

A plus (+) sign on a bar indicates that the score is significantly ($p < 0.05$) higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark.

### 4.4.9.3 HCAHPS Star Ratings

Table 14 shows HCAHPS Star Ratings calculated from DC respondent scores of Care Transition. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have a HCAHPS Star Ratings calculation.

**Table 15. HCAHPS Star Ratings for Care Transition.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Five-Star | Air Force | 673rd Medical Group, Elmendorf<br>60th Medical Group, Travis<br>96th Medical Group, Eglin<br>81st Medical Group, Keesler<br>88th Medical Group, Wright-Patterson<br>48th Medical Group, Lakenheath<br>31st Medical Group, Aviano Air Base |
| | Army | Eisenhower Army Medical Center, Ft. Gordon<br>Reynolds Army Community Hospital, Ft. Sill<br>Brooke Army Medical Center, Ft. Sam Houston<br>Landstuhl Regional Medical Center<br>Brian Allgood Army Community Hospital, Seoul |
| | Navy | Naval Hospital Twentynine Palms<br>Naval Hospital Pensacola |
| | NCR | Ft. Belvoir Community Hospital |
| Four-Star | Air Force | 99th Medical Group, O'Callaghan Hospital<br>633rd Medical Group, Langley-Eustis |
| | Army | Bassett Army Community Hospital, Ft. Wainwright<br>Evans Army Community Hospital, Ft. Carson<br>Martin Army Community Hospital, Ft. Benning<br>Irwin Army Community Hospital, Ft. Riley<br>Blanchfield Army Community Hospital, Ft. Campbell<br>Bayne Jones Army Community Hospital, Ft. Polk<br>L. Wood Army Community Hospital, Ft. Leonard Wood<br>Keller Army Community Hospital, West Point<br>Womack Army Medical Center, Ft. Bragg<br>William Beaumont Army Medical Center, Ft. Bliss<br>Darnall Army Medical Center, Ft. Hood<br>Madigan Army Medical Center, Ft. Lewis<br>Weed Army Community Hospital, Ft. Irwin |
| | Navy | Naval Hospital Camp Pendleton<br>Naval Medical Center San Diego<br>Naval Hospital Jacksonville<br>Naval Medical Center Portsmouth<br>Naval Hospital Bremerton<br>Naval Hospital Guam<br>Naval Hospital Okinawa |
| | NCR | Walter Reed National Medical Center |
| Three-Star | Army | Winn Army Community Hospital, Ft. Stewart<br>Tripler Army Medical Center, Ft. Shafter |
| | Navy | Naval Hospital Camp Lejeune<br>Naval Hospital Yokosuka |

## 4.4.10 Cleanliness of Hospital Environment

Appendix J has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on this measure. Figure 22 shows Cleanliness of Hospital Environment scores by Care Type, Service Branch (for DC) and Region (for PC).

### 4.4.10.1 Comparison to CMS Benchmark

Scores from **DC** respondents for Cleanliness of Hospital Environment were significantly higher than the benchmark of 74%.

Scores from **PC** respondents on this measure met but were not significantly different from the benchmark.

### 4.4.10.2 Measure by Service Branch

For DC, **Air Force** and **Army** respondents reported scores that were significantly higher than the benchmark. Scores from **NCR** and **Navy** respondents met but were not significantly different from the benchmark.

### 4.4.10.3 Measure by Region

Respondent scores from the **West** Region were significantly higher than the benchmark. Scores from **North** and **South** Region respondents met but were not significantly different from the benchmark.

### 4.4.10.4 Measure by Product Line

For both DC and PC, **Surgical** care respondents reported scores that were significantly higher than the benchmark.

For **Medical** care, DC respondents reported scores that were significantly higher than the benchmark, while PC respondents reported scores that met but were not significantly different than the benchmark. For **Obstetric** care, both DC and PC respondents reported scores that met but were not significantly different than the benchmark.

**Care Type**

(+)
75.9%     73.7%

Direct Care     Purchased Care

**Service Branch (DC)**

(+)        (+)
75.3%      78.7%     71.0%      72.7%

Air Force     Army     NCR     Navy

**Region (PC)**

(+)
73.8%      72.0%     76.3%

North     South     West

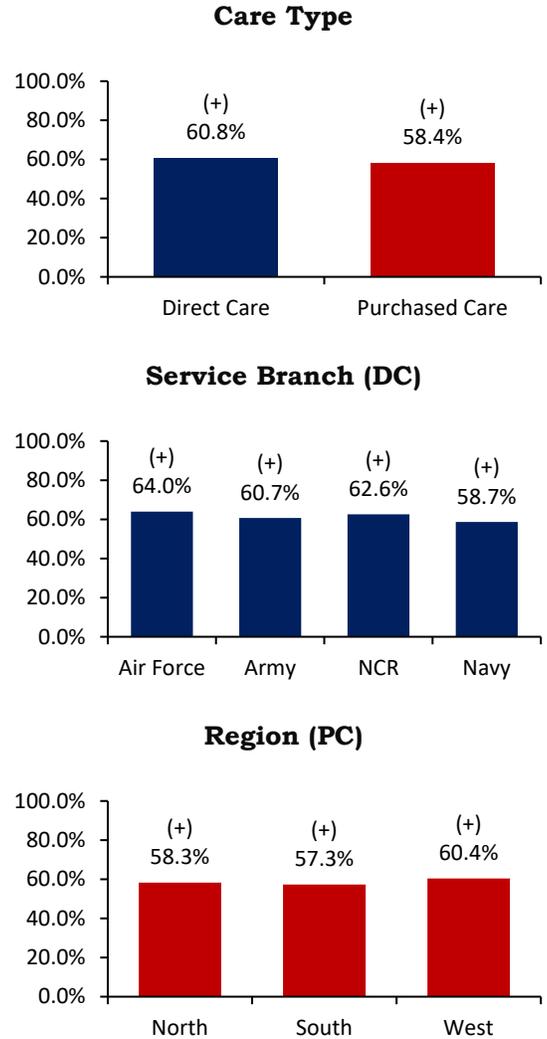**Figure 22. Cleanliness of Hospital Scores by Care Type, Service Branch, and Region.**

A plus (+) sign on a bar indicates that the score is significantly (p < 0.05) higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark.

### 4.4.10.5    HCAHPS Star Ratings

Table 15 shows HCAHPS Star Ratings calculated from DC respondent scores for Cleanliness of Hospital Environment. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have HCAHPS Star Ratings calculated.

**Table 16. HCAHPS Star Ratings for Cleanliness of Hospital Environment.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Five-Star | Air Force | 31st Medical Group, Aviano Air Base |
| | Army | Bayne Jones Army Community Hospital, Ft. Polk |
| | | Keller Army Community Hospital, West Point |
| | | Reynolds Army Community Hospital, Ft. Sill |
| | | Landstuhl Regional Medical Center |
| Four-Star | Air Force | 673rd Medical Group, Elmendorf |
| | | 81st Medical Group, Keesler |
| | | 88th Medical Group, Wright-Patterson |
| | Army | Bassett Army Community Hospital, Ft. Wainwright |
| | | Evans Army Community Hospital, Ft. Carson |
| | | Eisenhower Army Medical Center, Ft. Gordon |
| | | Martin Army Community Hospital, Ft. Benning |
| | | Irwin Army Community Hospital, Ft. Riley |
| | | Blanchfield Army Community Hospital, Ft. Campbell |
| | | L. Wood Army Community Hospital, Ft. Leonard Wood |
| | | Womack Army Medical Center, Ft. Bragg |
| | | Brooke Army Medical Center, Ft. Sam Houston |
| | | Darnall Army Medical Center, Ft. Hood |
| | | Madigan Army Medical Center, Ft. Lewis |
| | | Weed Army Community Hospital, Ft. Irwin |
| | | Brian Allgood Army Community Hospital, Seoul |
| | Navy | Naval Hospital Pensacola |
| | | Naval Hospital Jacksonville |
| | | Naval Hospital Yokosuka |
| | NCR | Ft. Belvoir Community Hospital |
| Three-Star | Air Force | 60th Medical Group, Travis |
| | | 96th Medical Group, Eglin |
| | Army | Winn Army Community Hospital, Ft. Stewart |
| | | Tripler Army Medical Center, Ft. Shafter |
| | | William Beaumont Army Medical Center, Ft. Bliss |
| | Navy | Naval Hospital Camp Pendleton |
| | | Naval Medical Center San Diego |
| | | Naval Medical Center Portsmouth |
| | | Naval Hospital Okinawa |
| Two-Star | Air Force | 99th Medical Group, O'Callaghan Hospital |
| | | 633rd Medical Group, Langley-Eustis |
| | | 48th Medical Group, Lakenheath |
| | Navy | Naval Hospital Twentynine Palms |
| | | Naval Hospital Camp Lejeune |
| | | Naval Hospital Bremerton |
| | | Naval Hospital Guam |
| | NCR | Walter Reed National Medical Center |

## 4.4.11      Quietness of Hospital Environment

Appendix J has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on this measure. Figure 23 shows Quietness of Hospital Environment scores by Care Type, Service Branch (for DC) and Region (for PC).

### 4.4.11.1      Comparison to CMS Benchmark

Scores from **DC** respondents for Quietness of Hospital Environment were significantly higher than the benchmark of 62%.

Scores from **PC** respondents met but were not significantly different from the benchmark.

### 4.4.11.2      Measure by Service Branch

For DC, respondent scores from **all Service Branches** (**Air Force**, **Army, NCR**, and **Navy**) were significantly higher than the benchmark.

### 4.4.11.1      Measure by Region

For PC, scores from **North, South,** and **West** Region respondents met but were not significantly different from the benchmark.

### 4.4.11.2      Measure By Product Line

For both DC and PC, **Obstetric** care respondents reported scores that were significantly higher than the benchmark.

For **Medical** care, DC respondents reported scores that were significantly higher than the benchmark, while PC respondents reported scores that were significantly lower than the benchmark. For **Surgical** care, DC respondents reported scores that were significantly higher than the benchmark, while PC respondents reported scores that met but were not significantly different from the benchmark.

**Care Type**



**Service Branch (DC)**
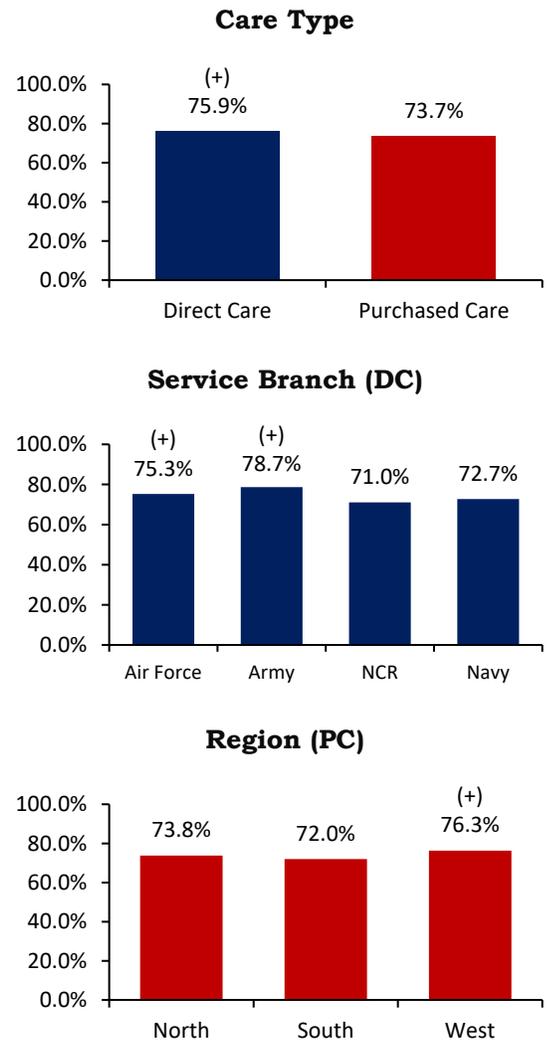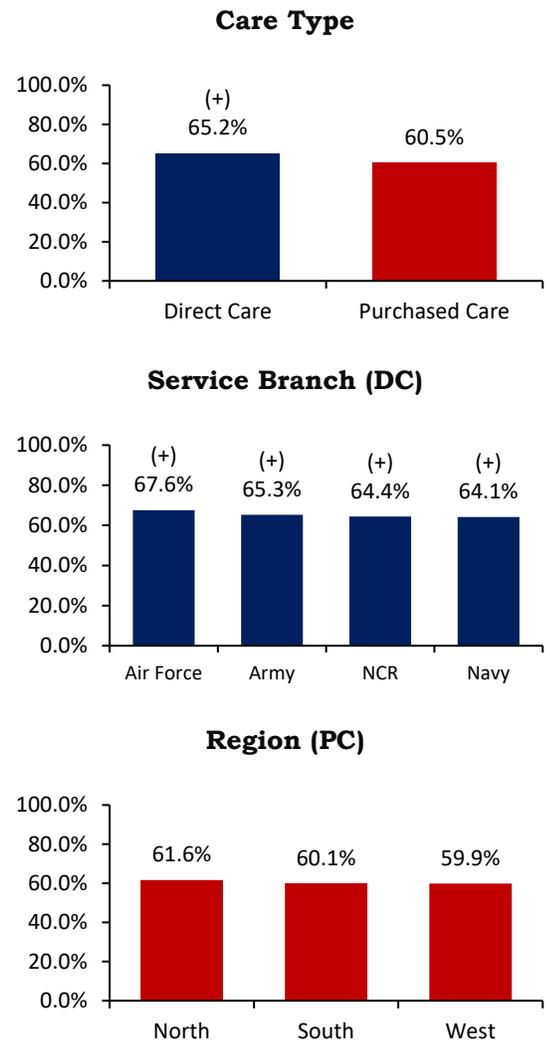


**Region (PC)**



**Figure 23. Quietness of Hospital Scores by Care Type, Service Branch, and Region.**

A plus (+) sign on a bar indicates that the score is significantly ($p < 0.05$) higher than the benchmark, while a minus (-) sign indicates that the score is significantly lower than the benchmark.

### 4.4.11.3    HCAHPS Star Ratings

Table 16 shows HCAHPS Star Ratings calculated from DC respondent scores for Quietness of Hospital Environment. Eleven DC facilities did not have enough completed responses over a four-quarter reporting period to have HCAHPS Star Ratings calculated.

**Table 17. HCAHPS Star Ratings for Quietness of Hospital Environment.**

| Type of Facility | Military Branch | Facility |
|---|---|---|
| Five-Star | Army | Martin Army Community Hospital, Ft. Benning<br>Keller Army Community Hospital, West Point<br>Reynolds Army Community Hospital, Ft. Sill<br>Brian Allgood Army Community Hospital, Seoul |
| | Navy | Naval Hospital Pensacola<br>Naval Hospital Jacksonville |
| | NCR | Ft. Belvoir Community Hospital |
| Four-Star | Air Force | 96th Medical Group, Eglin<br>81st Medical Group, Keesler<br>88th Medical Group, Wright-Patterson<br>48th Medical Group, Lakenheath<br>31st Medical Group, Aviano Air Base |
| | Army | Evans Army Community Hospital, Ft. Carson<br>Irwin Army Community Hospital, Ft. Riley<br>Blanchfield Army Community Hospital, Ft. Campbell<br>Bayne Jones Army Community Hospital, Ft. Polk<br>L. Wood Army Community Hospital, Ft. Leonard Wood<br>Darnall Army Medical Center, Ft. Hood<br>Weed Army Community Hospital, Ft. Irwin |
| | Navy | Naval Hospital Camp Pendleton<br>Naval Medical Center Portsmouth<br>Naval Hospital Bremerton<br>Naval Hospital Guam<br>Naval Hospital Okinawa |
| Three-Star | Air Force | 673rd Medical Group, Elmendorf<br>99th Medical Group, O'Callaghan Hospital<br>633rd Medical Group, Langley-Eustis |
| | Army | Bassett Army Community Hospital, Ft. Wainwright<br>Eisenhower Army Medical Center, Ft. Gordon<br>Winn Army Community Hospital, Ft. Stewart<br>Womack Army Medical Center, Ft. Bragg<br>William Beaumont Army Medical Center, Ft. Bliss<br>Brooke Army Medical Center, Ft. Sam Houston<br>Madigan Army Medical Center, Ft. Lewis<br>Landstuhl Regional Medical Center |
| | Navy | Naval Hospital Twentynine Palms |
| Two-Star | Air Force | 60th Medical Group, Travis |
| | Army | Tripler Army Medical Center, Ft. Shafter |
| | Navy | Naval Medical Center San Diego<br>Naval Hospital Camp Lejeune<br>Naval Hospital Yokosuka |
| | NCR | Walter Reed National Medical Center |

## 4.5    DoD Supplemental Questions

The TRISS reports on eight measures other than the 11 HCAHPS measures: Family Member Stayed, Staff Introduced Self, Communication among Staff, Repeat Care, Education on Breastfeeding, Staff Washed Hands, Staff Checked Identification, and Overall Nursing Care Rating. Appendix K has full demographic breakdowns (by beneficiary category, age, health status, gender, product line, Service Branch, and Region) for data on these measures. Table 21 lists the DoD supplemental questions wording.

### 4.5.1 Measures by Care Type

DC and PC respondents reported similar scores (within two points) for five measures: Communication Among Staff, Family Member Stayed, Education on Breastfeeding, Staff Washed Hands and Overall Nursing Care. DC respondents reported higher scores for Staff Introduced Self than PC respondents, while PC respondents reported higher scores for OB Repeat Care and Staff Checked Identification than DC respondents. Figure 24 below depicts the scores on individual measures given by DC and PC respondents.
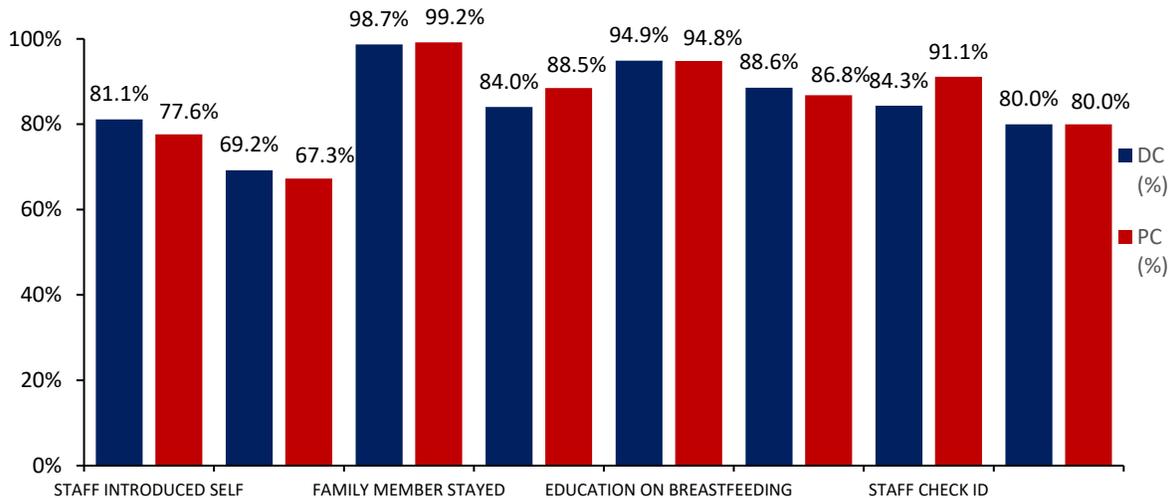


**Figure 24. Comparison of Supplemental Department of Defense Scores by Care Type.**

### 4.5.2 Measures by Subgroup

For DC, there is little variability by Service Branch for many measures. Even so, respondents at NCR facilities reported lower scores for Staff Check ID and Staff Washed Hands. Air Force respondents provided high scores for the Communication Among Staff and Overall Nursing Care measures.

There is also little variability between PC Regions. For Good Staff Communication, respondents from the South Region provided low scores compared to North and West respondents. North Region respondent scores were comparatively low on OB Repeat care, while the West Region respondent scores were high for Overall Nursing Care.

### 4.5.3 Measures by Product Line

For DC, Obstetric care respondents reported lower scores for the Staff Check ID and Overall Nursing Care. Obstetric care respondents also reported considerably lower scores for Communication Among Staff when compared to Medical care and Surgical care respondents. DC Medical care respondents reported considerably lower scores on OB Repeat Care and Education on Breastfeeding as compared to Obstetric and Medical care respondents.

For PC, Surgical care respondents reported higher scores than the Obstetric and Medical care respondents on Communication Among Staff and Overall Nursing Care, while Obstetric respondents reported higher scores for Staff Introduce Self.

## 4.6    Year-to-Year Analysis: Comparison Between Year 2016 and Year 2017

This section compares TRISS results between Year 2017, the current dataset, and Year 2016, the dataset reviewed in the previous Annual TRISS report. Year 2016 includes response from 83,276 users who visited MTFs or a PC network facility between April 1, 2015, and March 31, 2016. Year 2017 includes responses from 67,648 users who visited MTFs or a PC network facility between April 1, 2016, and March 31, 2017.

### 4.6.1    Overall Trends

**Both DC and PC had respondent scores that improved or remained stable between Year 2016 and Year 2017, with no measure experiencing significant decreases.**

Scores from DC respondents significantly improved on five metrics, with the largest significant increase of 4.5% (see Figure 25). Scores from PC respondents, on aggregate, also increased on five of the 11 measures, with a maximum increase of 3.6% (see Figure 26). Both DC and PC saw significant improvements in respondent scores for the two global measures of Overall Hospital Rating and Recommend the Hospital between Year 2016 and Year 2017.



**Figure 25. Difference in Scores for DC HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.

70
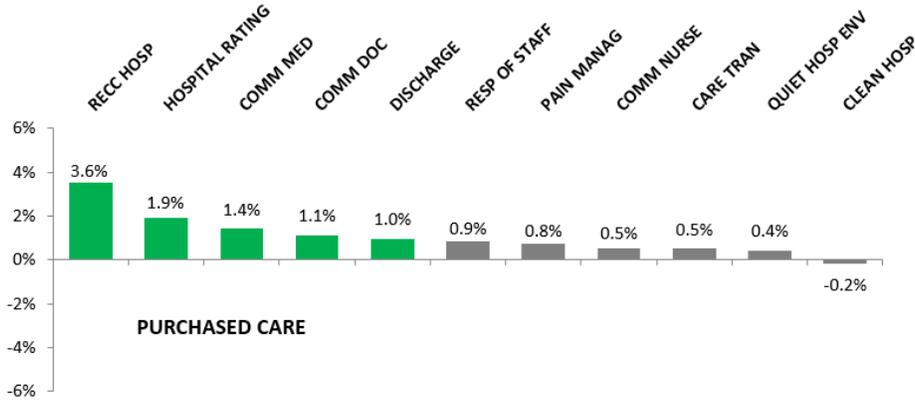
**Figure 26. Difference in Scores for PC HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.

## 4.6.2 DC Trends

### 4.6.2.1 Service Branch

Figure 27 through Figure 30 show changes in DC respondent scores for HCAHPS measures from Year 2016 to Year 2017 by military branch and NCR.

**Overall, DC respondent scores remained stable or improved across the three Service Branches while NCR respondent scores showed significant decreases.** Scores from Army respondents fared best with significant improvements on seven of 11 HCAHPS measures, and scores from Air Force respondents showed significant improvement on four measures. Scores from Navy respondents improved in the Communication about Medicines measure. None of the Service Branches saw significant decreases in respondent scores, but NCR respondents reported significant decreases in seven of 11 HCAHPS measures.



**Figure 27. Difference in Scores for Air Force HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.

71
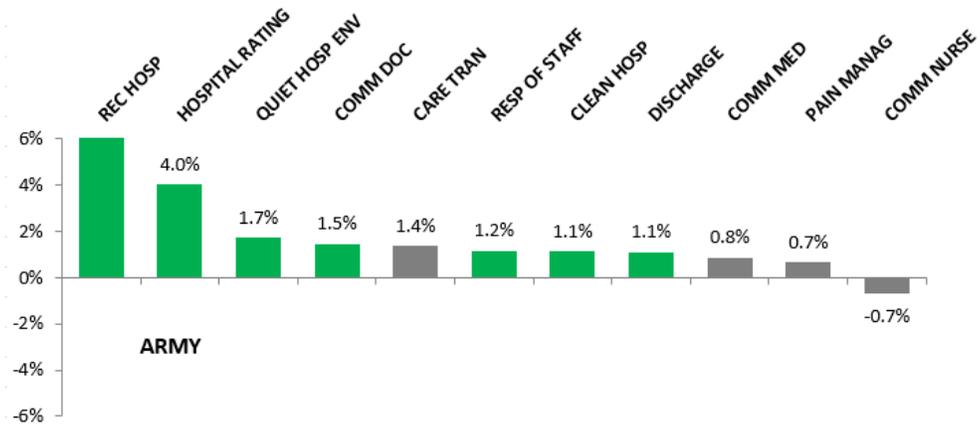
**Figure 28. Difference in Scores for Army HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.
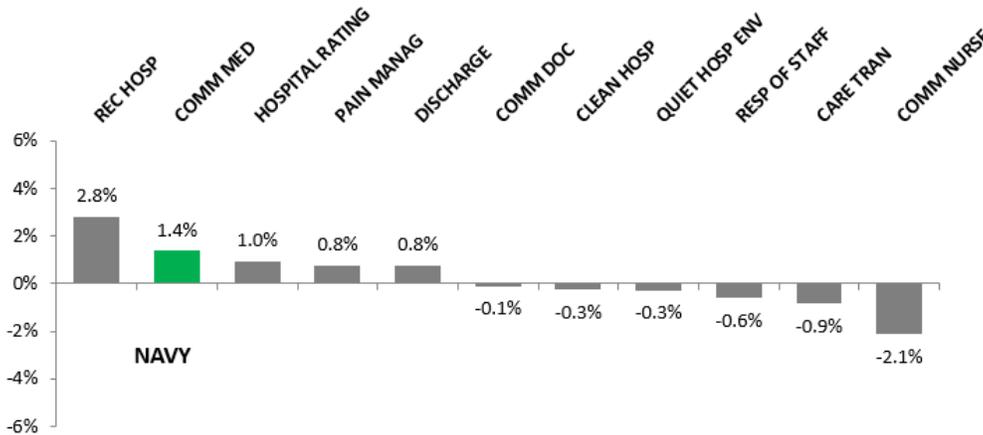


**Figure 29. Difference in Scores for Navy HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.
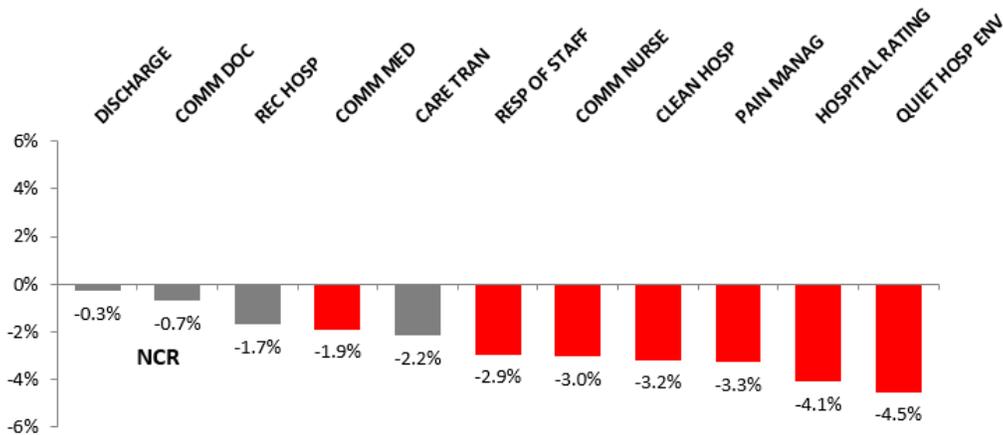


**Figure 30. Difference in Scores for NCR HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Red bars indicate a significant decrease in score, and grey bars indicate no change in score.

72

### 4.6.2.2 Product Line

Figure 31 through Figure 33 show changes in DC respondent scores from Year 2016 to Year 2017 by product line.

**DC respondent scores either improved or remained stable between Year 2016 to Year 2017 when examined by product line.** Obstetric respondent scores fared best with improvements in eight of 11 HCAHPS measures, and Medical respondent scores improved on seven measures. Surgical care respondent scores improved on Recommend the Hospital and remained stable for all other measures from Year 2016 to Year 2017.
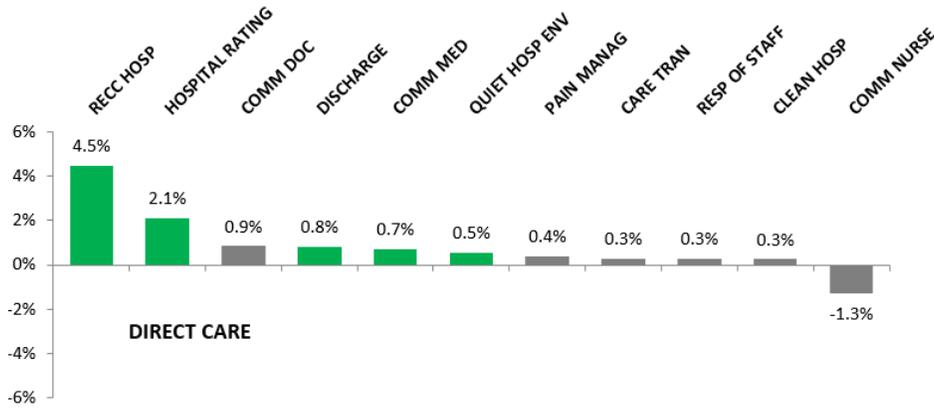


**Figure 31. Difference in Scores for DC Medical HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.



**Figure 32. Difference in Scores for DC Obstetric HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.

**Figure 33. Difference in Scores for DC Surgical HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.

### 4.6.3 PC Trends

#### 4.6.3.1 Region

Figure 34 through Figure 36 show changes in PC respondent scores from Year 2016 to Year 2017 by TRO Region.

**Overall, scores from PC respondents improved or remained stable between Year 2016 and Year 2017 across regions.** Scores from North Region respondents fared best, with improvements on five measures including Recommend the Hospital, Overall Hospital Rating, Communication with Doctors, Quietness of Hospital Environment, and Discharge Information. Scores from South Region respondents significantly improved on Recommend the Hospital and Discharge Information. Scores from respondents in the West Region significantly improved on three measures: Recommend the Hospital, Quietness of Hospital Environment, and Overall Hospital Rating. None of the three Regions saw significant decreases on any of the eleven HCAHPS measures.
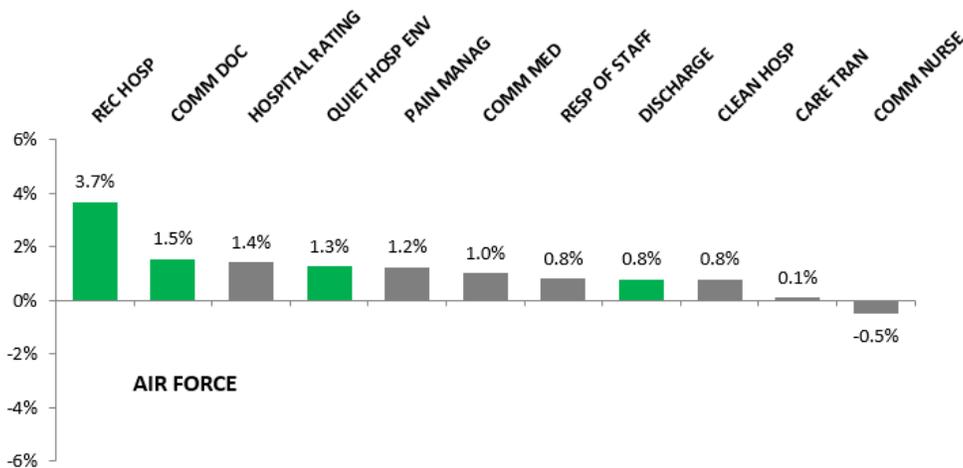


**Figure 34. Difference in Scores for North Region HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score and grey bars indicate no change in score.

**Figure 35. Difference in Scores for South Region HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score and grey bars indicate no change in score.
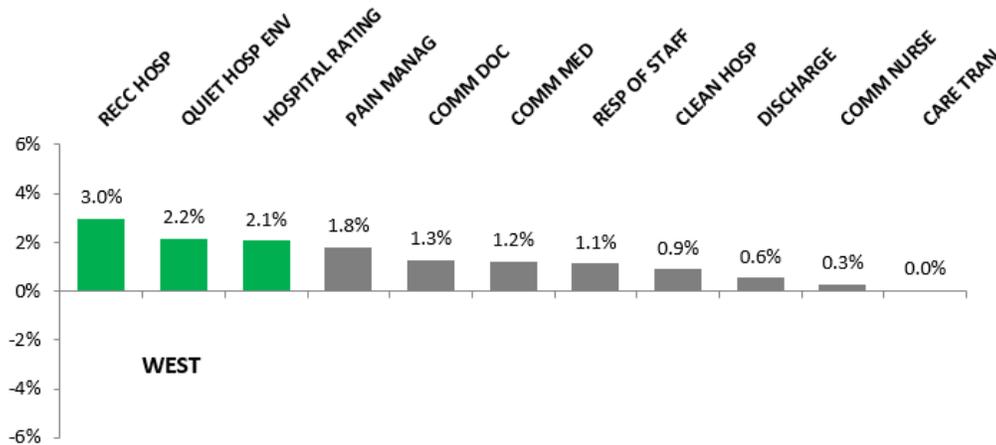


**Figure 36. Difference in Scores for West Region HCAHPS between Year 2016 (FY2016 Q1 and FY2016 Q2 aggregated) and Year 2017 (FY2016 Q3 through FY2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score and grey bars indicate no change in score.

### 4.6.3.2  Product Line

through               break down PC changes in measures from Year 2016 to Year 2017 by product line.

**Scores from PC respondents across product lines either improved or remained stable, with the most significant improvements found among Medical care and Surgical care respondents.** Medical care respondent scores improved for six measures, including Overall Hospital Rating, Recommend the Hospital, Care Transition, Communication with Doctors, Communication with Nurses, and Discharge Information. While Obstetric care respondent scores remained stable with no significant changes from Year 2016 to Year 2017, Surgical care respondent scores improved on four measures: Communication about Medicines, Communication with Nurses, Recommend the Hospital, and Overall Hospital Rating.
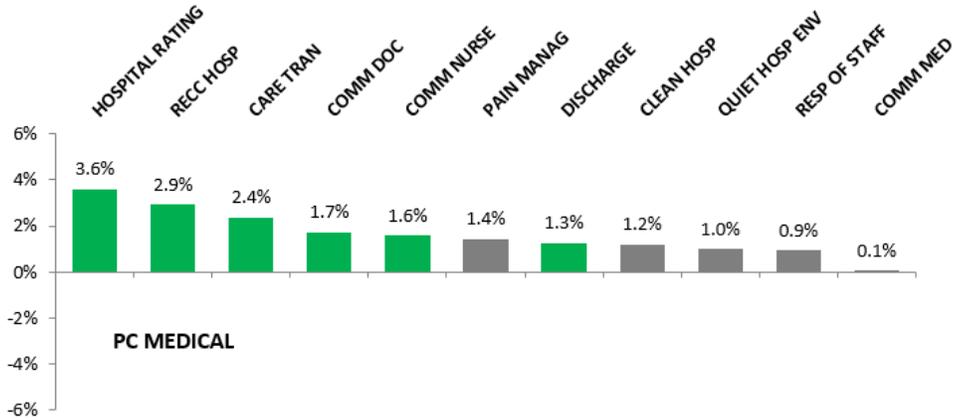
**Figure 37. Difference in Scores for PC Medical HCAHPS between Year 2016 (Q1 and Q2 aggregated) and Year 2017 (Year 2016 Q3 through Year 2017 Q2 aggregated).**

Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.
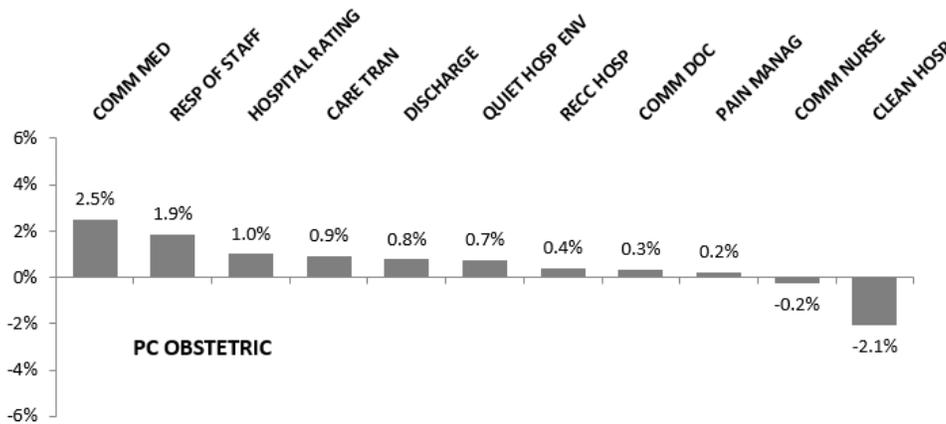


**Figure 38. Difference in Scores for PC Obstetric HCAHPS between Year 2016 (Q1 and Q2 aggregated) and Year 2017 (Year 2016 Q3 through Year 2017 Q2 aggregated).**
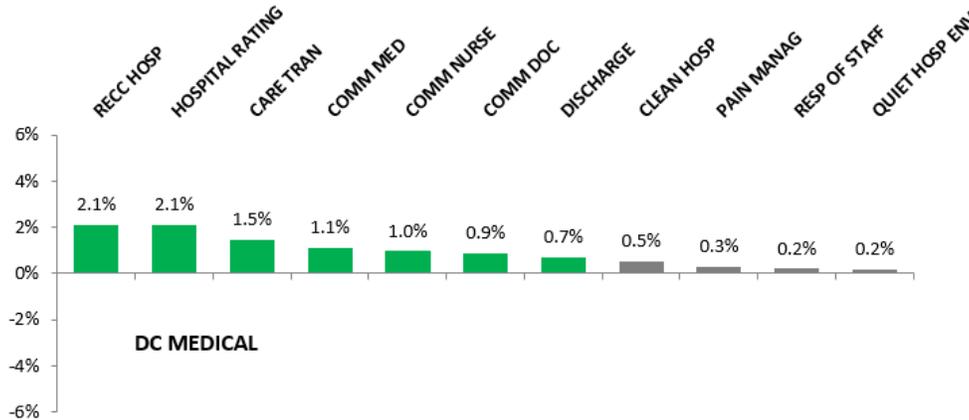
Note: Grey bars indicate no change in score.
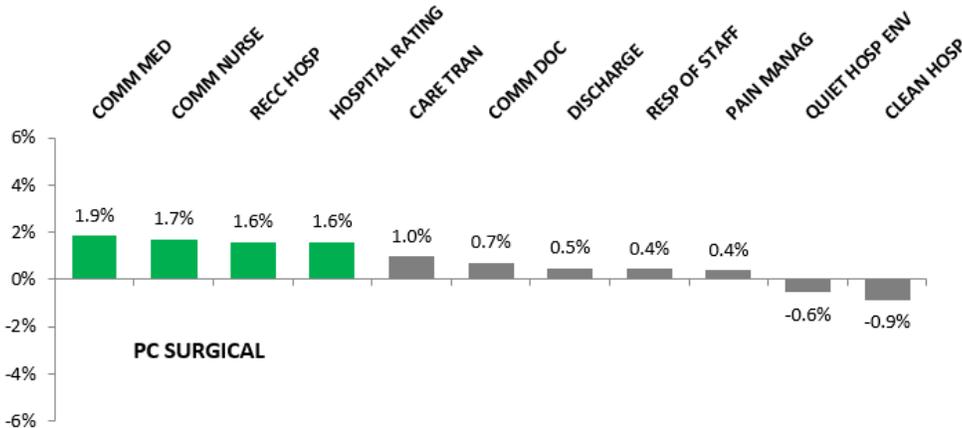


**Figure 39. Difference in Scores for PC Surgical HCAHPS between Year 2016 (Q1 and Q2 aggregated) and Year 2017 (Year 2016 Q3 through Year 2017 Q2 aggregated).**

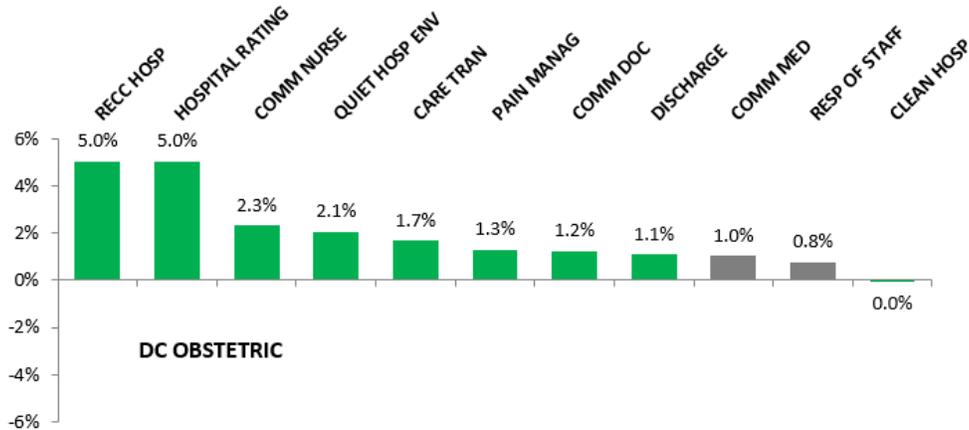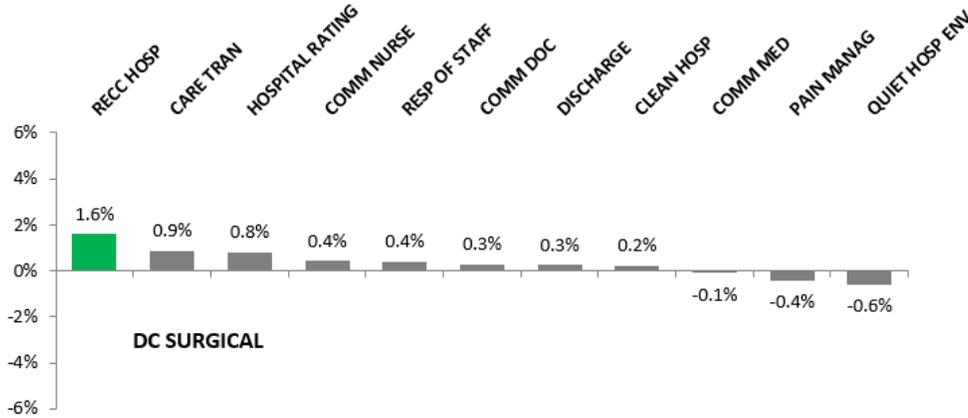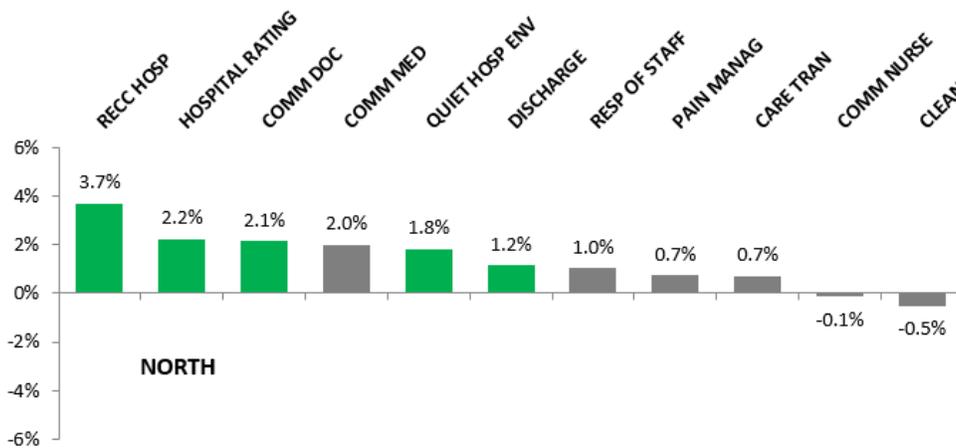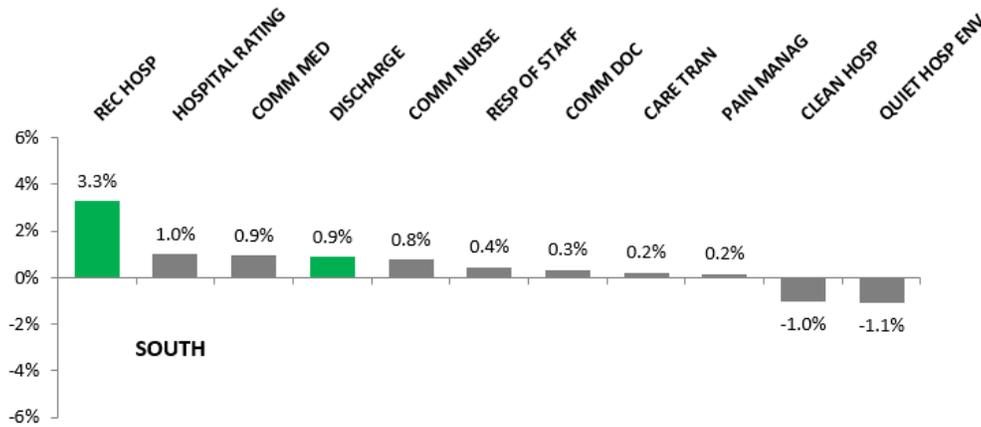Note: Green bars indicate a significant increase in score, and grey bars indicate no change in score.

# 5 METHODOLOGY

The goal of the TRICARE Inpatient Satisfaction Survey (TRISS) study is to understand the inpatient experience among the 9.4 million MHS users in both Direct Care (DC) and Purchased Care (PC) settings. The TRISS program requests a census of users who were recently discharged after an overnight admission or longer from a world-wide military treatment facility (MTF; referred as DC) are surveyed. During the reporting period, there was a deviation from using a census. As a Federal program, the number to be sampled is tightly governed by the contract. The volume of discharged DC patients exceeded past volumes, and the sampling was necessary to keep the number sampled within the 140,000 patient contractual limit. Discharged patients were surveyed as a census in FY2016 Q3 for all hospitals. In keeping with HCAHPS protocols, sampling rates were adjusted every quarter. FY2016Q4 and FY2017Q1 selected a simple random sample for the larger hospitals and a census for the smaller ones (where expected number of completes are less than 300 surveys per years). This consists of approximately 20 of MTFs. The remaining larger hospitals sampled between 89-98% of eligible admissions. At FY2017Q2 discharged patients were surveyed as a census.

In addition, a representative sample is selected for civilian hospitals receiving sufficient numbers of MHS users (PC). Users included in this study are Active Duty family members (ADFM) 18 years and over, retirees and their family members, and all Active Duty (AD) personnel regardless of age.

Inpatient care is defined as an overnight stay as an inpatient admission to either an MTF or civilian hospital in which the patient's admission date is different from their discharge date. The admission need not be 24 hours in length. Patients must be 18 years or older at time of admission, have a non-psychiatric MS-DRG principal diagnosis at discharge, and be alive at time of discharge. Non-eligible MS-DRG codes are 283-285, 789-795, 876, 880-887, 894-897, 945-946, 998-999. See Table 17 for all eligible MS-DRG codes.

The TRISS study methodology follows the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) protocols set out by the Centers for Medicare and Medicaid Services (CMS). The complete details of the HCAHPS protocol can be found in the HCAHPS Quality Assurance Guidelines Version 12.0 (http://www.hcahpsonline.org/Files/QAG_V12.0_2017.pdf).

Adherence to HCAHPS protocols ensures comparability of TRISS and civilian hospital experience results throughout the United States. The protocols include definitions of respondent eligibility criteria, sampling rules, field procedures, data processing, and reporting. This section of the Annual Report provides details of the methodology and procedures used in the TRISS study in the third and fourth quarters of FY2016 and the first and second quarters of FY2017 for both DC and PC.

## 5.1    Sample Frame

The sample consists of all MHS users who recently received inpatient care from an MTF or a MHS civilian network hospital. The next sections outline the specific sampling parameters.

## 5.1.1 TRISS Sample Requirements

### 5.1.1.1 Target Sample Size

TRISS requires a target sample size of 300 completed interviews per facility per year. Assuming a 30% response rate per facility, at least 1,000 patients must be contacted each year from each facility. To achieve this sample size for DC the vendor conducts a census or near census of all eligible inpatient discharges, and mails surveys to a maximum of 140,000 users (130,000 within the continental United States [CONUS] and 10,000 outside of the continental United States [OCONUS]) across 51 facilities (37 CONUS and 14 OCONUS) per year.

This section reports on sampling procedures for time periods Year 2016 and Year 2017. The time-period Year 2016 covers responses from 83,276 users who visited MTFs or a PC network facility between April 1, 2015, and March 31, 2016. Year 2017 covers responses from 67,648 users who visited MTFs or a PC network facility between April 1, 2016, and March 31, 2017.

Three facilities included in the Year 2016 Annual Report are no longer sampled or only sampled for part of the reporting period for the Year 2017 Annual Report because they no longer accept inpatients. These three facilities are Ireland Army Community Hospital, 366th Medical Group Mountain Home, and Reynolds Army Community Hospital, Ft. Still.

For the PC sample, surveys are mailed to up to 47,000 users across 70 CONUS facilities per year. Random samples are selected within each PC facility to achieve the required 300 completes. If a facility does not have enough discharges to obtain 300 completes with a random sample, the sample consists of a census of all discharged users.

The sampling rate is a function of the requirement to collect 300 completed cases per 12-month period and of the expected response rate. The PC sample was generated from select civilian hospitals monthly. Civilian hospitals were selected for sampling based on historical claims data to determine whether they have enough discharges to collect 300 completed cases per 12 months. Hospitals with too few inpatient discharges to generate the full 300 completed cases may still comply with the protocol by conducting a census of all eligible inpatients. The sample plan was reviewed each quarter and adjusted to account for variations in the estimated response rate.

### 5.1.1.2 Eligibility

TRISS respondent eligibility requirements are identical for the DC and PC samples. The sample frame consists of MHS users discharged from an overnight stay (as defined above). The population includes military personnel, retirees, and their beneficiaries. The target population includes Active Duty Service Members; Active Duty Family Members; Survivors of Deceased Active Duty Family Members; active National Guard and Reserve Members; Family Members of active National Guard and Reserve Members; Retired Service Members; Family Members of Retired Service Members; and others who use military healthcare.

In addition, the TRISS protocol follows HCAHPS eligibility guidelines for inclusion in the sample frame. The HCAHPS Quality Assurance Guidelines for survey eligibility include:

- Patients must be 18 or older at the time of admission.
- At least one overnight stay in the hospital.
- Non-psychiatric principal diagnosis.
- Diagnosis defined by HCAHPS Diagnosis Related Groups (DRGs)[1] V34.
  - Obstetric Product Line.
  - Medical Product Line.
  - Surgical Product Line.
  - Missing.
- Alive at the time of discharge.

The patient's principal diagnosis at the time of discharge determines whether he or she falls into one of the three product line categories (Obstetric, Medical, or Surgical) eligible for HCAHPS.

Patients who meet the eligible population criteria outlined above are to be included in the HCAHPS sample frame. However, several categories of otherwise eligible patients are excluded from the sample frame. These are:

- "No-Publicity" patients – Patients who request that they not be contacted.
- Court/Law enforcement patients (i.e., prisoners); this does not include patients residing in halfway houses.
- Patients discharged to hospice care (hospice-home or hospice-medical facility).
- Patients excluded because of state regulations.
- Patients discharged to nursing homes and skilled nursing facilities.

To reduce respondent burden, HCAHPS guidelines require monthly de-duplication of eligible patients based on household and multiple discharges within the same calendar month. De-duplication must be performed within each calendar month, utilizing address information and the patient's medical record number (such as EDIPN). The de-duplication process covers the following two areas:

1. De-duplication by Household: Only one adult member per household is included in the HCAHPS survey sample frame for a given month. For de-duplication purposes, halfway houses, barracks, and healthcare facilities are not considered to be a household, and thus must not be de-duplicated. Examples of healthcare facilities include: long-term care facilities, assisted living facilities, and group homes.
2. De-duplication for Multiple Discharges: While patients are eligible to be included in the HCAHPS Survey sample in consecutive months, if a patient is discharged more than once within a given calendar month, only one discharge date is included in the sample frame. The method used for de-duplicating sample received at the end of the month is to include only the last discharge date of the month in the sample frame.

When the vendor receives the initial population file, the DRG code may be missing, but is added to the frame in a future refresh. Table 17 has Product Line and Eligibility assignments according to HCAHPS protocol (available at http://www.hcahpsonline.org/Files/MS-DRG_V.33.pdf). As can be seen from the table, a record with a missing DRG may be eligible for the survey, but the DRG code must be updated when available. The vendor receives updates

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[1] Based on DRG list as defined by V.34 HCAHPS MS-DRGs effective October 1, 2016.

when changes are made to the population file. The last update is provided as close to the date of the close of field as possible. At that time, final eligibility is determined.

**Table 18. Assignment of Diagnosis-related Groups for TRISS Product Line Designations.**

| MS-DRG Codes | Product Line | HCAHPS Eligibility |
|---|---|---|
| 765-768, 774, 775 | Obstetrics | Yes |
| 52-103, 121-125, 146-159, 175-208, 280-282, 286-316, 368-395, 432-446, 533-566, 592-607, 637-645, 682-700, 722-730, 754-761, 776-782, 808-816, 834-849, 862-872, 913-923, 933-935, 947-951, 963-965, 974-977 | Medical | Yes |
| 1-8, 10-14, 16-17, 20-42, 113-117, 129-139, 163-168, 215-236, 239-274, 326-358, 405-425, 453-483, 485-489, 492-520, 570-585, 614-630, 652-675, 707-718, 734-750, 769, 770, 799-804, 820-830, 853-858, 901-909, 927-929, 939-941, 955-959, 969, 970, 981-989 | Surgical | Yes |
| 283-285, 789-795, 876, 880-887, 894-897, 945, 946, 998, 999 | Ineligible | No |
| A missing MS-DRG code does not exclude a patient from being drawn into the sample frame. | M= Missing | Yes |

Table 18 provides the target sample sizes for FY2016 Quarters 3 and 4 and FY2017 Quarters 1 and 2, the initial cases provided, the number of eligible cases and the number selected and sent questionnaires for the DC and PC populations. Appendix G has further details on DC eligibility rates by facility, and Appendix H has the details for PC.

**Table 19. Eligible TRISS Cases in Quarters 3 and 4 FY2016 and Quarters 1 and 2 FY2017.**

| Population | Target Sample Sizes | Records Received | Eligible Cases | Sampled Cases |
|---|---|---|---|---|
| Direct Care Totals | 140,000 | 145,673 | 141,673 | 133,987 |
| Purchased Care Totals | 47,000 | 81,877 | 67,031 | 43,203 |
| Totals for DC and PC | 187,000 | 227,550 | 208,704 | 177,190 |

### 5.1.1.3 DC Sampling Plan

Appendix A has the Year 2017 DC sampling plan. The DC sampling plan was a near census of all eligible discharged patients from participating MTFs. These discharges occurred at 51 MTFs both in CONUS and OCONUS. The sizes of the MTFs vary, and some facilities have relatively few inpatient admissions.

Appendix G shows the number of DC eligible discharges sampled in FY2016 Q3 and Q4 and FY2017 Q1 and Q2 as well as the response rates for each facility.

### 5.1.1.4 Purchased Care Sampling Plan

Appendix B has the PC sampling plan for FY2016 Q3 and Q4 and FY2017 Q1 and Q2. The plan shows the number of eligible discharges sampled, the number returned, the response rate, and the ineligible rate from that mail out (returned undeliverable, ineligible diagnosis type,

deceased or incapacitated, etc.). These numbers were used to determine the number to include in the selected sample for each PC facility.

The PC survey program targets civilian hospitals with high volumes of care for MHS users. A large number of civilian hospitals provide care to Military Health System (MHS) users, though most PC hospitals see only a few MHS patients. Each year, the list of PC facilities and their MHS patient discharge volumes are reviewed by representatives of the TRICARE Regions. Changes were requested between Year 2016 and Year 2017. Appendix B lists the 70 facilities selected by the TRICARE Region POCs to be most relevant based on 2016 statistics. After Defense Health Agency (DHA) review, these facilities were included in the Year 2017 TRISS sampling plan.

For each PC hospital and for DC facilities in FY16 Q3 through FY17 Q2, monthly random samples were selected from eligible monthly discharges using the rate of sampling, $f$, of the following form:

$$f = \frac{300}{N*Y},$$

In the formula above, $f$ is the sampling rate, 300 is the minimum number required of completed interviews each year over a 12-month survey period, N is the anticipated number of eligible discharges, and Y is the expected response rate.[2]

Appendix H shows the number of PC eligible discharges sampled in FY2016 Q3 and Q4 and FY2017 Q1 and Q2 as well as response rates for each facility.

## 5.1.2 Population Databases and Data Extraction

Figure 40 outlines the sample frame development process. The source of the TRISS sample frame is the Department of Defense (DoD) DEERS (Defense Enrollment Eligibility Reporting System). DEERS compiles DC inpatient admissions and discharges from the Composite Health Care System (CHCS) database. It also compiles PC (civilian) inpatient admissions and discharges from the MDR TRICARE Encounter Data (TED) database. The TED consists of claims data from civilian hospitals for services rendered on behalf of MHS users.

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[2]Response rate used here refers to the rate of return from the number sent out without removing non-contactable (undeliverable, deceased, etc.) individuals from the calculation.
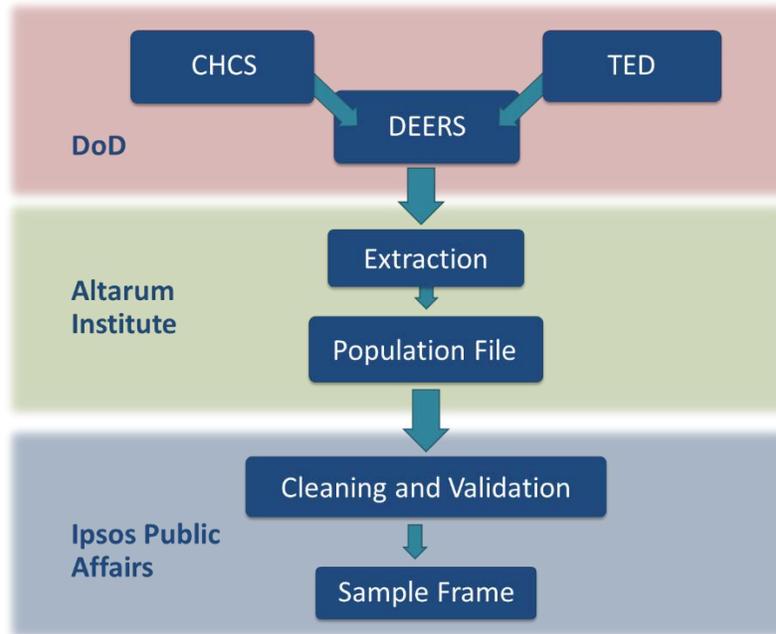
**Figure 40. Procedural Flow for Sample Frame Development.**

On a separate data extraction contract with DHA, a vendor extracts DEERS records for all DHA survey efforts. Twice monthly, the data extraction vendor provides the survey vendor with a population file of all eligible hospital discharges recorded since the previous file transfer, for both DC and PC. Population files are sent directly from the data extraction vendor to the survey vendor using a secure FTP site accessible only between the two companies.

The TRISS patient discharge data file includes the patient Electronic Data Interchange Person Numbers (EDIPN), along with all necessary information needed to create the sampling frame and contact a potential respondent. Variables included in the TRISS patient discharge data file include (but are not limited to):

- EDIPN.
- Age.
- Admission date.
- Discharge date.
- MTF.
- Diagnosis Related Group (MS-DRG) codes.
- Discharge code (reason for discharge, includes deceased).
- Date of death (if applicable) or death flag.
- Address for contact and telephone number.

Once received, the population files undergo extensive checking and evaluation. Deceased patients, invalid DRG codes, incomplete information, invalid MTFs, and ineligible civilian facilities are eliminated from the records. The Diagnosis Related Group (MS-DRG) field may not be available at the time of data extraction, and/or the fields may be updated at a later time. Such revisions occurred in approximately 20% of the records.

Table 19 shows the field cycles with population sample delivery dates, end of field dates, and dates that survey results are available on the TRISS reporting website (https://www.trissreports.com).

Although the population databases for DC and PC are delivered simultaneously, the field periods and reporting dates do not coincide due to differences between DC and PC sample build process. DC results in this report are based on discharge dates from April 1, 2016 through March 31, 2017. The DC field period, following HCAHPS protocols, ended on June 1, 2017. PC results are based on discharge dates from April 1, 2016 through March 31, 2017. The PC field period ended on June 29, 2017.

Table 19 shows that the TRISS project for Quarters 3 and 4 FY2016 and Quarters 1 and 2 FY2017 followed a twice-monthly survey administration schedule. The files include all available discharges in the period since the previous population file creation. Once the population files were received by the vendor, they underwent a series of checks and procedures for completeness, eligibility, and address cleaning. The resulting files constitute the sample frame.

Samples were pulled according to the DC and PC sampling plan. Most of the DC sample is a census except for instances described in the introduction to Section 5, so almost all eligible respondents were selected from the sample frame, and random samples were selected from the PC hospitals to ensure that 300 surveys for each facility are completed each year. The samples were formatted per HCAHPS rules and sent to the vendor operations for National Change of Address (NCOA) updates, printing and mailing, and formatting separate files for follow-up telephone interviewing. This occurred within five days after population file delivery. The general key dates for processing the surveys are:

Key Dates for a given Field Cycle:

- Day 0: Population database received from the data extraction vendor.
- Days 1-2: Database cleaned, sample frame constructed, and sample generated for survey vendor operations.
- Days 3-4: Letters and questionnaires produced and inserted.
- Day 5: Questionnaires mailed.
- Day 24-25: Respondents to the mail survey and respondents who have contacted us to tell us they are not eligible are removed from the telephone sample file.
- Day 26: Telephone interviewing begins.
- Day 47: Telephone interviewing fielding ends.

**Table 20. Y2016 Q3 and Q4 and Y2017 Q1 and Q2 Twice-monthly Field Cycles Population Frame, Field Period, and Web Reporting Upload Schedules.**

| Field Cycle | DC Quarter | DC Discharge Date | PC Quarter | PC Discharge Date | Sample Delivered to Ipsos | Field End | DC Data Available | PC Data Available |
|---|---|---|---|---|---|---|---|---|
| 16-08 | Y2016 Q3 | 04/01/16-04/15/16 | Y2016 Q2 | | 04/28/16 | 06/16/16 | 09/30/16 | |
| 16-09 | Y2016 Q3 | 04/16/16-04/30/16 | Y2016 Q2 | | 05/12/16 | 06/30/16 | 09/30/16 | |
| 16-10 | Y2016 Q3 | 05/01/16-05/15/16 | Y2016 Q3 | 04/01/16-04/15/16 | 05/26/16 | 07/15/16 | 09/30/16 | 11/02/16 |
| 16-11 | Y2016 Q3 | 05/16/16-05/31/16 | Y2016 Q3 | 04/16/16-04/30/16 | 06/09/16 | 07/28/16 | 09/30/16 | 11/02/16 |
| 16-12 | Y2016 Q3 | 06/01/16-06/15/16 | Y2016 Q3 | 05/01/16-05/15/16 | 06/23/16 | 08/11/16 | 09/30/16 | 11/02/16 |
| 16-13 | Y2016 Q3 | 06/16/16-06/30/16 | Y2016 Q3 | 05/16/16-05/31/16 | 07/14/16 | 09/01/16 | 09/30/16 | 11/02/16 |
| 16-14 | Y2016 Q4 | 07/01/16-07/15/16 | Y2016 Q3 | 06/01/16-06/15/16 | 07/28/16 | 09/15/16 | 01/05/17 | 11/02/16 |
| 16-15 | Y2016 Q4 | 07/16/16-07/31/16 | Y2016 Q3 | 06/16/16-06/30/16 | 08/11/16 | 09/29/16 | 01/05/17 | 11/02/16 |
| 16-16 | Y2016 Q4 | 08/01/16-08/15/16 | Y2016 Q4 | 07/01/16-07/15/16 | 08/25/16 | 10/13/16 | 01/05/17 | 02/02/17 |
| 16-17 | Y2016 Q4 | 08/16/16-08/31/16 | Y2016 Q4 | 07/16/16-07/31/16 | 09/08/16 | 10/27/16 | 01/05/17 | 02/02/17 |
| 16-18 | Y2016 Q4 | 09/01/16-09/15/16 | Y2016 Q4 | 08/01/16-08/15/16 | 09/22/16 | 11/10/16 | 01/05/17 | 02/02/17 |
| 16-19 | Y2016 Q4 | 09/16/16-09/30/16 | Y2016 Q4 | 08/16/16-08/31/16 | 10/13/16 | 12/01/16 | 01/05/17 | 02/02/17 |
| 16-20 | Y2017 Q1 | 10/01/16-10/15/16 | Y2016 Q4 | 09/01/16-09/15/16 | 10/27/16 | 12/15/16 | 04/07/17 | 02/02/17 |
| 16-21 | Y2017 Q1 | 10/16/16-10/31/16 | Y2016 Q4 | 09/16/16-09/30/16 | 11/10/16 | 12/29/16 | 04/07/17 | 02/02/17 |
| 16-22 | Y2017 Q1 | 11/01/16-11/15/16 | Y2017 Q1 | 10/01/16-10/15/16 | 11/29/16 | 01/16/17 | 04/07/17 | 05/03/17 |
| 16-23 | Y2017 Q1 | 11/16/16-11/30/16 | Y2017 Q1 | 10/16/16-10/31/16 | 12/08/16 | 01/26/17 | 04/07/17 | 05/03/17 |
| 16-24 | Y2017 Q1 | 12/01/16-12/15/16 | Y2017 Q1 | 11/01/16-11/15/16 | 12/21/16 | 02/09/17 | 04/07/17 | 05/03/17 |
| 17-01 | Y2017 Q1 | 12/16/16-12/31/16 | Y2017 Q1 | 11/16/16-11/30/16 | 01/12/17 | 03/03/17 | 04/07/17 | 05/03/17 |
| 17-02 | Y2017 Q2 | 01/01/17-01/15/17 | Y2017 Q1 | 12/01/16-12/15/16 | 01/26/17 | 03/16/17 | 07/07/17 | 05/03/17 |
| 17-03 | Y2017 Q2 | 01/16/17-01/31/17 | Y2017 Q1 | 12/16/16-12/31/16 | 02/09/17 | 03/30/17 | 07/07/17 | 05/03/17 |
| 17-04 | Y2017 Q2 | 02/01/17-02/15/17 | Y2017 Q2 | 01/01/17-01/15/17 | 02/23/17 | 04/13/17 | 07/07/17 | 08/07/17 |
| 17-05 | Y2017 Q2 | 02/16/17-02/28/17 | Y2017 Q2 | 01/16/17-01/31/17 | 03/09/17 | 04/27/17 | 07/07/17 | 08/07/17 |
| 17-06 | Y2017 Q2 | 03/01/17-03/15/17 | Y2017 Q2 | 02/01/17-02/15/17 | 03/23/17 | 05/11/17 | 07/07/17 | 08/07/17 |
| 17-07 | Y2017 Q2 | 03/16/17-03/31/17 | Y2017 Q2 | 02/16/17-02/28/17 | 04/13/17 | 06/01/17 | 07/07/17 | 08/07/17 |
| 17-08 | Y2017 Q3 | | Y2017 Q2 | 03/01/17-03/15/17 | 04/27/17 | 06/15/17 | | 08/07/17 |
| 17-09 | Y2017 Q3 | | Y2017 Q2 | 03/16/17-03/31/17 | 05/11/17 | 06/29/17 | | 08/07/17 |

### 5.1.2.1 Direct Care Sample Frame

Twice per month, the survey vendor a population database of DC patient discharges from the data extraction vendor. These are all inpatient discharges from MTFs recorded in the DEERS system since the last data transfer. DC records must meet all of the criteria described earlier, and the discharge date must be within 42 days of the expected start of field date five days after the delivery of the population file. The final file after these eliminations is the DC sample frame, and it includes CONUS, OCONUS, MTFs, and patients with non-U.S. home addresses.

For the DC sample frame, the government uses the TRICARE Operations Center (TOC) to produce twice monthly DC inpatient admission files derived from the Composite Health Care System (CHCS). These CHCS data form the basis of the DC sampling frame and support the requirement for initiating field data collection within 42 days of date of discharge.

The twice monthly CHCS extracts reflect all discharges for the six weeks prior to harvest, and contain a minimum set of data elements for identifying discharges and applying HCAHPS QAG inclusion/exclusion criteria. Remaining data elements, such as patient demographics and contact information, are retrieved from DEERS data. The government then provides the extract sample file of all DC inpatients twice a month as of the reference date for the month. The reference date used is as close as possible to the file extraction date. To the extent possible, the government removes duplicate beneficiaries from the sampling frame.

### 5.1.2.2 Purchased Care Sample Frame

The survey vendor receives the population file with PC hospital discharges twice a month by the data extraction vendor. The basis of the discharge information is from the MDR TRICARE Encounter Data (TED). The TED consists of claims data from civilian hospitals for services rendered on behalf of MHS beneficiaries. Since the TED system is limited to the date of submission and validation of claims, the date of discharge may be past a date to prepare a survey to meet the 42-day requirement. As a result, the PC survey is not subject to the HCAHPS requirement of a 42-day maximum lag between discharge and survey completion.

For the PC sample frame, PC inpatient discharge records resulting from claims may take months to be submitted and processed, and therefore will not meet the targeted 42-day survey completion requirement. The main data source for PC admissions is the TRICARE Encounter Data (TED). Similar to the DC frame process, the discharge record is used to provide only the most fundamental data elements - patient ID, care dates, provider ID, and descriptors for categorizing care into product line and applying exclusions. Remaining data elements, such as patient demographics and contact information, are retrieved from the DEERS data available in the MDR. The government provides an electronic sample member file of the population of all inpatients, contact information, and all necessary inpatient attributes by accessing various DHA databases. The data files are based on the most recent inpatient information. Claims data, Standard In Patient Data Record (SIDRs) for DC and TED for PC, and demographic information are extracted and merged into one file by the government. The unit of analysis for this sampling is unique individuals. The resulting file includes inpatient contact data (including patient name and address). These data constitute the sampling frame.

The PC frame covers discharges from the 15th of the previous month (prior to sampling) back to the 16th of the month before (i.e., two months prior to sampling). The data sources are collected from DHA electronic transmissions for the DC, or claims for PC services. The survey operations include a PC component at every other field cycle, due to the once-per-month update schedule of the source TED data. The survey cycle occurring latest in the month includes the PC component, due to the update schedule of TED data.

## 5.1.3 Preparation of the Sample for Mail/Phone Administration

After sample receipt, the vendor selects the sample based on HCAHPS rules and then creates mail and telephone files. Each record is appended with a unique respondent ID number, which indicates PC/DC and the wave. Only data needed by the specific operations team is appended per HIPAA rules (such as name and address for a mailing file). The telephone file is sent to a third-party for telephone hygiene and telephone appending. The mail file is sent to the mail operations group to use to create letters and questionnaires.

After the mail field period has ended, mail returns and records dispositioned as refusals or ineligible are removed from the telephone file, and this revised file is sent to the telephone operations group.

## 5.2    Data Collection Protocols

The TRISS project follows HCAHPS protocols except where explicitly indicated (e.g. in the period between discharge and survey mailing for PC). Full details of quality assurances, survey completion rules, data security measures, and other procedural details can be found in the 2016 HCAHPS Quality Assurance Protocol, available upon request (tricare.survey@ipsos-research.com).

The TRISS survey is first sent to the sample population through a mailed paper survey. The survey instrument is included in Section 5.3.6 and Appendix D. Completed mail surveys are delivered to the vendor's Returns Processing Department daily, where surveys are opened and processed. Processing includes scanning in the ID numbers of all returns.

Full surveys, including the barcodes, are scanned on the same day as received. As surveys are scanned, the scanner endorses a sequential identification number on each page of every questionnaire. This endorsement retains the page order of the documents and provides quicker access to the original documents if they have to be referenced at a later date. The high-speed scanners capture both sides of a form simultaneously. The scanning programs have been preprogrammed to recognize defining characteristics of the TRISS questionnaires in detailed version-specific templates. As each questionnaire passes through the scanner, a black and white "picture" is created of every page of the questionnaire. The image is cleaned instantaneously and pixilation is determined based on a gray-scale image of the document, thus improving the quality of the captured image. The images are then converted into electronic data using FACTS (Fast Accurate Capture Technology Solutions).

Any white mail (written comments from respondents) is delivered to the TRISS team in order to follow up with questions or to disposition records such as notices that the respondent is deceased. The returned questionnaires are imaged into electronic ASCII data.

Users are contacted via telephone if a response is not received within 21 days of paper survey distribution, and a survey identical to the mail instrument is administered via phone to these users.

A total of five attempts is made to reach users by phone, with calls staggered over the course of three weeks, during different time periods. Phone interview answers are recorded by the phone interviewers. Telephone survey responses are appended to the mail survey dataset on a daily basis. A portion of the telephone numbers provided for OCONUS MTFs were not correct, and resolutions are currently being pursued to improve the ability to contact these users.

## 5.2.1 Data Processing

At the end of phone field, mail returns and telephone data are compiled into one data set. If there are returns for both mail and phone, the survey with the most data based on core questions is retained. User data provided with the sample are appended to the survey results. Such data includes gender, beneficiary category, age, DRG code, state/Region, MTF code, or the civilian hospital name. These data allow assignment of product line, age category, facility, and TRICARE Regional Office or Service Branch, as applicable.

Individual records in the user response dataset must be "scored" to determine their final survey status codes. When the user answers at least 50 percent of the HCAHPS Core questions applicable to all patients, and there is no evidence that he/she is ineligible, a final survey status code of "1 – Completed Survey" is assigned. When a user provides a response to at least one HCAHPS Core question, but too few Core questions to meet the criteria for a completed survey, a final survey status code of "6 Non-response: Break-off" is assigned. Core questions are Q1-10, 12, 15, 18, and 21-25.

Once the data collection field period is closed and the final user response dataset (including data scoring) is available, the final dispositioning process can begin.

The following files are de-duped within themselves:
- White mail disposition file.
- Survey comments (snippets) / Help line disposition file.
- Synovate Offline Labels and Return System (SOLARS) undeliverables
- Scored user response data set.
- Deceased dataset removals kept for dispositioning.

Once each is de-duped, the white mail disposition file, the snippets/help line disposition file, and the SOLARS undeliverables file are merged and de-duped again, retaining only one interim disposition record per survey ID. This file is merged with the user response data set and the de-duplication process is repeated, again retaining only one disposition record per ID. Finally, the sample file is compared against this merged file, and any user without a disposition is assigned a disposition of "8 Non-response after maximum attempts." Quality Assurance Guidelines Manual rules are strictly followed for all de-duplication and dispositioning.

Several items in the HCAHPS Survey can and should be skipped by certain users. These gate questions form skip patterns. Four questions in the HCAHPS Survey serve as screener questions (Questions 10, 12, 15, and 18) that determine whether the associated dependent questions require an answer. The following decision rules are provided to assist coding user responses to skip pattern questions.

**Gate questions (Questions 10, 12, 15, 18):**
If the gate question is left blank, then code the gate question as "M - Missing/Don't Know".

**Dependent questions (Questions 11, 13, 14, 16, 17):**

| Gate question | | Dependent questions |
|---|---|---|
| Q10 | | Q11 |
| Q12 | | Q13, Q14 |
| Q15 | | Q16, Q17 |
| **If the gate question is:** | **And the dependent question:** | **Then code the dependent question as:** |
| answered "Yes" | is left blank | "M" - Missing/Don't Know |
| answered "Yes" | Is NOT left blank | Keep the Value Provided |
| answered "No" | is left blank | "8" - Not Applicable |
| answered "No" | Is NOT left blank | Keep the Value Provided |
| is left blank | is left blank | "M" - Missing/Don't Know |
| is left blank | Is NOT left blank | Keep the Value Provided |

**Dependent questions (Questions 19, 20):**

| Gate question | | Dependent questions |
|---|---|---|
| Q18 | | Q19, Q20 |
| **If the gate question is:** | **And the dependent question:** | **Then code the dependent question as:** |
| answered "Own home" or "Someone else's home" | is left blank | "M" - Missing/Don't Know |
| answered "Own home" or "Someone else's home" | Is NOT left blank | Keep the Value Provided |
| answered "Another health facility" | is left blank | "8" - Not Applicable |
| answered "Another health facility" | Is NOT left blank | Keep the Value Provided |
| is left blank | is left blank | "M" - Missing/Don't Know |
| is left blank | Is NOT left blank | Keep the Value Provided |

**All other HCAHPS questions (Questions 1-9, 21-22, 49-53):**
If the question is left blank, then code as "M - Missing/Don't Know".

## 5.3 Analytic Methodology

### 5.3.1 Nonresponse Analysis

The weighting strategy assumes that the demographic measures identify groups with differential rates of response and respond differently to the survey questions. This section examines the rates of response by looking at the population's distribution for each variable, and their results for Overall Hospital Rating.

#### 5.3.1.1 Overall Response Rates

Response rates for DC and PC are reported in Appendix G and Appendix H, respectively. DC response rates are broken out by Service Branch, facility, and CONUS & OCONUS affiliation. PC response rates are broken out by Region and facility.

The overall Year 2017 response rate for DC was 40% and for PC was 44%.[3]

#### 5.3.1.2 Direct Care

Table 20 reports response distributions for the key weighting variables (the "Population" column shows demographic distributions for the universe of MHS users eligible to take TRISS, while the "Sample" column shows demographic distributions for the users who responded to the survey). Older users are more likely to respond than younger users. This is seen in both the age and beneficiary category variables. All results are statistically significant due to the very large sample sizes. These results show that the sample is overrepresented by older users.

Table 20 also shows the unweighted and weighted Overall Rating scores for each of the subgroups. Users 65 years of age and older have a much higher response rating than users less than 65 years of age. As a result, wherever other demographic groups are related to age, such as beneficiary category, marital status, and, to some degree, product line, unweighted results would bias the results due to over-representation of older users in the sample. The weighting plan corrects for this over-representation, thus removing the bias from the higher proportion of older users.

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[3] Response rate is defined as Response Rate = Completed Surveys / (Number Mailed Out – Ineligibles).

**Table 21. Direct Care Response Distributions for Key Demographic Variables.**

| Weighting Variables | | Distribution (Percent) | | Overall Rating (Percent) | |
|---|---|---|---|---|---|
| | | Population | Sample | Unweighted | Weighted |
| Gender | Male | 34.7 | 36.1 | 79.2 | 76.7 |
| | Female | 65.3 | 63.9 | 71.1 | 69.1 |
| Age | 18–24 | 18.5 | 19.8 | 65.0 | 65.1 |
| | 25–34 | 27.4 | 27.5 | 62.2 | 62.3 |
| | 35–44 | 12.2 | 12.2 | 64.6 | 64.4 |
| | 45–64 | 20.9 | 20.3 | 78.8 | 78.5 |
| | Under 65 (total) | 79.0 | 79.7 | 67.7 | 67.6 |
| | 65+* | 21.0 | 20.3 | 86.0 | 86.0 |
| Marital status | Divorced/widowed | 9.2 | 9.0 | 78.9 | 76.8 |
| | Married | 80.7 | 79.6 | 72.0 | 69.1 |
| | Single | 9.8 | 11.0 | 62.1 | 61.8 |
| | Unspecified | 0.4 | 0.4 | 79.0 | 77.6 |
| Product Line | Medical | 40.4 | 39.1 | 77.5 | 74.8 |
| | Obstetrics/Gynecology | 29.2 | 28.3 | 64.4 | 64.4 |
| | Surgical | 24.0 | 23.7 | 77.7 | 75.6 |
| Beneficiary category | AD | 23.9 | 26.3 | 63.1 | 63.4 |
| | ADFM | 31.6 | 30.6 | 64.1 | 64.1 |
| | Retirees under 65 | 23.6 | 23.0 | 78.1 | 78.0 |
| | Retirees 65+ | 20.9 | 20.1 | 86.0 | 86.0 |
| MRF Service Branch | Army | 50.9 | 50.7 | 74.1 | 71.7 |
| | Air Force | 13.2 | 12.7 | 78.6 | 76.0 |
| | Navy | 25.9 | 26.5 | 75.1 | 69.0 |
| | NCR | 10.0 | 10.1 | 75.4 | 73.6 |

## 5.3.2 Measures and Scoring

HCAHPS composites and individual items are core to TRISS and HCAHPS reporting. TRISS uses the same scoring protocol as CMS for the items adopted from the HCAHPS instrument.

HCAHPS measures consist of two global items, seven composite measures, and two individual items, as shown in Table 21. The two global items (Overall Hospital Rating and Recommend the Hospital) capture general perceptions of the facility. Composite measures are calculated from two or more individual survey items related to an aspect of care. For instance, the composite item, Communication with Nurses, consists of three individual items that measure perceptions of (a) nurses' courtesy and respect, (b) nurses listening carefully, and (c) whether nurses explained information in a way the patient could understand. Finally, two individual items capture perceptions of two aspects of the facility (cleanliness and quietness) within single survey items (these measures are not composites).

In addition to the HCAHPS measures, the TRISS instrument includes items added by the DoD to address areas of interest among the military community. Table 21 shows these items under the heading, "Supplemental DoD Questions."

**Table 22. TRISS Measures, Including HCAHPS and DoD Questions.**

| Global Items |
|---|
| Q21: Overall Hospital Rating |
| Q22: Recommend the Hospital |

| **Composite Measures** |
|---|
| Communication with Nurses |
| Q1: During this hospital stay, how often did nurses treat you with <u>courtesy and respect</u>? |
| Q2: During this hospital stay, how often did nurses <u>listen carefully to you</u>? |
| Q3: During this hospital stay, how often did nurses <u>explain things</u> in a way you could understand? |
| Communication with Doctors |
| Q5: During this hospital stay, how often did doctors treat you with courtesy and respect? |
| Q6: During this hospital stay, how often did doctors listen carefully to you? |
| Q7: During this hospital stay, how often did doctors explain things in a way you could understand? |
| Responsiveness of Hospital Staff |
| Q4: During this hospital stay, after you pressed the call button, how often did you get help as soon as you wanted it? |
| Q11: How often did you get help in getting to the bathroom or in using a bedpan as soon as you wanted? |
| Pain Management |
| Q13: During this hospital stay, how often was your pain well controlled? |
| Q14: During this hospital stay, how often did the hospital staff do everything they could to help you with your pain? |
| Communication about Medicines |
| Q16: Before giving you any new medicine, how often did hospital staff tell you what the medicine was for? |
| Q17: Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand? |
| Discharge Information |
| Q19: 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? |
| Q20: 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? |
| Care Transition |
| Q23: 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. |
| Q24: When I left the hospital, I had a good understanding of the things I was responsible for in managing my health. |
| Q25: When I left the hospital, I clearly understood the purpose for taking each of my medications. |

| **Individual Items** |
|---|
| Q8: Cleanliness of Hospital Environment. |
| Q9: Quietness of Hospital Environment. |

| **Supplemental Department of Defense Questions** |
|---|
| Staff Introduced Self |
| Q26: During this hospital stay, when doctors, nurses, or other hospital staff first came to your room, how often did they introduce themselves? |
| Communication among Staff |
| Q27: During this hospital stay, how often did you feel there was good communication between team members about your health needs? |
| Family Member Stayed |

Q28: Did staff allow family members or someone close to you to be with you when you wanted them there?

| Hospital Room Privacy* |
| --- |

Q29: Which best describes your hospital room?

| Product Line* |
| --- |

Q30: For this stay, were you admitted to the hospital for childbirth (including C-section), a surgical procedure or operation, or another medical condition or illness.

| Obstetrics Repeat Care |
| --- |

Q31: If you were just beginning your pregnancy, and you had a choice, would you use the same hospital for your OB care?

| Education on Breastfeeding |
| --- |

Q32: Were you offered education or support about breastfeeding while in the hospital?

| Staff Washed Hands |
| --- |

Q33: How often did your staff wash or sanitize their hands before touching you?

| Staff Check Identification |
| --- |

Q34: How often did staff ask your name, check your ID band, or confirm who you were before giving you any medications, treatments, or tests?

| Overall Nursing Care Rating |
| --- |

Q35: Using any number from 0 to 10, where 0 is the worst nursing care possible and 10 is the best nursing care possible, what number would you use to rate the care you received during your stay?

*Note Q29 "Hospital Room Privacy" is not included in the current analysis because the question is a categorical (i.e., question responses consist of three room types, as opposed to the scaled ratings used in other questions). Q30 "Product Line" is not included in the current analysis because the question is used to identify obstetric respondents, in order to complete Q31 and Q32.

### 5.3.2.1 Individual Item Estimation

Estimates for individual items use the following formulae:

$$\hat{X} = \frac{\sum_{i=1}^{n} w'_i X_i I_i}{\sum_{i=1}^{n} w'_i I_i} = \sum_{i=1}^{n} w_i X_i I_i$$

and

$$Var(\hat{X}) = \frac{1}{n(n-1)} \sum_{i=1}^{n} w_i (X_i - \hat{X})^2.$$

Here, $w_i$ is the sample weight for the respondent $i$. $X_i$ is the survey response for respondents $i$ and $I_i$ is an indicator (1 if a response is present; 0 if not present). For an $X_i = 0$ or 1 variable, i.e., estimating a proportion, the formulae are the same, but they are simplified with the forms:

$$\hat{P} = \frac{\sum_{i=1}^{n} (w_i \times X_i \times I_i)}{\sum_{i=1}^{n} (w_i \times I_i)},$$

and

$$Var(\hat{P}) = \frac{\hat{P}(1 - \hat{P})}{n}.$$

These formulae do not account for the finite population correction factor, the stratification, or the increase in variance due to the weights.

The formulae for one facility use these:

$$Var(\hat{P}) = \left[1 - \frac{n}{N}\right] \left.\hat{P}(1 - \hat{P})\right/_{n^*} = [1 - f] \left.\hat{P}(1 - \hat{P})\right/_{n^*}$$

where

$$n^* = n/(1 + CV^2(w)).$$

$f$ is the correction factor for the finite population.

Formulae for a roll-up of two or more facilities are:

$$Var(\hat{P}) = \sum_{h=1}^{H}\left[1 - \frac{n_h}{N_h}\right]\left(\frac{N_h}{N}\right)^2 \left.\hat{P}_h\left(1 - \hat{P}_h\right)\right/_{n_h^*} = \sum_{h=1}^{H}[1 - f_h]\ W_h^2\ Var(\hat{P}_h),$$

and

$$n_h^* = n_h/(1 + CV_h^2(w)).$$

## 5.3.2.2 Composite Estimation

The composite is determined by calculating the mean top box score within a facility for each question, and then summing scores for the questions and dividing by the number of questions. Where data are weighted as on the TRISS, the response indicators (1 or 0) and the number of responses are multiplied by the weight. The equation for calculating a composite score is:

$$C = \frac{\sum_{j=1}^{k} P_j}{k}$$

where

$C$ = the composite,

$k$ = the number of questions in the composite, and

$P_j$ = Proportion j (the proportion for the jth question of the composite).

The formula for calculating $P_j$ is:

$$P_j = \frac{\sum_{i=1}^{n}(w_i \times X_{i,j} \times I_{i,j})}{\sum_{i=1}^{n}(w_i \times I_{i,j})}$$

where

$w_i$ = the sampling weight of the ith respondent,

$X_{i,j}$ = an indicator (1 or 0) of whether response $i,j$ was "top-box" or not, and

$I_{i,j}$ = an indicator of whether a response was provided for respondent I and question j.

Table 22 below provides an example of how the composite score is calculated for the Nursing Communications composite among six respondents. The example does not use weighted data, and thus follows the equations above as if $w_i$ is always 1.

**Table 23. Example Table of Nursing Communications Question Responses.**

| Respondent | Question 1 Response | Question 2 Response | Question 3 Response |
|---|---|---|---|
| 1 | Always (1) | Always (1) | Always (1) |
| 2 | No answer (Missing) | Sometimes (0) | No answer (Missing) |
| 3 | Never (0) | Never (0) | Usually (0) |
| 4 | Usually (0) | Always (1) | Always (1) |
| 5 | Always (1) | Sometimes (0) | Sometimes (0) |
| 6 | Usually (0) | Usually (0) | Always (1) |
| Question Score | 2 out of 5 = 40% | 2 out of 6 = 33.3% | 3 out of 5 = 60% |

The composite would then be 44% = (40% + 33.3% + 60%)/3.

### 5.3.2.3 HCAHPS Star Ratings Estimation

CMS created the HCAHPS Star Ratings system to enable consumers to more easily interpret and compare hospital patient experience information. HCAHPS Star Ratings are calculated using the same data as the HCAHPS measures. Twelve HCAHPS Star Ratings are reported: 11 for each of the HCAHPS measures and one overall "HCAHPS Summary Star Rating." A five-star scale is calculated for each hospital, where more stars indicate better quality of care. The TRISS reporting website began reporting the HCAHPS Summary Star Rating in July 2015. HCAHPS Star Ratings are not published for facilities with fewer than 100 completed responses over a four-quarter reporting period. This criterion is different from the criterion to report results of the TRISS measures where 30 is the minimum number of responses over four quarters for TRISS scores. The 100-response criterion is mandated by CMS. Therefore, a hospital may have sufficient responses to report TRISS measures, but not enough to report the facility's HCAHPS Star Rating.

HCAHPS Star Ratings are calculated from the 11 HCAHPS measures. HCAHPS Star Ratings are calculated in 4 steps:

> Step 1 - Construction of HCAHPS Linear Mean Scores
> Step 2 - Adjustment of HCAHPS Linear Mean Scores
> Step 3 - Conversion of Linear Mean Scores to HCAHPS Star Ratings
> Step 4 - Calculation of the HCAHPS Summary Star Rating

*1. Construction of HCAHPS Linear Mean Scores* – Each question is converted to a linear scale from zero to 100. Negative survey responses such as "never," "no," "definitely no," "strongly disagree," and "overall rating 0" receive a zero on the linear scale. The most positive responses receive 100 points on the scale: "always," "yes," "definitely yes," "strongly agree," and "overall rating 10." Depending on the number of responses for a question, the scale is divided into equal units. For example, responses on a scale of "never," "sometimes," "usually," and "always" would score 0, 33.3, 66.6, and 100 respectively.

*2. Adjustment of HCAHPS Linear Mean Scores* – The linear scores are adjusted for patient mix and survey mode. As with TRISS scores, the mix of patients and mode of survey administration is used to level scores between hospitals based on patient characteristics and survey mode. Finally, four-quarter linear score averages are rounded to integers.

*3. Conversion of Linear Mean Scores to HCAHPS Star Ratings* – CMS provides a conversion algorithm that takes a question linear score and maps onto the number of stars. The algorithm was created by CMS such that groups of hospitals receiving scores within the same groups are as similar as possible and those within different clusters are as different as possible. The cut off points vary based on each measure.

*4. Calculation of the HCAHPS Summary Star Rating* – The HCAHPS Summary Star Rating is the average of the Star Ratings for the seven HCAHPS composite measures, the Overall Hospital Rating, the Recommend the Hospital measure, and a combined rating for Cleanliness of the Hospital Environment and Quietness of the Hospital Environment. The final averages are rounded to full star ratings.

## 5.3.3 Variance Estimation and Statistical Testing

TRISS reporting includes statistical tests of significance for percentages and means. Three primary classes of tests are:

1) Tests for a facility for one quarter versus the last.
2) Tests for a facility versus a rolled-up value such as Region, Service Branch, or MHS. This can be generalized to a Service Branch versus the MHS, for example.
3) Tests for a facility, Region, Service Branch, or MHS versus HCAHPS Benchmark.

### 5.3.3.1 Variance Estimation

The generalized form of a variance estimate for an individual item from a stratified design is:

$$V^1(\hat{X}) = \sum_{h=1}^{H} \left(\frac{N_h}{N}\right)^2 \left(1 - \frac{n_h}{N_h}\right) \sum_{i=1}^{n_h} (x_i - \hat{X}_h)^2.$$

Actual variances are greater than $V^1(\hat{X})$ due to corrections to the weights accounting for non-response, so the variance is adjusted by using the following functional form:

$$V(\hat{X}) = V^1(\hat{X}) * [1 + CV^2(w)].$$

$CV^2(w)$ is the coefficient of variation of the weights.

### 5.3.3.2 Statistical Testing

Reports have statistical tests of significance when indicated. The reports include statistical tests for percentages and means. The tests for the three classes are discussed in turn.

### 5.3.3.2.1 *Tests for a facility for one quarter versus the previous*

This test is equivalent to a t-test between two proportions since each result is from an independent sample. The results are always weighted, and the tests are based on the effective sample sizes and not the unweighted sample size. Effective sample size reflects the additional variability in the results due to the weights. The test statistic is:

$$T = \frac{P_t - P_{t-1}}{\sqrt{Var(P_t) + Var(P_{t-1})}},$$

where $P_t$ is the result at quarter t, and $P_{t-1}$ is the result for the preceding quarter. $Var(P_t)$ is easily calculated using:

$$Var(P_t) = \frac{P_t\,(1 - P_t)}{n}\,(1 + CV^2(w))$$

$$= \frac{P_t\,(1 - P_t)}{n^*}$$

where n$^*$ is the effective sample size, $n^* = {}^{n}/_{(1 + CV^2(w))}$.

More difficult tests are those between two HCAHPS composite estimates. The difficulty is in the calculation of the variance of the composite. For the composite:

$$C = \frac{\sum_{j=1}^{k} P_j}{k},$$

the variance has the form:

$$Var(C) = \sum_{j=1}^{k} Var(P_j) + 2 \sum_{j=1}^{k} \sum_{l=j}^{k} 2\, Cov(P_j, P_l).$$

The test between two composites from mutually exclusive or independent samples is based on the test statistic:

$$T = \frac{C_t - C_{t-1}}{\sqrt{Var(C_t) + Var(C_{t-1})}}\ .$$

### 5.3.3.2.2   Tests for a facility versus a rolled up value

This test must account for the overlap of the sample for the facility and the roll up. The vendor has created efficient coding to allow this test within a large reporting system. The test for overlapping samples, such as a test between a facility and the facility's Region, includes the facility's score in the Region's score. If the second composite, $C_2$, is the rolled-up score, e.g., the Region, the test is:

$$T = \frac{C_1 - C_2^o}{\sqrt{Var(C_1) + Var(C_2)}},$$

$C_2^o$ is the composite for the rolled score with the cases from $C_1$ removed.

### 5.3.3.2.3   Tests for TRISS score versus the HCAHPS benchmark

In the case of testing TRISS scores against the HCAHPS Benchmark where $C_2$ is the HCAHPS benchmark, estimates for Var($C_2$) are needed. Table 23 provides estimates for Standard Error for $C_2 = \sqrt{Var(C_2)}$. These are based on the published benchmark scores from July 2014 through June 2015.

**Table 24. Estimated Standard Errors for HCAHPS Benchmarks.**

| Benchmark Report | Comm with Nurses | Comm with Doctors | Responsiveness of Hospital Staff | Pain Management | Comm about Medicines | Cleanliness of Hospital Environment |
|---|---|---|---|---|---|---|
| 2014–2015 | 0.89 | 0.63 | 0.12 | 0.45 | 1.25 | 0.75 |

| Quietness of Hospital Environment | Discharge Information | Care Transition | Overall Hospital Rating | Recommend the Hospital | Number of Hospitals | Response Rate |
|---|---|---|---|---|---|---|
| 1.14 | 1.17 | 0.41 | 1.06 | 0.45 | 4182 | 30% |

## 5.3.4 Sample Weighting

This section describes the statistical weighting approach applied to TRISS data. Statistical weights are used to:

1. **Adjust data in the case of unbalanced representation due to the sample design.** The sampling plan for the PC sample randomly selects a sample from each facility to achieve 300 completed surveys regardless of facility  size . Each facility has its own probability of selection. The DC sampling plans selects nearly all eligible patients. In the cases of 100% sample selection of a hospital's patients, each patient has a probability of selection of one.
2. **Adjust data for known non-response patterns in TMA surveys.** These patterns may introduce bias into the results. The weights mitigate or correct for this potential bias.
3. **Correct for period-to-period and cross population estimation.** The target population fluctuates from quarter-to-quarter and the PC population is smaller than the DC population. The weights are corrected to allow for estimation of results for the entire quarter and for month-to-month estimates.

The first step calculates weights to account for the design. The general formula for the design weight is:

$$dw_i = \frac{\frac{N_{k,h}}{N_k}}{\frac{n_{k,h}}{n_k}} = K \, \frac{N_{k,h}}{n_{k,h}}.$$

Here $N_{k,h}$ is the total number of discharges for the stratum or facility $h$ with population $k$ ($k$ is DC-CONUS, DC-OCONUS, or PC), $N_k$ is the total number of discharges for the population, $n_{k,h}$ is the number of completes for stratum h, and the $n_k$ is the total number of completes for population $k$. $K$ is an adjustment factor to assure weights sum to a designated amount. We separated DC CONUS and OCONUS to deal with very different contact rates for these populations. The DC design weights are then adjusted to bring the weighted proportions into alignment for CONUS and OCONUS populations.

The second step used ratio-raking weight adjustments to correct the weighted sample distribution under the design weights to the quarter's demographic and population subgroups totals. The totals are provided in Table 24 for DC and Table 25 for PC.

**Table 25. Direct Care Population Targets for Quarters 3 and 4 FY2016 and Quarters 1 and 2 FY2017.**

| | | Targets | | | | | | | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q3 Y2016 | | Q4 Y2016 | | Q1 Y2017 | | Q2 Y2017 | | | |
| Weighting Variables | | *N* | % | *N* | % | *N* | % | *N* | % | *N* | % |
| Age | Under 65 | 26,911 | 79.48 | 26,884 | 80.08 | 25,290 | 78.98 | 25,271 | 77.36 | 104,356 | 78.99 |
| | 65+ | 6,947 | 20.52 | 6,687 | 19.92 | 6,730 | 21.02 | 7,394 | 22.64 | 27,758 | 21.01 |
| Marital status | Divorced/widowed | 3,114 | 9.2 | 2,916 | 8.69 | 2,914 | 9.1 | 3,151 | 9.65 | 12,095 | 9.15 |
| | Single | 3,218 | 9.5 | 3,367 | 10.03 | 3,130 | 9.78 | 3,214 | 9.84 | 12,929 | 9.79 |
| | Married | 27,390 | 80.9 | 27,168 | 80.93 | 25,853 | 80.74 | 26,168 | 80.11 | 106,579 | 80.67 |
| | Unspecified | 136 | 0.4 | 120 | 0.36 | 123 | 0.38 | 132 | 0.4 | 511 | 0.39 |
| Beneficiary category | AD | 8,062 | 23.81 | 8,130 | 24.22 | 7,722 | 24.12 | 7,642 | 23.4 | 31,556 | 23.89 |
| | ADFM | 10,685 | 31.56 | 11,046 | 32.9 | 10,154 | 31.71 | 9,868 | 30.21 | 41,753 | 31.6 |
| | Retirees under 65 | 8,208 | 24.24 | 7,752 | 23.09 | 7,458 | 23.29 | 7,807 | 23.9 | 31,225 | 23.63 |
| | Retirees 65+ | 6,903 | 20.39 | 6,643 | 19.79 | 6,686 | 20.88 | 7,348 | 22.5 | 27,580 | 20.88 |
| MRF Service Branch | Army | 17,324 | 51.17 | 17,023 | 50.71 | 16,273 | 50.82 | 16,667 | 51.02 | 67,287 | 50.93 |
| | Air Force | 4,454 | 13.15 | 4,349 | 12.95 | 4,238 | 13.24 | 4,420 | 13.53 | 17,461 | 13.22 |
| | Navy | 8,645 | 25.53 | 8,906 | 26.53 | 8,337 | 26.04 | 8,324 | 25.48 | 34,212 | 25.9 |
| | NCR | 3,435 | 10.15 | 3,293 | 9.81 | 3,172 | 9.91 | 3,254 | 9.96 | 13,154 | 9.96 |

**Table 26. Purchased Care Population Targets for Quarters 3 and 4 FY2016 and Quarters 1 and 2 FY2017.**

| | | Targets | | | | | | | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q3 Y2016 | | Q4 Y2016 | | Q1 Y2017 | | Q2 Y2017 | | | |
| Weighting | Variables | *N* | % | *N* | % | *N* | % | *N* | % | *N* | % |
| Age | Under 65 | 8,747 | 50.33 | 9,338 | 53.25 | 7,328 | 47.91 | 8,243 | 49.19 | 33,656 | 50.26 |
| | 65+ | 8,632 | 49.67 | 8,197 | 46.75 | 7,966 | 52.09 | 8,513 | 50.81 | 33,308 | 49.74 |
| Marital status | Divorced/widowed | 2,887 | 16.61 | 2,728 | 15.56 | 2,626 | 17.17 | 2,804 | 16.73 | 11,045 | 16.49 |
| | Single | 556 | 3.2 | 655 | 3.74 | 495 | 3.24 | 546 | 3.26 | 2,252 | 3.36 |
| | Married | 13,872 | 79.82 | 14,085 | 80.33 | 12,089 | 79.04 | 13,339 | 79.61 | 53,385 | 79.72 |
| | Unspecified | 64 | 0.37 | 67 | 0.38 | 84 | 0.55 | 67 | 0.4 | 282 | 0.42 |
| Beneficiary category | AD | 906 | 5.21 | 1,000 | 5.7 | 757 | 4.95 | 931 | 5.56 | 3,594 | 5.37 |
| | ADFM | 3,166 | 18.22 | 3,712 | 21.17 | 2,802 | 18.32 | 3,010 | 17.96 | 12,690 | 18.95 |
| | Retirees under 65 | 4,677 | 26.91 | 4,627 | 26.39 | 3,769 | 24.64 | 4,304 | 25.69 | 17,377 | 25.95 |
| | Retirees 65+ | 8,630 | 49.66 | 8,196 | 46.74 | 7,966 | 52.09 | 8,511 | 50.79 | 33,303 | 49.73 |
| Region | North | 4,532 | 26.08 | 5,100 | 29.08 | 4,920 | 32.17 | 5,558 | 33.17 | 20,110 | 30.03 |
| | South | 9,021 | 51.91 | 7,917 | 45.15 | 5,708 | 37.32 | 6,274 | 37.44 | 28,920 | 43.19 |
| | West | 3,826 | 22.02 | 4,518 | 25.77 | 4,666 | 30.51 | 4,924 | 29.39 | 17,934 | 26.78 |

## 5.3.5 Patient and Mode Mix Adjustment

Not every hospital has the same mix of patients. Research has shown significant differences in results depending on the mix of patients and whether a hospital's HCAHPS survey used a telephone-only, mail-only, or mixed mode methodology (Elliott et al., 2009). CMS created adjustment algorithms for each HCAHPS composite and reportable item accounting for result differences due to the type of product (medical, surgical, or obstetrics), education, health status, language of person, patient age, and survey response rate.[4] The TRISS program updates the type of product every quarter using a refresh process based on discharges' revised diagnosis related group codes and self-reported type of hospitalization.

The HCAHPS Patient-Mix and Mode adjustment algorithm first adjusts results by patient mix and then adjusts for survey administration mode. HCAHPS adjustments for survey mode are generally larger than adjustments for patient-mix.[5]

### 5.3.5.1 Patient and Mode Mix Adjustment Model

The Patient and Mode Mix Adjustment model adjusts "Top-Box" and "Bottom-Box" results separately for each composite. The TRISS website only reports "Top-Box" at this time. Every quarter, CMS releases updated adjustment parameters for the following HCAHPS composites.

- Communication with Nurses – Composite of three 4-point scale questions.
- Communication with Doctors – Composite of three 4-point scale questions.
- Responsiveness of Hospital Staff – Composite of two 4-point scale questions.
- Pain Management – Composite of two 4-point scale questions.
- Communication about Medicines – Composite of two 4-point questions.
- Cleanliness of Hospital Environment – Individual 4-point scale question.
- Quietness of Hospital Environment – Individual 4-point scale question.
- Discharge Information – Composite of two yes-no questions.
- Overall Hospital Rating – Single 0- to 10-point scale question.
- Recommend the Hospital – Single 5-point scale question.
- Care Transition Measures – Composite of three 4-point scale questions.

The Patient and Mode Mix adjustment model is:

$$Y' = \hat{Y} + PMA + M,$$

where Y' is the Patient and Mode Mix (PMM) adjusted score for the CMS composite, $\hat{Y}$ is the unadjusted TRISS score for the composite, *PMA* is the hospital-specific patient-mix adjustment for the composite, and *M* is the published mode adjustment for the composite. The order of estimation is:

1. Calculation of TRISS hospital scores and measures.

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[4] Mode and Patient-Mix Adjustment of the CAHPS® Hospital Survey (HCAHPS) April 30, 2008, http://www.hcahpsonline.org.

2. Calculation of the patient-mix adjustment for the hospital.
3. Addition of the TRISS score, the patient-mix adjustment, and the mode component.

## 5.3.5.2 Patient Mix Adjustment

The Patient-Mix adjustment (PMA) is a linear adjustment with parameters reported each quarter based on multiple regression analyses. The model is:

$$PMA = \sum_{j=1}^{15} a_j (h_j - m_j).$$

This adjustment is just for patient-mix, where $a_j$ are the adjustment regression coefficients supplied by CMS for each of 15 factors[6], $h_j$ are the patient-mix adjustment category means for the hospital, and $m_j$ are the CMS-supplied national patient-mix adjustment category means. Included in the adjustments are factors for age and product line, and the interaction between age and product line. It also accounts for differences in education level, language skills, time between date of release and survey completion, and self-reported health status.

The specific demographics included in the adjustment model are:

- Education (Q39 – ordinal) – Included in the model as the mean of the 6 scale points with
  1- 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
- Overall Health (Q37 - scalar)- Included in the model as the mean of the 5-point scale with
  1- Excellent
  2- Very Good
  3- Good
  4- Fair
  5- Poor

- Non-English Language Spoken (Q27 - English spoken is reference category) – Included in the model as a categorical / dummy variable (TRISS is administered in English only)
  o Non-specific language (prior to October 2013 discharges)
  o Spanish (post April 2016 discharges)
  o Chinese (post April 2016 discharges)
  o Russian, Vietnamese, Other (post April 2016 discharges)
- Age (eight categories used as categorical scale) – Included in the model as a categorical / dummy variable
  1- 18-24
  2- 25-34
  3- 35-44
  4- 45-54
  5- 55-64
  6- 65-74
  7- 75-84

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[6] The HCAHPS website posts the new coefficients every quarter for patient-mix and mode mix, http://www.hcahpsonline.org/modeadjustment.aspx

        8- 85 or older (reference age category)

- Product line (Categorical - three categories with Medical as reference category) – Included in the model as a categorical / dummy variable
  - Medical
  - Surgical
  - Obstetrics
- Product line by age interaction
  - Obstetrics*Age – MATAGE (age used as ordinal scale)
  - Surgical * Age – SURGAGE (age used as ordinal scale)
- Response Percentile – A quasi-measure of response rate
  - Response Percentile = Lag time rank / Monthly sample size

CMS publishes every quarter an updated HCAHPS Benchmark for each of its reported composites. Appendix C reports the April 2017 adjustment parameters ($a_j$) from the CMS website. Comparisons to the benchmarks assume the basic protocols are maintained. An overview of the protocols is:

- A patient must have been admitted to hospital overnight for care under an eligible DRG code.
- Contact with the respondent must occur within 42 days of discharge date.
- All respondents must be U.S. residents.
- The questions must follow the exact HCAHPS question wordings and response scales.
- The interview can be administered by mail-alone, phone-alone or mail-with-phone-follow-up.

Table 26 provides the national means ($m_j$) reported by CMS for April 2017

**Table 27. Patient-Mixed Adjustment Means**

| PMA | National Mean |
|---|---|
| Education (per level; 1 = 8th grade or less and 6 = More than 4-year college degree) | 3.790 |
| Self-rated health (per level; 1 = Excellent and 5 = Poor) | 2.755 |
| Response Percentile | 13.6% |
| Language Spoken At Home | |
| Spanish | 5.0% |
| Chinese | 0.3% |
| Russian, Vietnamese, Other | 1.8% |
| English (REFERENCE) | 92.9% |
| Age | |
| 18–24 | 3.5% |
| 25–34 | 10.6% |
| 35–44 | 6.6% |
| 45–54 | 9.7% |
| 55–64 | 19.2% |
| 65–74 | 24.9% |
| 75–84 | 18.0% |
| 85+ (REFERENCE) | 7.4% |
| Service Line | |
| Maternity | 12.8% |
| Surgical | 37.0% |
| Medical (REFERENCE) | 50.2% |
| Interactions | |
| Surgical line × Age | 1.994 |
| Maternity line × Age | 0.272 |

## 5.3.5.3 Mode Mix Adjustment

As noted earlier, HCAHPS adjustments for survey mode are usually larger than adjustments for patient-mix. Mode mix adjustments provide increases and decreases in the Top-Box and Bottom-Box scores based on the mode of survey administration. CMS releases model adjustments for telephone-only, mixed and active IVR, as shown in Table 27. Mail-only is the reference group. The TRISS uses a mixed-mode protocol.

**Table 28. HCAHPS Survey Mode Adjustments of Top Box and Bottom Box Percentages (after PMA) to Adjust Other Modes to a Reference of Mail.**

|  | Bottom Box | | | Top Box | | |
|---|---|---|---|---|---|---|
|  | Phone Only | Mixed | IVR | Phone Only | Mixed | IVR |
| **HCAHPS Composite Measures** | | | | | | |
| Communication with Nurses | -0.8% | -0.5% | -0.6% | -4.0% | -0.3% | -1.8% |
| Communication with Doctors | -2.2% | -1.4% | -1.2% | -1.3% | 1.0% | -0.3% |
| Responsiveness of Hospital Staff | -0.2% | -1.9% | -1.4% | -4.7% | 0.1% | -1.9% |
| Pain Management | -0.6% | -0.9% | -1.3% | -4.7% | -2.3% | -3.4% |
| Communication about Medicine | 0.5% | -1.4% | -1.5% | -3.9% | -0.9% | -1.6% |
| Discharge Information | 1.3% | -0.2% | 3.2% | -1.3% | 0.2% | -3.2% |
| Care Transition | 2.6% | 0.6% | -3.1% | -3.3% | -3.0% | 1.0% |
| **HCAHPS Individual Items** | | | | | | |
| Cleanliness of Hospital Environment | 1.0% | 0.4% | 0.6% | -5.5% | -2.1% | -1.9% |
| Quietness of Hospital Environment | -1.4% | 0.9% | 1.4% | -6.3% | -3.1% | -10.2% |
| **HCAHPS Global Items** | | | | | | |
| Overall Hospital Rating | 0.9% | -1.1% | 0.8% | -2.8% | -1.8% | -1.6% |
| Recommend the Hospital | 0.4% | -0.4% | 0.1% | -4.4% | -1.4% | -2.2% |

## 5.3.5.4 Statistical Testing of Adjusted Scores

The test for comparing the PMM adjusted TRISS score versus the HCAHPS Benchmark is the same as a test between two mutually exclusive or independent samples. The test statistic is:

$$T = \frac{C_1 - C_2}{\sqrt{Var(C_1) + Var(C_2)}} \ .$$

where $C_1$ is the TRISS score $Y'$, and $C_2$ is the HCAHPS benchmark score.

The variance of the TRISS score $Y'$ can be written as:

$$Var(Y') = Var(\hat{Y} + PMA + M) = Var(\hat{Y}) + Var(PMA) + Var(M) = Var(\hat{Y}) + Var(PMA).$$

Values for Mode adjustments are not revised each quarter, so $Var(M)$ is zero.

$Var(\hat{Y})$ is the variance or the square of the standard error of a TRISS estimate[7]. $Var(PMA)$ is based on the variance of a mean value under a multiple regression model, where:

$$PMA = \tilde{Y} - \hat{\mu} = \left[a_0 + \sum_{j=1}^{15} a_j h_j\right] - \left[a_0 + \sum_{j=1}^{15} a_j m_j\right] = \left[\sum_{j=1}^{15} a_j h_j\right] - \left[\sum_{j=1}^{15} a_j m_j\right] .$$

The expression for $Var(PMA)$ expands to be:

$$Var(PMA) = Var\left(\sum_{j=1}^{15} a_j h_j\right) + Var\left(\sum_{j=1}^{15} a_j m_j\right)$$

---

[7] The variance for a roll up of two or more facilities is:

$$Var(\hat{P}) = \sum_{h=1}^{H}\left[1 - \frac{n_h}{N_h}\right]\left(\frac{N_h}{N}\right)^2 \hat{P}_h\left(1 - \hat{P}_h\right) \Big/ n_h^* = \sum_{h=1}^{H}[1 - f_h]\, W_h^2\, Var(\hat{P}_h) \text{ with } n_h^* = n_h/(1 + CV_h^2(w)).$$

$$= \left[\sum_{j=1}^{15}(h_j - m_j)^2 V(a_j) + 2 \sum_{j=1}^{15}\sum_{k>j}^{15}(h_j - m_j)(h_k - m_k)\, Cov(a_j, a_k)\right] +$$

$$\left[\sum_{j=1}^{15}(m_j - m_j)^2 V(a_j) + 2 \sum_{j=1}^{15}\sum_{k>j}^{15}(m_j - m_j)(m_k - m_k)\, Cov(a_j, a_k)\right]$$

$$= \left[\sum_{j=1}^{15}(h_j - m_j)^2 V(a_j) + 2 \sum_{j=1}^{15}\sum_{k>j}^{15}(h_j - m_j)(h_k - m_k)\, Cov(a_j, a_k)\right].[8]$$

The test statistic for the Patient and Mode Adjusted TRISS estimate versus $C_2$ is:

$$T = \frac{Y' - C_2}{\sqrt{Var(Y\prime) + Var(C_2)}} \; .$$

The vendor estimates the variances and covariances for the adjustment coefficients using the 2012-2014 quarterly adjustment coefficients. The TRISS Survey and Sample Design Plan reports tables with these values.

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[8] Variance expression is based on variance of the mean predicted from a multiple regression. See Chaterjee and Price (1991), *Regression Analysis by Example,* Wiley: New York.

## 5.3.6   TRISS Instrument

**TRICARE Inpatient Satisfaction Survey**

DEFENSE HEALTH AGENCY

**DHA**
Defense Health Agency

RCS Number: DD-HA (A) 2076
OMB# 0938-0981

### Survey Instructions

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

According to the Privacy Act of 1974, as amended, the Department of Defense is required to inform you of the purposes and use of this survey. Please read this Privacy Act Statement carefully.

**AUTHORITY:** 10 U.S.C. 136, Under Secretary of Defense for Personnel and Readiness; 10 U.S.C. 1071 (NOTE), Annual Beneficiary Survey; 10 U.S.C. Chapter 55, Medical and Dental Care; 42 U.S.C. 11131-11152, Health Care Improvement Act of 1986; 32 CFR 199.16, TRICARE Program; and DoDD 6025.13, Medical Quality Assurance (MQA) in the Military Health System (MHS).

**PURPOSE:** The information collected in this survey helps health policy makers gauge beneficiary satisfaction with inpatient care within the Military Health System's direct care and the purchased care network facilities. Responses will be used to facilitate beneficiary comparisons of hospitals, guide Military Treatment Facility quality improvement efforts, and improve the Military Health System.

**ROUTINE USES:** None

**DISCLOSURE:** Voluntary. Failure to respond will not result in any penalty to the respondent. However, maximum participation is encouraged so that data will be as complete and representative as possible.

*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 courtesy and respect?
   - ☐ Never
   - ☐ Sometimes
   - ☐ Usually
   - ☐ Always

2. During this hospital stay, how often did nurses listen carefully to you?
   - ☐ Never
   - ☐ Sometimes
   - ☐ Usually
   - ☐ Always

3. During this hospital stay, how often did nurses explain things in a way you could understand?
   - ☐ Never
   - ☐ Sometimes
   - ☐ Usually
   - ☐ Always

4. During this hospital stay, after you pressed the call button, how often did you get help as soon as you wanted it?
   - ☐ Never
   - ☐ Sometimes
   - ☐ Usually
   - ☐ Always
   - ☐ I never pressed the call button

#### YOUR CARE FROM DOCTORS

5. During this hospital stay, how often did doctors treat you with courtesy and respect?
   - ☐ Never
   - ☐ Sometimes
   - ☐ Usually
   - ☐ Always

6. During this hospital stay, how often did doctors listen carefully to you?
   - ☐ Never
   - ☐ Sometimes
   - ☐ Usually
   - ☐ Always

1

7. During this hospital stay, how often did doctors <u>explain things</u> in a way you could understand?

   ☐ Never
   ☐ Sometimes
   ☐ Usually
   ☐ Always

### THE HOSPITAL ENVIRONMENT

8. During this hospital stay, how often were your room and bathroom kept clean?

   ☐ Never
   ☐ Sometimes
   ☐ Usually
   ☐ Always

9. During this hospital stay, how often was the area around your room quiet at night?

   ☐ Never
   ☐ Sometimes
   ☐ Usually
   ☐ Always

### 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?

    ☐ Yes
    ☐ No → **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?

    ☐ Never
    ☐ Sometimes
    ☐ Usually
    ☐ Always

12. During this hospital stay, did you need medicine for pain?

    ☐ Yes
    ☐ No → **If No, Go to Question 15**

13. During this hospital stay, how often was your pain well controlled?

    ☐ Never
    ☐ Sometimes
    ☐ Usually
    ☐ Always

14. During this hospital stay, how often did the hospital staff do everything they could to help you with your pain?

    ☐ Never
    ☐ Sometimes
    ☐ Usually
    ☐ Always

15. During this hospital stay, were you given any medicine that you had not taken before?

    ☐ Yes
    ☐ No → **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?

    ☐ Never
    ☐ Sometimes
    ☐ Usually
    ☐ Always

17. Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?

    ☐ Never
    ☐ Sometimes
    ☐ Usually
    ☐ 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?

    ☐ Own home
    ☐ Someone else's home
    ☐ 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?

    ☐ Yes
    ☐ 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?

    ☐ Yes
    ☐ 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 Worst hospital possible
    ☐ 1
    ☐ 2
    ☐ 3
    ☐ 4
    ☐ 5
    ☐ 6
    ☐ 7
    ☐ 8
    ☐ 9
    ☐ 10 Best hospital possible

22. Would you recommend this hospital to your friends and family?

    ☐ Definitely no
    ☐ Probably no
    ☐ Probably yes
    ☐ 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.

    ☐ Strongly disagree
    ☐ Disagree
    ☐ Agree
    ☐ Strongly agree

24. When I left the hospital, I had a good understanding of the things I was responsible for in managing my health.

    ☐ Strongly disagree
    ☐ Disagree
    ☐ Agree
    ☐ Strongly agree

25. When I left the hospital, I clearly understood the purpose for taking each of my medications.

    ☐ Strongly disagree
    ☐ Disagree
    ☐ Agree
    ☐ Strongly agree
    ☐ I was not given any medication when I left the hospital

## YOUR HEALTH CARE

*This next set of questions is to provide the hospital additional feedback about your hospital stay.*

26. During this hospital stay, when doctors, nurses or other hospital staff first came to your room, how often did they introduce themselves?

    ☐ Never
    ☐ Sometimes
    ☐ Usually
    ☐ Always

27. During this hospital stay, how often did you feel there was good communication between team members about your health care needs?

    ☐ Never
    ☐ Sometimes
    ☐ Usually
    ☐ Always

28. Did staff allow family members or someone close to you to be with you when you wanted them there?

    ☐ Yes
    ☐ No
    ☐ Not applicable to my situation

29. Which best describes your hospital room?

    ☐ Private
    ☐ Semi-private (two patients in one room)
    ☐ Bay (three or more patients in a room)

30. For this stay, were you admitted to the hospital for childbirth (including C-section), a surgical procedure or operation, or another medical condition or illness?

    ☐ Childbirth (including C-section)
    ☐ Surgical procedure or operation
    ☐ Another medical condition or illness

## CHILDBIRTH

31. If you were just beginning your pregnancy, and you had a choice, would you use the same hospital for your OB care?

    ☐ Yes
    ☐ No
    ☐ Not sure

32. Were you offered education or support about breastfeeding while in the hospital?

    ☐ Yes
    ☐ No

## PATIENT SAFETY

33. How often did your staff wash or sanitize their hands before touching you?

☐ Never
☐ Sometimes
☐ Usually
☐ Always
☐ I was not treated or checked by staff
☐ I don't know

34. How often did staff ask your name, check your ID band, or confirm who you were before giving you any medications, treatments, or tests?

☐ Never
☐ Sometimes
☐ Usually
☐ Always

## NURSING CARE

35. Using any number from 0 to 10, where 0 is the worst nursing care possible and 10 is the best nursing care possible, what number would you use to rate the care you received during your stay?

☐ 0 Worst nursing care possible
☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10 Best nursing care possible

## ABOUT YOU

*There are only a few remaining items left.*

36. During this hospital stay, were you admitted to this hospital through the Emergency Room?

☐ Yes
☐ No

37. In general, how would you rate your overall health?

☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Poor

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38. In general, how would you rate your overall <u>mental or emotional health</u>?

☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Poor

39. What is the highest grade or level of school that you have <u>completed</u>?

☐ 8th grade or less
☐ Some high school, but did not graduate
☐ High school graduate or GED
☐ Some college or 2-year degree
☐ 4-year college graduate
☐ More than 4-year college degree

40. Are you of Spanish, Hispanic or Latino origin or descent?

☐ No, not Spanish/Hispanic/Latino
☐ Yes, Puerto Rican
☐ Yes, Mexican, Mexican American, Chicano
☐ Yes, Cuban
☐ Yes, other Spanish/Hispanic/Latino

41. What is your race? Please choose one or more.

☐ White
☐ Black or African American
☐ Asian
☐ Native Hawaiian or other Pacific Islander
☐ American Indian or Alaska Native

42. What language do you <u>mainly</u> speak at home?

☐ English
☐ Spanish
☐ Chinese
☐ Russian
☐ Vietnamese
☐ Portuguese
☐ Some other language (please print):

_____

## COMMENT

43. Do you have any comments regarding your inpatient care or suggestions for improvement?

_____
_____
_____
_____

THANK YOU

Please return the complete survey in the postage-paid envelope.
TRICARE Inpatient Satisfaction Survey
c/o Survey Processing Center
PO Box 5030
Chicago, IL 60680-9858

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