

**Patient-Mix Adjustment Coefficients**  
**Applicable to the Patient Experience of Care Domain Score in the**  
**Hospital Value-Based Purchasing FY 2013 Actual Percentage Payment Summary Report**

## INTRODUCTION

CMS adjusts HCAHPS scores for the effects of patient-mix and mode of survey administration in order to permit fair comparisons of hospitals. The process of patient-mix adjustment is described in detail in the document, “Mode and Patient-mix Adjustment of the CAHPS® Hospital Survey (HCAHPS)” (<http://www.hcahpsonline.org/files/Final%20Draft%20Description%20of%20HCAHPS%20Mode%20and%20PMA%20with%20bottom%20box%20modedoc%20April%2030,%202008.pdf>). Current and historic patient-mix adjustment coefficients are available on the official HCAHPS On-Line Web site (<http://www.hcahpsonline.org/modeadjustment.aspx>).

We make reference to the patient-mix adjustment process for Hospital Value-Based Purchasing in Step 4 of “A Step-by-Step Guide to Calculating the Patient Experience of Care Domain Score in the Hospital Value-Based Purchasing FY 2013 Actual Percentage Payment Summary Report.” (See HCAHPS Web site “HCAHPS and Hospital VBP” page.

## KEY DIFFERENCES IN HCAHPS SCORES in Hospital VBP and Hospital Compare

While the Patient Experience of Care Domain dimensions in the Hospital VBP program are derived from the HCAHPS Survey, two important differences between the Hospital VBP and Hospital Compare programs necessitate the calculation of *patient-mix adjustments* specifically for the FY 2013 Hospital VBP program. The HCAHPS *survey mode adjustments*, however, are the same for the Hospital Compare and Hospital VBP programs. The two key differences in patient-mix adjustment between the Hospital Compare public reporting program and the FY 2013 Hospital VBP program are as follows:

### Time Periods

- The HCAHPS scores on Hospital Compare are derived from patients discharged in four consecutive calendar quarters (twelve months) on a rolling basis
- The Patient Experience of Care Domain scores in the FY 2013 Hospital VBP program are derived from patients discharged in a defined set of three consecutive quarters (nine months)
  - o July 2009 to March 2010 for the Baseline Period
  - o July 2011 to March 2012 for the Performance Period

### Measures and Outcomes

- Hospital Compare reports all HCAHPS measures and the full range of survey results
  - o Top-box, middle-box and bottom-box results for ten HCAHPS measures
- Hospital VBP utilizes eight measures (called “dimensions” in Hospital VBP) and top-box results only
  - o “Cleanliness of hospital environment” and “Quietness of hospital environment” are combined to form one dimension, “Cleanliness and Quietness”
    - See Step 6 in “A Step-by-Step Guide to Calculating the Patient Experience of Care Domain Score in the Hospital Value-Based Purchasing FY 2013 Actual Percentage Payment Summary Report”
  - o “Recommend the Hospital” is not used in Hospital VBP

In addition, one patient characteristic, “[Emergency Room Admission](#),” which was originally used in patient-mix adjustment of HCAHPS scores, has subsequently become unavailable. Since second quarter 2010, the HCAHPS patient-mix adjustment has not included this factor.

Changes of this nature can create unavoidable discontinuities in HCAHPS scores across time. In this instance, FY 2013 Baseline Period scores incorporate ER admission as a patient-mix adjustment while the corresponding Performance Period scores do not. Analyses undertaken by the HCAHPS Project Team found that the absence of emergency room admission had little effect overall on HCAHPS scores.

#### PATIENT-MIX ADJUSTMENT TABLES FOR THE FY 2013 Hospital VBP PROGRAM

Tables 1 and 3 report patient-mix adjustments for the “top-box” (most positive response) of the HCAHPS dimensions used in the FY 2013 Baseline Period and Performance Period, respectively. Adjustments are averaged across the three quarters that comprise the Hospital VBP Baseline Period and the Performance Period for FY 2013.

HCAHPS dimension scores are adjusted to the overall national mean of patient-mix variables across all hospitals reporting in a given quarter. These overall national means are presented for the Baseline Period and Performance Period in Table 2 and Table 4, respectively.

Whether the scores of a given hospital are adjusted upward or downward for a given measure depends not only on these patient-mix adjustments but also on the patient-mix of that hospital relative to the national average of these patient-mix characteristics. Specifically, the total patient mix-adjustment for a given hospital is the sum of a series of products, where each product multiplies the adjustment by the deviation of the hospital’s mean on the corresponding patient-mix variable from the national mean on that patient-mix variable. For more details, including equations, on patient-mix adjustment, please see, [http://hcahponline.org/files/December\\_2012\\_PMA\\_Web\\_Document\\_09-12-12.pdf](http://hcahponline.org/files/December_2012_PMA_Web_Document_09-12-12.pdf).

Table 1.  
 FY 2013 Hospital VBP Baseline Period:  
 “Top-Box” HCAHPS Patient-Mix Adjustments  
 (Three Quarter Average for July 2009 to March 2010 Discharges)

Patient-Mix Adjustment (PMA)	Comm. with Nurses	Comm. with Doctors	Responsiveness of Hosp. Staff	Pain Management	Comm. About Medicines	Cleanliness of Hosp. Env.	Quietness of Hosp. Env.	Discharge Information	Overall Hospital Rating
Education (per level; 1=8th grade or less and 6=More than 4-year college degree)	2.16%	1.82%	2.72%	2.64%	3.26%	2.13%	3.88%	0.92%	1.31%
Self-Rated Health (per level; 1=Excellent and 5=Poor)	5.30%	4.95%	6.46%	6.74%	5.25%	4.15%	4.24%	1.33%	5.54%
Emergency Room Admission	1.13%	4.38%	2.09%	1.90%	2.52%	0.27%	1.80%	3.11%	1.70%
Response Percentile (per 1% of response percentile)	0.20%	0.17%	0.23%	0.16%	0.16%	0.06%	0.03%	0.01%	0.16%
Non-English Primary Language	-0.16%	-0.54%	-0.29%	-2.08%	-1.93%	0.53%	-5.92%	-2.12%	-6.27%
<b>AGE</b>									
Age 18-24	4.29%	4.10%	3.90%	6.31%	-9.09%	3.78%	-6.73%	-1.69%	16.14%
Age 25-34	1.35%	1.49%	-3.16%	2.52%	-9.84%	4.33%	-7.12%	-2.95%	11.10%
Age 35-44	-0.87%	-0.66%	-5.38%	-0.08%	-10.95%	4.16%	-5.20%	-3.41%	8.32%
Age 45-54	-3.06%	-2.35%	-6.69%	-2.55%	-11.16%	3.19%	-2.21%	-3.78%	5.00%
Age 55-64	-4.98%	-4.17%	-7.93%	-5.57%	-11.59%	2.50%	-1.85%	-4.65%	1.39%
Age 65-74	-4.94%	-4.98%	-7.10%	-6.09%	-9.51%	3.07%	-1.23%	-3.61%	0.06%
Age 75-84	-3.01%	-2.65%	-4.09%	-3.62%	-4.74%	1.81%	0.15%	-1.56%	-0.42%
Age 85+ (REFERENCE)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>SERVICE LINE</b>									
Maternity	-5.92%	-11.21%	-14.00%	-10.95%	-10.55%	4.31%	-11.27%	-7.24%	-12.57%
Surgical	1.70%	-8.92%	1.92%	-1.51%	-1.42%	0.03%	-0.08%	-5.69%	-3.47%
Medical (REFERENCE)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>INTERACTIONS</b>									
Surgical Line * Age <sup>1</sup>	-0.06%	1.01%	-0.28%	-0.34%	0.33%	-0.10%	0.07%	-0.03%	0.42%
Maternity Line * Age <sup>1</sup>	1.02%	1.57%	2.14%	1.61%	1.93%	-0.36%	1.60%	1.30%	2.12%

<sup>1</sup> Age takes on the values of 1 to 8 as follows: (1: 18 to 24); (2: 25 to 34); (3: 35 to 44); (4: 45 to 54); (5: 55 to 64); (6: 65 to 74); (7: 75 to 84); and (8: 85+).

Table 2.  
 FY 2013 Hospital VBP Baseline Period:  
 National Means of PMA Variables  
 (Three Quarter Average for July 2009 to March 2010 Discharges)

Patient-Mix Adjustment (PMA)	National Mean
Education (per level; 1=8 <sup>th</sup> grade or less and 6=More than 4-year college degree)	3.644
Self-Rated Health (per level; 1=Excellent and 5=Poor)	2.814
Emergency Room Admission	43.9%
Response Percentile	16.3%
Non-English Primary Language	5.9%
<b>AGE</b>	
Age 18-24	4.6%
Age 25-34	10.5%
Age 35-44	7.5%
Age 45-54	11.7%
Age 55-64	17.6%
Age 65-74	21.4%
Age 75-84	18.8%
Age 85+ (REFERENCE)	8.0%
<b>SERVICE LINE</b>	
Maternity	15.7%
Surgical	33.7%
Medical (REFERENCE)	50.6%
<b>INTERACTIONS</b>	
Surgical Line * Age <sup>1</sup>	1.786
Maternity Line * Age <sup>1</sup>	0.412

<sup>1</sup> Age takes on the values of 1 to 8 as follows: (1: 18 to 24); (2: 25 to 34); (3: 35 to 44); (4: 45 to 54); (5: 55 to 64); (6: 65 to 74); (7: 75 to 84); and (8: 85+).

Table 3.  
 FY 2013 Hospital VBP Performance Period:  
 “Top-Box” HCAHPS Patient-Mix Adjustments  
 (Three Quarter Average for July 2011 to March 2012 Discharges)

Patient-Mix Adjustment (PMA)	Comm. with Nurses	Comm. with Doctors	Responsiveness of Hosp. Staff	Pain Management	Comm. About Medicines	Cleanliness of Hosp. Env.	Quietness of Hosp. Env.	Discharge Information	Overall Hospital Rating
Education (per level; 1=8th grade or less and 6=More than 4-year college degree)	2.00%	1.81%	2.70%	2.62%	3.12%	1.93%	3.87%	0.79%	3.21%
Self-Rated Health (per level; 1=Excellent and 5=Poor)	4.97%	4.85%	6.11%	6.50%	5.08%	4.03%	4.10%	1.29%	6.27%
Emergency Room Admission	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Response Percentile (per 1% of response percentile)	0.18%	0.15%	0.20%	0.15%	0.15%	0.06%	0.01%	0.01%	0.16%
Non-English Primary Language	0.52%	-0.23%	0.86%	-1.40%	-0.68%	1.58%	-5.31%	-1.40%	-6.70%
<b>AGE</b>									
Age 18-24	4.15%	3.67%	5.02%	6.23%	-8.99%	2.65%	-6.29%	-2.71%	18.05%
Age 25-34	1.18%	1.07%	-2.09%	2.32%	-10.09%	2.43%	-6.83%	-4.11%	13.88%
Age 35-44	-1.01%	-0.85%	-4.31%	-0.07%	-11.60%	2.27%	-5.21%	-4.69%	9.71%
Age 45-54	-2.92%	-2.51%	-5.65%	-2.54%	-11.71%	1.56%	-2.75%	-4.88%	4.79%
Age 55-64	-4.60%	-4.14%	-6.66%	-4.82%	-11.46%	1.02%	-1.88%	-5.47%	0.73%
Age 65-74	-4.62%	-5.13%	-5.94%	-5.69%	-9.55%	1.80%	-1.28%	-4.58%	-1.64%
Age 75-84	-2.79%	-2.94%	-3.50%	-3.36%	-4.92%	1.19%	0.01%	-2.01%	-1.63%
Age 85+ (REFERENCE)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>SERVICE LINE</b>									
Maternity	-6.81%	-14.22%	-14.89%	-12.98%	-12.26%	1.72%	-11.55%	-8.54%	-13.18%
Surgical	1.25%	-9.64%	0.49%	-1.26%	-1.34%	-0.08%	-0.81%	-5.37%	-4.95%
Medical (REFERENCE)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>INTERACTIONS</b>									
Surgical Line * Age <sup>1</sup>	-0.11%	0.75%	-0.29%	-0.58%	0.07%	-0.14%	-0.02%	-0.17%	0.46%
Maternity Line * Age <sup>1</sup>	1.36%	1.76%	1.90%	1.91%	2.52%	0.82%	0.94%	1.79%	2.15%

<sup>1</sup> Age takes on the values of 1 to 8 as follows: (1: 18 to 24); (2: 25 to 34); (3: 35 to 44); (4: 45 to 54); (5: 55 to 64); (6: 65 to 74); (7: 75 to 84); and (8: 85+).

Table 4.  
 FY 2013 Hospital VBP Performance Period:  
 National Means of PMA Variables  
 (Three Quarter Average for July 2011 to March 2012 Discharges)

Patient-Mix Adjustment (PMA)	National Mean
Education (per level; 1=8 <sup>th</sup> grade or less and 6=More than 4-year college degree)	3.708
Self-Rated Health (per level; 1=Excellent and 5=Poor)	2.774
Emergency Room Admission	N/A
Response Percentile	16.2%
Non-English Primary Language	6.6%
<b>AGE</b>	
Age 18-24	4.6%
Age 25-34	11.3%
Age 35-44	7.5%
Age 45-54	11.5%
Age 55-64	18.7%
Age 65-74	21.6%
Age 75-84	17.7%
Age 85+ (REFERENCE)	7.2%
<b>SERVICE LINE</b>	
Maternity	13.7%
Surgical	35.1%
Medical (REFERENCE)	51.2%
<b>INTERACTIONS</b>	
Surgical Line * Age <sup>1</sup>	1.837
Maternity Line * Age <sup>1</sup>	0.291

<sup>1</sup> Age takes on the values of 1 to 8 as follows: (1: 18 to 24); (2: 25 to 34); (3: 35 to 44); (4: 45 to 54); (5: 55 to 64); (6: 65 to 74); (7: 75 to 84); and (8: 85+).