

## **Patient-Mix Adjustment Factors for Home Health Care CAHPS Survey Field Test Results**

Home Health Care CAHPS (HHCAHPS) Survey results will be “refreshed” or updated each calendar year quarter and published on Medicare's Care Compare website at <https://www.medicare.gov/care-compare/>. This memo describes the process used to estimate the patient-mix adjustments; the estimates will be updated each quarter based on data from national implementation.

Prior research has shown that patients’ assessment of the health care they receive may be affected by both the survey data collection mode and patient characteristics. In 2022, the Centers for Medicare & Medicaid Services (CMS) and the HHCAHPS Coordination Team conducted a field test to test a revised survey instrument and assess the effects of four data collection modes (mail only, telephone only, mail with telephone follow-up of nonrespondents, and Web with mail follow-up of non-respondents). Data collected during the 2022 HHCAHPS field test were also used to determine which, if any, patient characteristics (patient mix) affected patients’ assessment of the home health care they received. Similar to past HHCAHPS field tests, the results of this HHCAHPS Survey field test showed differences in responses attributable to patient mix characteristics. Therefore, patient mix adjustments will be made on HHCAHPS Survey results that are publicly reported using selected patient characteristics identified during the field test.

The patient mix adjustment factors being used in the HHCAHPS Survey are derived from coefficients for the identified patient characteristics obtained from Ordinary Least Squares regression analyses on each separate HHCAHPS response item. The regression coefficients indicate the tendency of patients with particular characteristics to respond more positively or negatively to HHCAHPS Survey questions. Patient mix adjustment factors are calculated directly from these regression coefficients for each HHCAHPS response item by multiplying the coefficients by negative one ( $-1.0$ ).

Patient mix adjustment factors to account for HHA differences in patient mix are calculated and applied to HHA raw scores for each of the HHCAHPS response items. Adjusted scores for multi-item measures are then formed from these adjusted scores and averaged to produce the published scores. Published scores are adjusted for differences between an HHA’s patient composition according to the HHCAHPS patient mix characteristics and the overall national composition of home health patients on these same characteristics. This adjustment, which allows consumers to compare different HHAs based on the same overall patient composition, is made by subtracting the national mean for a given patient characteristic from an

HHA's share of patients on this patient characteristic. For example, if nationally 20 percent of patients are aged 65–74, but an HHA's share of patients on this measure is 25 percent, then this adjustment for the difference in the HHA's patient composition versus the overall national patient composition is calculated as 25 percent minus 20 percent, or 5 percent.

Four sets of numbers are needed to calculate an HHA's adjusted score for any given HHCAHPS response item: (1) the "raw score," or an HHA's mean value on the respective HHCAHPS outcome before adjustment, (2) the individual-level patient mix adjustment factors shown in Table 1 (top box adjustment factors), (3) the HHA's mean values on the patient mix characteristic variables, and (4) the national mean on the patient mix characteristic variables shown in Table 2.

The adjusted score for a given HHCAHPS Survey response item for an HHA is the sum of a series of products in the equation shown below, where each product multiplies the adjustment from Table 1 (top box) by the deviation of the HHA's mean on a given patient mix characteristic from the national mean on that characteristic from Table 2:

$$Y' = y + a_1(h_1 - m_1) + a_2(h_2 - m_2) + a_3(h_3 - m_3) + \dots + a_{19}(h_{19} - m_{19})$$

where

- $y'$  is the HHA's adjusted score for the respective HHCAHPS response item
- $y$  is the HHA's "raw score," or mean value on the respective unadjusted top box HHCAHPS response item
- $a_1$  to  $a_{19}$  are the individual-level adjustments from Table 1 for the patient characteristics in the table expressed as a proportion rather than as a percentage
- $h_1$  to  $h_{19}$  are the HHA's mean proportions of patients with each of the patient characteristics in the same row
- $m_1$  to  $m_{19}$  are the national mean proportions of patients with each of the patient characteristics in Table 2 across the HHAs participating in HHCAHPS.

For public reporting purposes, the final adjusted HHCAHPS score is rounded to the nearest integer and expressed as a percentage (e.g., 84%).

Information presented in this document, while specific to the field test, will permit an HHA to approximate the effect of patient mix adjustment on its HHCAHPS Survey results. In

national implementation, the patient-mix adjustment coefficients would be updated each quarter based on actual data.

**Table 1. “Top Box” HHCAHPS Patient-Mix Adjustment Factors (2022 HHCAHPS Survey Field Test)**

<b>Patient Mix Characteristic Patient Mix Level</b>	<b>Care of Patients</b>	<b>Comm. Btwn Providers and Patients</b>	<b>Home Safety</b>	<b>Review Medicines</b>	<b>Talk Medicine Side Effects</b>
Proxy Proxy	-0.033	-0.022	-0.043	-0.066	-0.002
Non-English survey response Non-English survey response	0.021	0.033	0.000	-0.061	-0.054
Age 18–49	-0.006	0.015	0.086	0.046	0.070
50–64	0.019	0.029	0.044	-0.002	-0.007
65–74	RC	RC	RC	RC	RC
75–84	0.015	0.020	0.011	0.035	0.047
85+	0.013	0.028	-0.004	0.050	0.081
Education < 8th grade	0.016	0.006	0.016	0.009	-0.055
Some high school	0.006	0.006	-0.017	0.008	0.001
High school graduate/GED	RC	RC	RC	RC	RC
Some college	0.004	0.014	-0.003	0.032	0.026
College graduate or more	0.010	0.026	0.018	0.047	0.050
Residence status Patient lived alone	0.040	0.030	0.02	0.027	0.047
Self-reported health status Excellent	-0.036	-0.045	-0.031	0.016	-0.101
Very good	0.005	-0.005	0.008	0.045	0.015
Good	RC	RC	RC	RC	RC
Fair	0.011	0.012	0.006	-0.004	0.019
Poor	0.044	0.045	0.002	-0.008	0.009
Mental/emotional status Excellent	-0.065	-0.036	0.003	-0.042	0.008
Very good	-0.026	-0.020	-0.020	-0.007	0.024
Good	RC	RC	RC	RC	RC
Fair	0.003	0.000	0.002	-0.011	-0.023
Poor	0.049	0.049	0.039	0.053	0.064

RC = reference category

**Table 2. National Means on Patient-Mix Adjustment Factors (2022 HHCAHPS Survey Field Test)**

Patient Mix Characteristic Patient Mix Level	Mean
Proxy respondent used	0.11
Non-English survey response	0.05
Age	0.03
18–49	
50–64	0.09
65–74	0.27
75–84	0.36
85+	0.26
Education	0.07
8th grade or less	
Some high school	0.09
High school graduate/GED	0.33
Some college	0.27
College graduate or more	0.24
Residence status	0.34
Patient lived alone	
Self-reported health status	0.09
Excellent	
Very good	0.17
Good	0.33
Fair	0.31
Poor	0.10
Mental/emotional status	0.44
Excellent/very good	
Good	0.32
Fair/poor	0.24