

CATEGORICAL ADJUSTMENT INDEX (CAI) METHODOLOGY

This attachment provides details of the methodology employed to select the adjusted measure set for the CAI and to calculate and apply the CAI values.

The Categorical Adjustment Index (CAI) was introduced in 2017 to address the average within-contract disparity in performance revealed through our research among beneficiaries who receive a low income subsidy, are dual eligible (LIS/DE), and/or are disabled. CMS developed the CAI as an analytical adjustment while we develop a long-term solution.

The adjustment factor varies according to a contract's final adjustment category, which is determined by the contract's proportion of LIS/DE beneficiaries and proportion of beneficiaries with disability status. By design, the CAI values are monotonically increasing with LIS/DE and disability proportions. Thus, contracts with larger LIS/DE and/or disability status percentages receive larger positive adjustments conditional on the value of the other dimension.

MA-PD contracts can have up to three mutually exclusive adjustments – one for the overall Star Rating and one for each of the summary ratings (Part C and Part D). MA-only contracts can have one adjustment for the Part C summary rating. PDPs can have one adjustment for the Part D summary rating.

LIS/DE and DISABILITY STATUS DATA SOURCES

Data Sources for the Determination of the CAI values

- Monthly enrollment files
- Social Security Administration and Railroad Retirement Board Record System
- Centers for Medicare & Medicaid Services Integrated Data Repository (IDR)

The development and calculation of the CAI values rely on data from the previous year's Star Ratings program. For example, the 2020 Star Ratings CAI values were determined using data from the 2019 Star Ratings year. The 2020 CAI values used data from the 2017 measurement period for all measures except CAHPS measures which, by design, employ data from the 2018 measurement period.

Using data from the previous year's Star Ratings program allows the CAI values to be published in advance of their application. The CAI values are released through the process described for changes in, and adoption of, payment and risk adjustment policies in section 1853(b) of the Act each year.

PERCENTAGES OF LIS/DE and DISABLED BENEFICIARIES

Contract Assignment

A beneficiary is assigned to a contract based on his/her enrollment information using the December file of the Medicare enrollment data, which aligns with the data used for the calculation of the CAI values. A beneficiary must have been alive for at least part of the month of December to be assigned to a contract and included in an enrollment count.

Contract Enrollment

Contract enrollment for the development of the CAI is determined using the information from the contract assignment. Medicare enrollment data from the measurement year of the previous year's Star Ratings are used to determine contract enrollment, with the requirement that a beneficiary must have been alive for at least part of December to be assigned to a contract.

Percentage of LIS/DE per Contract

Once beneficiaries are assigned to contracts, the percentage of beneficiaries who are LIS/DE is determined using the monthly indicators in the Medicare enrollment data of the applicable measurement period. If a beneficiary was designated as full or partially dual eligible or received an LIS at any time during the applicable measurement period, the beneficiary is categorized as LIS/DE.

The percentage of LIS/DE for a contract is calculated as the quotient of the number of LIS/DE beneficiaries in a contract and the contract enrollment (determined using the method presented previously). To convert the proportion to a percentage, the quotient is multiplied by 100.

The percentage of LIS/DE is set to 100% for D-SNP-only contracts and contracts with an all-D-SNP PBP for which the raw percentage of LIS/DE of the plan (calculated using the method described above) is at least 99%.

Puerto Rico contracts do not have LIS/DE percentages that are comparable to the mainland US, because Puerto Rico beneficiaries are not eligible for LIS. In addition, the Federal Poverty Level (FPL) cutoff for Medicaid is more stringent in Puerto Rico (85 percent of the FPL) and therefore not comparable to the cutoff in the United States. Thus, LIS/DE for Puerto Rico contracts must be imputed for the purpose of applying CAI values, and Puerto Rico contracts are excluded from the models used to calculate CAI values and the actual calculation of CAI values.

Percentage of Disabled Beneficiaries per Contract

Beneficiaries are categorized as disabled using information from the Social Security Administration (SSA) and Railroad Retirement Board (RRB) record systems. Disability status is determined using the variable Original Reason for Entitlement (OREC) for Medicare. Beneficiaries with OREC coded as a 1 or 3 are considered disabled, and beneficiaries are non-disabled if OREC is equal to any other non-missing codes.

OREC ORIGINAL REASON FOR ENTITLEMENT

- 0 = Beneficiary insured due to age
- 1 = Beneficiary insured due to disability
- 2 = Beneficiary insured due to ESRD
- 3 = Beneficiary insured due to disability and current ESRD
- 9 = None of the above

If a beneficiary was originally eligible for Medicare because of disability, the beneficiary is

categorized as having disability status even after they reach age 65.

The percentage of disabled beneficiaries is calculated as the number of disabled beneficiaries in a contract divided by the contract enrollment (determined using the method presented previously). To convert the proportion to a percentage, the quotient is multiplied by 100.

ADJUSTED MEASURES

Adjusted Measure Selection

The adjusted measure scores of a subset of the Star Ratings measures serve as the foundation for calculating CAI values. Measures are excluded from adjustment as part of the CAI if the measures are already case-mix adjusted for socio-economic status (for example, CAHPS and HOS outcome measures), if the focus of the measurement is not a beneficiary-level issue, but rather a contract, plan, or provider-level issue (for example, appeals, call center, Part D price accuracy measures), if the measure is scheduled to be retired or revised during the Star Rating year in which the CAI is being applied, or if the measure is applicable to only Special Needs Plans (SNPs; for example, SNP Care Management, Care for Older Adults measures).

The measures selected for adjustment in the current Star Ratings CAI are published through the process described for changes in, and adoption of, payment and risk adjustment policies in section 1853(b) of the Act and noted in the Medicare Part C & D Star Ratings Technical Notes.

Adjusted Measure Scores and Associated Measure-Level Stars

The adjusted measures scores for the selected measures are determined using results from regression models of beneficiary-level measure scores that adjust for the average within-contract difference in measure scores between LIS/DE and not-LIS/DE and between disabled and not disabled beneficiaries for MA or PDP contracts. The approach used to determine the adjusted measure scores approximates case-mix adjustment using a beneficiary-level, logistic regression model with contract fixed effects and beneficiary-level indicators of LIS/DE and disability status, similar to the approach currently used to adjust CAHPS patient experience measures. However, unlike CAHPS case-mix adjustment, the only adjusters are LIS/DE and disability status.¹ The adjusted measure scores for each contract are “recycled predictions” from these models. (These are average predicted measure scores for a given contract, calculated as if the contract had population-average for LIS/DE and disability rates. This is estimated by predicting beneficiary-level scores as if all beneficiaries were in the contract in question, with all beneficiaries retaining their original values for all other covariates, weights, and other adjustments). A separate set of models using only contract fixed effects is used to calculate unadjusted scores for the subset of measures selected for the development of the CAI. Eligible beneficiaries with valid measure data who died during the year are allowed to count towards their contract’s unadjusted and adjusted measure scores.

¹ If a measure specification requires adjustment for non-socio-economic factors, the measure is included in the candidate set and the specification is followed for its analysis and if selected, for its adjustment. The risk adjustment weights are used in the LIS/DE disparity analysis. If the measure is selected as an adjusted measure, the risk adjustment weights are included in the adjustment along with LIS/DE and disability status.

The adjusted measure scores are used only to determine CAI values. The adjusted measure scores are converted to a measure-level rating using the measure thresholds (cut points) from the previous Star Ratings year. The unadjusted stars are created using the same methodology but using the unadjusted scores above.^{2,3}

CALCULATION OF CAI VALUES

As discussed above, the adjusted measure scores are converted to measure-level Star Ratings using the cut points published in the Technical Notes for the applicable Star Ratings' year. Once all measures selected for adjustment have been converted to measure-level Star Ratings, the CAI values are determined by completing the following steps:

Creation and Assignment of Initial Categories Based on LIS/DE and Disabled Percentages

- (1) The distributions of the percentages of LIS/DE and disabled beneficiaries for all contracts that received ratings in the prior year are examined separately.
- (2) The distributions are disaggregated into equally-sized groups using one dimension at a time (LIS/DE or disabled percentage). The lower and upper limit for each group is determined.
- (3) Each contract is categorized into an LIS/DE group based on its percentage of LIS/DE beneficiaries.
- (4) Each contract is categorized into a disabled group based on its percentage of disabled beneficiaries.
- (5) Initial categories are formed using the information from the LIS/DE groups and the disabled groups. For example, if the LIS/DE distribution is disaggregated into 10 equally-sized LIS/DE groups and the disabled distribution is disaggregated into 5 equally-sized disabled groups, a total of 10 x 5 or 50 initial categories are formed by cross-classifying the LIS/DE and disabled groupings. Figure 1 illustrates the example of the creation of 50 initial categories based on 10 groups for LIS/DE (the columns of the matrix) and 5 groups for disabled (the rows in the matrix).

² The thresholds (cut points) for the measures are determined using hierarchical clustering of the operational run measure scores from all contracts required to report the measure for the applicable Star Ratings year.

³ Since the CAI is added to or subtracted from the operational run Star Ratings, the reward factor is determined using operational measure scores. In addition, the Part C and D improvement measures use operational run measure scores for both years being compared.

Figure 1: Initial Categories

| Disabled Groups | LIS/DE Groups | | | | | | | | | |
|-----------------|---------------|---|---|---|---|---|---|---|---|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |

- (6) Each contract is assigned to an initial category based on its categorization for LIS/DE and disabled.

Note: Each initial category does not need to contain the same number of contracts. It is possible that some initial categories will have only a small number of contracts or perhaps no contracts based on the distribution of the contracts' percentages for LIS/DE and disabled beneficiaries. For example, the category reflecting the lowest LIS/DE group and highest disabled group typically contains no contracts.

Adjusted Overall and Summary Star Ratings (as applicable based on contract-type)

- (7) The adjusted overall and summary Star Ratings are calculated using the adjusted measure-level stars of the adjusted measures and all other measure-level stars from the operational run.
- (8) The unadjusted overall and summary Star Ratings are calculated using unadjusted measure-level stars of the measures selected for adjustment and all other measure-level stars from the operational run.
- (9) Within each of the initial categories by rating type (overall for MA-PDs, Part C summary for MA-PDs and MA-only, Part D summary for MA-PDs, and Part D summary for PDPs), the difference between the adjusted Star Rating and the corresponding unadjusted Star Rating is computed.
- (10) Within each of the initial categories, the mean difference between the adjusted Star Rating and the corresponding unadjusted Star Rating is determined.

Final Adjustment Categories

- (11) The mean differences for the initial categories per rating type in step 10 are examined and the initial categories are collapsed to form final adjustment categories. The initial categories are collapsed in order to enforce monotonicity in at least one dimension (LIS/DE or disabled), to strive to achieve at least 0.01 difference between groups in the CAI values, and to strive to achieve a minimum number of contracts (i.e., 30 contracts for MA-PD and 10 for PDPs) per final adjustment category.

Note: Initial categories are combined such that, as the percentages of LIS/DE or disabled beneficiaries within a category increase and the other dimension does not decrease, the adjustment value of the CAI increases. The final adjustment categories aim to have a minimum number of 30 contracts for each final MA adjustment group and 10 contracts for each final PDP adjustment group. The guideline for the number of contracts per final adjustment group is designed to maintain the stability of the estimates. If possible, final adjustment categories are collapsed such that CAI values differ by at least 0.01 units in at least one of the two dimensions (LIS/DE and disability). (It may not always be possible to have final CAI category values differing by at least 0.01 units in at least one dimension given the goal of imposing monotonicity across both the LIS/DE and disability dimensions.)

CAI Values

- (12) Using the contracts that fall within each of the final adjustment categories for each rating type (overall for MA-PDs, Part C summary for MA-PDs and MA-only, Part D summary for MA-PDs, and Part D summary for PDPs), the mean difference between the adjusted Star Rating and the corresponding unadjusted Star Rating is computed.
- (13) The sets of mean differences within each rating type's final adjustment categories found in step 12 are the CAI values.

APPLICATION OF THE CAI VALUES

The rating-specific CAI value is added to or subtracted from the corresponding unrounded Star Rating from the operational run prior to the application of the hold harmless rule. The reward factor is determined using unadjusted scores.