Design for *Care Compare* Nursing Home Five-Star Quality Rating System:

Technical Users' Guide

September 2023

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September 2023 Revisions

Upcoming Adjustment to Staffing and Quality Measures

Effective with the April 2024 refresh, CMS will update the staffing level case-mix adjustment methodology and freeze four of the Quality Measures (QMs) used in the Five-Star Quality Rating System. These changes are needed to accommodate changes (e.g., replacing Section G items with Section GG) to the Minimum Data Set (MDS). CMS will freeze (i.e., hold constant) the staffing level measures for three months during the transition. In July 2024, CMS will change the staffing case-mix adjustment methodology to a model based on the Patient-Driven Payment Model (PDPM) and will post staffing level measures that use this methodology. For more details about the updated case-mix adjustment for staffing level measures, please refer to "Updated Case-Mix Adjustment Methodology for Staffing Level Measures" in the Appendices section. CMS will revise the staffing rating thresholds to maintain the same overall distribution of points for affected staffing measures. In addition, beginning in April 2024, to incentivize providers to submit accurate staffing data, CMS will revise the staffing rating methodology so providers that fail to submit staffing data or submit erroneous data receive the lowest score possible for corresponding staffing turnover measures. Please refer to the CMS Memorandum (QSO-23-21-NH) for more information about these upcoming updates to staffing and quality measures.

July 2023 Revisions

Changes to the Nursing-Home Level Exclusion Criteria

Effective with the July 2023 refresh, CMS revised the nursing-home level exclusion criteria on erroneously high number of administrators applied to the administrator turnover measure. Previously, if a nursing home submitted Payroll-Based Journal (PBJ) data and reported administrator hours (PBJ job code 1) for five or more individuals (based on employee IDs in the PBJ system) on 12 or more days during the three-quarter denominator eligibility period, the administrator turnover measure would be excluded. Effective July 2023, if a nursing home reports administrator hours (PBJ job code 1) for five or more individuals (based on employee IDs) on four or more days in a single quarter in any of the six quarters required for calculating the administrator turnover measure, the administrator turnover measure will be excluded. Details on the exclusion criteria are described in the Specifications for Staff Turnover Measures section of this document.

January 2023 Revisions

Adjusting Quality Measure Ratings Based on Erroneous Schizophrenia Coding

Effective with the January 2023 refresh, CMS will be conducting audits of schizophrenia coding in the Minimum Data Set (MDS) data. Facilities that have coding inaccuracies identified through the schizophrenia MDS audit will have their Quality Measure (QM) ratings adjusted as follows:

- The overall QM and long-stay QM ratings will be downgraded to one star for six months (this drops the facility's overall star rating by one star).
- The short-stay QM rating will be suppressed for six months.
- The long-stay antipsychotic QM will be suppressed for 12 months.

Posting Citations Under Dispute:

To be more transparent, CMS will now display citations under informal dispute on the Nursing Home Care Compare website. While the citations will be publicly displayed, they will not be included in the calculation of a facility's star rating until the dispute is complete (and the survey is considered final).

For more information on these updates see: QSO-23-05-NH

October 2022 Revisions

Quality Measure Rating Threshold changes

Effective with the October 2022 refresh, CMS is implementing the planned, regular increases to the Quality Measure (QM) rating thresholds, increasing each rating threshold by one-half of the average improvement in QM scores since the last time the thresholds were set. For the October 2022 refresh, the average improvement was determined from the period of January 2022 – July 2022. The new rating thresholds are shown in Table 5 of this document. Note that the point thresholds for individual QMs did not change. CMS plans to implement these regular increases every six months.

July 2022 Revisions

Changes to the Methodology for the Staffing Rating

Effective with the July 2022 refresh, CMS revised the methodology for calculating the Staffing star rating. The new rating is based on six separate staffing measures. Similar to the Quality Measure (QM) rating, points are assigned based on the performance on each of these six measures. The points are then summed and the total staffing score is compared to staffing rating point thresholds to assign a rating of one to five stars. The six measures are as follows:

- Case-mix adjusted total nurse (RN, LPN/LVN, aide) staffing levels (hours per resident per day)
- Case-mix adjusted RN staffing levels (hours per resident per day)
- Case-mix adjusted total nurse (RN, LPN/LVN, aide) staffing levels (hours per resident per day) on the weekend
- Total nurse turnover, defined as the percentage of nursing staff that left the nursing home over a twelve-month period
- Registered Nurse (RN) turnover, defined as the percentage of RN staff that left the nursing home over a twelve-month period
- Administrator turnover, defined as the number of administrators who left the nursing home over a twelve-month period.

Details on the definition of each of these measures and how the staffing rating is calculated based on facility performance on these measures are provided in the Staffing Domain section of this document.

Changes to the Methodology for the Overall Quality Rating

Effective with the July 2022 refresh, CMS revised the methodology for assigning the overall quality star rating. Previously, facilities that obtained a four- or five-star staffing rating, received an additional star in their overall star rating. Effective July 2022, only nursing homes with a five-star staffing rating will get an increase in their overall star rating. The full methodology for assigning the overall quality star rating based on the health inspection rating, the staffing rating and the QM rating is described in the Overall Nursing Home Rating section of this document.

April 2022 Revisions

Quality Measure Rating Threshold changes

Effective with the April 2022 refresh, CMS implemented the planned, regular increases to the Quality Measure (QM) rating thresholds, increasing each rating threshold by one-half of the average improvement in QM scores since the last time the thresholds were set. For the April 2022 refresh, the average improvement was determined from the period of April 2019 – January 2022. The new rating thresholds are shown in Table 5 of this document. Note that the point thresholds for individual QMs did not change.

Introduction

In December 2008, the Centers for Medicare & Medicaid Services (CMS) enhanced its *Nursing Home Compare*[1] public reporting site to include a set of quality ratings for each nursing home that participates in Medicare or Medicaid. The ratings take the form of several "star" ratings for each nursing home. The primary goal of this rating system is to provide residents and their families with an easy way to understand assessment of nursing home quality, making meaningful distinctions between high and low performing nursing homes.

This document provides a comprehensive description of the design for the Nursing Home Five-Star Quality Rating System. This design was developed by CMS with assistance from Abt Associates, invaluable advice from leading researchers in the long-term care field who comprise the Technical Expert Panel (TEP) for this project, and numerous ideas contributed by consumer and provider groups. All of these organizations and groups have continued to contribute their input as the rating system has been refined and updated to incorporate newly available data. We believe the rating system offers valuable and comprehensible information to consumers based on the best data available. It features an Overall Quality Rating of one to five stars based on nursing home performance on three domains, each of which has its own rating:

- ***Health Inspections - Measures based on outcomes from state health inspections:*** Ratings for the health inspections domain are based on the number, scope, and severity of deficiencies identified during the three most recent annual inspection surveys, as well as substantiated findings from the most recent 36 months of complaint investigations and focused infection control surveys. All deficiency findings are weighted by scope and severity. The health inspections rating also takes into account the number of revisits required to ensure that deficiencies identified during health inspection surveys have been corrected.
- ***Staffing - Measures based on nursing home staffing levels and staff turnover:*** Ratings for the staffing domain are based on six measures. This includes three nurse staffing level measures (hours per resident per day) and three measures of staff turnover. The staffing measures are derived from data submitted each quarter through the Payroll-Based Journal (PBJ) System, along with daily resident census derived from Minimum Data Set, Version 3.0 (MDS 3.0) assessments. The nurse staffing level measures are case-mix adjusted based on the distribution of MDS 3.0 assessments by Resource Utilization Groups, version IV (RUG-IV groups) and cover a single quarter. The turnover measures use six consecutive quarters of PBJ data to define annual turnover for nursing staff and administrators.
- ***Quality Measures - Measures based on MDS and claims-based quality measures (QMs):*** Ratings for the quality measures are based on performance on 15 of the QMs that are currently posted on the *Care Compare* website. These include nine long-stay measures and six short-stay measures. Note that not all the quality measures that are reported on *Care Compare* are included in the rating calculations. In addition to an overall quality measure rating, separate QM ratings for short-stay measures and long-stay measures are also reported.

[1] Nursing Home Compare was retired on December 1, 2020 and replaced with *Care Compare*, which can be accessed at https://www.medicare.gov/care-compare/.

In recognition of the multi-dimensional nature of nursing home quality, *Care Compare* displays ratings for each of these domains along with an overall rating.

A companion document to this Technical Users' Guide (*Nursing Home Compare*–Five Star Quality Rating System: Technical Users' Guide–State-Level Cut Point Tables) provides the data for the state-level cut points for the health inspection star ratings. The data table in the companion document is updated monthly. The cut points for the staffing rating are listed in Table 3 of this Technical Users' Guide, and the cut points for the individual staffing measures included in the staffing rating are in Appendix Table A2. Table 5 provides the cut points for the QM ratings, and the cut points for the individual QMs are in Appendix Table A3.

Methodology for Constructing Ratings

Health Inspection Domain

Nursing homes that participate in the Medicare and/or Medicaid programs have an onsite recertification (standard) "comprehensive" inspection annually *on average*, with very rarely more than fifteen months elapsing between inspections for any one particular nursing home. Inspections are unannounced and are conducted by a team of health care professionals who spend several days in the nursing home to assess whether the nursing home is in compliance with federal requirements. These inspections provide a comprehensive assessment of the nursing home, reviewing facility practice and policies in such areas as resident rights, quality of life, medication management, skin care, resident assessment, nursing home administration, environment, and kitchen/food services. The methodology for constructing the health inspection rating is based on the three most recent recertification surveys for each nursing home, complaint deficiencies during the most recent three-year period, deficiencies cited on focused infection control surveys in the most recent three-year period, and any repeat revisits needed to verify that required corrections have brought the facility back into compliance. The Five-Star Quality Rating System uses nearly 400,000 records for the health inspection domain alone.

Scoring Rules

CMS calculates a health inspection score based on points assigned to deficiencies identified in each active provider's three most recent recertification health inspections, as well as on deficiency findings from the most recent three years of complaint inspections and findings from focused infection control surveys.

- ***Health Inspection Results***: Points are assigned to individual health deficiencies according to their scope and severity –more serious, widespread deficiencies receive more points, with additional points assigned for substandard quality of care (see Table 1). If the status of the deficiency is "past non-compliance" and the severity is "immediate jeopardy" (i.e., J-, K- or L-level), then points associated with a G- level deficiency are assigned. Note citations that are under dispute through the Informal Dispute Resolution (IDR) or Independent IDR processes are displayed on Nursing Home Care Compare, however, they are not included in the health inspection score calculation until the dispute process is finished. Two types of health citations – F731 (Waiver of requirement to provide licensed nurses on a 24-hour basis) and F884 (COVID-19 reporting to the Centers for Disease Control) -- are not considered in the health inspection score calculation (nor are these reported on Nursing Home *Care Compare*). Additionally, other health citations with a deficiency status code indicating that a waiver has

been granted, while displayed on the website, are not included in the health inspection score. Deficiencies from Life Safety surveys are not included in the Five-Star rating calculations. Deficiencies from Federal Comparative Surveys are not reported on *Care Compare* or included in rating calculations, though the results of State Survey Agency determinations made during a Federal Oversight Survey are included.

- ***Repeat Revisits - Number of repeat revisits required to confirm that correction of deficiencies have restored compliance***: No points are assigned for the first revisit; points are assigned only for the second, third, and fourth revisits and are proportional to the health inspection score for the survey cycle (Table 2). If a provider fails to correct deficiencies by the time of the first revisit, then these additional revisit points are assigned up to 85 percent of the health inspection score for the fourth revisit. CMS' experience is that providers who fail to demonstrate restored compliance with safety and quality of care requirements during the first revisit have lower quality of care than other nursing homes. More revisits are associated with more serious quality problems.

Table 1
Health Inspection Score: Weights for Different Types of Deficiencies

Severity	**Scope**		
	Isolated	**Pattern**	**Widespread**
Immediate jeopardy to resident health or safety	**J** 50 points* (75 points)	**K** 100 points* (125 points)	**L** 150 points* (175 points)
Actual harm that is not immediate jeopardy	**G** 20 points	**H** 35 points (40 points)	**I** 45 points (50 points)
No actual harm with potential for more than minimal harm that is not immediate jeopardy	**D** 4 points	**E** 8 points	**F** 16 points (20 points)
No actual harm with potential for minimal harm	**A** 0 point	**B** 0 points	**C** 0 points

Note: Figures in parentheses indicate points for deficiencies that are for substandard quality of care.

Shaded cells denote deficiency scope/severity levels that constitute substandard quality of care. See the Electronic Code of Federal Regulations (https://www.ecfr.gov/cgi-bin/text-idx?SID=9c4d022241818fef427dc79565aba4b5&mc=true&node=pt42.5.488&rgn=div5#se42.5.488_1301) for a definition of substandard quality of care.

* If the status of the deficiency is "past non-compliance" and the severity is Immediate Jeopardy, then points associated with a 'G-level" deficiency (i.e., 20 points) are assigned.

Source: Centers for Medicare & Medicaid Services

Table 2
Weights for Repeat Revisits

Revisit Number	Noncompliance Points
First	0
Second	50 percent of health inspection score
Third	70 percent of health inspection score
Fourth	85 percent of health inspection score

Note: The health inspection score includes points from deficiencies cited on the standard health inspection and complaint inspections during a given survey cycle.

CMS calculates a total weighted health inspection score for each facility (including any repeat revisits). Note that a lower survey score corresponds to fewer deficiencies and revisits, and thus better performance on the health inspection domain. In calculating the total weighted score, more recent standard surveys are weighted more heavily than earlier surveys with the most recent period (rating cycle 1) being assigned a weighting factor of 1/2, the previous period (rating cycle 2) having a weighting factor of 1/3, and the second prior period (rating cycle 3) having a weighting factor of 1/6. The individual weighted scores for each cycle are then summed (after including complaint surveys, focused infection control surveys, and revisit points) to create the total weighted health inspection score for each facility.

Complaint inspections and focused infection control surveys are assigned to a time period based on the 12-month period in which the complaint or infection control survey occurred. Complaint or focused infection control surveys that occurred within the most recent 12 months from when the data are uploaded receive a weighting factor of 1/2; those from 13-24 months ago have a weighting factor of 1/3, and those from 25-36 months ago have a weighting factor of 1/6. There are some deficiencies that appear on both standard and complaint inspections. To avoid potential double-counting, deficiencies that appear on complaint inspections that are conducted within 15 days of a recertification inspection (either prior to or after the recertification inspection) are counted only once. If the scope or severity differs between the two inspections, the highest scope-severity combination is used. Deficiencies cited on focused infection control surveys are treated slightly differently. If two or more infection control inspections cite the same deficiency within a 15-day period, all are included; however, if one or more of these deficiencies was also cited on a recertification survey and/or a complaint inspection within the same 15-day window, only the infection control citations are included. Points from complaint deficiencies and deficiencies cited on infection control surveys from a given period are added to the health inspection score before calculating revisit points, if applicable.

For facilities missing data for one period, the health inspection score is determined based on the periods for which data are available, using the same relative weights, with the missing (third) survey weight distributed proportionately to the existing two inspections using two survey cycles. Specifically, when there are only two recertification inspections, the most recent survey cycle receives 60 percent weight and the prior cycle receives 40 percent weight. Facilities with only one standard health inspection are considered to have insufficient data to determine a health inspection rating and their rating is set to missing for the health inspection domain. For these facilities, no overall quality rating is assigned, and no ratings are reported for the staffing or QM domains even if data for these domains are available. *Care Compare* will display “Not Available” for these facilities.

Rating Methodology

Health inspections are based on federal regulations, which surveyors implement using national interpretive guidance and a federally specified survey process. Federal staff train state inspectors and oversee state performance. The federal oversight includes quality checks based on a 5 percent sample of

the health inspections performed by states, in which federal inspectors either accompany state inspectors or replicate the inspection within 60 days of the state and then compare results. These control systems are designed to improve consistency in the survey process. Nonetheless there remains variation among states in both inspection process and outcomes. Such variation derives from many factors, including:

- ***Survey Management:*** Variation among states in the skill sets of inspectors, supervision of inspectors, and the inspection processes;
- ***State Licensure***: State licensing laws set forth different expectations for nursing homes and affect the interaction between state enforcement and federal enforcement (for example, a few states conduct many complaint investigations based on state licensure, and issue citations based on state licensure rather than on the federal regulations);
- ***Medicaid Policy:*** Medicaid pays for the largest proportion of long-term care in nursing homes. Nursing home eligibility rules, payment, and other policies in the state-administered Medicaid program may be associated with differences in survey outcomes.

For the above reasons, CMS bases Five-Star quality ratings in the health inspection domain on the relative performance of facilities within a state. This approach helps control for variation among states. CMS determines facility ratings using these criteria:

- The top 10 percent (with the lowest health inspection weighted scores) in each state receive a health inspection rating of five stars.
- The middle 70 percent of facilities receive a rating of two, three, or four stars, with an equal number (approximately 23.33 percent) in each rating category.
- The bottom 20 percent receive a one-star rating.

Rating thresholds are re-calibrated each month so that the distribution of star ratings within states remains relatively constant over time. However, the rating for a given facility is held constant until there is a change in the weighted health inspection score for that facility, regardless of changes in the statewide distribution. Items that could change the health inspection score include the following:

- A new health inspection
- A complaint investigation or focused infection control survey that results in one or more deficiency citations
- A second, third, or fourth revisit
- Resolution of Informal Dispute Resolutions (IDR) or Independent Informal Dispute Resolutions (IIDR) resulting in changes to the scope and/or severity of deficiencies
- The “aging” of complaint and/or focused infection control deficiencies. Specifically, as noted above, findings from complaint and infection control surveys are assigned to a time period based on the 12-month period in which the survey occurred; thus, when a citation from a complaint or infection control survey ages into a different cycle, it receives less weight in the scoring process, resulting in a lower health inspection score and potentially a change in health inspection rating.

In the very rare case that a state or territory has fewer than five facilities upon which to generate the cut points, the national distribution of health inspection scores is used. Cut points for the health inspection ratings can be found in the Cut Point Table in the companion document to this Technical Users' Guide: Five Star Quality Rating System State-Level Cut Point Tables available in the 'downloads' section at: https://www.cms.gov/medicare/provider-enrollment-and-certification/certificationandcomplianc/fsqrs.html.

Rating Methodology for Facilities with Abuse Citation(s) To make it easier for consumers to identify facilities with instances of non-compliance related to abuse, *Care Compare* includes an icon that identifies facilities that meet either of the following criteria:

1) Harm-level abuse citation in the most recent survey cycle: Facilities cited for abuse[2] where residents were found to be harmed (Scope/Severity of G or higher) on:

    a. the most recent standard survey, **or**
    b. on a complaint or focused infection control survey within the past 12 months.

2) Repeat abuse citations: Facilities cited for abuse where residents were found to be potentially harmed (Scope/Severity of D or higher) on:

    a. the most recent standard survey or
    b. on a complaint or focused infection control survey within the past 12 months, **and**
    c. on the previous (i.e., second most recent) standard survey or
    d. on a complaint survey in the prior 12 months (i.e., from 13 to 24 months ago).

Nursing homes that receive the abuse icon have their health inspection rating capped at a maximum of two stars. Due to the methodology used to calculate the overall rating, the best overall rating a facility that receives the abuse icon can have is four stars. The abuse icon (and the cap on the health inspection rating) will be removed as of the first monthly website refresh following when a nursing home no longer meets the abuse icon criteria.

Staffing Domain

There is considerable evidence of a relationship between nursing home staffing levels and resident outcomes. The CMS Staffing Study[3], among other research, found a clear association between nurse staffing ratios and nursing home quality of care. There is also a growing body of evidence on the

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[2] Note that abuse is identified as having received a deficiency of any of these tags: F600 (Protect each resident from all types of abuse, such as physical, mental, sexual abuse, physical punishment, and neglect by anybody); F602 (Protect each resident from the wrongful use of the resident's belongings or money); F603 (Protect each resident from separation from other residents, his/her room, or confinement to his/her room); F223 (Protect each resident from all abuse, physical punishment, and involuntary separation from others); and F224 (Protect each resident from mistreatment, neglect, and misappropriation of personal property).

[3] Kramer AM, Fish R. "The Relationship Between Nurse Staffing Levels and the Quality of Nursing Home Care." Chapter 2 in Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes: Phase II Final Report. Abt Associates, Inc., Winter 2001.

relationship between staff turnover and resident outcomes, with higher turnover associated with poorer quality of care.[4]

The rating for staffing is based on six measures. Detailed specifications for each of these measures is provided below. The six measures are as follows:

- Case-mix adjusted total nursing hours per resident day (registered nurse (RN) + licensed practical nurse (LPN) + nurse aide hours) for a quarter averaged across all days (weekdays and weekends)
- Case-mix adjusted RN hours per resident day for a quarter, averaged across all days (weekdays and weekends)
- Case-mix adjusted total nursing hours per resident day (RN + LPN + nurse aide hours) for a quarter averaged across all weekend days (Saturdays and Sundays)
- The percentage of nursing staff that left the nursing home over a twelve-month period.
- The percentage of RNs that left the nursing home over a twelve-month period.
- The number of administrators that left the nursing home over a twelve-month period.

The source for reported staffing hours is the Payroll-Based Journal (PBJ) system.[5] These data are submitted quarterly and are due 45 days after the end of each reporting period. Only data submitted and accepted by the deadline are used by CMS for staffing calculations and in the Five-Star Rating System. The resident census is based on a daily resident census measure that is calculated by CMS using MDS assessments.

Specifications for the nurse staffing level measures

The specific PBJ job codes that are used in the RN, LPN, and nurse aide hour calculations are:

- RN hours: Includes RN director of nursing (job code 5), registered nurses with administrative duties (job code 6), and registered nurses (job code 7).
- LPN hours: Includes licensed practical/licensed vocational nurses with administrative duties (job code 8) and licensed practical/vocational nurses (job code 9)
- Nurse aide hours: Includes certified nurse aides (job code 10), aides in training (job code 11), and medication aides/technicians (job code 12)

Note that the PBJ staffing data include both facility employees (full-time and part-time) and individuals under an organization (agency) contract or an individual contract. The PBJ staffing data do not include "private duty" nursing staff reimbursed by a resident or his/her family. Also not included are hospice staff and feeding assistants.

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[4] Zheng Q, Williams CS, Shulman ET, White AJ. Association between staff turnover and nursing home quality - evidence from payroll-based journal data. Journal of the American Geriatrics Society. May 2022. doi:10.1111/jgs.17843

[5] More detailed information about the PBJ system is available at: https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/Staffing-Data-Submission-PBJ.html

The daily resident census, used in the denominator of the reported nurse staffing ratios, is derived from MDS resident assessments and is calculated as follows:

1. Identify the reporting period (quarter) for which the census will be calculated (e.g., CY 2021 Q2: April 1–June 30, 2021).

2. Extract MDS assessment data for all residents of a facility beginning one year prior to the reporting period to identify all residents that *may* reside in the facility (i.e., any resident with an MDS assessment may still reside in the facility). For example, for the CY 2021 Q2 reporting period, extract MDS data from April 1, 2020 through June 30, 2021.

3. Identify discharged/deceased residents using the following criteria:
   a) If a resident has an MDS Discharge assessment or Death in Facility tracking record, use the date reported on that assessment and assume that the resident no longer resides in the facility as of the date of discharge/death on the last assessment. In the case of discharges, if there is a subsequent admission assessment, then assume that the resident re-entered the nursing home on the entry date indicated on the entry assessment.
   b) For any resident with an interval of 150 days or more with no assessments, assume the resident no longer resides in the facility as of the 150th day from the last assessment. (This assumption is based on the requirement for facilities to complete MDS assessments on all residents at least quarterly). If no assessment is present, assume the resident was discharged, but the facility did not transmit a Discharge assessment.

For any particular date, residents whose assessments do not meet the criteria in #3 above prior to that date are assumed to reside in the facility. The count of these residents is the census for that particular day.

MDS assessments for a given resident are linked using the Resident Internal ID. The Resident Internal ID is a unique number, assigned by the Quality Improvement Evaluation System (QIES) Assessment Submission and Processing (ASAP) system, which identifies a resident. The combination of state and Resident Internal ID uniquely identifies a resident in the national repository. The process by which the Resident Internal ID is created is described by the *MDS 3.0 Provider User's Guide - Appendix B* (https://qtso.cms.gov/system/files/qtso/Users_AppB.pdf). The following MDS items are used to define the Resident Internal ID:

- State ID
- Facility Internal ID (QIES ASAP system number)
- Social Security Number (SSN)
- Last Name
- First Name
- Date of Birth
- Gender

Therefore, in order to achieve an accurate census, it is imperative that, in addition to having complete assessment data for each resident including Discharge assessment data, residents are assigned correct Resident Internal IDs. To facilitate this, providers must ensure that MDS items, in particular the items indicated above, are entered correctly on each assessment. Providers must also carefully monitor the Final Validation Report, generated upon MDS submission, for any errors. Providers should work with their

State RAI Coordinator or State Automation Coordinator to correct any errors that arise during assessment submission. In addition to using their Final Validation Report to validate the file structure and data content of each successful MDS submission, providers can monitor their MDS data using additional Certification and Survey Provider Enhanced Reports (CASPER) Reports. There are CASPER Reports for MDS Census Summary (returns resident count per day), MDS Census Detail (returns list of Resident Internal IDs counted per day), Admissions, Discharges, Duplicate Residents, Errors, and Daily Rosters, among others. Full descriptions of these reports are available in Section 6 of the CASPER Reporting MDS Provider User's Guide available at the following link: https://qtso.cms.gov/system/files/2018-03/cspr_sec6_mds_prvdr.pdf. Information about Final Validation Reports and error messages in the reports is available in Sections 4 and 5 of the MDS 3.0 Provider User's Guide (https://qtso.cms.gov/reference-and-manuals/mds-30-provider-users-guide).

The nurse staffing hours reported through PBJ and the daily MDS census are both aggregated (summed) across the quarterly reporting period. The quarterly reported nurse staffing hours per resident day are then calculated by dividing the aggregate reported hours by the aggregate resident census. Only days that have at least one resident are included in the calculations. Total nurse staffing on the weekends is similarly calculated with both the numerator (reported nurse staffing hours) and the denominator (resident census) aggregated (summed) across all weekend days (Saturdays and Sundays) in the quarterly reporting period.

CMS uses a set of exclusion criteria to identify facilities with highly improbable PBJ staffing data and nurse staffing levels are not reported for these facilities ("Not Available" is displayed on the *Care Compare* website). Some of these nursing homes will also not receive a staffing rating; however, some will receive a one-star staffing rating due to scoring exceptions. The exclusion criteria are as follows:

- Total nurse staffing (job codes 5-12), aggregated over all days in the quarter with at least one resident, is zero (0 hours per resident per day).[6]
- Total nurse staffing (job codes 5-12), aggregated over all weekend days in the quarter with at least one resident, is zero (0 hours per resident per day).
- Total nurse staffing (job codes 5-12), aggregated over all days in the quarter with at least one resident, is excessively high (>12 hours per resident day).
- Total nurse staffing (job codes 5-12), aggregated over all weekend days in the quarter with at least one resident, is excessively high (>12 hours per resident day).
- Nurse aide staffing (job codes 10-12), aggregated over all days in the quarter with at least one resident, is excessively high (>5.25 hours per resident day).
- Nurse aide staffing (job codes 10-12), aggregated over all weekend days in the quarter with at least one resident, is excessively high (>5.25 hours per resident day).

Case-Mix Adjustment

CMS adjusts the reported staffing ratios for case-mix, using the Resource Utilization Group (RUG-IV) case-mix system. The CMS Staff Time Resource Intensity Verification (STRIVE) Study measured the

[6] Note that, prior to January 2022, nursing homes with total nurse staffing < 1.5 hours per resident day were excluded.

average number of RN, LPN, and nurse aide minutes associated with each RUG-IV group (using the 66 group version of RUG-IV). These are referred to as "case-mix hours".[7]

CMS calculates case-mix adjusted hours per resident day for each facility for each staff type using this formula:

$$\textbf{Hours}_{\textbf{Adjusted}} = (\textbf{Hours}_{\textbf{Reported}} / \textbf{Hours}_{\textbf{Case-Mix}}) * \textbf{Hours}_{\textbf{National Average}}$$

The reported hours are those reported by the facility through PBJ as described above. National average hours for a given staff type represent the national mean of case-mix hours across all facilities active on the last day of the quarter that submitted valid nurse staffing data for the quarter. The National Average Hours are updated every quarter and will be available in the State US Averages table in the Provider Data Catalog on CMS.gov (https://data.cms.gov/provider-data/).

The case-mix values for each nursing home are based on the daily distribution of residents by RUG-IV group in the quarter covered by the PBJ reported staffing and estimates of daily RN, LPN, and nurse aide hours from the CMS STRIVE Study (see Table A1). Specifically, case-mix nurse staffing hours per resident day for a given nursing home are calculated as follows:

1) The MDS is used to assign a RUG-IV group to each resident for each day in the quarter. The method is similar to that used for calculating the daily MDS census and is described below.
2) This information is aggregated to generate a count of residents in each of the 66 RUG-IV groups in the nursing home for each day in the quarter. RUG-IV groups that are not represented on a given day are assigned a count of zero. Residents for whom there is insufficient MDS information to assign a RUG-IV category are not included.
3) Based on the number of residents in each RUG-IV group, case-mix total nursing and RN hours are calculated by multiplying by nursing time estimates for each RUG-IV group from the STRIVE study (Table A1).
4) Aggregate case-mix nursing and RN hours for the quarter are calculated by summing across all days and RUG-IV groups. These are the numerators in the calculations of case-mix total nursing and RN hours per resident day. The denominator for these calculations is the count of the total number of resident-days in the quarter for which there is a valid RUG-IV group.
5) Case-mix total nursing and RN hours per resident day for each nursing home are calculated by dividing aggregate case-mix hours (total nursing or RN) by the number of resident-days. Due to an extremely high correlation (>0.99) between facility case-mix values on the weekends and that calculated for all days in the quarter, the case-mix value for all days in the quarter is used for calculating the case-mix adjusted total nurse staffing on the weekends.

To determine the number of residents in each RUG-IV grouping for each day of the quarter for each nursing home, the same algorithm is used as that used to generate the daily MDS census (with slight adjustment to count RUG-IV groupings specifically, instead of just counting residents):

1) Identify the reporting period (quarter) for which the RUG groupings will be collected (e.g., CY 2021 Q2: April 1–June 30, 2021).
2) Extract MDS assessment data (including RUG-IV 66 Hierarchical group) for all residents of a facility beginning one year prior to the reporting period to identify all residents that may reside in the nursing home (i.e., any resident with an MDS assessment may still reside in the nursing

[7] Note that the term "case-mix hours" replaces the term "expected hours" that was used prior to April 2019.

home). For example, for the CY 2021 Q2 reporting period, MDS data from April 1, 2020 through June 30, 2021 were extracted.

3) Identify discharged/deceased residents using the following criteria:

   a) If a resident has an MDS Discharge assessment or Death in Facility tracking record, use the date reported on that assessment and assume that the resident no longer resides in the nursing home as of the date of discharge/death on the last assessment. In the case of discharges, if there is a subsequent admission assessment, then assume that the resident re-entered the nursing home on the entry date indicated on the admission assessment.

   b) For any resident with an interval of 150 days or more with no MDS assessments, assume the resident no longer resides in the nursing home as of the 150th day from the last assessment. (This assumption is based on the requirement for facilities to complete MDS assessments on all residents at least quarterly). If no assessment is present, it is assumed the resident was discharged, but the nursing home did not transmit a Discharge assessment.

For any particular date, residents whose assessments do not meet the criteria in #3 above prior to that date are assumed to reside in the nursing home. The RUG IV 66 Hierarchical group assigned to those residents on their most recent assessments as of that date are used to determine the RUG-IV distribution for that nursing home on that date. The calculations of "case-mix", "reported", and "national average" hours are made separately for RNs and for all nursing staff (both for the full week and for weekends). Adjusted hours are also calculated for both groups using the formula provided earlier in this section.

A downloadable file that contains the "case-mix", "reported" and "adjusted" hours used in the staffing calculations is included in the nursing home provider information data table available in the Provider Data Catalog on CMS.gov (https://data.cms.gov/provider-data/).

Specifications for Staff Turnover Measures

Three staff turnover measures are reported on the *Care Compare* website and included in the staffing rating: total nurse, registered nurse (RN), and nursing home administrator turnover.

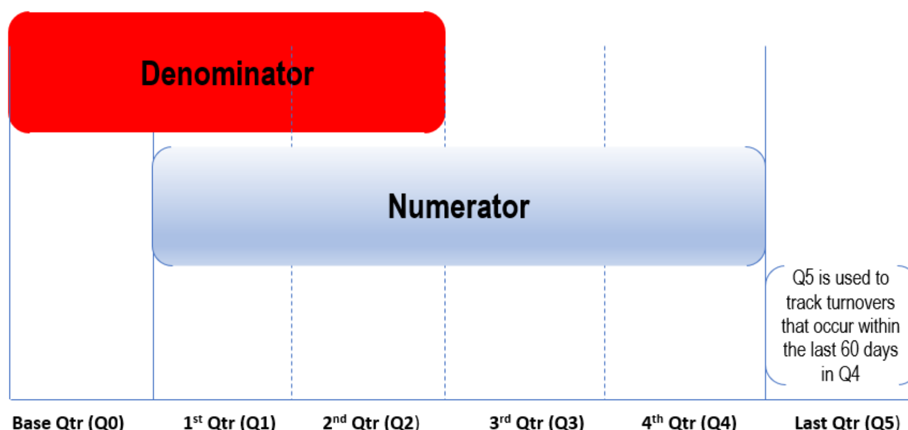
The turnover measures are derived based on data from the Centers for Medicare and Medicaid Services (CMS) Payroll-Based Journal (PBJ) System. Using data submitted through PBJ, annual turnover measures for RNs, total nurses (RNs, licensed practical/licensed vocational nurses (LPNs), and nurse aides), and nursing home administrators are constructed. The PBJ job codes included in turnover measures for RNs and total nurses are consistent with those used for the staffing level measures reported on the ***Medicare.gov Care Compare website***. Specifically, below are the definitions that are used for the staff types included in the turnover measures:

- RNs: Includes RN director of nursing (job code 5), RNs with administrative duties (job code 6), and RNs (job code 7)
- Total Nurses: Includes RN director of nursing (job code 5), RNs with administrative duties (job code 6), RNs (job code 7), LPNs with administrative duties (job code 8), LPNs (job code 9), certified nurse aides (job code 10), aides in training (job code 11), and medication aides/technicians (job code 12)
- Nursing home administrators (job code 1)

Note that the calculation of the annual turnover measures requires six consecutive quarters of PBJ data (See Figure 1). Data from a baseline quarter (prior to the first quarter covered by the turnover measures)

along with the first two quarters covered by the turnover measures are used for identifying employees who are eligible to be included in the turnover measure. Data from the quarter after the four-quarter period covered by the turnover measures are used to identify the gaps in days worked in the last 60 days of the fourth quarter used for the turnover measure.

Figure 1: Time Period Used for Calculating Turnover Measures



Staff turnover measures are constructed using the daily staffing information submitted through the PBJ system. Turnover is identified based on gaps in days worked, allowing the creation of a turnover measure that is defined the same way across all nursing homes and that does not depend on termination dates reported by nursing homes. Individuals are identified based on the employee system ID and nursing home identifiers in the PBJ data.

- ***Denominator:*** The turnover measures include only individuals who work at least 120 hours in the 90-day period starting from the first workday observed across the baseline quarter (the quarter prior to the first quarter used in the turnover calculation) and the first two quarters used in the turnover calculation. For example, the turnover calculation for calendar year 2021 includes in the denominator, individuals who worked 120 or more hours in the 90-day period with the first workday of the 90-day period occurring in 2020Q4-2021Q2 (October 1, 2020 through June 30, 2021). This specification excludes individuals who work infrequently (e.g., occasionally covering shifts at a nursing home). Note that both regular employees and agency staff are included in the turnover measure if they work sufficient hours to be eligible for the denominator.
- ***Numerator:*** Individuals who no longer work at the nursing home are defined as eligible individuals who have a period of at least 60 consecutive days in which they do not work at all. The 60-day gap must start during the period covered by the turnover measure. This lengthy period without any reported work hours suggests that the individual is no longer working at the nursing home. For example, the numerator for turnover in 2021 includes eligible employees who had a 60-day gap that started anytime during the year. The turnover date is defined as the last workday prior to the start of the 60-day gap. Note that data from the quarter after the period covered by the turnover measure are required to identify gaps that start within 60 days of the end of the period covered by the turnover measure. For example, data from 2022Q1 are used to identify 60-day gaps that started between November 2, 2021 and December 31, 2021.

Note that individuals who return to the nursing home after a gap of more than 60 days can have multiple 'employment spells' used in the turnover calculation if they meet the eligibility requirement for subsequent employment spell(s). Essentially, they are treated as new employees.

- **Exclusions:** Several types of nursing-home level exclusion criteria are applied:
    - Nursing homes that failed to submit staffing data or submitted data that are considered invalid (using the current exclusion rules for the staffing domain) for one or more of the quarters used to calculate the turnover measures are excluded (see staffing domain section above for more details). Turnover measures will not be reported or used in the staffing rating until the quarter(s) with missing or invalid data are no longer included in the turnover measure calculation period (six quarters). Additionally, if a nursing home has no resident census information (derived from MDS assessments and needed for the calculation of staffing levels), the nursing home is excluded. These are the same exclusion rules used for the nurse staffing measures described above. Additionally, nursing homes that failed an audit of the PBJ staffing data for one of the covered quarters are excluded.
    - Nursing homes are excluded from the total nurse staffing and RN turnover measures if they have fewer than five eligible nurses (RNs, LPNs, and nurse aides) in the denominator. The purpose of this exclusion rule is to increase the stability of the turnover measures. Note that for the nursing home administrator turnover measure, the minimum requirement is one eligible administrator since most nursing homes have only one nursing home administrator.
    - For the total nurse staffing and RN turnover measures, nursing homes with 100 percent daily total nurse staffing turnover for any day in the six quarter period on which there were at least five eligible nurse staff are excluded. 100 percent daily turnover is typically the result of changes in the employee IDs used by nursing homes. Since gaps in days worked are identified based on the employee and nursing home IDs reported in the PBJ data, a change in employee IDs can result in a 100 percent turnover rate on a particular day (i.e., the day that the nursing home started using the new identifier), which reflects the change in the employee IDs and not actual staff turnover.
    - For the administrator turnover measure, nursing homes that submitted no administrator data for one or more of the six required quarters are excluded.
    - For the administrator turnover measure, nursing homes that submitted PBJ data suggesting an erroneously high number of administrators are excluded. Specifically, if a nursing home reports administrator hours (job code 1) for five or more individuals (based on employee IDs) on four or more days for one or more of the six required quarters, the administrator turnover measure will be excluded.
- ***Turnover calculation:*** Annual turnover measures are constructed. For the total nurse and RN turnover measures, the annual turnover percentage is calculated using this formula:

(Total number of employment spells that ended in turnover)/(Total number of eligible employment spells)

Using this specification, the maximum turnover rate is 100 percent.

Nursing home administrator turnover is measured as the *total number of administrators that left the nursing home during the period covered by the turnover measures.*

Scoring Rules for the Staffing Measures

Points are assigned to each of the six staffing measures. For five of the measures (all except administrator turnover), the points are determined based on deciles. For the staffing level measures, more points are assigned for higher case-mix adjusted staffing levels. For the turnover measures, more points are assigned for lower turnover. Weights for the measures (maximum possible points) are as follows:

- For **case-mix adjusted total nurse staffing** and **case-mix adjusted RN staffing**, a maximum of 100 points is assigned. Nursing homes are grouped into deciles based on the national distribution of each measure. Nursing homes in the lowest decile receive 10 points. Points are increased in 10-point increments so that nursing homes in the highest decile receive 100 points.
- For **case-mix adjusted total nurse staffing on the weekends**, a maximum of 50 points is assigned. Nursing homes are grouped into deciles based on the national distribution of each measure. Nursing homes in the lowest decile receive 5 points. Points are increased in 5-point increments so that nursing homes in the highest decile receive 50 points.
- For **total nurse turnover** and **RN turnover**, a maximum of 50 points is assigned. Nursing homes are grouped into deciles based on the national distribution of each measure. Nursing homes in the decile with the highest turnover receive 5 points. Points are increased in 5-point increments so that nursing homes in the decile with the lowest turnover receive 50 points.
- For **administrator turnover**, a maximum of 30 points is assigned. Nursing homes with no administrator departures during the measurement period receive 30 points; nursing homes with one administrator departure receive 25 points; and nursing homes with two or more administrator departures during the annual measurement period receive 10 points.

The cut points for each of the staffing measures are based on the national distribution of the measures including data through the first calendar quarter of 2022. These cut points are listed in Appendix Table A2.

Rating Methodology

Once points are assigned for each of the six staffing measures, these points are summed to provide a total staffing score for each nursing home. There is a maximum of 380 possible points. No staffing rating is assigned to nursing homes with reported nurse staffing levels for the quarter that are considered invalid according to the staffing level exclusion rules described previously. However, if a nursing home has valid data for the nurse staffing level measures but is missing one or more of the turnover measures, a rating will be assigned based on the staffing level measures and any available turnover measures. These nursing homes will have a maximum possible score of less than 380 points; thus, their staffing score is rescaled according to the following formula:

Total staffing points for available measures X (380/maximum possible points based on available measures)

Note that this formula rescales a nursing home's score so that the rescaled score has a maximum of 380 points and is equivalent to assigning the nursing home's average points on the available measures to the measures that are missing. After any necessary rescaling, the staffing rating is assigned based on the point thresholds shown in Table 3.

Table 3
Point Ranges for the Staffing Rating (maximum possible score = 380 points)

1 star	2 stars	3 stars	4 stars	5 stars
< 155	155 - 204	205 - 254	255 - 319	320 - 380

Note: These cut points are applied after any necessary rescaling of the staffing score to have a maximum possible value of 380 points. The rescaled score is rounded to the nearest integer. Cut points for each of the six measures that contribute to the total staffing Score are shown in Appendix Table A2.

Scoring Exceptions

The following are exceptions to the scoring rules (described previously) for assigning the staffing rating:

- Providers that fail to submit any staffing data by the required deadline will receive a one-star staffing rating for the quarter.
- Providers that submit staffing data indicating that there were four or more days in the quarter with no RN staffing hours (job codes 5-7) on days when there were one or more residents in the nursing home will receive a one-star staffing rating for the quarter.
- CMS conducts audits of nursing homes to verify the data submitted and to ensure accuracy. Facilities that fail to respond to these audits and those for which the audit identifies significant discrepancies between the hours reported and the hours verified will receive a one-star staffing rating for three months from the time at which the deadline to respond to audit requests passes or discrepancies are identified. If repeat audits identify the same discrepancy, the timeframe for the staffing rating downgrade may be extended.

Quality Measure Domain

A set of quality measures (QMs) has been developed from Minimum Data Set (MDS) and Medicare claims data to describe the quality of care provided in nursing homes. These measures address a broad range of function and health status indicators. Most nursing homes will have three QM ratings–an overall QM rating, a long-stay QM rating, and a short-stay QM rating. For nursing homes that have only long-stay or only short-stay QMs, the overall QM rating is equal to their long-stay or short-stay QM rating. QM ratings are based on performance on a subset of 10 MDS-based QMs and five measures that are created using Medicare claims. These measures were selected for use in the rating system based on their validity and reliability, the extent to which nursing home practice may affect the measures, statistical performance, and the importance of the measures.

Measures for Long-Stay residents (defined as residents who are in the nursing home for greater than 100 days) that are derived from MDS assessments:

- Percentage of long-stay residents whose need for help with daily activities has increased
- Percentage of long-stay residents whose ability to move independently worsened
- Percentage of long-stay high-risk residents with pressure ulcers
- Percentage of long-stay residents who have or had a catheter inserted and left in their bladder
- Percentage of long-stay residents with a urinary tract infection

- Percentage of long-stay residents experiencing one or more falls with major injury
- Percentage of long-stay residents who got an antipsychotic medication

Measures for Long-Stay residents that are derived from claims data:

- Number of hospitalizations per 1,000 long-stay resident days
- Number of outpatient emergency department (ED) visits per 1,000 long-stay resident days

Measures for Short-Stay residents that are derived from MDS assessments:

- Percentage of short-stay residents who improved in their ability to move around on their own
- Percentage of Skilled Nursing Facility (SNF) residents with pressure ulcers/pressure injuries that are new or worsened
- Percentage of short-stay residents who got antipsychotic medication for the first time

Measures for Short-Stay residents that are derived from claims data:

- Percentage of short-stay residents who were re-hospitalized after a nursing home admission
- Percentage of short-stay residents who have had an outpatient emergency department (ED) visit
- Rate of successful return to home and community from a SNF

Table 4 contains more detailed information on these measures. Technical specifications for all of the measures are available in the downloads section at https://www.cms.gov/medicare/quality-initiatives-patient-assessment-instruments/nursinghomequalityinits/nhqiqualitymeasures.html.

Values for four of the MDS-based QMs (Percentage of long-stay residents whose ability to move independently, Percentage of long-stay residents who have or had a catheter inserted and left in their bladder, Percentage of short-stay residents who improved in their ability to move around on their own, Percentage of SNF residents with pressure ulcers/pressure injuries that are new or worsened) are risk adjusted, using resident-level covariates that adjust for resident factors associated with differences in the performance on the QM. For example, the catheter risk-adjustment model takes into account whether or not residents had bowel incontinence or pressure sores on the prior assessment. All of the claims-based measures are risk adjusted. Risk-adjustment for the hospitalization and ED visit measures incorporates items from Medicare enrollment data and Part A claims and information from the first MDS assessment associated with the nursing home stay. Risk adjustment for the rate of successful return to home and community from a SNF measure uses data derived from Medicare enrollment data and Part A claims. The risk-adjustment methodology is described in more detail in the technical specification documents referenced above. CMS calculates ratings for the QM domain using the **four** most recent quarters for which data are available (except the rate of successful return to home and community from a SNF that uses a two-year period). The time period specifications were selected to increase the number of assessments available for calculating the QM rating. This increases the stability of estimates and reduces the amount of missing data. The adjusted four-quarter QM values for each of the MDS-based QMs used in the five-star algorithm, except the short-stay pressure ulcer/injury measure are computed as follows:

$$QM_{4Quarter} = [(QM_{Q1} * D_{Q1}) + (QM_{Q2} * D_{Q2}) + (QM_{Q3} * D_{Q3}) + (QM_{Q4} * D_{Q4})]/(D_{Q1} + D_{Q2} + D_{Q3} + D_{Q4})$$

Where QM_{Q1}, QM_{Q2}, QM_{Q3}, and QM_{Q4} correspond to the adjusted QM values for the four most recent quarters and D_{Q1}, D_{Q2}, and D_{Q3} D_{Q4} are the denominators (number of eligible residents for the particular QM) for the same four quarters.

Values for the claims-based measures and the short-stay pressure ulcer/pressure injury measure are calculated in a similar manner, except that the data used to calculate the measures use a full year (or two years) of data rather than being broken out separately by quarter.

Table 4 Quality Measures Used in the Five-Star Quality Measure Rating Calculation

Measure	Comments
MDS Long-Stay Measures	
Percentage of residents whose ability to move independently worsened	This measure is a change measure that reports the percentage of long-stay residents who have demonstrated a decline in independence of locomotion when comparing the target assessment to a prior assessment. Residents who lose mobility may also lose the ability to perform other activities of daily living, like eating, dressing, or getting to the bathroom.
Percentage of residents whose need for help with daily activities has increased	This measure reports the percentage of long-stay residents whose need for help with late-loss Activities of Daily Living (ADLs) has increased when compared to the prior assessment. This is a change measure that reflects worsening performance on at least two late loss ADLs by one functional level or on one late loss ADL by more than one functional level compared to the prior assessment. The late loss ADLs are bed mobility, transfer, eating, and toileting. Maintenance of ADLs is related to an environment in which the resident is up and out of bed and engaged in activities. The CMS Staffing Study found that higher staffing levels were associated with lower rates of increasing ADL dependence.
Percentage of high-risk residents with pressure ulcers	This measure captures the percentage of long-stay, high-risk residents with Stage II-IV or unstageable pressure ulcers. Residents at high risk for pressure ulcers are those who are impaired in bed mobility or transfer, who are comatose, or who suffer from malnutrition.
Percentage of residents who have/had a catheter inserted and left in their bladder	This measure reports the percentage of residents who have had an indwelling catheter in the last seven days. Indwelling catheter use may result in complications, like urinary tract or blood infections, physical injury, skin problems, bladder stones, or blood in the urine.
Percentage of residents with a urinary tract infection	This measure reports the percentage of long-stay residents who have had a urinary tract infection within the past 30 days. Urinary tract infections can often be prevented through hygiene and drinking enough fluid. Urinary tract infections are relatively minor but can lead to more serious problems and cause complications like delirium if not treated.
Percentage of residents experiencing one or more falls with major injury	This measure reports the percentage of long-stay residents who have experienced one or more falls with major injury reported in the target period or look-back period (one full calendar year).
Percentage of residents who got an antipsychotic medication	This measure reports the percentage of long-stay residents who are receiving antipsychotic drugs in the target period. Reducing the rate of antipsychotic medication use has been the focus of several CMS initiatives.

Table 4 Quality Measures Used in the Five-Star Quality Measure Rating Calculation	
Measure	**Comments**
Claims-Based Long-Stay Measures	
Number of hospitalizations per 1,000 resident days	This measures the number of unplanned inpatient admissions or outpatient observation stays that occurred among long-stay residents of a nursing home during a one-year period, expressed as the number of unplanned hospitalizations for every 1,000 days that the long-stay residents were admitted to the nursing home.
Number of outpatient emergency department (ED) visits per 1,000 resident days	This measures the number of outpatient ED visits that occurred among long-stay residents of a nursing home during a one-year period, expressed as the number of outpatient ED visits for every 1,000 days that the long-stay residents were admitted to the nursing home.
MDS Short-Stay Measures	
Percentage of residents who improved in their ability to move around on their own	This measure assesses the percentage of short-stay residents whose independence in three mobility functions (i.e., transfer, locomotion, and walking) increases over the course of the nursing home care episode.
Percentage of SNF residents with pressure ulcers/pressure injuries that are new or worsened	This measure captures the percentage of short-stay residents with pressure ulcers that are new or whose existing pressure ulcers worsened during their stay in the SNF and includes unstageable ulcers.
Percentage of residents who antipsychotic medication for the first time	This measure reports the percentage of short-stay residents who are receiving an antipsychotic medication during the target period but not on their initial assessment.
Claims-Based Short-Stay Measures	
Percentage of short-stay residents who were re-hospitalized after a nursing home admission	This measure reports the percentage of all new admissions or readmissions to a nursing home from a hospital where the resident was re-admitted to a hospital for an inpatient or observation stay within 30 days of entry or reentry.
Percentage of short-stay residents who have had an outpatient emergency department (ED) visit	This measure reports the percentage of all new admissions or readmissions to a nursing home from a hospital where the resident had an outpatient ED visit (i.e., an ED visit not resulting in an inpatient hospital admission) within 30 days of entry or reentry.
Rate of successful return to home and community from a SNF	This measure reports the rate at which residents returned to home and community with no unplanned hospitalizations and no deaths in the 31 days following discharge from the SNF.

Missing Data and Imputation

MDS-based measures are reported if the measure can be calculated for at least 20 residents' assessments (summed across **four** quarters of data to enhance measurement stability) for both the long- and short-stay QMs. The short-stay claims-based measures are reported if the measure can be calculated for at least 20 nursing home stays over the course of the year. The long-stay claims-based measures are reported if the measure can be calculated for at least 20 nursing home stays over the course of the year.

For facilities with missing data or an inadequate denominator size for one or more QMs meeting the criteria described below, all available data from the nursing home are used. The remaining assessments (or stays) are imputed to get the nursing home to the minimum required sample size of 20. Missing values are imputed based on the statewide average for the measure. For example, if a nursing home had actual data for 12 resident assessments, the data for those 12 assessments would be used and the remaining eight assessments would be imputed using the state average to get to the minimum sample size required to include the measure in the scoring for the QM rating. The imputation strategy for the missing values depends on the pattern of missing data.

- For facilities that have an adequate denominator size for at least five of the nine long-stay QMs, values are imputed for the long-stay measures with fewer than 20 assessments or residents as described above. Points are then assigned for all nine long-stay QMs according to the scoring rules described below.
- For facilities that have an adequate denominator size for at least four of the six short-stay QMs, values are imputed for the short-stay measures with smaller denominators as described above. Points are then assigned for all six short-stay QMs according to the scoring rules described below.
- For facilities that do not have an adequate denominator size for at least five long-stay QMs but that have an adequate denominator size for four or more short-stay QMs, the QM rating is based on the short-stay measures only. Values for the missing long-stay QMs are not imputed. No long-stay QM rating is reported, and no long-stay measures are used in determining the overall QM rating.
- Similarly, for facilities that do not have an adequate denominator size for at least four short-stay QMs but that have an adequate denominator size for five or more long-stay QMs, the QM rating is based on the long-stay measures only. Values for the missing short-stay QMs are not imputed. No short-stay QM rating is reported, and no short-stay measures are used in determining the overall QM rating.

Note that while values are imputed according to the rules described above for the purposes of assigning points for the QM score, data for QMs that use imputed data are not reported on the *Care Compare* website nor included in the downloadable databases available at https://data.cms.gov/provider-data/. QM values are publicly reported only for providers meeting the minimum denominator requirements prior to any imputation.[8]

Scoring Rules for the Individual QMs

Two different sets of weights are used for assigning QM points to individual QMs. Some measures have a maximum score of 150 points while the maximum number of points for other measures is 100. The weight for each measure was determined based on the opportunity for nursing homes to improve on the measure and the clinical significance of the measure based on expert feedback. For measures that have a maximum score of 150 points, the points are determined based on deciles. Quintiles are used for measures that have a maximum score of 100 points. For all measures, points are calculated based on performance relative to the national distribution of the measure. Points are assigned after any needed imputation of individual QM values, with the points determined using this methodology:

- For long-stay ADL worsening, long-stay antipsychotic medication, long-stay mobility decline, the two claims-based long-stay measures, the percentage of short-stay residents who improved in their ability to move around on their own, and the three claims-based short-stay measures: nursing homes are grouped into deciles based on the national distribution of the QM. Nursing homes in the lowest performing decile receive 15 points for the measure. Points are increased in 15-point intervals for each decile so that nursing homes in the highest performing decile receive 150 points.

[8] Note that for the rate of successful return to home and community from a SNF, the minimum sample size for publicly reporting the measure is 25.

- For long-stay pressure ulcer, long-stay catheter, long-stay urinary tract infections, long-stay falls, short-stay pressure ulcer/pressure injury, and short-stay antipsychotic medication: nursing homes are grouped into quintiles based on the national distribution of the QM. The quintiles are assigned 20 points for the lowest performing quintile, 100 points for the highest performing quintile, and 40, 60 or 80 points for the second, third and fourth quintiles respectively.
- For two 100-point measures that have more than 20 percent of nursing homes with a QM value of 0 (short-stay pressure ulcers/injuries and short-stay antipsychotic measures), all nursing homes with a QM value of 0 are awarded 100 points, and the remaining nursing homes are divided to maintain as close to even quintiles as possible.

Note that, for all of the measures, the groupings are based on the national distribution of the QMs, prior to any imputation. For most of the MDS-derived QMs, the cut points are based on the QM distributions averaged across the four quarters from Quarter 4 of 2017 to Quarter 3 of 2018. For short-stay pressure ulcers/pressure injuries, the cut points are based on the national distribution of the measure calculated for the period of Quarter 1 2019 through Quarter 4 2019. For the rate of successful return to home and community from a SNF measure, the cut points are based on the national distribution of the measure calculated for the period Quarter 4 of 2016 through Quarter 3 of 2017. For the other four claims-based QMs (except rate of successful return to home and community from a SNF), the cut points are based on the national distribution of the measures calculated for the period of Quarter 4 of 2017 through Quarter 3 of 2018. The points associated with each individual QM are listed in Appendix Table A2.

Quality Measures with a maximum score of 150 points:
Long-stay
Percentage of residents whose need for help with daily activities increased
Percentage of residents who received an antipsychotic medication
Percentage of residents whose ability to move independently worsened
Number of hospitalizations per 1,000 resident days
Number of outpatient emergency department (ED) visits per 1,000 resident days

Short-stay
Percentage of residents who improved in their ability to move around on their own
Rate of successful return to home and community from a SNF
Percentage of short-stay residents who were re-hospitalized after a nursing home admission
Percentage of short-stay residents who have had an outpatient emergency department (ED) visit

Quality Measures with maximum score of 100 points:
Long-stay
Percentage of residents experiencing one or more falls with major injury
Percentage of high-risk residents with pressure ulcers
Percentage of residents with a urinary tract infection
Percentage of residents who have or had a catheter inserted and left in their bladder

Short-stay
Percentage of residents who got an antipsychotic medication for the first time
Percentage of SNF residents with pressure ulcers/pressure injuries that are new or worsened

Scoring Exceptions

CMS conducts audits of schizophrenia coding in the MDS. Facilities that have coding inaccuracies identified through these audits have their QM ratings adjusted as follows:

- The overall QM and long-stay QM ratings are downgraded to one star for six months (Note that this drops the facility's overall star rating by one star). For months 7-12, the facility will receive the minimum number of points for the long-stay antipsychotic QM.
- The short-stay QM rating is suppressed for six months.
- The long-stay antipsychotic QM is suppressed for 12 months.

Note: The lifting of the downgrade and/or suppression at the timeframes above are subject to CMS verifying the issues have been corrected.

For facilities that admit miscoding after being notified by CMS that the facility will be audited, but prior to the start of the audit, CMS will consider a lesser action related to their star ratings than those listed above, such as suppression of the QM ratings (rather than downgrade).

Rating Methodology

After any needed imputation for individual QMs, points are summed across all of the long-stay QMs, all of short-stay QMs, as well as across all QMs based upon the scoring rules described above to create a long-stay QM score, a short-stay QM score, and a total QM score for each nursing home. The long-stay QM score ranges between 155 and 1,150. Due to differences in number of measures and weights, the *unadjusted* short-stay QM score has a maximum of 800 points. So that the long- and short-stay measures can count equally in the calculation of the total QM score, an adjustment factor of 1,150/800 is applied to the unadjusted total short-stay score. After applying this adjustment, the adjusted short-stay score ranges from 144 to 1,150[9]. The total overall QM score, which sums the total long-stay score and the total adjusted short-stay score, ranges between 299 and 2,300.

Facilities that receive an overall QM rating are in one of the following categories:

- They have points for all of the QMs.
- They have points for only the nine long-stay QMs (long-stay facilities).
- They have points for only the six short-stay QMs (short-stay facilities).
- They do not have sufficient data for either the long-stay or the short-stay QMs. No QM ratings are generated for these nursing homes.

Once the long-stay, short-stay, and overall QM scores are computed for each nursing home as described above, a long-stay QM rating is assigned to nursing homes that have long-stay QM scores; a short-stay QM rating is assigned to nursing homes that have short-stay QM scores, and an overall QM star rating is assigned using the methodology previously described using the point thresholds shown in Table 5. CMS plans to raise these thresholds every six months by 50% of the increase in scores over that time period.

[9] The unadjusted total short-stay score ranges from 100 to 800.

Table 5

Point Ranges for the QM Ratings (as of October 2022)

QM Rating	Long-Stay QM Rating Thresholds	Short-Stay QM Rating Thresholds	Overall QM Rating Thresholds
★	155–483	144–491	299–975
★★	484–581	492–588	976–1,170
★★★	582–663	589–678	1,171–1,342
★★★★	664–755	679–766	1,343–1,522
★★★★★	756–1,150	767–1,150	1,523–2,300
Note: the short-stay QM rating thresholds are based on the adjusted scores (after applying the factor of 1,150/800 to the unadjusted scores)			

Overall Nursing Home Rating (Composite Measure)

Based on the star ratings for the health inspection domain, the staffing domain and the quality measure domain, CMS assigns the overall Five-Star rating in three steps:

Step 1: Start with the health inspection rating.

Step 2: Add one star to the Step 1 result if the staffing rating is five stars; subtract one star if the staffing rating is one star. The overall rating cannot be more than five stars or less than one star.

Step 3: Add one star to the Step 2 result if the quality measure rating is five stars; subtract one star if the quality measure rating is one star. The overall rating cannot be more than five stars or less than one star.

Note: If the health inspection rating is one star, then the overall rating cannot be upgraded by more than one star based on the staffing and quality measure ratings.

The rationale for limiting star rating upgrades is that the staffing and quality measure domains should not significantly outweigh the rating from actual onsite visits from trained surveyors who may have found very serious quality of care problems. Since the health inspection rating is heavily weighted toward the most recent findings, a health inspection rating of one star reflects both a serious and recent finding.

The method for determining the overall nursing home rating does not assign specific weights to the health inspection, staffing, and QM domains. The health inspection rating is the most important dimension in determining the overall rating; however, depending on the performance on the staffing and QM domains, the overall rating for a nursing home may be increased or decreased by up to two stars.

If a nursing home has no health inspection rating, then no overall rating is assigned. If a nursing home has no health inspection rating because it is too new to have two standard surveys, then no ratings for any domain are displayed.

Special Focus Facilities

Nursing homes that are current participants in the Special Focus Facility (SFF) program will not be assigned overall ratings or ratings in any domain. A yellow warning sign is displayed instead of the overall rating and "Not Available" is displayed in place of the ratings for all other domains.

Change in Nursing Home Rating

Facilities may see a change in their overall rating for a number of reasons. Since the overall rating is based on three individual domains, a change in any one of the domains can affect the overall rating. Any new data for a nursing home could potentially change a star rating domain.

Health inspection rating changes: Events that could change the health inspection score include:

- A new health inspection.
- New complaint deficiencies.
- New focused infection control survey deficiencies.
- A second, third, or fourth revisit.
- Resolution of Informal Dispute Resolutions (IDR) or Independent Informal Dispute Resolutions (IIDR) resulting in changes to the scope and/or severity of deficiencies.
- The "aging" of complaint and focused infection control survey deficiencies. Another reason the health inspection data (and therefore the rating) for a nursing home may change is the "aging" of one or more complaint or focused infection control survey deficiencies. Specifically, these citations are assigned to a time period based on the 12-month period in which the complaint investigation or focused infection control survey occurred. Thus, when a complaint or focused infection control survey deficiency ages into a prior period, it receives less weight in the scoring process and thus the weighted health inspection score may change and be compared to the state distribution at that time.
- If a nursing home newly qualifies for the abuse icon, the health inspection rating is capped at two stars, and this may cause a change in the overall rating. Similarly, when a nursing home no longer qualifies for the abuse icon, the health inspection rating may change.

Health inspection data will be included as soon as they become part of the CMS database. The timing for this can vary by state and depends on having the complete survey package for the State Survey Agency to upload to the national database. Additional inspection data may be added to the database at any time because of complaint investigations, outcomes of revisits, Informal Dispute Resolutions (IDR), or Independent Informal Dispute Resolutions (IIDR). These data may not be added in the same cycle as the standard inspection data.

Since the cut-points between star categories for the health inspection rating are based on percentile distributions that are not fixed, those cut-points may vary slightly depending on the current nursing home distribution in the database. However, while the cut-points for the health inspection ratings may change

from month to month, the rating for a given facility is held constant until there is a change in the weighted health inspection score for that nursing home.

Staffing rating changes: PBJ staffing data are reported quarterly, so new staffing measures and ratings are calculated and posted quarterly. Changes in a nursing home's staffing measure or rating may be due to differences in the number of hours submitted for staff, changes in the daily census, changes in resident case-mix from the previous quarter, or changes in staff turnover. Additionally, the audit process may lead to a change in the staffing rating for a facility.

Quality Measure rating changes: Data for the MDS-based QMs and the claims-based hospitalization and ED visit measures are updated quarterly, and the QM rating is updated at the same time. The updates typically occur in January, April, July, and October at the time of the *Care Compare* website refresh. Changes in the quality measures may change the star ratings.

Appendices

Table A1
Case-Mix Nursing Minutes by RUG-IV Group and Nursing Staff Type

Major RUG Group	RUG-IV Code	STRIVE Study Average Times (Minutes)				
		RN	LPN	Total Licensed	Nurse Aide	Total Nurse (RN+LPN+Aide)
Rehab Plus Extensive	RUX	68.37	111.44	179.81	131.11	310.92
	RUL	109.06	63.87	172.93	199.94	372.87
	RVX	29.24	95.88	125.12	145.94	271.06
	RVL	67.74	97.39	165.13	139.99	305.12
	RHX	128.79	51.92	180.71	155.24	335.95
	RHL	67.28	48.41	115.69	135.32	251.01
	RMX	97.54	74.61	172.15	148.44	320.59
	RML	133.82	84.01	217.83	153.24	371.07
	RLX	133.82	84.01	217.83	153.24	371.07
Rehab	RUC	27.80	66.41	94.21	148.95	243.16
	RUB	45.01	71.09	116.10	141.03	257.13
	RUA	35.18	54.55	89.73	101.01	190.74
	RVC	34.22	68.45	102.67	156.53	259.20
	RVB	28.86	56.56	85.42	119.90	205.32
	RVA	31.30	59.35	90.65	113.73	204.38
	RHC	36.62	54.88	91.50	156.14	247.64
	RHB	36.42	47.88	84.30	119.48	203.78
	RHA	27.09	51.76	78.85	99.82	178.67
	RMC	32.58	56.05	88.63	148.87	237.50
	RMB	32.10	55.47	87.57	134.74	222.31
	RMA	25.99	48.79	74.78	98.81	173.59
	RLB	33.86	44.58	78.44	185.83	264.27
	RLA	15.46	43.58	59.04	118.93	177.97
Extensive Services	ES3	130.49	58.49	188.98	152.12	341.10
	ES2	65.19	75.23	140.42	146.65	287.07
	ES1	72.81	49.49	122.30	127.62	249.92
Special Care High	HE2	21.25	67.93	89.18	190.47	279.65
	HD2	41.89	70.63	112.52	153.76	266.28
	HC2	35.13	53.63	88.76	154.72	243.48
	HB2	60.64	67.91	128.55	133.86	262.41
	HE1	19.20	67.73	86.93	149.47	236.40
	HD1	16.89	54.54	71.43	141.80	213.23
	HC1	22.43	54.17	76.60	135.33	211.93
	HB1	21.65	50.50	72.15	106.77	178.92

Major RUG Group	RUG-IV Code	STRIVE Study Average Times (Minutes)				
		RN	LPN	Total Licensed	Nurse Aide	Total Nurse (RN+LPN+Aide)
Special Care Low	LE2	22.16	58.83	80.99	176.15	257.14
	LD2	19.59	58.10	77.69	153.29	230.98
	LC2	27.44	47.80	75.24	116.12	191.36
	LB2	29.52	50.73	80.25	128.44	208.69
	LE1	22.11	52.25	74.36	143.41	217.77
	LD1	11.78	43.94	55.72	130.80	186.52
	LC1	15.72	46.56	62.28	124.77	187.05
	LB1	18.99	48.66	67.65	106.16	173.81
Clinically Complex	CE2	21.05	44.13	65.18	162.70	227.88
	CD2	20.01	45.17	65.18	175.51	240.69
	CC2	19.77	36.95	56.72	132.92	189.64
	CB2	23.50	36.46	59.96	114.97	174.93
	CA2	20.69	44.63	65.32	80.92	146.24
	CE1	21.26	33.75	55.01	159.10	214.11
	CD1	15.31	41.90	57.21	151.40	208.61
	CC1	16.00	35.10	51.10	126.91	178.01
	CB1	16.17	34.99	51.16	118.45	169.61
	CA1	22.39	40.22	62.61	72.76	135.37
Behavioral Symptoms and Cognitive Performance	BB2	11.30	33.26	44.56	117.96	162.52
	BA2	18.34	41.18	59.52	101.56	161.08
	BB1	14.93	32.83	47.76	114.30	162.06
	BA1	13.60	31.57	45.17	86.06	131.23
Reduced Physical Functioning	PE2	15.11	39.76	54.87	163.58	218.45
	PD2	12.09	38.01	50.10	163.38	213.48
	PC2	8.14	33.51	41.65	124.90	166.55
	PB2	15.49	38.95	54.44	118.83	173.27
	PA2	5.50	35.91	41.41	73.16	114.57
	PE1	19.91	36.07	55.98	161.23	217.21
	PD1	16.18	33.58	49.76	147.31	197.07
	PC1	14.07	36.94	51.01	123.74	174.75
	PB1	12.49	31.80	44.29	95.60	139.89
	PA1	14.32	32.42	46.74	70.77	117.51

Table A2. Ranges for Point Values for Staffing Measures[1]

Staffing Measure	Points	Min	Max
Adjusted RN Staffing (Hours per Resident per Day)	**100**	1.298	Or higher
	90	0.992	1.297
	80	0.819	0.991
	70	0.692	0.818
	60	0.591	0.691
	50	0.505	0.590
	40	0.426	0.504
	30	0.352	0.425
	20	0.261	0.351
	10	0.000	0.260
Adjusted Total Nurse Staffing (Hours per Resident per Day)	**100**	4.954	Or higher
	90	4.429	4.953
	80	4.105	4.428
	70	3.869	4.104
	60	3.653	3.868
	50	3.445	3.652
	40	3.248	3.444
	30	3.030	3.247
	20	2.747	3.029
	10	0.000	2.746
Adjusted Total Nurse Staffing on weekends (Hours per Resident per Day)	**50**	4.328	Or higher
	45	3.896	4.327
	40	3.623	3.895
	35	3.382	3.622
	30	3.174	3.381
	25	2.985	3.173
	20	2.810	2.984
	15	2.613	2.809
	10	2.350	2.612
	5	0.000	2.349

Staffing Measure	Points	Min	Max
RN Turnover (%)	**50**	0.000	24.528
	45	24.529	33.108
	40	33.109	39.623
	35	39.624	45.161
	30	45.162	49.123
	25	49.124	56.977
	20	56.978	62.963
	15	62.964	71.053
	10	71.054	81.081
	5	81.082	100.000
Total Nurse Turnover (%)	**50**	0.000	34.416
	45	34.417	40.594
	40	40.595	44.848
	35	44.849	48.696
	30	48.697	52.353
	25	52.354	56.391
	20	56.392	60.699
	15	60.700	65.741
	10	65.742	72.678
	5	72.679	100.000
Number of Administrator Departures	**30**	0	0
	25	1	1
	10	2	Or more

[1]For all measures except for Number of Administrator Departures, these cut points are based on the national distribution of data through 2022Q1. For the staffing level measures, the cut points are based on deciles of case-mix adjusted staffing for 2022Q1. For the total nurse and RN turnover measures, these cut points are based on the national distribution of turnover for calendar year 2021. As described in the specifications for the turnover measures in this document, data from 2022Q1 is used to identify staff that left the nursing home during the last quarter of 2021.

Table A3
Ranges for Point Values for Quality Measures, Using Four Quarter Average Distributions[1]

Quality Measure	For QM values …		Number of QM points is…
	Between…	And…	
Percentage of SNF residents with pressure ulcers/pressure injuries that are new or worsened (short-stay)	0.0000	0.0000	100
	0.0001	0.0219	80
	0.0220	0.0395	60
	0.0396	0.0647	40
	0.0648	1.0000	20
Rate of successful return to home and community from a SNF (short-stay)	0.6336	1.0000	150
	0.5976	0.6335	135
	0.5697	0.5975	120
	0.5453	0.5696	105
	0.5173	0.5452	90
	0.4917	0.5172	75
	0.4609	0.4916	60
	0.4262	0.4608	45
	0.3763	0.4261	30
	0.0000	0.3762	15
Percentage of residents whose need for help with daily activities has increased (long-stay)	0.0000	0.0719	150
	0.0720	0.0956	135
	0.0957	0.1141	120
	0.1142	0.1296	105
	0.1297	0.1441	90
	0.1442	0.1589	75
	0.1590	0.1759	60
	0.1760	0.1978	45
	0.1979	0.2323	30
	0.2324	1.0000	15

Quality Measure	For QM values …		Number of QM points is…
	Between…	And…	
Percentage of residents who have/had a catheter inserted and left in their bladder (long-stay)	0.0000	0.0050	100
	0.0051	0.0126	80
	0.0127	0.0217	60
	0.0218	0.0356	40
	0.0357	1.0000	20
Percentage of residents with a urinary tract infection (long-stay)	0.0000	0.0070	100
	0.0071	0.0160	80
	0.0161	0.0272	60
	0.0273	0.0452	40
	0.0453	1.0000	20
Percentage of residents experiencing one or more falls with major injury (long-stay)	0.0000	0.0134	100
	0.0135	0.0246	80
	0.0247	0.0356	60
	0.0357	0.0514	40
	0.0515	1.0000	20
Percentage of residents who got an antipsychotic medication (long-stay)	0.0000	0.0478	150
	0.0479	0.0749	135
	0.0750	0.0960	120
	0.0961	0.1137	105
	0.1138	0.1321	90
	0.1322	0.1508	75
	0.1509	0.1746	60
	0.1747	0.2039	45
	0.2040	0.2538	30
	0.2539	1.0000	15
Percentage of residents who got antipsychotic medication for the first time (short-stay)	0.0000	0.0000	100
	0.0001	0.0096	80
	0.0097	0.0168	60
	0.0169	0.0289	40
	0.0290	1.0000	20

Quality Measure	For QM values …		Number of QM points is…
	Between…	And…	
Percentage of residents whose ability to move independently worsened (long-stay)	0.0000	0.0821	150
	0.0822	0.1121	135
	0.1122	0.1350	120
	0.1351	0.1568	105
	0.1569	0.1760	90
	0.1761	0.1955	75
	0.1956	0.2153	60
	0.2154	0.2394	45
	0.2395	0.2747	30
	0.2748	1.0000	15
Percentage of high-risk residents with pressure ulcers (long-stay)	0.0000	0.0377	100
	0.0378	0.0584	80
	0.0585	0.0783	60
	0.0784	0.1057	40
	0.1058	1.0000	20
Percentage of residents who improved in their ability to move around on their own (short-stay)	0.8276	1.0000	150
	0.7745	0.8275	135
	0.7365	0.7744	120
	0.7039	0.7364	105
	0.6738	0.7038	90
	0.6428	0.6737	75
	0.6091	0.6427	60
	0.5664	0.6090	45
	0.5015	0.5663	30
	0.0000	0.5014	15

Quality Measure	For QM values …		Number of QM points is…
	Between…	And…	
Percentage of short-stay residents who were re-hospitalized after a nursing home admission (short-stay)	0.0000	0.1500	150
	0.1501	0.1770	135
	0.1771	0.1956	120
	0.1957	0.2115	105
	0.2116	0.2260	90
	0.2261	0.2403	75
	0.2404	0.2557	60
	0.2558	0.2743	45
	0.2744	0.3032	30
	0.3033	1.0000	15
Percentage of short-stay residents who have had an outpatient emergency department (ED) visit (short-stay)	0.0000	0.0475	150
	0.0476	0.0640	135
	0.0641	0.0768	120
	0.0769	0.0887	105
	0.0888	0.1000	90
	0.1001	0.1124	75
	0.1125	0.1271	60
	0.1272	0.1465	45
	0.1466	0.1759	30
	0.1760	1.0000	15

Quality Measure	For QM values …		Number of QM points is…
	Between…	And…	
Number of hospitalizations per 1,000 resident days (long-stay)	0.0000	0.8514	150
	0.8515	1.1167	135
	1.1168	1.3112	120
	1.3113	1.4931	105
	1.4932	1.6759	90
	1.6760	1.8622	75
	1.8623	2.0642	60
	2.0643	2.3236	45
	2.3237	2.7286	30
	2.7287	1000.000	15
Number of outpatient emergency department (ED) visits per 1,000 resident days (long-stay)	0.0000	0.3468	150
	0.3469	0.4968	135
	0.4969	0.6214	120
	0.6215	0.7381	105
	0.7382	0.8749	90
	0.8750	1.0265	75
	1.0266	1.2088	60
	1.2089	1.4696	45
	1.4697	1.9080	30
	1.9081	1000.000	15

[1]For the hospitalization and ED visit measures, points are based on data from 2017Q4–2018Q3. For MDS-based measures except for the short-stay pressure ulcer/pressure injury measure, points are based on data from 2017Q4–2018Q3. For the short-stay pressure ulcer/pressure injury measure, points are based on data from 2019Q1–2019Q4. For the successful return to home and community from a SNF measure, points are based on data from 2016Q4 through 2017Q3.

Having a greater number of QM points corresponds to better performance. More points are awarded for having a lower QM rate for all measures except functional improvement and successful community discharge where higher rates correspond to better performance.

Updated Case-Mix Adjustment Methodology for Staffing Level Measures (Effective July 2024)

CMS adjusts the reported staffing ratios for case-mix, using the nursing Case-mix Groups (CMGs) and corresponding nursing Case-mix Indexes (CMIs) from the Patient-Driven Payment Model (PDPM) [1]. There are 25 nursing CMGs under the PDPM. The nursing CMIs[2] are shown in Table A4. CMS calculates "case-mix hours"[3] based on the distribution of nursing CMGs within each facility, PDPM nursing CMIs, and the reported national average staffing level.

CMS calculates case-mix adjusted hours per resident day for each facility for each staff type using this formula:

$$\textbf{Hours}_{\text{Adjusted}} = (\textbf{Hours}_{\text{Reported}}/\textbf{Hours}_{\text{Case-Mix}}) * \textbf{Hours}_{\text{National Average}}$$

The reported hours are those reported by the facility through PBJ as described above. National average hours for a given staff type represent the national mean of case-mix hours across all facilities active on the last day of the quarter that submitted valid nurse staffing data for the quarter. The National Average Hours are updated every quarter and will be available in the State US Averages table in the Provider Data Catalog on CMS.gov (https://data.cms.gov/provider-data/).

The case-mix values for each nursing home are based on the daily distribution of residents by PDPM nursing CMG in the quarter covered by the PBJ reported staffing and CMIs for the corresponding nursing CMGs. Specifically, case-mix nurse staffing hours per resident day for a given nursing home are calculated as follows:

1) The MDS is used to assign a PDPM nursing CMG to each resident for each day in the quarter. The method is similar to that used for calculating the daily MDS census and is described below.
2) This information is aggregated to generate a count of residents in each of the 25 PDPM nursing CMGs in the nursing home for each day in the quarter. Nursing CMGs that are not represented on a given day are assigned a count of zero. Residents for whom there is insufficient MDS information to assign a nursing CMG are not included.
3) Weighted by the number of resident-days in each nursing CMG, the average Nursing CMI in the quarter is calculated for each nursing home. More specifically, it is calculated by dividing a nursing home's aggregate nursing CMIs across nursing CMGs by the number of resident-days in the quarter.
4) Similarly, a national weighted-average nursing CMI is calculated using data from all nursing homes.
5) For each nursing home, a relative nursing CMI ratio is calculated as the ratio of its weighted-average nursing CMI to the national weighted-average nursing CMI.
6) For each nursing home, its case-mix staffing hours per resident day is calculated as:

[1] https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/SNFPPS/PDPM

[2] These CMI values are based on the Fiscal Year 2024 Skilled Nursing Facility Prospective Payment System Final Rule (CMS – 1779-F, available at: https://www.federalregister.gov/documents/2023/08/07/2023-16249/medicare-program-prospective-payment-system-and-consolidated-billing-for-skilled-nursing-facilities)

[3] Note that the term "case-mix hours" replaces the term "expected hours" that was used prior to April 2019.

Case-mix hours (total nursing, RN, or weekend) per resident day = facility nursing CMI ratio × national mean of reported hours per resident day

To determine the number of residents in each PDPM Nursing CMG for each day of the quarter for each nursing home, the same algorithm is used as that is used to generate the daily MDS census (with slight adjustment to count PDPM nursing CMGs specifically, instead of just counting residents):

1) Identify the reporting period (quarter) for which the PDPM groupings will be collected (e.g., CY 2023 Q4: October 1–December 31, 2023).
2) Extract MDS assessment data (including PDPM Nursing CMGs) for all residents of a facility beginning one year prior to the reporting period to identify all residents that may reside in the nursing home (i.e., any resident with an MDS assessment may still reside in the nursing home). For example, for the CY 2023 Q4 reporting period, MDS data from October 1, 2022 through December 31, 2023 were extracted.
3) Identify discharged/deceased residents using the following criteria:
    a) If a resident has an MDS Discharge assessment or Death in Facility tracking record, use the date reported on that assessment and assume that the resident no longer resides in the nursing home as of the date of discharge/death on the last assessment. In the case of discharges, if there is a subsequent admission assessment, then assume that the resident re-entered the nursing home on the entry date indicated on the admission assessment.
    b) For any resident with an interval of 150 days or more with no MDS assessments, assume the resident no longer resides in the nursing home as of the 150th day from the last assessment. (This assumption is based on the requirement for facilities to complete MDS assessments on all residents at least quarterly). If no assessment is present, it is assumed the resident was discharged, but the nursing home did not transmit a Discharge assessment.

For any particular date, residents whose assessments do not meet the criteria in #3 above prior to that date are assumed to reside in the nursing home. The PDPM nursing CMG assigned to those residents on their most recent assessments as of that date are used to determine the PDPM nursing CMG distribution for that nursing home on that date. The calculations of “case-mix”, “reported”, and “national average” hours are made separately for RNs and for all nursing staff (both for the full week and for weekends). Adjusted hours are also calculated for both groups using the formula provided earlier in this section.

A downloadable file that contains the “case-mix”, “reported” and “adjusted" hours used in the staffing calculations is included in the nursing home provider information data table available in the Provider Data Catalog on CMS.gov (https://data.cms.gov/provider-data/).

Table A4
PDPM Nursing Case-Mix Indexes by Nursing CMG

Nursing CMG	Nursing CMI
ES3	3.84
ES2	2.90
ES1	2.77
HDE2	2.27
HDE1	1.88

HBC2	2.12
HBC1	1.76
LDE2	1.97
LDE1	1.64
LBC2	1.63
LBC1	1.35
CDE2	1.77
CDE1	1.53
CBC2	1.47
CA2	1.03
CBC1	1.27
CA1	0.89
BAB2	0.98
BAB1	0.94
PDE2	1.48
PDE1	1.39
PBC2	1.15
PA2	0.67
PBC1	1.07
PA1	0.62

Source: Fiscal Year 2024 SNF PPS Final Rule (https://www.federalregister.gov/documents/2023/08/07/2023-16249/medicare-program-prospective-payment-system-and-consolidated-billing-for-skilled-nursing-facilities)