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

Technical Users' Guide

January 2017

Note: In July 2016, the Centers for Medicare & Medicaid Services (CMS) made several changes to the quality measure (QM) domain of the Five Star Nursing Home Quality Rating System. These include the addition of five new measures and several methodological changes. The new measures are:

- ***Percentage of short-stay residents who were successfully discharged to the community (claims-based)***
- ***Percentage of short-stay residents who have had an outpatient emergency department visit (claims-based)***
- ***Percentage of short-stay residents who were re-hospitalized after a nursing home admission (claims-based)***
- ***Percentage of short-stay residents who made improvements in function (MDS-based)***
- ***Percentage of long-stay residents whose ability to move independently worsened (MDS-based)***

These measures greatly expand the number of short-stay measures used on Nursing Home Compare and add important domains not covered by other measures. The five new QMs will be phased in between July 2016 and January 2017. As of January 2017, the five QMs incorporated into the rating in July 2016 have the same weight as the other eleven QMs.

The methodological changes introduced in July include:

- ***Using four quarters of data rather than three for determining QM ratings.***
- ***Reducing the minimum denominator for all measures (short-stay, long-stay, and claims-based) to 20 summed across four quarters.***
- ***Revising the imputation methodology for QMs with low denominators meeting specific criteria. A facility's own available data will be used and the state average will be used to reach the minimum denominator.***
- ***Using national cut points for assigning points for the ADL QM rather than state-specific thresholds.***

These changes are described in more detail in the Quality Measure Domain section of this document.

Introduction

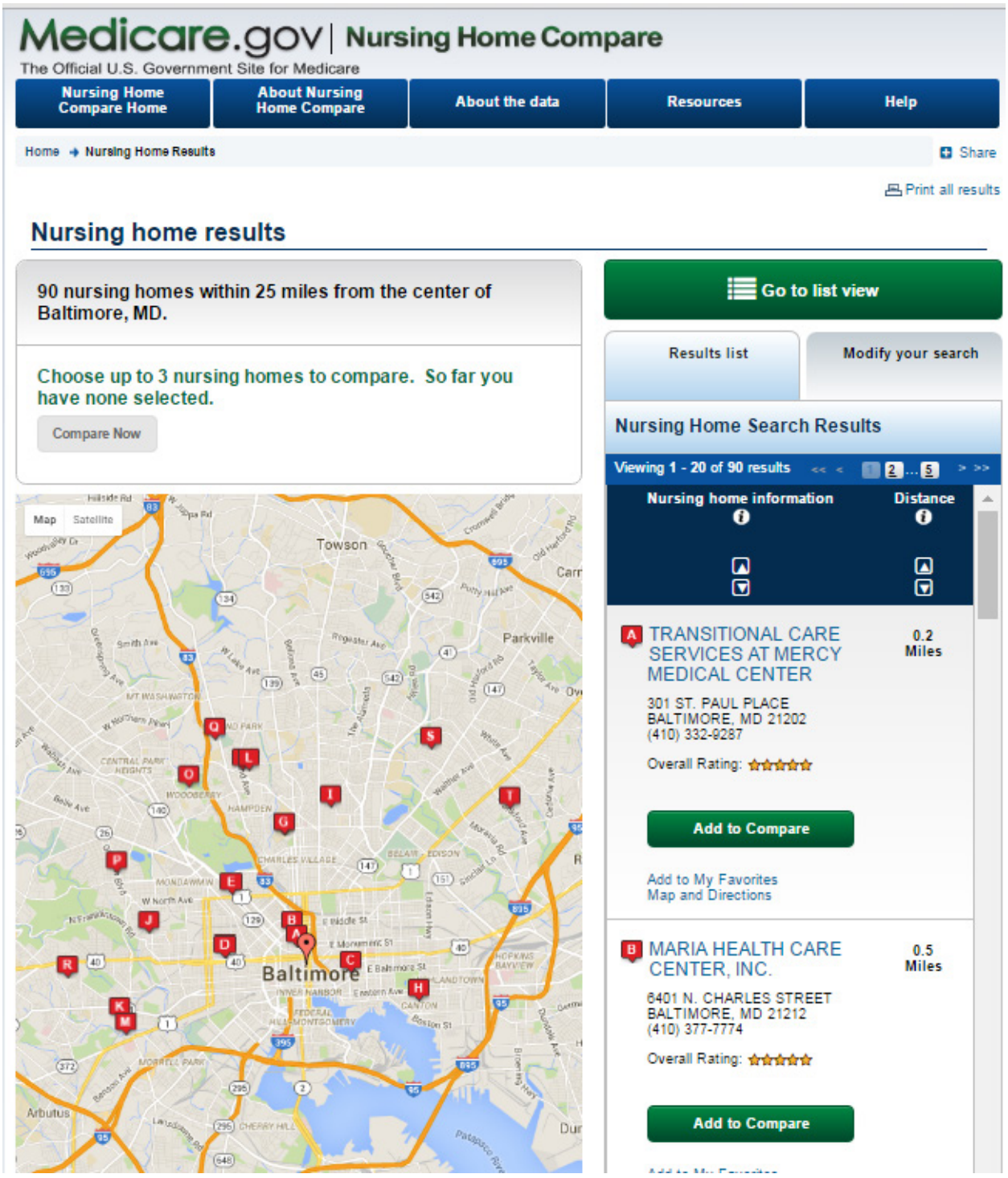
In December 2008, The Centers for Medicare & Medicaid Services (CMS) enhanced its *Nursing Home Compare* public reporting site to include a set of quality ratings for each nursing home that participates in Medicare or Medicaid. The ratings take the form of several "star" ratings for each nursing home. 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 Compare* 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 Five-Star Quality Rating System continues to offer valuable and comprehensible information to consumers based on the best data currently available. The rating system features an Overall Quality Rating of one to five stars based on facility performance for three types of measures, each of which has its own five-star rating:

- ***Health Inspections - Measures based on outcomes from State health inspections:*** Facility ratings for the health inspection 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. All deficiency findings are weighted by scope and severity. This measure also takes into account the number of revisits required to ensure that deficiencies identified during the health inspection survey have been corrected.
- ***Staffing - Measures based on nursing home staffing levels:*** Facility ratings on the staffing domain are based on two measures: 1) Registered nurse (RN) hours per resident day; and 2) total staffing hours (RN+ licensed practical nurse (LPN) + nurse aide hours) per resident day. Other types of nursing home staff such as clerical or housekeeping staff are not included in these staffing numbers. These staffing measures are derived from the CMS Certification and Survey Provider Enhanced Reports (CASPER) system, and are case-mix adjusted based on the distribution of Minimum Data Set, Version 3.0 (MDS 3.0) assessments by Resource utilization groups, version III (RUG-III) group.
- ***QMs - Measures based on MDS and claims-based quality measures (QMs):*** Facility ratings for the quality measures are based on performance on 16 of the 24 QMs that are currently posted on the *Nursing Home Compare* web site, and that are based on MDS 3.0 assessments as well as hospital and emergency department claims. These include nine long-stay measures and seven short-stay measures.

In recognition of the multi-dimensional nature of nursing home quality, *Nursing Home Compare* displays information on facility ratings for each of these domains alongside the overall performance rating. Further, in addition to the overall staffing five-star rating mentioned above, a five-star rating for RN staffing is also displayed separately on the Nursing Home Compare website, when users seek more information on the staffing component.

An example of the rating information included on *Nursing Home Compare* is shown in the figure below. Users of the web site can drill down on each domain to obtain additional details on facility performance.



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 star ratings included in the health inspection. The data table in the companion document will be updated monthly. Cut points for the staffing ratings have been fixed and do not vary

monthly. Data tables giving the cut points for the staffing ratings are included in Tables 4 and 5 in this Technical Users' Guide.

Methodology for Constructing the 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, and any repeat revisits needed to verify that required corrections have brought the facility back into compliance. The Five-Star Quality Rating System uses more than 200,000 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.

- ***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. Deficiencies from Life Safety surveys are not included in calculations for the Five-Star rating. Deficiencies from Federal Comparative Surveys are not reported on *Nursing Home Compare* or included in *Five Star* 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.

CMS calculates a total health inspection score for each facility. The total score is calculated as the facility's weighted deficiency score (including any repeat revisit points). 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 surveys are weighted more heavily than earlier surveys with the most recent period (cycle 1) being assigned a weighting factor of 1/2, the previous period (cycle 2) having a weighting factor of 1/3, and the second prior survey (cycle 3) having a weighting factor of 1/6. The individual weighted time period scores are then summed to create the total weighted survey score for each facility.

Complaint inspections are assigned to a time period based on the most recent 12 month period in which the complaint survey occurred. Complaint inspections that occurred within the most recent 12 months preceding the current web site update date 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. Points from complaint deficiencies 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. Specifically, when there are only two recertification inspections, the most recent receives 60 percent weight and the prior receives 40 percent weight. Facilities with only one standard health inspection are considered not to have sufficient data to determine a health inspection rating and are set to missing for the health inspection domain. For these facilities, no composite rating is assigned and no ratings are reported for the staffing or QM domains even if these ratings are available.

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 if the requirement which is not met is one that falls under the following federal regulations: 42 CFR 483.13 resident behavior and nursing home practices, 42 CFR 483.15 quality of life, 42 CFR 483.25 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.

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% 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 outcome.

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.

Cut points 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 that results in one or more deficiency citations;
- A second, third, or fourth revisit;
- Resolution of an 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 deficiencies. Specifically, as noted above, complaint surveys are assigned to a time period based on the most recent 12 month period in which the complaint survey occurred; thus, when a complaint deficiency 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.

Staffing Domain

There is considerable evidence of a relationship between nursing home staffing levels and resident outcomes. The CMS Staffing Study found a clear association between nurse staffing ratios and nursing home quality of care, identifying specific ratios of staff to residents below which residents are at substantially higher risk of quality problems.[1]

The rating for staffing is based on two case-mix adjusted measures:

1. Total nursing hours per resident day (RN + LPN + nurse aide hours)
2. RN hours per resident day

The source document for the reported staffing hours is the CMS form CMS-671 (Long Term Care Facility Application for Medicare and Medicaid) obtained from CASPER. The resident census is based on the count of total residents from the CMS form CMS-672 (Resident Census and Conditions of Residents). The specific fields that are used in the RN, LPN, and nurse aide hours calculations are:

- RN hours: Includes registered nurses (tag number F41 on the CMS-671 form), RN director of nursing (F39), and nurses with administrative duties (F40).

[1] 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.

- LPN hours: Includes licensed practical/licensed vocational nurses (F42)
- Nurse aide hours: Includes certified nurse aides (F43), aides in training (F44), and medication aides/technicians (F45)

Note that the CASPER staffing data include both facility employees (full time and part time) and individuals under an organization (agency) contract or an individual contract. The CASPER 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. The staffing hours reported on the CMS-671 form are for the residents in the Medicare- and/or Medicaid-certified beds only.

CMS uses a set of exclusion criteria to identify facilities with highly improbable CASPER staffing data, and neither staffing data nor a staffing rating are reported for these facilities (displaying "Data Not Available" on the Nursing Home Compare website).

The resident census, used in the denominator of the staffing calculations uses data reported in block F78 of the CMS-672 form. This includes the total number of residents in Medicare- and/or Medicaid-certified beds and the number for whom a bed is being maintained on the day the nursing home survey begins (bed-holds). Bed-holds typically involve residents temporarily away in a hospital or on leave. The CMS-671 form separately collects hours for full-time, part-time, and contract staff. These hours are converted to full-time equivalents (FTE), which are summed across full time, part time, and contract staff and converted to hours per resident per day (HRD) as follows:

$$\textbf{HRD = total hours for each nursing discipline/resident census/14 days}$$

This calculation is done separately for RNs, LPNs, and Nurse Aides as described above, and all three of these are summed to calculate total nursing hours.

Case-Mix Adjustment

CMS adjusts the reported staffing ratios for case-mix, using Resource Utilization Group (RUG-III) case-mix system. The CMS Staff Time Measurement Studies recorded the number of RN, LPN, and nurse aide minutes associated with each RUG-III group (using the 53 group version of RUG-III). CMS calculates case-mix adjusted hours per resident day for each facility for each staff type using this formula:

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

where $\text{Hours}_{\text{National Average}}$ is the mean across all facilities of the reported hours per resident day for a given staff type. The expected values are based on the distribution of residents by RUG-III group in the quarter closest to the date of the most recent standard survey (when the staffing data were collected) and measures of the expected RN, LPN, and nurse aide hours that are based on data from the CMS 1995 and 1997 Staff Time Measurement Studies (see Table A1). The distribution of residents by RUG-III group is determined using the most recent MDS assessment for current residents of the nursing home on the last day of the quarter.

The data used in the RUG calculations are based on a summary of MDS information for residents currently in the nursing home. The MDS assessment information for each active nursing home resident is consolidated to create a profile of the most recent standard information for the resident. An active resident is defined as a resident who, on the last day of the quarter, has no discharge assessment and whose most recent MDS transaction is less than 180 days old (this allows for 93 days between quarterly assessments,

plus time for completion and submission of the assessments). The active resident information can represent a composite of items taken from the most recent OBRA-required and Scheduled-PPS assessments. Different items may come from different assessments. The intention is to create a profile with the most recent standard information for an active resident, regardless of source of information. These data are used to place each resident in a RUG category.

For the Five-Star rating, a "draw" of the most recent RUG category distribution data is done for every nursing facility on the last business day of the last month of each quarter. The Five-Star rating makes use of the distribution for the quarter in which the staffing data were collected. For each facility, a "target" date that is seven days prior to the most recent standard survey date is assigned. The rationale for this target is that the staffing data reported for CASPER covers the two-week period prior to the survey, with seven days being the midpoint of that interval. If RUG data are available for the facility for the quarter containing that survey "target" date, that quarter of RUG data is used for the case mix adjustment. In instances when the quarter of RUG data containing the survey target date is not available for a given facility, the quarter of available RUG data that is closest to that target date - either before or after – is selected. Closest is defined as having the smallest absolute value for the difference between the survey target date and the midpoint of the available RUG quarter(s). If the RUG data for the quarter in which the survey was conducted becomes available subsequently, the staffing rating will be recalculated to reflect these more appropriate data, and this might change the staffing rating. The staffing rating calculated using staffing data and RUG data from the same quarter will be held constant for a nursing home until new staffing data are collected for the facility.

Expected hours are calculated by summing the nursing times in minutes (from the CMS Time Study found in Appendix Table A1) connected to each RUG category across all residents in the category and across all categories. The total minutes are then divided by the number of residents included in the calculations. The number of minutes per resident is converted to hours by dividing by 60. The result is the "expected" number of hours per resident day for each nursing category.

The "reported" hours are those reported by the facility on the CMS-671 form from the most recent standard survey, while the "national average" hours (shown in Table 3) represent the unadjusted national mean of the reported hours across all facilities for December, 2011.

Table 3
National Average Hours per Resident Day Used To Calculate Adjusted Staffing (as of April 2012)

Type of staff	National average hours per resident per day
Total nursing staff (Aides + LPNs + RNs)	4.0309
Registered nurses	0.7472

The calculations of "expected", "reported", and "national average" hours are performed separately for RNs and for all staff delivering nursing care (RNs, LPNs, and CNAs). Adjusted hours are also calculated for both groups using the formula discussed earlier in this section.

A downloadable file that contains the "expected", "reported" and "case-mix adjusted" hours used in the staffing calculations is available at: http://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandComplianc/FSQRS.html. The file, referred to as the "Expected and Adjusted Staff Time Values Data Set," contains data for both RNs and total staff for each individual nursing home.

Scoring Rules

The two staffing measures (RN and total nursing staff) are given equal weight. For each of RN staffing and total staffing, a 1 to 5 rating is assigned based on a percentile-based method (where percentiles are based on the distribution for freestanding facilities[2]) (Table 4). For each facility, the overall staffing rating is assigned based on the combination of the two staffing ratings (Table 5).

The percentile cut points (data boundaries between each star category) were determined using the data available as of December 2011. This was the first update of the cut points since December 2008 and was necessary because of changes in the expected staffing due to MDS 3.0. The cut points were set so that the changes in expected staffing due to MDS 3.0 would not impact the overall distribution of the five-star ratings; that is, they were selected so that the proportion of nursing homes in each rating category would initially (i.e. for April 2012) be the same as it was in December 2011. CMS will evaluate whether further rebasing is needed on an annual basis. A major advantage of using fixed cut-points is that it allows the distribution of staffing ratings to change over time. Nursing homes that seek to improve their staffing rating, for example, can ascertain the increased levels at which they would earn a higher star rating for the staffing domain.

Table 4

National Star Cut Points for Staffing Measures, Based on Case-Mix Adjusted Hours per Resident Day (updated April 2012)

Staff type	1 star	2 stars lower	2 stars upper	3 stars lower	3 stars upper	4 stars lower	4 stars upper	5 stars
RN	< 0.283	≥0.283	< 0.379	≥0.379	< 0.513	≥0.513	< 0.710	≥0.710
Total	< 3.262	≥3.262	< 3.661	≥3.661	< 4.173	≥4.173	< 4.418	≥4.418

Note: Adjusted staffing values are rounded to three decimal places before the cut points are applied.

Rating Methodology

Facility ratings for overall staffing are based on the combination of RN and total nurse (RNs, LPNs, and CNAs) staffing ratings as shown in Table 5. To receive an overall staffing rating of five stars, facilities must achieve a rating of five stars for both RN and total staffing. To receive a four-star staffing rating, facilities must receive at least a three-star rating on one (either the RN or total nurse staffing) and a rating of four or five stars on the other.

[2] The distribution for freestanding facilities was used because of concerns about the reliability of staffing data for some hospital-based facilities.

Table 5

Staffing Points and Rating (updated February 2015)

RN rating and hours		Total nurse staffing rating and hours (RN, LPN and nurse aide)				
		1	2	3	4	5
		<3.262	3.262 – 3.660	3.661 – 4.172	4.173 – 4.417	≥4.418
1	<0.283	★	★	★★	★★	★★★
2	0.283 – 0.378	★	★★	★★★	★★★	★★★
3	0.379 – 0.512	★★	★★★	★★★	★★★★	★★★★
4	0.513 – 0.709	★★	★★★	★★★★	★★★★	★★★★
5	≥0.710	★★★	★★★	★★★★	★★★★	★★★★★

Note: Adjusted staffing values are rounded to three decimal places before the cut points are applied.

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. The facility rating for the QM domain is based on its performance on a subset of 13 (out of 24) of the MDS-based QMs and three MDS- and Medicare claims-based measures currently posted on Nursing Home Compare. The measures were selected based on their validity and reliability, the extent to which facility practice may affect the measure, statistical performance, and importance. Five additional measures (indicated below) were added to the Five-Star rating system in July 2016.

Measures for Long-Stay residents (residents in the facility for greater than 100 days) that are derived from MDS assessments:

- Percentage of residents whose need for help with activities of daily living has increased
- **(ADDED JULY 2016):** Percentage of residents whose ability to move independently worsened
- Percentage of high risk residents with pressure ulcers (sores)
- Percentage of residents who have/had a catheter inserted and left in their bladder
- Percentage of residents who were physically restrained
- Percentage of residents with a urinary tract infection
- Percentage of residents who self-report moderate to severe pain
- Percentage of residents experiencing one or more falls with major injury
- Percentage of residents who received an antipsychotic medication

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

- **(ADDED JULY 2016):** Percentage of residents whose physical function improves from admission to discharge

- Percentage of residents with pressure ulcers (sores) that are new or worsened
- Percentage of residents who self-report moderate to severe pain
- Percentage of residents who newly received an antipsychotic medication

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

- **(ADDED JULY 2016):** Percentage of residents who were re-hospitalized after a nursing home admission
- **(ADDED JULY 2016):** Percentage of residents who have had an outpatient emergency department visit
- **(ADDED JULY 2016):** Percentage of residents who were successfully discharged to the community

Table 6 contains more detailed information on these measures. Technical specifications for the complete set of MDS-based QMs are available at: https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/Downloads/MDS-30-QM-Users-Manual-V10.pdf Technical specifications for the claims-based measures are available at: https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandComplianc/Downloads/New-Measures-Technical-Specifications-DRAFT-04-05-16-.pdf.

Values for five of the MDS-based QMs (mobility decline, catheter, long-stay pain, short-stay functional improvement, and short-stay pressure ulcers) 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. Additionally, all three of the claims-based measures are also risk adjusted using both items from Medicare Part A claims that preceded the start of the nursing home stay and information from the first MDS assessment associated with the nursing home stay.

The risk-adjustment methodology is described in more detail in the technical specification documents referenced above. The covariates and the coefficients used in the risk-adjustment models are reported in Table A-2 in the Appendix.

CMS calculates ratings for the QM domain using the **four** most recent quarters for which data are available. This time period specification was 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 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 three claims-based measures are calculated in a similar manner, except that the data used to calculate the measures use a full year of data rather than being broken out separately by quarter.

Table 6 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 percent 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 activities of daily living has increased[1]	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 dependence in ADLs.
Percentage of high-risk residents with pressure ulcers	This measure captures the percentage of long-stay, high-risk residents with Stage II-IV 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 who were physically restrained	This measure reports the percentage of long-stay residents who are physically restrained on a daily basis. A resident who is restrained daily can become weak, lose his or her ability to go to the bathroom without help, and develop pressure ulcers or other medical complications.
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 who self-report moderate to severe pain	This measure captures the percentage of long-stay residents who report either (1) almost constant or frequent moderate to severe pain in the last five days or (2) any very severe/horrible pain in the last 5 days.
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 received 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.
MDS Short-Stay Measures	
Percentage of residents whose physical function improves from admission to discharge	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 residents with pressure ulcers that are new or worsened	This measure captures the percentage of short-stay residents with new or worsening Stage II-IV pressure ulcers.
Percentage of residents who self-report moderate to severe pain	This measure captures the percentage of short-stay residents, with at least one episode of moderate/severe pain or horrible/excruciating pain of any frequency, in the last 5 days.

Table 6 Quality Measures Used in the Five-Star Quality Measure Rating Calculation	
Measure	**Comments**
Percentage of residents who newly received an antipsychotic medication	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 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.
Percentage of short-stay residents who were successfully discharged to the community	This measure reports the percentage of all new admissions to a nursing home from a hospital where the resident was discharged to the community within 100 calendar days of entry and for 30 subsequent days, did not die, was not admitted to a hospital for an unplanned inpatient stay, and was not readmitted to a nursing home.

[1]Indicates ADL QM as referenced in scoring rules
Sources: Based on information from the AHRQ Measures Clearinghouse and the NHVBP Draft Design Report and the MDS 3.0 Quality Measures User's Manual.

Missing Data and Imputation

Consistent with the specifications used for *Nursing Home Compare,* 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 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 facility are used. The remaining assessments (or stays) are imputed to get the facility to the minimum required sample size of 20. For example, if a facility 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 to include the measure in the scoring for the QM rating. Missing values are imputed based on the statewide average for the measure. 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 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 seven short-stay QMs (including at least one of the three claims-based measures), values are imputed for the short-stay measures with smaller denominators as described above. Points are then assigned for all seven short-stay QMs according to the scoring rules described below.
- For facilities with adequate denominator sizes on four or fewer long-stay QMs, the QM rating is based on the short-stay measures only. Values for the missing long-stay QMs are not imputed, and no long-stay measures are used in determining the QM rating.

- Similarly, for facilities with adequate denominator sizes for three or fewer short-stay QMs or no claims-based QMs, the QM rating is based on the long-stay measures only. Values for the missing short-stay QMs are not imputed, and no short-stay measures are used in determining the QM rating. One exception to this is for a small number of nursing homes that have adequate denominators for all four of the MDS-based short-stay measures but none of the claims-based measures. For these nursing homes, values are not imputed for the claims-based measures; however, the points assigned for the MDS-based short-stay measures are used in generating the QM rating according to the scoring rules described below.

Scoring Rules for the Individual QMs

For each measure, 20 to 100 points (50 points for the new QMs in July 2016) are assigned based on facility performance relative to the national distribution of the QM. Points are assigned after any needed imputation of individual QM values, with the points determined in the following way:

- For long-stay ADL worsening, long-stay pressure ulcers, long-stay catheter, long-stay urinary tract infections, long-stay pain, long-stay injurious falls, and short-stay pain: facilities are grouped into quintiles based on the national distribution of the QM. The quintiles are assigned 20 points for the poorest performing quintile, 100 points for the best performing quintile, and 40, 60 or 80 points for the second, third and fourth quintiles respectively.
- The **long-stay physical restraint** and **short-stay pressure ulcer** QMs are treated slightly differently because they have low prevalence – specifically, substantially more than 20 percent (i.e. a quintile) of nursing homes have zero percent rates on these measures.
    - For the **long-stay physical restraint** QM, facilities achieving the best possible score on the QM (i.e. zero percent of residents triggering the QM) are assigned 100 points; this is about 60 percent of facilities (or three quintiles). The remaining facilities are divided into two evenly sized groups, (each with about 20 percent of nursing homes); the poorer performing group is assigned 20 points, and the better performing group is assigned 60 points.
    - The **short-stay pressure ulcer** QM is treated similarly: facilities achieving the best possible score on the QM (i.e. zero percent of residents triggering the QM) are assigned 100 points; this is about one-third of nursing homes. The remaining facilities are divided into three evenly sized groups, (each with about 23 percent of nursing homes) and assigned 25, 50 or 75 points.
- For measures that were added to the QM rating beginning in February 2015, the following scoring rules use used:
    - For the **long-stay antipsychotic medication**, **long-stay mobility decline**, **short-stay functional improvement**, and the **three claims-based measures**, facilities are divided into five groups based on the national distribution of the measure. The top-performing 10 percent of facilities receive 100 points; the poorest performing 20 percent of facilities receive 20 points; the middle 70 percent of facilities are divided into three equally sized groups (each including approximately 23.3 percent of nursing homes) and receive 40, 60 or 80 points.
    - The **short-stay antipsychotic medication** QM is treated similarly; however, because approximately 20 percent of facilities achieve the best possible score on this QM (i.e. zero percent of residents triggering the QM), these facilities all receive 100 points; the

poorest performing 20 percent of facilities receive 20 points; the remaining facilities are divided into three equally sized groups (each including approximately 20 percent of nursing homes) and receive 40, 60 or 80 points.

Note that, for all of the measures, the groupings are based on the national distribution of the QMs, prior to any imputation. For each of the MDS-derived QMs, the cut points are based on the QM distributions averaged across the four quarters of 2015. For the claims-based QMs, the cut points are based on the national distribution of the measures calculated for the period of Quarter 3 of 2014 through Quarter 2 of 2015.

Rating Methodology

After any needed imputation for individual QMs, the points are summed across all QMs based upon the scoring rules above to create a total score for each facility. The total possible score ranges between 325 and 1,600 in January 2017.

Facilities that receive a 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 the nine long-stay QMs and the 4 MDS-based short-stay QMs
- They have points for only the seven short-stay QMs (short-stay facilities)
- They have points for only the four MDS-based short-stay QMs
- No values are imputed for nursing homes with data on fewer than five long-stay QMs and fewer than four short-stay QMs. No QM rating is generated for these nursing homes.

To ensure that all facilities are scored on the same scale, the total score is rescaled for long and short-stay facilities:

- If the facility has data for only the nine long-stay measures, the average of these point values is assigned for each of the seven (missing) short-stay measures and the total score is recalculated.
- If the facility has data for the nine long-stay QMs and the four MDS-based short-stay QMs but not the claims-based QMs, the average of the point values for the MDS-based short-stay QMs is assigned for each of the three (missing) claims-based measures and the total score is recalculated.
- If the facility has data for only the seven short-stay measures, the average of these point values is assigned for each of the nine (missing) long-stay measures and the total score is recalculated.
- If the facility has data for only the four MDS-based short stay QMs, but none of the long-stay QMs or the claims-based QMs, the average of the point values for the MDS-based short-stay QMs is assigned for each of the nine (missing) long-stay measures and each of the three (missing) claims-based measures and the total score is recalculated.

Once the summary QM score is computed for each facility as described above, the five-star QM rating is assigned, according to the point thresholds shown in Table 7. These thresholds were set so that the overall proportion of nursing homes would be approximately 25 percent five-star, 20 percent for each of two-, three-, and four-star and 15 percent one-star, which was the distribution in February 2015 (the previous time that new measures were added and rebasing was required). The cut points associated with these star

ratings will be held constant for a period of one year (from January 2017), allowing the distribution of the QM rating to change over time.

Table 7
Star Cut-points for Quality Measure Summary Score
(updated January 2017)

QM Rating	Point Range July 2016	Point Range January 2017
★	275 – 669	325 – 789
★★	670 – 759	790 – 889
★★★	760 – 829	890 – 969
★★★★	830 – 904	970 – 1054
★★★★★	905 – 1350	1055 – 1600

Overall Nursing Home Rating (Composite Measure)

Based on the star ratings for the health inspection domain, the staffing domain and the MDS 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 four or five stars ***and greater than*** the health inspection rating; 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. If the nursing home is a Special Focus Facility (SFF) that has not graduated, the maximum overall rating is three stars.

The rationale for upgrading facilities in Step 2 that receive a rating of four of five stars for staffing (rather than limiting the upgrade to those with five stars) is that the criteria for the staffing rating is quite stringent. However, requiring that the staffing rating be greater than the health inspection rating in order for the score to be upgraded ensures that a facility with four stars on health inspections and four stars on staffing (and more than one star on the quality measure rating) does not receive an overall rating of five stars.

The rationale for limiting star rating upgrades is that two self-reported data domains should not significantly outweigh the rating from actual onsite visits from trained surveyors who 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 rationale for limiting the overall rating of a Special Focus Facility (SFF) is that the health inspection rating is weighted toward more recent results and may not fully capture the long history of "yo-yo" or "in and out" of compliance with federal safety and quality of care requirements that some nursing homes exhibit. That type of history can be characteristic of the SFF nursing homes. The Nursing Home Compare web site should reflect the most recent data available so consumers can monitor facility performance, however, the overall rating will be capped out of caution that the prior "yo-yo" pattern could be repeated. Once a facility graduates from the SFF initiative by sustaining improved compliance for about 12 months, the cap will be removed for the former SFF nursing home.

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, but, depending on the performance on the staffing and QM domains, the overall rating for a facility may be increased or decreased by up to two stars.

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

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.

Provided below are some potential reasons that a change in a domain could occur:

New Data for the Facility

Any new data for a facility could potentially change a star rating domain.

Events that could change the health inspection score include:

- A new health inspection,
- New complaint deficiencies,
- A second, third, or fourth revisit,
- Resolution of an Informal Dispute Resolutions (IDR) or Independent Informal Dispute Resolutions (IIDR) resulting in changes to the scope and/or severity of deficiencies, or
- The "aging" of complaint deficiencies.

The 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.

Another reason the health inspection data (and therefore the rating) for a facility may change is the "aging" of one or more complaint deficiencies. Specifically, complaint investigations are assigned to a time period based on the most recent 12 month period in which the complaint investigation occurred. Thus, when a complaint 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.

CASPER staffing data are collected at the time of the health inspection, so new staffing data will be added for a facility approximately annually. The case-mix adjustment for the staffing data is based on MDS assessment data for the current residents of the nursing home on the last day of the quarter in which the staffing data were collected (i.e. the quarter closest to the standard survey date). If the RUG data for the quarter in which the staffing data were collected are not available for a given facility, the quarter of available RUG data closest to the survey target date - either before or after – is selected. If the RUG data for the quarter in which the survey was conducted becomes available subsequently, the staffing rating will be recalculated to reflect these more appropriate data, and this might change the staffing rating. The staffing rating calculated using staffing data and RUG data from the same quarter will be held constant for a nursing home until new staffing data are collected for the facility.

Quality Measure data for the MDS-based QMs are updated on Nursing Home Compare on a quarterly basis, and the nursing home QM rating is updated at the same time. The updates occur mid-month in January, April, July, and October. The claims-based QM data will update every six months (in April and October). Changes in the quality measures may change the star rating.

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 facility 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 facility.

Appendix

Table A1
RUG Based Case-Mix Adjusted Nurse and Aide Staffing Minute Estimates

1995-1997 Time Study Average Times (Minutes)					
RUG-53	Resident Specific Time + Non-Resident Specific Time Minutes				
Group	STAFF TYPE				Total Minutes
	RN	LPN	Nurse Total	AIDE	All Staff Types
REHAB & EXTENSIVE					
RUX	160.67	84.89	245.56	200.67	446.22
RUL	127.90	59.19	187.10	134.57	321.67
RVX	137.28	58.33	195.61	167.54	363.15
RVL	128.93	47.75	176.67	124.30	300.97
RHX	130.42	48.69	179.12	155.39	334.50
RHL	117.25	69.00	186.25	127.00	313.25
RMX	163.88	91.36	255.24	195.76	450.99
RML	166.61	62.68	229.29	147.07	376.36
RLX	116.87	55.13	172.00	132.63	304.63
REHABILITATION					
REHAB ULTRA HIGH					
RUC	100.75	46.03	146.78	174.86	321.64
RUB	84.12	34.94	119.06	123.13	242.19
RUA	64.98	39.49	104.47	97.91	202.38
REHAB VERY HIGH					
RVC	93.31	50.21	143.52	163.59	307.10
RVB	85.90	42.54	128.44	138.37	266.81
RVA	72.04	26.53	98.56	103.49	202.05
REHAB HIGH					
RHC	94.85	45.04	139.89	166.48	306.37
RHB	100.85	34.80	135.65	130.40	266.05
RHA	89.76	27.51	117.27	102.59	219.85
REHAB MEDIUM					
RMC	78.01	49.35	127.37	172.16	299.53
RMB	88.69	38.05	126.73	140.23	266.96
RMA	94.15	34.41	128.55	116.54	245.10
REHAB LOW					
RLB	69.38	46.52	115.91	196.33	312.24
RLA	60.88	33.02	93.89	124.29	218.18

Table A1 RUG Based Case-Mix Adjusted Nurse and Aide Staffing Minute Estimates					
1995-1997 Time Study Average Times (Minutes)					
RUG-53	Resident Specific Time + Non-Resident Specific Time Minutes				
Group	STAFF TYPE				Total Minutes
	RN	LPN	Nurse Total	AIDE	All Staff Types
EXTENSIVE					
SE3	143.56	101.33	244.89	193.50	438.39
SE2	108.52	86.06	194.58	163.54	358.12
SE1	80.79	57.68	138.47	191.79	330.26
SPECIAL					
SSC	72.9	64.3	137.20	184.1	321.30
SSB	70.9	55.0	125.90	172.4	298.30
SSA	91.7	41.7	133.40	130.4	263.80
CLINICALLY COMPLEX					
CC2	85.2	42.50	127.70	191.1	318.80
CC1	55.7	57.70	113.40	176.9	290.30
CB2	61.5	41.80	103.30	159.0	262.30
CB1	59.0	36.20	95.20	147.3	242.50
CA2	58.8	43.30	102.10	130.3	232.40
CA1	59.7	37.60	97.30	103.3	200.60
IMPAIRED COGNITION					
IB2	40.0	32.0	72.00	137.2	209.20
IB1	39.0	32.0	71.00	130.0	201.00
IA2	38.0	27.0	65.00	100.0	165.00
IA1	33.0	26.0	59.00	96.0	155.00
BEHAVIOR					
BB2	40.0	30.0	70.00	136.0	206.00
BB1	38.0	28.0	66.00	130.0	196.00
BA2	38.0	30.0	68.00	90.0	158.00
BA1	34.0	25.0	59.00	73.5	132.50

Table A1
RUG Based Case-Mix Adjusted Nurse and Aide Staffing Minute Estimates

1995-1997 Time Study Average Times (Minutes)					
RUG-53	**Resident Specific Time + Non-Resident Specific Time Minutes**				
Group	**STAFF TYPE**				**Total Minutes**
	RN	**LPN**	**Nurse Total**	**AIDE**	**All Staff Types**
PHYSICAL FUNCTION					
PE2	37.0	32.0	69.00	184.8	253.80
PE1	37.0	29.4	66.40	181.6	248.00
PD2	36.0	25.0	61.00	170.0	231.00
PD1	36.0	27.6	63.60	160.0	223.60
PC2	25.6	32.8	58.40	154.4	212.80
PC1	45.1	20.6	65.70	124.2	189.90
PB2	28.0	36.8	64.80	80.6	145.40
PB1	27.5	27.7	55.20	93.9	149.10
PA2	31.9	30.6	62.50	72.9	135.40
PA1	28.2	29.8	58.00	72.8	130.80

Table A2
Coefficients for Risk-Adjustment Model

Quality Measure/Covariate	Constant (Intercept)	Coefficient
Percentage of long-stay residents who had a catheter inserted and left in their bladder	-3.645993	
1. Indicator of frequent bowel incontinence on prior assessment		0.545108
2. Indicator of pressure sores at stages II, III, or IV on prior assessment		1.967017
Percentage of long-stay residents who self-report moderate to severe pain	-2.428281	
1. Indicator of independence or modified independence in daily decision making on the prior assessment		1.044019
Percentage of short-stay residents with pressure ulcers that are new or worsened	-5.204646	
1. Indicator of requiring limited or more assistance in bed mobility on the initial assessment		1.013114
2. Indicator of bowel incontinence at least occasionally on initial assessment		0.835473
3. Indicator of diabetes or peripheral vascular disease on the initial assessment		0.412676
4. Indicator of low body mass index on the initial assessment		0.373643

Source: http://www.cms.hhs.gov/NursingHomeQualityInits/Downloads/NHQIQMUsersManual.pdf

Table A3
Ranges for Point Values for Quality Measures, Using Four Quarter Average Distributions[1, 4]

Quality measure	For QM values		Number of QM points is…[2]	
	between...	and...	July 2016	January 2017
ADL Decline (long-stay)	0.00000000	0.10049021	100	100
	0.10049022	0.13483145	80	80
	0.13483146	0.16778523	60	60
	0.16778524	0.20794393	40	40
	0.20794394	1.00000000	20	20
Moderate to Severe Pain (long-stay)	0.00000000	0.02201134	100	100
	0.02201135	0.04988420	80	80
	0.04988421	0.08311380	60	60
	0.08311381	0.13081113	40	40
	0.13081114	1.00000000	20	20
High risk pressure Ulcers (long-stay)	0.00000000	0.02654868	100	100
	0.02654869	0.04453437	80	80
	0.04453438	0.06181819	60	60
	0.06181820	0.08633095	40	40
	0.08633096	1.00000000	20	20
Catheter (long-Stay)	0.00000000	0.01073927	100	100
	0.01073928	0.02094371	80	80
	0.02094372	0.03178361	60	60
	0.03178362	0.04745521	40	40
	0.04745522	1.00000000	20	20
Urinary Tract Infection (long-stay)	0.00000000	0.01851851	100	100
	0.01851852	0.03423682	80	80
	0.03423683	0.05128203	60	60
	0.05128204	0.07598784	40	40
	0.07598785	1.00000000	20	20
Physical Restraints (long-stay)	0.00000000	0.00000000	100	100
	0.00000001	0.01424503	60	60
	0.01424504	1.00000000	20	20

Quality measure	For QM values		Number of QM points is…[2]	
	between...	and...	July 2016	January 2017
Injurious Falls (long-stay)	0.00000000	0.01315789	100	100
	0.01315790	0.02403848	80	80
	0.02403849	0.03511052	60	60
	0.03511053	0.05035973	40	40
	0.05035974	1.00000000	20	20
Antipsychotic Meds (long-stay)	0.00000000	0.06843265	100	100
	0.06843266	0.12704916	80	80
	0.12704917	0.17391305	60	60
	0.17391306	0.23979592	40	40
	0.23979593	1.00000000	20	20
Moderate to Severe Pain (short-stay)	0.00000000	0.07359305	100	100
	0.07359306	0.13229570	80	80
	0.13229571	0.18827161	60	60
	0.18827162	0.26041665	40	40
	0.26041666	1.00000000	20	20
New or Worsening Pressure Ulcers (short-stay)	0.00000000	0.00000000	100	100
	0.00000001	0.00692691	75	75
	0.00692692	0.01566247	50	50
	0.01566248	1.00000000	25	25
Antipsychotic Meds (short-stay)	0.00000000	0.00000000	100	100
	0.00000001	0.00999998	80	80
	0.00999999	0.01912567	60	60
	0.01912568	0.03486237	40	40
	0.03486238	1.00000000	20	20
Mobility decline (long-stay)[3]	0.00000000	0.08022493	50	100
	0.08022494	0.14454544	40	80
	0.14454545	0.19333225	30	60
	0.19333226	0.24905966	20	40
	0.24905967	1.00000000	10	20

Quality measure	For QM values		Number of QM points is…[2]	
	between...	and...	July 2016	January 2017
Functional Improvement (short-stay)[3]	0.81666872	1.00000000	50	100
	0.70966590	0.81666871	40	80
	0.62861965	0.70966589	30	60
	0.52015014	0.62861964	20	40
	0.00000000	0.52015013	10	20
Hospital readmission (short-stay)[3]	0.00000000	0.13839278	50	100
	0.13839279	0.18716279	40	80
	0.18716280	0.21886203	30	60
	0.21886204	0.25689121	20	40
	0.25689122	1.00000000	10	20
ED Visits (short-stay)[3]	0.00000000	0.05488714	50	100
	0.05488715	0.08944665	40	80
	0.08944666	0.11696705	30	60
	0.11696706	0.15529003	20	40
	0.15529004	1.00000000	10	20
Successful community discharge (short-stay)[3]	0.66448731	1.00000000	50	100
	0.59926791	0.66448730	40	80
	0.54906047	0.59926790	30	60
	0.47667646	0.54906046	20	40
	0.00000000	0.47667645	10	20

[1]For the claims-based measures (hospital readmission, ED visit, community discharge), points are based on data from 2014Q3 – 2015Q2. For the MDS-based measures (all others), points are based on data from 2015Q1 – 2015Q4. A higher QM value corresponds to better performance for all measures except functional improvement and successful community discharge where lower QM values correspond to better performance.

[2]The five new QMs (functional improvement, mobility decline, hospital readmission, ED visit, and community discharge) are being phased into the QM rating. In July 2016 each contributed half the points of the other measures. In January 2017, the thresholds will remain the same but the points associated with each will double.

[3]Indicates one of the five new QMs as of July 2016 contributing half the points of the other 11 QMs. Starting in January 2017, the new QMs will contribute the same number of points as the other measures.

[4]Thresholds for three quality measures were slightly changed on July 20, 2016 to correct errors in the earlier version of the TUG that was published on July 7, 2016. The thresholds that appeared in the July 7, 2016 version of the TUG were never used to calculate ratings that were publicly reported.