

**Design for Nursing Home Compare 5-Star  
Rating System:  
Users Guide**

**December 2008**



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# Introduction

The Centers for Medicare & Medicaid Services (CMS) is enhancing its Nursing Home Compare public reporting site to include several “star” ratings for each nursing home. The primary goal in launching 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.

The purpose of this document is to provide a comprehensive description of the design for the Nursing Home Compare Five-Star Rating System. This design was developed based on weekly discussions with the CMS Long-Term Care Task Force, input from the project’s Technical Expert Panel (TEP), and extensive data analysis. The initial version of the rating system will include an overall 5-star rating that is based on facility performance on three types of performance measures, each of which will also have its own associated 5-star rating:

- ***Measures based on outcomes from state survey inspections:*** Facility ratings for the survey domain will be based on a count of the number of deficiencies, with deficiencies weighted by scope and severity and the number of revisits required to ensure that major deficiencies are corrected.
- ***Measures based on nursing home staffing levels:*** Facility ratings on the staffing domain will be based on two measures: RN hours per resident day and total staffing hours (RN, LPN, nurse aide) per resident day. Other types of nursing home staff such as clerical, administrative, or housekeeping staff are not included in these staffing numbers. These staffing measures are derived from the CMS Online Survey and Certification Reporting (OSCAR) system and will be case mix adjusted based on the distribution of MDS assessments by RUG-III group.
- ***Measures based on MDS quality measures (QMs):*** Facility ratings for the quality measures will be based on performance on a subset of 10 QMs that are posted on the Nursing Home Compare web site. These include 7 long-stay measures and 3 short-stay measures.

In recognition of the multi-dimensional nature of nursing home quality, Nursing Home Compare will display information on facility ratings on each of these domains alongside the overall performance rating. Further, in addition to the overall staffing 5-star rating mentioned above, a 5-star rating for RN staffing will also be displayed on the new NH 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. Note that users of the web site will be able to drill down on each domain to get additional details on facility performance.



**Nursing Home Compare** [NHC Home](#) | [Help](#) | [Glossary](#) | [Resources](#)

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**Step 2 - Choose Nursing Home to Compare** [Print this page](#)

<b>Search Results</b>	<b>Quality of Care Ratings</b>	<b>Your Search Criteria</b>
There are 4 Nursing Homes in <b>Virginia</b> .  Select up to 3 Nursing Homes from the results table below and select the "Compare" button to compare your selections in more detail.	The number of stars shows how well the nursing homes perform.  <b>Much Above Average</b> ★★★★★ <b>Above Average</b> ★★★★☆ <b>Average</b> ★★★☆☆ <b>Below Average</b> ★★☆☆☆ <b>Much Below Average</b> ★☆☆☆☆	You have selected the following criteria for your search:  <b>State:</b> Virginia • <a href="#">Modify Search</a> • <a href="#">New Search</a>

There are **261** nursing homes available in Virginia. Select one or more Nursing Homes, up to 3 in total, then click "Compare".

**Icon Legend** ● **Facilities with Poor Survey Performance** - Special Focus Facility: This nursing home has a record of persistently poor survey performance, and has been selected for more frequent inspections and monitoring. To learn more, visit <http://www.cms.hhs.gov> website.

Choose up to 3 Facilities to <input type="button" value="Compare"/>		Sort Table By: Overall Ratings <input type="button" value="Sort"/>							
Facility Name and General Information	Overall Ratings	Quality Measures	Health Inspections	Staffing	Program Participation	Total Number of Certified Beds	Type of Ownership	Continuing Care Retirement Community	
	<a href="#">What is this?</a>	<a href="#">What is this?</a>	<a href="#">What is this?</a>	<a href="#">What is this?</a>				<a href="#">What is this?</a>	
<input type="checkbox"/> <b>Basic Spring</b> 5755 East Main Street Fairfax, VA 22031 (555) 555-0988  <i>Located in a Hospital                      Resident &amp; Family                      Councils: Both</i>	★★★★★ 5 Stars	★★★★☆ 4 Stars	★★★★★ 5 Stars	★★★★☆ 4 Stars	Medicare and Medicaid	100	For Profit - Corporation	Yes	
<input type="checkbox"/> <b>Lakefront View</b> 1980 West Pecos Road Fairfax, VA 22031 (555) 555-0988  <i>Resident &amp; Family                      Councils: Both</i>	★★★★☆ 4 Stars	★★★★☆ 4 Stars	★★★☆☆ 3 Stars	★★★★☆ 4 Stars	Medicare and Medicaid	93	Non Profit - Corporation	Yes	
<input type="checkbox"/> <b>Glencrest Gardens</b> 2012 West Southern Ave Fairfax, VA 22031 (555) 555-0988  <i>Resident &amp; Family                      Councils: Both</i>	★★★☆☆ 3 Stars	★★★☆☆ 3 Stars	★★★☆☆ 3 Stars	★★★☆☆ 3 Stars	Medicare and Medicaid	89	Non Profit - Corporation	No	
<input type="checkbox"/> <b>Holton Mills</b> <span style="color: orange;">●</span> 2750 Lee Highway Fairfax, VA 22031 (555) 555-0988  <i>Resident &amp; Family                      Councils: Resident</i>	★★☆☆☆ 2 Stars	★★☆☆☆ 2 Stars	★★☆☆☆ 2 Stars	★☆☆☆☆ 1 Star	Medicare	69	For Profit - Corporation	No	

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# Methodology

## Survey Domain

### Scoring Rules

Scoring rules are based on a slightly modified version of the CMS Special Focus Facility (SFF) Algorithm (Tables 1 and 2). CMS developed this algorithm for identifying nursing homes with a history of serious problems that are candidates for its SFF program. To select candidates for the SFF program, CMS references each active provider's current standard survey and two prior surveys as well as three years of complaints.

- **Survey deficiencies:** Points are assigned to individual health citations according to their scope and severity – more points are assigned for more serious, widespread deficiencies, fewer points for less serious, isolated deficiencies (see Table 1). If the citation generates a finding of substandard quality of care, additional points are assigned. Note that the points associated with different scope/severity combinations have been changed slightly to increase the relative importance of D-I level deficiencies.
- **Number of revisits required to confirm correction of deficiencies at scope and severity level F or greater:** Points are assigned for the second, third, and fourth revisits (Table 2). If a provider fails to correct major deficiencies at the time of the first revisit, then these additional revisit points are assigned. There are no points for the first revisit and the points increase to 100 for the fourth revisit.

We calculate a total survey score for facilities based on their deficiencies and revisits. Note that a lower survey score corresponds to fewer deficiencies and revisits and thus better performance on the survey domain. In calculating the total survey score, more recent surveys are weighted more heavily than earlier surveys. The most recent period is assigned a weighting factor of 1/2, the previous period has a weighting factor of 1/3, and the second prior survey has a weighting factor of 1/6. The weighted time period scores are then summed to create the survey score for each facility.

For facilities missing data for one period, the survey 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 surveys. Specifically, when there are only 2 standard health surveys, the most recent will receive 60% weight and the prior will receive 40% weight. Facilities with only one standard survey are considered not to have sufficient data to determine a survey rating and are set to missing for the survey domain. For these facilities, no composite rating will be assigned and no ratings will be reported for the staffing or QM domains even if these are available.

**Table 1**  
**Survey Deficiency Score: Weights for Different Types of Deficiencies**

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

Source: Centers for Medicare & Medicaid Services

**Table 2**  
**CMS Special Focus Facility Algorithm: Weights for Different Types of Deficiencies**

Revisit Number	Noncompliance Points
First	0
Second	50 points
Third	75 additional points
Fourth	100 additional points

### Rating Methodology

Facility ratings on the survey domain are based on the relative performance of facilities within a state. This approach helps to control for variation between state surveys and regulatory systems. Facility ratings are determined using these criteria:

- The top 10 percent (lowest 10 percent in terms of survey deficiency score) in each state receive a 5-star rating.
- 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.

This distribution is based on discussions with CMS and the Project’s TEP. The cut points will be re-set each month so that the distribution of star ratings within states remains fixed over time. This is to reduce the likelihood that the rating process will affect the survey process. As a consequence,

however, it is possible for a facility's rating to change from month to month even without a new survey in that facility because of new surveys in other facilities that affect the statewide distribution. Note that three U.S. territories (Guam, Puerto Rico, and the Virgin Islands) have fewer than 5 facilities upon which to generate the cutpoints. For facilities in these territories, the national distribution is used. Cutpoints for the data that will be displayed when the 5-star website becomes active (based on data reported to CMS as of 11/4/2008) are shown in the Appendix (Table A1).

## Staffing Domain

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

- Total nursing hours per resident day (RN, LPN, and nurse aide)
- RN hours per resident day

The source data for the staffing measures is OSCAR. The data are subject to the same exclusion criteria as is currently used on Nursing Home Compare. These are intended to exclude facilities with unreliable OSCAR staffing data and exclude facilities with outlier staffing levels (less than 1.5 or more than 12 total nursing hours per resident day, facilities with large changes in reported staffing levels over time, and facilities that appear to report incomplete resident census information.)<sup>1</sup> Note that the OSCAR staffing data include both facility employees and contracted staffing agency hours. Consistent with the specifications on Nursing Home Compare, the RN measure includes hours for RN directors of nursing and nurses with administrative duties. Nurse aide hours include nurse aides in training and medication aides.

### Case Mix Adjustment

The measures are adjusted for case mix differences based on the Resource Utilization Group (RUG-III) case-mix system. We used data from the CMS Staff Time Measurement Studies to measure the number of RN, LPN, and nurse aide minutes associated with each RUG-III group (using the 53 group version of RUG-III)<sup>2</sup>. Case- mix adjusted measures of hours per resident day were calculated for each facility for each staff type using this formula:

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

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 average case-mix across four quarters of RUG III data.

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<sup>1</sup> The resident census information in OSCAR is based on residents in certified beds and may not include residents in non-certified beds.

<sup>2</sup> Note that we expect to use a case mix index based on the Staff Time and Resource Intensity Verification (STRIVE) study once these data are available. STRIVE is a national staff time measurement study that will provide data and analysis to update the Medicare Skilled Nursing Facility Prospective Payment System (SNF PPS).

## Scoring Rules

The two staffing measures are given equal weight. For each of RN staffing and total staffing, a 1 to 5 rating is assigned based on a combination of the percentile-based method (where percentiles are based on the distribution for freestanding facilities<sup>3</sup>) and staffing thresholds identified in the CMS staffing study (Table 3)<sup>4</sup>. For each facility, we assign a total staffing score that is based on the combination of the two staffing ratings (Table 4). The percentile cut points will be determined using the most recent data available at the time that the Nursing Home Compare 5-star website goes live. The cut points will be held constant for an initial two-year period after which CMS will review results. The advantage of fixed cut-points is that it better tracks facility improvement (or decline) over time.

**Table 3:  
Scoring Method and Thresholds<sup>1</sup> for Proposed Staffing Measures**

Rating	Definition	Range (adjusted hours per resident day)	
		RN	Total
1	<25 <sup>th</sup> percentile of distribution for freestanding facilities	<0.220	<2.946
2	at least 25 <sup>th</sup> percentile but less than median of the distribution for freestanding facilities	0.220-0.297	2.946-3.316
3	greater than or equal to the median but less than the 75 <sup>th</sup> percentile of the distribution for freestanding facilities	0.298-0.403	3.317 – 3.774
4	greater than or equal to the median of the distribution for freestanding facilities but less than the CMS staffing study threshold	0.404-0.549	3.775 – 4.079
5	at or exceeding the thresholds identified in the CMS staffing study <sup>2</sup>	≥ 0.550	≥ 4.080

<sup>1</sup>Except for the top cut point (to achieve a 5-star rating), the cut points shown are based on the distribution in the test data. The cutpoints that will be used at the time public reporting begins are based on data reported to CMS as of 11/4/2008, are shown in the Appendix (Table A2), and will be maintained at that fixed baseline level for two years.

<sup>2</sup>Note that the 0.55 RN threshold was identified for potentially avoidable hospitalizations (short-stay measures); the 4.08 threshold is the sum of the NA (2.78) and licensed staff (1.30) threshold for long-stay measures.

## Rating Methodology

Facility rating for overall staffing is based on the combination of RN and total staffing (RNs, LPNs, LVNs, CNAs) ratings as shown in Table 4. To receive a 5-star rating, facilities must meet both RN and total nursing thresholds from the CMS Staffing Study. Note that the columns 3 and 4 are identical as are rows 3 and 4.

<sup>3</sup> Note that we use the distribution for freestanding facilities because of concerns about the reliability of staffing data for some hospital-based facilities.

<sup>4</sup> 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.

**Table 4  
Staffing Points and Rating**

RN rating and hours		Total staffing rating and hours (RN, LPN and aide)				
		1	2	3	4	5
		<25 <sup>th</sup> pctl	≥25 <sup>th</sup> pctl, < median	≥ median, <75 <sup>th</sup> pctl	≥75 <sup>th</sup> pctl, < 4.08	≥ 4.08
1	<25 <sup>th</sup> pctl	★	★	★★	★★	★★★
2	≥25 <sup>th</sup> pctl, < median	★	★★	★★★	★★★★	★★★★★
3	≥ median, <75 <sup>th</sup> pctl	★★	★★★	★★★★	★★★★★	★★★★★
4	≥75 <sup>th</sup> pctl, < 0.55	★★	★★★	★★★★	★★★★★	★★★★★
5	≥ 0.55 hours	★★★	★★★★	★★★★★	★★★★★	★★★★★

## Quality Measure Domain

Facility rating for the QM domain is based on performance on a subset of ten of the measures posted on Nursing Home Compare. The measures were selected based on their validity and reliability, the extent to which the measure is under the facility’s control, statistical performance, and importance.

### Long-Stay Residents:

- Percent of residents whose need for help with daily activities has increased
- Percent of residents whose ability to move about in and around their room got worse
- Percent of high risk residents who have pressure sores
- Percent of residents who had a catheter inserted and left in their bladder
- Percent of residents who were physically restrained
- Percent of residents with urinary tract infection
- Percent of residents with moderate to severe pain

### Short-stay residents:

- Percent of residents with pressure sores
- Percent of residents with moderate to severe pain
- Percent of residents with delirium

The long-stay measures are similar to those used for the Nursing Home Value-Based Purchasing (NHVBP) demonstration except that NHVBP does not include the urinary tract infection measure or pain measure. Note that the two ADL-related long-stay measures (percent of residents whose need for help with daily activities has increased, percent of residents whose ability to move about in and around their room got worse) are incidence measures that are based on change across two MDS assessments. Table 5 contains more information on these measures.

Ratings for the QM domain will be calculated using the three 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, increasing the stability of estimates and reducing the amount of missing data.

**Table 5**  
**MDS-Based Quality Measures**

<b>Measure</b>	<b>Comments</b>
<b>Long-Stay Measures:</b>	
Percent of residents whose need for help with daily activities has increased <sup>1</sup>	This is a change measure that was endorsed by the National Quality Forum (NQF). Maintenance of ADLs is also 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 activities of daily living.
Percent of residents whose ability to move about in and around their room got worse <sup>1</sup>	This is a change measure that measures nursing home rules/practices related to use of mobility aides. Residents who lose mobility may also lose the ability to perform other activities of daily living, like eating, dressing, or getting to the bathroom.
Percent of high-risk residents who have pressure sores	The QM Validation Study identified a number of nursing home care practices that were associated with lower pressure sore prevalence rates including more frequent scheduling of assessments for suspicious skin areas, observations on the environmental assessment of residents, and care practices related to how the nursing home manages clinical, psychosocial, and nutritional complications.
Percent of residents who have/had a catheter inserted and left in their bladder	Using a catheter may result in complications, like urinary tract or blood infections, physical injury, skin problems, bladder stones, or blood in the urine.
Percent of residents who were physically restrained	A resident who is restrained daily can become weak, lose his or her ability to go to the bathroom by themselves, and develop pressure sores or other medical complications.
Percent of residents with urinary tract infection	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.
Percent of residents with moderate to severe pain	This measure examines whether patients are in moderate to severe pain every day over the last 7 days. Many nursing home residents have poorly controlled pain, and this pain can be managed by nursing homes through appropriate medications and other types of therapy. Poor pain management can have a significant impact on resident quality of life.
<b>Short-Stay Measures</b>	
Percent of residents with pressure sores	Pressure sores can lead to complications such as skin and bone infections.
Percent of residents with moderate to severe pain	This measure examines whether patients are in moderate to severe pain every day over the last 7 days. Many nursing home residents have poorly controlled pain, and this pain can be managed by nursing homes through appropriate medications and other types of therapy. Poor pain management can have a significant impact on resident quality of life.
Percent of residents with delirium	Delirium is not a normal part of aging and residents with delirium should receive emergency medical attention. Facility practices can help prevent delirium.

<sup>1</sup>Indicates ADL QMs as referenced in scoring rules

Sources: Based on information from the AHRQ Measures Clearinghouse and the NHVBP Draft Design Report

## Scoring Rules

Consistent with the specifications used for Nursing Home Compare, we will include long-stay measures if the measure can be calculated for at least 30 assessments (summed across three quarters of data to enhance stability). We will include the short-stay measures only if data are available for at least 20 assessments.

For each measure, points are assigned based on the facility quintile. Based on input from the project's TEP, performance on the two ADL-related measures is weighted 1.6667 times as high as the other measures. This higher weighting reflects the greater importance of these measures to many nursing home residents and ensures that the two ADL measures count for 40 percent of the overall weight on the long-stay measures. Table 6 shows the points assigned for each category for the ADL QMs and for the other QMs. The points are summed across all QMs to create a total score for each facility. Note that the total possible score ranges between 0 and 136 points.

Note that the percentiles are based on the national distribution for all of the QMs except for the two ADL measures, for which percentiles are set on a state-specific basis using the state distribution. For the ADL QMs, these cut points will be reset with each quarterly update of the QM data based on the state-specific distribution of these measures. For the other QMs, these cutpoints will remain fixed at the baseline national values for a period of two years. Note that the cut points are determined prior to any imputation for missing data (see discussion below). Also, the state-specific cut points for the ADL QMs are created for states/territories that have at least 5 facilities with a non-imputed value for that QM. In the rare case a state does not satisfy this criterion, we use the national distribution for that QM to set the cut points for that state. The cutpoints that will be used when public reporting begins are shown in the Appendix (Tables A4-A6).

	<b>ADL QMs</b>	<b>Other QMs</b>
<20 <sup>th</sup> percentile	20	12
20 <sup>th</sup> - <40 <sup>th</sup> percentile	15	9
40 <sup>th</sup> - <60 <sup>th</sup> percentile	10	6
60 <sup>th</sup> - <80 <sup>th</sup>	5	3
80 <sup>th</sup> percentile or greater	0	0

<sup>1</sup>Note that percentiles are determined on a statewide basis for ADL QMs and on a national basis for all other QMs.

## Missing Data and Imputation

Some facilities have missing data for one or more measure, usually because of an insufficient number of residents available for calculating the QM. Missing values are imputed based on the statewide average for the measure. The imputation strategy for these missing values depends on the pattern of missing data.

- For facilities that have data for at least four of the seven long-stay QMs, missing values will be imputed based on the statewide average for the measure. Points are assigned as shown in

Table 6, meaning that facilities will typically receive the middle number of points (10 for the ADL measures and 6 for the other measures) for QMs for which values are imputed.

- Similarly, for facilities that had data on at least 2 out of 3 post-acute QMs, missing values are imputed based on the state average for the QM and points are assigned as shown in Table 6.
- The QM rating for facilities with data on 3 or fewer long-stay QMs is based only on the short-stay measures. Mean values for the missing long-stay QMs are not imputed.
- Similarly, the QM rating for facilities with data with zero or 1 short-stay QM is based only on the long-stay measures. Mean values for the missing short-stay QMs are not imputed.

Based on these rules, after imputation, facilities will be in one of three categories:

- They will have points for all of the QMs.
- They will have points only for the 7 long-stay QMs (long-stay facilities).
- They will have points only for the 3 short-stay QMs (short-stay facilities)

So that all facilities will be scored on the same 136 point scale, points are rescaled for long and short-stay facilities:

- If the facility has data only for the three short-stay measures (total of 36 possible points), its score is multiplied by  $136/36$ .
- If the facility has data for only the seven long-stay measures (total of 100 possible points), its score is multiplied by  $136/100$ .

For states or territories with a small number of facilities, it may be impossible to impute the state average for a particular QM for which we would otherwise impute, because all the facilities in that state or territory are missing values for that QM. For example, a facility in the Virgin Islands may have information on all of its QMs except for “% Long stay residents with ADL worsening.” If no facility in the Virgin Islands has information on that QM then we cannot impute the state average. Instead we add up the points the facility earned for the 9 QMs it does report. Next, we divide by the total number of points (in this case, 116) it could have received for having those 9 QMs. Finally, we multiply by 136 points to calculate its adjusted number of points.

## **Rating Methodology**

Once the summary QM score is computed for each facility as described above, the 5-star QM rating is assigned based on the nationwide distribution of these scores, as follow:

- The top 10 percent receive a 5-star rating.
- The middle 70 percent of facilities receive a rating of two, three, or four stars, with an equal number (23.33 percent) in each rating category.

- The bottom 20 percent receive a one-star rating.

The cut points associated with these star ratings will be held constant for a period of two years, allowing the distribution of the QM rating to change over time. The cut points are shown in the Appendix (Table A7).

## Overall Nursing Home Rating (Composite Measure)

Based on the 5-star rating for the survey domain, the direct care staffing domain and the MDS quality measure domain, the overall 5-star rating is assigned in four steps as follows:

**Step 1:** Start with the survey deficiency 5-star rating.

**Step 2:** Add one star to the Step 1 result if staffing rating is 4 or 5 stars and greater than the deficiency rating; subtract 1 star if staffing is 1 star. The composite rating cannot be more than 5 stars or less than 1 star.

**Step 3:** Add one star to the Step 2 result if MDS rating is 5 stars; subtract 1 star if MDS rating is 1 star. The composite rating cannot be more than 5 stars or less than 1 star.

**Step 4:** If the rating after step 3 is 4 or 5 stars and the facility is a special focus facility that has not graduated, the overall rating is downgraded to 3 stars.

The rationale for upgrading facilities in step 2 that receive either a 4- or 5-star rating for staffing is the quite stringent criteria for the staffing rating. To earn 4 stars on the staffing measure, a facility must meet or exceed the CMS staffing study thresholds for RN or total staffing; to earn 5 stars on the staffing measure, a facility must meet or exceed the CMS staffing study thresholds for both RN and total staffing. However, requiring that the staffing rating be greater than the deficiency rating in order for the score to be upgraded ensures that a facility with 4 stars on deficiencies and 4 stars on staffing (and more than 1 star on MDS) will not receive a 5-star overall rating.

This method of determining the overall nursing home rating does not assign specific weights to the survey, staffing, and QM domains. The survey rating is the most important dimension in determining the overall rating, but, depending on their performance on the staffing and QM domains, a facility's overall rating may be up to two stars higher or lower than their survey rating.

If the facility has no survey deficiency rating, no overall rating will be assigned. If the facility has no survey deficiency rating because it is too new to have two standard surveys, no ratings for any domain will be displayed.

**Appendix:**  
**NH Compare: 5-star Nursing Home Ratings – Cutpoints Used in Construction of Ratings**

**Table A1. Star Cutpoints for Health Inspections - by State - (11-04-2008)<sup>1</sup>**

<b>State</b>	<b>1/2 star (80th %-ile)</b>	<b>2/3 star (56.66 %-ile)</b>	<b>3/4 star (33.33 %-ile)</b>	<b>4/5 star (10th %-ile)</b>	<b>Number of facilities</b>	<b>*=National Cutpoints Used<sup>2</sup></b>
Alaska	68.000	48.667	33.333	27.333	15	
Alabama	73.500	42.667	25.333	10.667	230	
Arkansas	165.333	102.667	70.333	39.000	230	
Arizona	97.333	56.000	36.667	18.667	132	
California	92.000	58.000	39.333	20.000	1247	
Colorado	113.333	78.667	51.333	22.000	210	
Connecticut	81.333	55.333	36.667	19.333	241	
District of Columbia	216.667	160.333	64.000	32.000	18	
Delaware	114.667	85.333	62.667	34.667	43	
Florida	82.667	55.333	38.667	20.000	678	
Georgia	68.000	37.667	23.333	10.000	358	
Guam	86.000	48.667	28.000	10.667	1	*
Hawaii	62.000	32.000	25.333	11.333	46	
Iowa	65.333	36.667	22.000	6.667	444	
Idaho	109.833	68.667	46.667	20.667	75	
Illinois	89.000	46.000	24.667	8.000	784	
Indiana	123.833	73.333	44.667	14.667	505	
Kansas	146.667	82.667	50.667	22.000	338	
Kentucky	74.667	35.333	20.000	8.667	287	
Louisiana	109.333	66.667	38.667	17.333	283	
Massachusetts	60.667	34.000	18.667	6.000	433	
Maryland	98.667	62.667	40.667	15.333	229	
Maine	84.000	44.667	29.333	10.667	112	
Michigan	110.667	75.333	48.333	24.000	417	
Minnesota	80.167	54.333	37.667	19.333	389	
Missouri	105.667	60.667	35.333	13.333	511	
Mississippi	75.333	40.000	21.333	8.000	200	
Montana	83.333	54.000	28.667	13.333	91	
North Carolina	50.667	27.333	15.333	6.667	419	
North Dakota	33.333	20.667	12.667	8.000	83	

**Table A1. Star Cutpoints for Health Inspections - by State - (11-04-2008)<sup>1</sup>**

<b>State</b>	<b>1/2 star (80th %-ile)</b>	<b>2/3 star (56.66 %-ile)</b>	<b>3/4 star (33.33 %-ile)</b>	<b>4/5 star (10th %-ile)</b>	<b>Number of facilities</b>	<b>*=National Cutpoints Used<sup>2</sup></b>
Nebraska	76.000	50.000	32.000	12.000	221	
New Hampshire	59.333	32.667	14.000	4.000	78	
New Jersey	69.333	35.333	22.000	7.333	361	
New Mexico	145.333	82.167	43.333	14.667	69	
Nevada	64.667	53.333	32.667	16.000	48	
New York	63.333	30.000	16.333	7.333	650	
Ohio	58.833	35.333	20.000	6.667	945	
Oklahoma	144.333	90.000	57.333	34.000	318	
Oregon	79.333	46.000	22.000	8.000	138	
Pennsylvania	56.000	31.333	17.333	8.000	705	
Puerto Rico	373.833	287.667	213.667	124.667	7	
Rhode Island	39.333	21.667	12.000	4.000	85	
South Carolina	82.333	44.000	25.333	11.333	175	
South Dakota	41.667	26.000	16.000	7.000	110	
Tennessee	72.667	41.333	24.000	12.000	317	
Texas	93.333	49.333	29.333	11.333	1108	
Utah	45.000	32.667	15.333	3.000	90	
Virginia	64.667	41.333	23.333	9.333	275	
Virgin Islands	86.000	48.667	28.000	10.667	1	*
Vermont	68.667	51.667	42.000	17.667	40	
Washington	100.667	54.000	28.667	10.667	237	
Wisconsin	74.333	39.333	22.000	7.333	388	
West Virginia	93.333	68.000	36.000	18.000	130	
Wyoming	108.667	79.333	60.000	25.333	39	

<sup>1</sup>Cutpoints for Health Inspection Scores used as follows: 5 stars:  $\leq 10^{\text{th}}$  percentile; 4 stars:  $>10^{\text{th}}$  percentile and  $\leq 33.33^{\text{rd}}$  percentile; 3 stars:  $>33.33^{\text{rd}}$  percentile and  $\leq 56.66^{\text{th}}$  percentile; 2 stars:  $>56.66^{\text{th}}$  percentile and  $\leq 80^{\text{th}}$  percentile; 1 star:  $>80^{\text{th}}$  percentile

<sup>2</sup>Cutpoints based on national distribution are used when fewer than 5 facilities in state/territory have data available

**Table A2. National Cutpoints for Staffing Measures (11-04-2008)<sup>1</sup>**

<b>Staff type</b>	<b>1/2 points (25th %-ile)</b>	<b>2/3 points (50th %-ile)</b>	<b>3/4 points (75th %-ile)</b>	<b>4/5 points (CMS staffing study)</b>
<b>RN</b>	0.222	0.298	0.402	0.550
<b>Total</b>	2.997	3.375	3.841	4.080

<sup>1</sup>Cutpoints for RN 5-star and Total staffing (RN,LPN, and CNA) used as follows based on case-mix adjusted hours per resident day: 5 points:  $\geq$  CMS staffing study threshold; 4 points:  $<$  CMS staffing study threshold and  $\geq 75^{\text{th}}$  percentile; 3 points:  $< 75^{\text{th}}$  percentile and  $\geq 50^{\text{th}}$  percentile (median); 2 points:  $< 50^{\text{th}}$  percentile and  $\geq 25^{\text{th}}$  percentile; 1 point:  $< 25^{\text{th}}$  percentile. The RN staffing 5-star is then simply assigned as 1 star per point. The overall Staffing (combined RN and total staffing) 5-star rating is constructed as shown in Table A3.

**Table A3. Assignment of Staffing 5-star Rating Based on RN and Total Staffing Ratings**

<b>RN rating and hours</b>		<b>Total staffing rating and hours (RN, LPN and aide)</b>				
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
		$< 25^{\text{th}}$ percentile	$\geq 25^{\text{th}}$ percentile and $<$ median	$\geq$ median and $< 75^{\text{th}}$ percentile	$\geq 75^{\text{th}}$ percentile and $<$ CMS staffing study threshold	$\geq$ CMS staffing study threshold
<b>1</b>	$< 25^{\text{th}}$ percentile	★	★	★★	★★	★★★
<b>2</b>	$\geq 25^{\text{th}}$ percentile & $<$ median	★	★★	★★★	★★★★	★★★★★
<b>3</b>	$\geq$ median & $< 75^{\text{th}}$ percentile	★★	★★★	★★★★	★★★★★	★★★★★
<b>4</b>	$\geq 75^{\text{th}}$ percentile & $<$ CMS staffing study threshold	★★	★★★	★★★★	★★★★★	★★★★★
<b>5</b>	$\geq$ CMS staffing study threshold	★★★	★★★★	★★★★★	★★★★★	★★★★★

**Table A4. National Quintile Cutpoints for Non-ADL QMs (11-04-2008)<sup>1</sup>**

<b>Quality Measure</b>	<b>20th %-ile</b>	<b>40th %-ile</b>	<b>60th %-ile</b>	<b>80th %-ile</b>
<b>LS: Moderate to Severe Pain</b>	0.02198	0.04294	0.06944	0.11364
<b>LS: High Risk Pressure Ulcers</b>	0.06623	0.09722	0.12745	0.16738
<b>LS: Indwelling Catheter</b>	0.02899	0.04808	0.06731	0.09325
<b>LS: Urinary Tract Infections</b>	0.05000	0.07458	0.09821	0.12844
<b>LS: Restraints</b>	0.00000	0.01493	0.03865	0.07813
<b>PA: Delirium</b>	0.00000	0.00806	0.02326	0.05128
<b>PA: Moderate to Severe Pain</b>	0.08537	0.14925	0.21429	0.30508
<b>PA: Pressure Ulcers</b>	0.10000	0.14474	0.18852	0.25000

LS = Long-stay; PA = Post-acute

<sup>1</sup>Quintiles for these cutpoints used to assign points towards the summary score as follows: 12 points:  $\leq 20^{\text{th}}$  percentile; 9 points:  $>20^{\text{th}}$  percentile and  $\leq 40^{\text{th}}$  percentile; 6 points:  $>40^{\text{th}}$  percentile and  $\leq 60^{\text{th}}$  percentile; 3 points:  $>60^{\text{th}}$  percentile and  $\leq 80^{\text{th}}$  percentile; 0 points:  $>80^{\text{th}}$  percentile.

**Table A5. Quintile Cutpoints for ADL QM Late Loss ADL Worsening (11-04-2008)**

<b>State</b>	<b>20th %-ile</b>	<b>40th %-ile</b>	<b>60th %-ile</b>	<b>80th %-ile</b>	<b>Number of facilities</b>	<b>*=National Cutpoints Used</b>
Alaska	0.08163	0.12717	0.14286	0.19167	11	
Alabama	0.07576	0.10180	0.12883	0.17241	223	
Arkansas	0.08333	0.11454	0.14689	0.19192	218	
Arizona	0.08571	0.11551	0.15789	0.21642	121	
California	0.05263	0.08264	0.11538	0.16667	1123	
Colorado	0.09524	0.13077	0.17355	0.22222	199	
Connecticut	0.11475	0.14378	0.18421	0.21930	237	
District of Columbia	0.08772	0.10337	0.15886	0.20952	17	
Delaware	0.11246	0.14745	0.17332	0.22768	40	
Florida	0.08416	0.10914	0.13636	0.17526	657	
Georgia	0.09554	0.12389	0.15615	0.20000	342	
Guam	0.08898	0.12340	0.15966	0.20767	0	*
Hawaii	0.06228	0.11111	0.16204	0.19903	38	
Iowa	0.09211	0.11594	0.14724	0.18333	422	
Idaho	0.09375	0.14286	0.17808	0.20388	69	
Illinois	0.08108	0.11782	0.14773	0.20175	718	
Indiana	0.16667	0.20661	0.24419	0.28727	476	
Kansas	0.09388	0.12685	0.16098	0.20145	325	
Kentucky	0.09700	0.14922	0.19389	0.23635	265	
Louisiana	0.13343	0.18547	0.22009	0.26327	265	
Massachusetts	0.10296	0.13052	0.15801	0.19221	420	
Maryland	0.09583	0.12757	0.15702	0.20245	217	
Maine	0.10370	0.13699	0.16667	0.20548	109	
Michigan	0.08295	0.11374	0.14634	0.19692	399	
Minnesota	0.10909	0.13636	0.16352	0.20219	382	
Missouri	0.07453	0.10497	0.13402	0.17582	484	
Mississippi	0.10040	0.13188	0.16445	0.21618	190	
Montana	0.10309	0.12766	0.17033	0.21196	84	
North Carolina	0.17031	0.20769	0.24306	0.28516	392	
North Dakota	0.12583	0.14961	0.18349	0.21111	79	
Nebraska	0.10610	0.14014	0.16909	0.21227	215	
New Hampshire	0.12397	0.15789	0.18644	0.23109	76	

**Table A5. Quintile Cutpoints for ADL QM Late Loss ADL Worsening (11-04-2008)**

State	20th %-ile	40th %-ile	60th %-ile	80th %-ile	Number of facilities	*=National Cutpoints Used
<b>New Jersey</b>	0.08197	0.10455	0.12782	0.15094	339	
<b>New Mexico</b>	0.12610	0.16578	0.20209	0.23850	65	
<b>Nevada</b>	0.16667	0.18919	0.22302	0.29630	43	
<b>New York</b>	0.07836	0.09790	0.12109	0.15517	639	
<b>Ohio</b>	0.08571	0.11881	0.15179	0.19048	907	
<b>Oklahoma</b>	0.06299	0.09155	0.11934	0.16129	303	
<b>Oregon</b>	0.04673	0.07821	0.10465	0.14035	134	
<b>Pennsylvania</b>	0.14417	0.18333	0.22051	0.26364	656	
<b>Puerto Rico</b>	0.08898	0.12340	0.15966	0.20767	0	*
<b>Rhode Island</b>	0.08487	0.11410	0.14412	0.17522	85	
<b>South Carolina</b>	0.07692	0.10695	0.14521	0.19079	163	
<b>South Dakota</b>	0.12316	0.14689	0.17963	0.20909	110	
<b>Tennessee</b>	0.08721	0.11364	0.14286	0.18421	298	
<b>Texas</b>	0.08898	0.12037	0.15254	0.19620	1042	
<b>Utah</b>	0.07303	0.11340	0.15079	0.20952	78	
<b>Virginia</b>	0.13149	0.16414	0.19786	0.24419	260	
<b>Virgin Islands</b>	0.08898	0.12340	0.15966	0.20767	1	*
<b>Vermont</b>	0.14863	0.17404	0.20942	0.25825	40	
<b>Washington</b>	0.08594	0.11047	0.14352	0.17949	226	
<b>Wisconsin</b>	0.09827	0.13061	0.16129	0.19580	377	
<b>West Virginia</b>	0.12821	0.16981	0.20313	0.26437	117	
<b>Wyoming</b>	0.11565	0.14414	0.16667	0.21693	36	

LS = Long-stay

<sup>1</sup>Quintiles for these cutpoints used to assign points towards the summary score as follows: 20 points:  $\leq 20^{\text{th}}$  percentile; 15 points:  $>20^{\text{th}}$  percentile and  $\leq 40^{\text{th}}$  percentile; 10 points:  $>40^{\text{th}}$  percentile and  $\leq 60^{\text{th}}$  percentile; 5 points:  $>60^{\text{th}}$  percentile and  $\leq 80^{\text{th}}$  percentile; 0 points:  $>80^{\text{th}}$  percentile.

**Table A6. Quintile Cutpoints for ADL QM Worsening Locomotion (11-04-2008)**

State	20th %-ile	40th %-ile	60th %-ile	80th %-ile	Number of facilities	*=National Cutpoints Used
Alaska	0.07527	0.11538	0.12057	0.19588	8	
Alabama	0.07813	0.10217	0.13081	0.16583	220	
Arkansas	0.07692	0.10638	0.13568	0.17143	217	
Arizona	0.08285	0.10965	0.14349	0.19936	115	
California	0.06061	0.09559	0.13393	0.18033	1087	
Colorado	0.07975	0.11594	0.16471	0.21622	198	
Connecticut	0.09677	0.13968	0.17568	0.21495	236	
District of Columbia	0.08434	0.09677	0.09890	0.13855	16	
Delaware	0.10969	0.15402	0.18462	0.22485	40	
Florida	0.07547	0.10360	0.12879	0.16532	646	
Georgia	0.08400	0.11754	0.14203	0.19210	340	
Guam	0.08143	0.11628	0.15152	0.20330	0	*
Hawaii	0.07000	0.14194	0.17931	0.21809	33	
Iowa	0.07752	0.11111	0.13559	0.17699	418	
Idaho	0.09259	0.14474	0.18182	0.22581	69	
Illinois	0.07143	0.11238	0.14676	0.18616	710	
Indiana	0.09920	0.14012	0.19093	0.24323	475	
Kansas	0.08197	0.12295	0.15254	0.19780	323	
Kentucky	0.08642	0.12302	0.16216	0.22807	252	
Louisiana	0.06786	0.08846	0.11765	0.14919	264	
Massachusetts	0.10938	0.14324	0.17773	0.21231	415	
Maryland	0.09574	0.13260	0.17127	0.23256	213	
Maine	0.15957	0.19565	0.22581	0.28846	107	
Michigan	0.08854	0.11888	0.14773	0.18987	391	
Minnesota	0.10849	0.13830	0.17005	0.20909	381	
Missouri	0.05970	0.09167	0.12000	0.15741	483	
Mississippi	0.08242	0.10812	0.13713	0.18608	190	
Montana	0.09859	0.13462	0.16568	0.21053	84	
North Carolina	0.09091	0.12903	0.17544	0.24413	386	
North Dakota	0.10448	0.14414	0.16923	0.20946	78	
Nebraska	0.10256	0.13478	0.17054	0.20513	212	
New Hampshire	0.12068	0.16273	0.19414	0.23146	75	

**Table A6. Quintile Cutpoints for ADL QM Worsening Locomotion (11-04-2008)**

State	20th %-ile	40th %-ile	60th %-ile	80th %-ile	Number of facilities	*=National Cutpoints Used
New Jersey	0.08000	0.10435	0.13402	0.16234	333	
New Mexico	0.10268	0.16279	0.19340	0.23780	64	
Nevada	0.12500	0.19469	0.24398	0.29592	42	
New York	0.08741	0.11321	0.13793	0.18325	633	
Ohio	0.08421	0.11561	0.15132	0.19355	902	
Oklahoma	0.04651	0.06883	0.09474	0.12950	302	
Oregon	0.06667	0.09091	0.11180	0.16049	129	
Pennsylvania	0.17701	0.22086	0.25294	0.31111	646	
Puerto Rico	0.08143	0.11628	0.15152	0.20330	0	*
Rhode Island	0.09459	0.11594	0.14027	0.15854	82	
South Carolina	0.09267	0.12156	0.14713	0.20000	160	
South Dakota	0.11056	0.13966	0.17084	0.20479	110	
Tennessee	0.08531	0.11123	0.13427	0.17331	295	
Texas	0.06195	0.09091	0.12121	0.16667	1032	
Utah	0.07407	0.10976	0.14516	0.21429	77	
Virginia	0.11966	0.15566	0.20679	0.25000	254	
Virgin Islands	0.08143	0.11628	0.15152	0.20330	1	*
Vermont	0.14963	0.19775	0.26078	0.28811	40	
Washington	0.09244	0.12579	0.16000	0.20455	222	
Wisconsin	0.09569	0.12299	0.15470	0.19444	376	
West Virginia	0.10112	0.14679	0.18421	0.22549	114	
Wyoming	0.10542	0.13159	0.16250	0.19315	35	

LS = Long-stay

<sup>1</sup>Quintiles for these cutpoints used to assign points towards the summary score as follows: 20 points:  $\leq 20^{\text{th}}$  percentile; 15 points:  $>20^{\text{th}}$  percentile and  $\leq 40^{\text{th}}$  percentile; 10 points:  $>40^{\text{th}}$  percentile and  $\leq 60^{\text{th}}$  percentile; 5 points:  $>60^{\text{th}}$  percentile and  $\leq 80^{\text{th}}$  percentile; 0 points:  $>80^{\text{th}}$  percentile.

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**Table A7. Star Cutpoints for MDS Quality Measure Summary Score (11-04-2008)**

<b>1/2 star</b> <b>20<sup>th</sup> percentile</b>	<b>2/3 star</b> <b>43.33<sup>rd</sup> percentile</b>	<b>3/4 star</b> <b>66.67<sup>th</sup> percentile</b>	<b>4/5 star</b> <b>(90<sup>th</sup> percentile)</b>
49	64	78	99

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<sup>1</sup>Cutpoints for MDS Quality Measure Scores (which have a 0-136 point range) used as follows: 5 stars:  $\geq 90^{\text{th}}$  percentile; 4 stars:  $<90^{\text{th}}$  percentile and  $\geq 66.67^{\text{th}}$  percentile; 3 stars:  $<66.67^{\text{th}}$  percentile and  $\geq 43.33^{\text{rd}}$  percentile; 2 stars:  $<43.33^{\text{rd}}$  percentile and  $\geq 20^{\text{th}}$  percentile; 1 star:  $<20^{\text{th}}$  percentile