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

Technical Users' Guide

July 2012

CMS

CENTERS for MEDICARE & MEDICAID SERVICES

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 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 project″s Technical Expert Panel (TEP), and countless ideas contributed by consumer and provider groups. All of these organizations and groups have continued to contribute their ideas as the system has been refined and updated to incorporate newly available data. We believe the Five-Star quality rating system on *Nursing Home Compare* continues to offer valuable and comprehensible information to consumers based on the best data currently available. The rating system features an overall five-star rating based on facility performance for three types of performance 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) RN hours per resident day; and 2) total staffing hours (RN+ LPN+ nurse aide hours) 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 CASPER Certification and Survey Provider Enhanced Reports (CASPER) system, and are case-mix adjusted based on the distribution of MDS 3.0 assessments by RUG-III group.

- *QMs - Measures based on MDS quality measures (QMs):* Facility ratings for the quality measures are based on performance on 9 of the 18 QMs that are currently posted on the *Nursing Home Compare* web site, and that are based on MDS 3.0 resident assessments. These include 7 long-stay measures and 2 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 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. 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 and for the QM ratings have been fixed and do not vary monthly. Data tables giving the cut points for those ratings are included in the Appendix of this Technical Users" Guide.

Methodology for Constructing the Ratings

Health Inspection Domain

Nursing homes that participate in the Medicare or Medicaid programs have an onsite standard ("comprehensive") survey annually *on average*, with very rarely more than fifteen months elapsing between surveys for any one particular nursing home. Surveys are unannounced and are conducted by a team of health care professionals. State survey teams spend several days in the nursing home to assess

whether the nursing home is in compliance with federal requirements. Certification surveys provide a comprehensive assessment of the nursing home, including assessment of such areas as medication management, proper skin care, assessment of resident needs, nursing home administration, environment, kitchen/food services, and resident rights and quality of life. Based on the most recent three standard surveys for each nursing home, results from any complaint investigations during the most recent three-year period, and any repeat revisits needed to verify that required corrections have brought the facility back into compliance, CMS" Five-Star quality rating system employs more than 200,000 records for the health inspection domain alone.

Scoring Rules

A health inspection score is calculated based on points assigned to deficiencies identified in each active provider"s current health inspection survey and the two prior surveys, as well as deficiency findings from the most recent three years of complaints information and survey revisits.

- *Health Inspection Results*: Points are assigned to individual health deficiencies according to their scope and severity – more points are assigned for more serious, widespread deficiencies, and fewer points for less serious, isolated deficiencies (see Table 1). If the deficiency generates a finding of substandard quality of care, additional points are assigned. 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 either.

- *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 (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 that 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.

We calculate a total health inspection score for facilities based on their weighted deficiencies and number of repeat revisits needed. 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 domain score, more recent surveys are weighted more heavily than earlier surveys; the most recent period (cycle 1) is assigned a weighting factor of 1/2, the previous period (cycle 2) has a weighting factor of 1/3, and the second prior survey (cycle 3) has a weighting factor of 1/6. The weighted time period scores are then summed to create the survey score for each facility.

Complaint surveys are assigned to a time period based on the calendar year in which the complaint survey occurred. Complaint surveys that occurred within the most recent 12 months 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 surveys. To avoid potential double-counting, deficiencies that appear on complaint surveys that are conducted within 15 days of a standard survey (either prior to or after the standard survey) are counted only once. If the scope or severity differs on the two surveys, 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 surveys. Specifically, when there are only two standard health surveys, 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 either the standard annual survey or complaint surveys during a given survey cycle.

Health inspections are based on federal regulations, national interpretive guidance, and a federally-specified survey process. Federal staff train State surveyors and oversee State performance. The federal oversight includes quality checks based on a 5% sample of the State surveys, in which federal surveyors either accompany State surveyors or replicate the survey within 60 days of the State and then compare results. These control systems are designed to optimize consistency in the survey process. Nonetheless there remains some variation between States. Such variation derives from many factors, including:

- *Survey Management:* Variation between States in the skill sets of surveyors, supervision of surveyors, and the survey 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. State nursing home eligibility rules, payment, and other policies in the State-administered Medicaid program create differences in both quality of care and enforcement of that quality.

For the above reasons, CMS‟ Five-Star quality ratings on the health inspection domain are based on the relative performance of facilities within a State. This approach helps to control for variation between States. Facility ratings are determined using these criteria:

- The top 10 percent (lowest 10 percent in terms of health inspection deficiency score) in each State receive a five-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 CMS experience and input from the Project‟s TEP. The cut points are re-calibrated each month so that the distribution of star ratings within States remains relatively constant over time in an effort to reduce the likelihood that the rating process affects the health inspection process. However, the rating for a given facility is held constant unless new health inspection data (for example,. a new health inspection survey, new complaint information or a 2nd, 3rd or 4th revisit) become available. Thus, a facility‟s rating will not change from month to month without new survey information from the facility, regardless of changes in the State wide distribution due to new surveys in other facilities.

In the rare case that a State or territory has fewer than 5 facilities upon which to generate the cut points, the national distribution is used. Cut points for the health inspection ratings are available in the companion document to this Technical Users‟ Guide: *Nursing Home Compare* – Five Star Quality Rating System: Technical Users‟ Guide – State-Level Cut Point Tables. The data can be found in CP Table 1.

Staffing Domain

There is considerable evidence of a relationship between nursing home staffing levels, staffing stability, 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 data for the staffing measures is CMS form CMS-671 (Long Term Care Facility Application for Medicare and Medicaid) from CASPER. The resident census is based on the count of total residents from 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).
- 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 who are reimbursed by a resident's family. Also not included are hospice staff and feeding assistants.

A set of exclusion criteria are used to identify facilities with unreliable CASPER staffing data, and neither staffing data nor a staffing rating are reported for these facilities. The exclusion criteria are intended to identify facilities with unreliable CASPER staffing data and facilities with outlier staffing levels.

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 residents in the nursing facility 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.

Case-mix Adjustment

The measures are adjusted for case-mix differences based on the Resource Utilization Group (RUG-III) case-mix system. Data from the CMS Staff Time Measurement Studies were used 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). Case- mix adjusted measures of hours per resident day were calculated for each facility for each staff type using this formula:

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

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[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.

where Hours$_{NationalAverage}$ 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, 14 days for completion, 31 days for submission after completion, and about one month grace period for late assessments). The active resident information can represent a composite of items taken from the most recent comprehensive, full, quarterly, PPS, and admission MDS 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 7 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 7 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).

Expected hours are calculated by summing the nursing times (from the CMS Time Study) connected to each RUG category across all residents in the category and across all categories. The hours are then divided by the number of residents included in the calculations. The result is the "expected" number of hours for the nursing home.

The "reported" hours are those reported by the facility on the CMS-671 form for their most recent survey, while the "national average" (shown in Table 3) hours represent the unadjusted national mean of the reported hours across all facilities for December, 2011. These national averages will be held constant for a two-year period, after which CMS will review this decision.

Table 3.

National average hours per resident day used in calculation of 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 calculation 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" and "reported" 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 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, a total staffing score 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 is the first update of the cut points since December 2008 and is necessary because of changes in the expected staffing due to MDS 3.0. The new 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. The new cut points will be held constant for another two-year period, after which CMS will review this decision. The advantage of fixed cut-points is that it better tracks facility improvement (or decline) over time. Nursing homes that seek to improve their staffing, for example, can ascertain the increased levels at which they would be afforded a higher star rating for the staffing domain.

Table 4
National Star Cut points for Staffing Measures (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 rating for overall staffing is based on the combination of RN and total nurse staffing (RNs, LPNs, LVNs, CNAs) ratings as shown in Table 4. To receive a five-star rating, facilities must meet or exceed the 5-star level for both RN and total staffing. Note that the columns 3 and 4 are identical as are rows 3 and 4, reflecting the equal weighting of the RN and total nurse staffing measures in the facility staffing rating.

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[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 April 2012)

RN rating and hours		Total staffing rating and hours (RN, LPN and 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**	1-star	1-star	2-stars	2-stars	3-stars
2	**0.283 – 0.378**	1-star	2-stars	3-stars	3-stars	4-stars
3	**0.379 – 0.512**	2-stars	3-stars	4-stars	4-stars	4-stars
4	**0.513 – 0.709**	2-stars	3-stars	4-stars	4-stars	4-stars
5	**≥0.710**	3-stars	4-stars	4-stars	4-stars	5-stars

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

Quality Measure Domain

A set of quality measures has been developed from Minimum Data Set (MDS)-based indicators to describe the quality of care provided in nursing homes. These measures address a broad range of functioning and health status in multiple care areas. The facility rating for the QM domain is based on performance on a subset of 9 (out of 18) of the QMs currently posted on Nursing Home Compare , and, as of July 2012, has been revised to accommodate the quality measures derived from MDS 3.0.   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 activities of daily living has increased
- Percent of high risk residents with pressure sores
- Percent of residents who have/had a catheter inserted and left in their bladder
- Percent of residents who were physically restrained
- Percent of residents with a urinary tract infection
- Percent of residents who self-report moderate to severe pain
- Percent of residents experiencing one or more falls with major injury

Short-stay residents:

- Percent of residents with pressure ulcers (sores) that are new or worsened
- Percent of residents who self-report moderate to severe pain

Table 6 contains more information on these measures. Technical specifications for the complete set of QMs are at: https://www.cms.gov/medicare/quality-initiatives-patient-assessment-instruments/nursinghomequalityinits/downloads/mds30qm-manual.pdf

Values for three of the QMs (catheter, the long-stay pain measure, and short-stay pressure ulcers) are risk adjusted, using resident-level covariates that adjust for factors associated with differences in the score for

the QM. For example, the catheter risk-adjustment model is based on an indicator of bowel incontinence or pressure sores on the prior assessment.   The risk-adjusted QM score is adjusted for the specific risk for that QM in the nursing facility. The risk-adjustment methodology is described in more detail in the Quality Measure Users Manual available on the CMS website referenced in the last paragraph. It is important to note that the regression models used in the risk adjustment are NOT refit each time the QMs are updated. It is assumed that the relationships do not change, so the coefficients from the most recent "fitting" of the model are used along with the most recent QM data. The covariates and the coefficients used in the risk-adjustment models are reported in Table A-2 in the Appendix.

Ratings for the QM domain are 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. The adjusted three-quarter QM values for each of the 9 QMs used in the 5-star algorithm are computed as follows:

$$QM_{3Quarter} = [(QM_{Q1} * D_{Q1}) + (QM_{Q2} * D_{Q2}) + (QM_{Q3} * D_{Q3})]/(D_{Q1} + D_{Q2} + D_{Q3})$$

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

Table 6

MDS-Based Quality Measures

Measure	Comments
Long-Stay Measures:	
Percent of residents whose need for help with daily activities has increased[1]	This measure reports the percent 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 2 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 activities of daily living.
Percent of high-risk residents with pressure ulcers	This measure captures the percentage of long-stay, high-risk residents with Stage II-IV pressure ulcers**.** High-risk residents for pressure sores are those who are impaired in bed mobility or transfer, who are comatose, or who suffer from malnutrition. 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	This measure reports the percentage of residents who have had an indwelling catheter in the last 7 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.
Percent of residents who were physically restrained	This measure reports the percent of long-stay nursing facility 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 sores or other medical complications.

Measure	Comments
Percent of residents with a urinary tract infection	This measure reports the percent of long-stay nursing facility 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.
Percent of residents who self-report moderate to severe pain	This measure captures the percent of long-stay residents who report either (1) almost constant or frequent moderate to severe pain in the last 5 days or (2) any very severe/horrible in the last 5 days.
Percent of residents experiencing one or more falls with major injury	This measure reports the percent of residents who experiences one or more falls with major injury (e.g., bone fractures, joint dislocations, closed head injuries with altered consciousness, or subdural hematoma) in the last year (12-month period)
Short-Stay Measures	
Percent of residents with pressure ulcers that are new or worsened	This measure captures the percentage of short-stay residents with new or worsening State II-IV pressure ulcers.
Percent of residents who self-report moderate to severe pain	This measure captures the percent 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.

[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.

Scoring Rules

Consistent with the specifications used for *Nursing Home Compare,* long-stay measures are included in the score if the measure can be calculated for at least 30 assessments (summed across three quarters of data to enhance measurement stability). Short-stay measures are included in the score only if data are available for at least 20 assessments.

For each measure, 1 to 100 points are assigned based on facility performance, with the points determined in the following way. Facilities achieving the best possible score on the QM (i.e. 0 % of residents triggering the QM) are assigned 100 points. The remaining facilities are assigned 1 to 99 points, based on national percentiles of the QM distribution for providers with values greater than 0%, with facilities in the poorest 1% receiving 1 point and facilities in the top 1% (of those with a non-zero value) scoring 99 points. All of the 9 QMs are given equal weight. The points are summed across all QMs to create a total score for each facility. Note that the total possible score ranges between 9 and 900 points.

Note that the percentiles are based on the national distribution for all of the QMs except for the ADL measure. For the ADL measure, deciles are set on a State -specific basis using the State distribution, with facilities assigned points in 10-point increments, based on their decile of performance, with 10 points assigned to the poorest performing decile and 100 points assigned to the top-performing decile, which includes facilities with 0% of residents showing ADL decline. The ADL measure is based on the within-State distribution because this measure appears to be more affected by case-mix variation, particularly influenced by differences in State Medicaid policies governing long term care.

Cut points for the QMs were set based on the QM distributions averaged across the second, third and fourth quarter of 2011 and will be maintained for a period of at least two years, after which CMS will review this decision. 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 State s/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, the national distribution for that QM is used to set the cut points for that State. The cut points for the QMs are shown in the Appendix (Tables A3-A12).

Missing Data and Imputation

Some facilities have missing data for one or more QM, 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 are imputed based on the statewide average for the measure. Points are then assigned according to the percentile-based cut points described above.

- Because there are only two short-stay measures included in the rating, values are not imputed for the short-stay QMs.

- The QM rating for facilities with data on three or fewer long-stay QMs is based on the short-stay measures only. Mean values for the missing long-stay QMs are not imputed.

- Similarly, the QM rating for facilities with data on zero or one short-stay QM is based on the long-stay measures only. Mean values for the missing short-stay QMs are not imputed.

Based on these rules, after imputation, facilities that receive a QM rating are in one of three categories:

- They have points for all of the QMs.
- They have points for only the 7 long-stay QMs (long-stay facilities).
- They have points for only the 2 short-stay QMs (short-stay facilities)
- No values are imputed for nursing homes with data on fewer than 4 long-stay QMs and fewer than 2 short-stay QMs. No QM rating is generated for these nursing homes.

So that all facilities are scored on the same 900 point scale, points are rescaled for long and short-stay facilities:

- If the facility has data for only the two short-stay measures (total of 200 possible points), its score is multiplied by 900/200.

- If the facility has data for only the seven long-stay measures (total of 700 possible points), its score is multiplied by 900/700.

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 a value would otherwise be imputed, 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 one. In this rare case, the points the facility earned for the 8 QMs it does report are summed, then divided by the total number of points (in this case, 800) the facility could have received for having those 8 QMs, and finally, multiplied by 900 points to calculate its adjusted number of points.

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 in each rating category in July 2012 (when the QM rating based on MDS 3.0 is first reported) would be similar to what it was when the MDS 2.0 QM rating was frozen in March 2011. The cut points associated with these star ratings will be held constant for a period of at least two years, allowing the distribution of the QM rating to change over time

Table 7

Star Cutpoints for MDS Quality Measure Summary Score (updated July 2012)

1 star	2 stars lower	2 stars upper	3 stars lower	3 stars upper	4 stars lower	4 stars upper	5 stars
$\leq$355	356	435	436	507	508	615	$\geq$616

Overall Nursing Home Rating (Composite Measure)

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

Step 1: Start with the health inspection five-star rating.

Step 2: Add one star to the Step 1 result if staffing rating is four or five stars *and greater than* the health inspection rating; subtract one star if staffing 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 quality measure rating is five stars; subtract one star if quality measure rating is one star. The overall rating cannot be more than five stars or less than one star.

Step 4: If the Health Inspection rating is one star, then the Overall Quality rating cannot be upgraded by more than one star based on the Staffing and Quality Measure ratings.

Step 5: If the nursing home is a Special Focus Facility (SFF) that has not graduated, the maximum Overall Quality rating is three stars.

The rationale for upgrading facilities in Step 2 that receive either a four- or five-star rating 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 MDS) does not receive a five-star overall rating.

The rationale for limiting upgrades in Step 4 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. And since the health inspection rating is heavily weighted toward the most recent findings, a one-star health rating reflects both a serious and recent finding.

The rationale for limiting the overall rating of a special focus facility in Step 5 is that the three data domains are weighted toward the most recent results and do not fully take into account the history of some nursing homes that exhibit a long history of "yo-yo" or "in and out" compliance with federal safety and quality of care requirements. Such history is a characteristic of the SFF nursing homes. While we wish the three individually-reported data sources to reflect the most recent data so that consumers can be aware that such facilities may be improving, we are capping the overall rating out of caution that the prior yo-yo pattern could be repeated. Once the facility graduates from the SFF initiative by sustaining improved compliance for about 12 months, we remove our cap for the former SFF nursing home, both figuratively and literally.

Our method for 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 health inspection rating, no overall rating is assigned. If the facility has no health inspection rating because it is too new to have two standard surveys, 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. Because the overall rating is based on three individual domains, a change in any one of the domains can affect the overall rating. A change in a domain can happen for several reasons.

New Data for the Facility

First of all, new data for the facility may change the rating. When a facility has a health inspection survey, either standard or as a result of a complaint, the deficiency data from the survey will become part of the calculation for the health inspection rating. The data will be included as soon as they become part of the CMS database. The timing for this may vary but depends on having a complete survey package for the state to upload to the database. Additional survey data may be added to the database because of complaint surveys or outcomes of revisits or Informal Dispute Resolutions (IDR) or Independent Informal Dispute Resolutions (IIDR). And these data may not be added in the same cycle as the standard survey data.

CASPER staffing data are collected at the time of the health inspection survey, 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 (the 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 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. Changes in the quality measures may change the star rating.

Changes in Data for Other Facilities

Because the cutpoints between star categories for the health inspection rating are based on percentile distributions that are not fixed, those cutpoints may vary slightly depending on the current facility distribution in the database. However, while the cutpoints for the health inspection ratings may change from month to month, a facility's rating will not change until there are new survey results for that facility. Cutpoints are fixed (starting April 2012) for the staffing measures (both RN and overall) as well as for the individual QMs and the QM rating (starting July 2012).

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				
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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
Percent 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
Percent 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
Percent 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

Tables A3 – A9
National Ranges for Point Values for Non-ADL QMs (updated July 2012)

Table A3. Ranges for Point values for Moderate to Severe Pain (long-stay)

# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...
1	0.38304761	1.00000000	35	0.14767612	0.15065360	69	0.07194375	0.07402024
2	0.33892191	0.38304760	36	0.14504161	0.14767611	70	0.07007529	0.07194374
3	0.31202674	0.33892190	37	0.14274052	0.14504160	71	0.06836160	0.07007528
4	0.29749888	0.31202673	38	0.14019410	0.14274051	72	0.06630955	0.06836159
5	0.28446076	0.29749887	39	0.13768667	0.14019409	73	0.06448673	0.06630954
6	0.27210702	0.28446075	40	0.13541780	0.13768666	74	0.06267182	0.06448672
7	0.26307672	0.27210701	41	0.13285648	0.13541779	75	0.06055590	0.06267181
8	0.25591017	0.26307671	42	0.13070294	0.13285647	76	0.05876408	0.06055589
9	0.24766124	0.25591016	43	0.12848964	0.13070293	77	0.05675614	0.05876407
10	0.24116924	0.24766123	44	0.12621505	0.12848963	78	0.05487560	0.05675613
11	0.23540680	0.24116923	45	0.12366827	0.12621504	79	0.05286220	0.05487559
12	0.22978806	0.23540679	46	0.12135035	0.12366826	80	0.05084404	0.05286219
13	0.22343955	0.22978805	47	0.11905472	0.12135034	81	0.04885206	0.05084403
14	0.21902096	0.22343954	48	0.11649740	0.11905471	82	0.04667376	0.04885205
15	0.21491414	0.21902095	49	0.11445881	0.11649739	83	0.04467831	0.04667375
16	0.21049623	0.21491413	50	0.11216412	0.11445880	84	0.04283816	0.04467830
17	0.20627668	0.21049622	51	0.11002414	0.11216411	85	0.04065880	0.04283815
18	0.20200689	0.20627667	52	0.10806660	0.11002413	86	0.03877398	0.04065879
19	0.19783546	0.20200688	53	0.10585350	0.10806659	87	0.03670657	0.03877397
20	0.19433548	0.19783545	54	0.10364003	0.10585349	88	0.03451718	0.03670656
21	0.19077056	0.19433547	55	0.10151900	0.10364002	89	0.03227123	0.03451717
22	0.18712597	0.19077055	56	0.09917673	0.10151899	90	0.02993043	0.03227122
23	0.18346284	0.18712596	57	0.09702329	0.09917672	91	0.02764761	0.02993042
24	0.18025516	0.18346283	58	0.09492635	0.09702328	92	0.02487430	0.02764760
25	0.17727309	0.18025515	59	0.09276980	0.09492634	93	0.02274586	0.02487429
26	0.17391219	0.17727308	60	0.09071350	0.09276979	94	0.02034854	0.02274585
27	0.17073570	0.17391218	61	0.08848274	0.09071349	95	0.01779920	0.02034853
28	0.16805563	0.17073569	62	0.08640308	0.08848273	96	0.01454792	0.01779919
29	0.16485669	0.16805562	63	0.08417607	0.08640307	97	0.01140057	0.01454791
30	0.16214166	0.16485668	64	0.08212876	0.08417606	98	0.00811659	0.01140056
31	0.15907943	0.16214165	65	0.08021127	0.08212875	99	0.00000001	0.00811658
32	0.15608657	0.15907942	66	0.07801917	0.08021126	100	0.00000000	0.00000000
33	0.15322421	0.15608656	67	0.07606229	0.07801916			
34	0.15065361	0.15322420	68	0.07402025	0.07606228			

Table A4. Ranges for Point values for High Risk Pressure Ulcers (long-stay)

# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...
1	0.20634922	1.00000000	35	0.08064517	0.08176101	69	0.04597703	0.04705879
2	0.18181819	0.20634921	36	0.07954548	0.08064516	70	0.04504509	0.04597702
3	0.16822429	0.18181818	37	0.07834105	0.07954547	71	0.04411766	0.04504508
4	0.15981736	0.16822428	38	0.07692310	0.07834104	72	0.04310345	0.04411765
5	0.15116279	0.15981735	39	0.07608695	0.07692309	73	0.04210527	0.04310344
6	0.14516131	0.15116278	40	0.07499999	0.07608694	74	0.04098359	0.04210526
7	0.13978495	0.14516130	41	0.07389166	0.07499998	75	0.04000000	0.04098358
8	0.13496932	0.13978494	42	0.07280929	0.07389165	76	0.03896104	0.03999999
9	0.13114753	0.13496931	43	0.07142860	0.07280928	77	0.03773586	0.03896103
10	0.12745101	0.13114752	44	0.07058822	0.07142859	78	0.03676472	0.03773585
11	0.12413795	0.12745100	45	0.06944447	0.07058821	79	0.03571428	0.03676471
12	0.12121209	0.12413794	46	0.06837607	0.06944446	80	0.03448278	0.03571427
13	0.11802577	0.12121208	47	0.06730771	0.06837606	81	0.03333336	0.03448277
14	0.11538463	0.11802576	48	0.06626507	0.06730770	82	0.03244842	0.03333335
15	0.11290322	0.11538462	49	0.06521740	0.06626506	83	0.03157893	0.03244841
16	0.11048158	0.11290321	50	0.06410258	0.06521739	84	0.03030303	0.03157892
17	0.10835216	0.11048157	51	0.06315788	0.06410257	85	0.02912624	0.03030302
18	0.10638299	0.10835215	52	0.06214690	0.06315787	86	0.02803739	0.02912623
19	0.10465117	0.10638298	53	0.06122449	0.06214689	87	0.02684567	0.02803738
20	0.10256411	0.10465116	54	0.06024101	0.06122448	88	0.02547768	0.02684566
21	0.10067116	0.10256410	55	0.05940594	0.06024100	89	0.02419354	0.02547767
22	0.09883722	0.10067115	56	0.05836578	0.05940593	90	0.02281372	0.02419353
23	0.09734515	0.09883721	57	0.05732483	0.05836577	91	0.02158275	0.02281371
24	0.09589043	0.09734514	58	0.05645164	0.05732482	92	0.02000001	0.02158274
25	0.09433965	0.09589042	59	0.05555556	0.05645163	93	0.01851852	0.02000000
26	0.09278351	0.09433964	60	0.05454549	0.05555555	94	0.01694914	0.01851851
27	0.09090913	0.09278350	61	0.05376345	0.05454548	95	0.01515153	0.01694913
28	0.08982039	0.09090912	62	0.05263163	0.05376344	96	0.01321589	0.01515152
29	0.08849561	0.08982038	63	0.05185184	0.05263162	97	0.01107011	0.01321588
30	0.08719347	0.08849560	64	0.05084747	0.05185183	98	0.00840338	0.01107010
31	0.08571431	0.08719346	65	0.05000000	0.05084746	99	0.00000001	0.00840337
32	0.08441556	0.08571430	66	0.04901963	0.04999999	100	0.00000000	0.00000000
33	0.08333333	0.08441555	67	0.04807694	0.04901962			
34	0.08176102	0.08333332	68	0.04705880	0.04807693			

Table A5. Ranges for Point values for Catheter (long-stay)

# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...
1	0.15733310	1.00000000	39	0.04770136	0.04847934	77	0.02221383	0.02292856
2	0.13544615	0.15733309	40	0.04687498	0.04770135	78	0.02157490	0.02221382
3	0.12263038	0.13544614	41	0.04606737	0.04687497	79	0.02096731	0.02157489
4	0.11378084	0.12263037	42	0.04538268	0.04606736	80	0.02033280	0.02096730
5	0.10687573	0.11378083	43	0.04458816	0.04538267	81	0.01978248	0.02033279
6	0.10114622	0.10687572	44	0.04383637	0.04458815	82	0.01897677	0.01978247
7	0.09671166	0.10114621	45	0.04302796	0.04383636	83	0.01819433	0.01897676
8	0.09316086	0.09671165	46	0.04242824	0.04302795	84	0.01751603	0.01819432
9	0.09015592	0.09316085	47	0.04178410	0.04242823	85	0.01671944	0.01751602
10	0.08746208	0.09015591	48	0.04098839	0.04178409	86	0.01599413	0.01671943
11	0.08462912	0.08746207	49	0.04033102	0.04098838	87	0.01520346	0.01599412
12	0.08196740	0.08462911	50	0.03966459	0.04033101	88	0.01436987	0.01520345
13	0.07976462	0.08196739	51	0.03899077	0.03966458	89	0.01357156	0.01436986
14	0.07799831	0.07976461	52	0.03828577	0.03899076	90	0.01271099	0.01357155
15	0.07594215	0.07799830	53	0.03754954	0.03828576	91	0.01196260	0.01271098
16	0.07405747	0.07594214	54	0.03692360	0.03754953	92	0.01107389	0.01196259
17	0.07236034	0.07405746	55	0.03631845	0.03692359	93	0.01025869	0.01107388
18	0.07048913	0.07236033	56	0.03562025	0.03631844	94	0.00928788	0.01025868
19	0.06884879	0.07048912	57	0.03503349	0.03562024	95	0.00842350	0.00928787
20	0.06752765	0.06884878	58	0.03438850	0.03503348	96	0.00745804	0.00842349
21	0.06616232	0.06752764	59	0.03375918	0.03438849	97	0.00622100	0.00745803
22	0.06501231	0.06616231	60	0.03303613	0.03375917	98	0.00479479	0.00622099
23	0.06376818	0.06501230	61	0.03240306	0.03303612	99	0.00000001	0.00479478
24	0.06251192	0.06376817	62	0.03169318	0.03240305	100	0.00000000	0.00000000
25	0.06121044	0.06251191	63	0.03105568	0.03169317			
26	0.06013712	0.06121043	64	0.03047529	0.03105567			
27	0.05915118	0.06013711	65	0.02983575	0.03047528			
28	0.05811381	0.05915117	66	0.02922412	0.02983574			
29	0.05688069	0.05811380	67	0.02859935	0.02922411			
30	0.05595874	0.05688068	68	0.02798111	0.02859934			
31	0.05490564	0.05595873	69	0.02733414	0.02798110			
32	0.05390375	0.05490563	70	0.02676120	0.02733413			
33	0.05298287	0.05390374	71	0.02617710	0.02676119			
34	0.05214697	0.05298286	72	0.02561982	0.02617709			
35	0.05124880	0.05214696	73	0.02500271	0.02561981			
36	0.05015664	0.05124879	74	0.02430850	0.02500270			
37	0.04929435	0.05015663	75	0.02364605	0.02430849			
38	0.04847935	0.04929434	76	0.02292857	0.02364604			

Table A6. Ranges for Point Values for Urinary Tract Infection (long-stay)

# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...
1	0.23913046	1.00000000	38	0.08681671	0.08823529	75	0.04132232	0.04265406
2	0.21126761	0.23913045	39	0.08536587	0.08681670	76	0.04010025	0.04132231
3	0.19658121	0.21126760	40	0.08401083	0.08536586	77	0.03879313	0.04010024
4	0.18487396	0.19658120	41	0.08266126	0.08401082	78	0.03759398	0.03879312
5	0.17557252	0.18487395	42	0.08156031	0.08266125	79	0.03645833	0.03759397
6	0.16759778	0.17557251	43	0.08016881	0.08156030	80	0.03517587	0.03645832
7	0.16129035	0.16759777	44	0.07894739	0.08016880	81	0.03396225	0.03517586
8	0.15624999	0.16129034	45	0.07766990	0.07894738	82	0.03260869	0.03396224
9	0.15126053	0.15624998	46	0.07627121	0.07766989	83	0.03124997	0.03260868
10	0.14728682	0.15126052	47	0.07509881	0.07627120	84	0.02985074	0.03124996
11	0.14391144	0.14728681	48	0.07394369	0.07509880	85	0.02877696	0.02985073
12	0.14035085	0.14391143	49	0.07262570	0.07394368	86	0.02719032	0.02877695
13	0.13775513	0.14035084	50	0.07123288	0.07262569	87	0.02564105	0.02719031
14	0.13432836	0.13775512	51	0.07000000	0.07123287	88	0.02403847	0.02564104
15	0.13125003	0.13432835	52	0.06862745	0.06999999	89	0.02255641	0.02403846
16	0.12857142	0.13125002	53	0.06751055	0.06862744	90	0.02097901	0.02255640
17	0.12571429	0.12857141	54	0.06645571	0.06751054	91	0.01960783	0.02097900
18	0.12328769	0.12571428	55	0.06542057	0.06645570	92	0.01796406	0.01960782
19	0.12087915	0.12328768	56	0.06428574	0.06542056	93	0.01612903	0.01796405
20	0.11881187	0.12087914	57	0.06299216	0.06428573	94	0.01449277	0.01612902
21	0.11627910	0.11881186	58	0.06191371	0.06299215	95	0.01234567	0.01449276
22	0.11397058	0.11627909	59	0.06060607	0.06191370	96	0.01041668	0.01234566
23	0.11200000	0.11397057	60	0.05947958	0.06060606	97	0.00806452	0.01041667
24	0.10992909	0.11199999	61	0.05833333	0.05947957	98	0.00543481	0.00806451
25	0.10804024	0.10992908	62	0.05726873	0.05833332	99	0.00000001	0.00543480
26	0.10606064	0.10804023	63	0.05620610	0.05726872	100	0.00000000	0.00000000
27	0.10416667	0.10606063	64	0.05494505	0.05620609			
28	0.10218981	0.10416666	65	0.05376347	0.05494504			
29	0.10055869	0.10218980	66	0.05263160	0.05376346			
30	0.09883722	0.10055868	67	0.05158733	0.05263159			
31	0.09717868	0.09883721	68	0.05037784	0.05158732			
32	0.09574468	0.09717867	69	0.04901963	0.05037783			
33	0.09433962	0.09574467	70	0.04761908	0.04901962			
34	0.09263161	0.09433961	71	0.04651162	0.04761907			
35	0.09122809	0.09263160	72	0.04512372	0.04651161			
36	0.08971552	0.09122808	73	0.04390245	0.04512371			
37	0.08823530	0.08971551	74	0.04265407	0.04390244			

Table A7. Ranges for Point Values for Physical Restraints (long-stay)

# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...
1	0.21758240	1.00000000	38	0.03846154	0.03960395	75	0.01219512	0.01265821
2	0.17840378	0.21758239	39	0.03749997	0.03846153	76	0.01176472	0.01219511
3	0.15772872	0.17840377	40	0.03636369	0.03749996	77	0.01129947	0.01176471
4	0.14000000	0.15772871	41	0.03531598	0.03636368	78	0.01083034	0.01129946
5	0.13043480	0.13999999	42	0.03448276	0.03531597	79	0.01034483	0.01083033
6	0.12290505	0.13043479	43	0.03333337	0.03448275	80	0.00993378	0.01034482
7	0.11549298	0.12290504	44	0.03246754	0.03333336	81	0.00952381	0.00993377
8	0.10958906	0.11549297	45	0.03162056	0.03246753	82	0.00907028	0.00952380
9	0.10367173	0.10958905	46	0.03076923	0.03162055	83	0.00862069	0.00907027
10	0.09829062	0.10367172	47	0.02981030	0.03076922	84	0.00813008	0.00862068
11	0.09345798	0.09829061	48	0.02884615	0.02981029	85	0.00775195	0.00813007
12	0.08928572	0.09345797	49	0.02793297	0.02884614	86	0.00735295	0.00775194
13	0.08547009	0.08928571	50	0.02708805	0.02793296	87	0.00694444	0.00735294
14	0.08242951	0.08547008	51	0.02631583	0.02708804	88	0.00651467	0.00694443
15	0.07911395	0.08242950	52	0.02554744	0.02631582	89	0.00609759	0.00651466
16	0.07589287	0.07911394	53	0.02489627	0.02554743	90	0.00569261	0.00609758
17	0.07246381	0.07589286	54	0.02409638	0.02489626	91	0.00526318	0.00569260
18	0.06976748	0.07246380	55	0.02347422	0.02409637	92	0.00490196	0.00526317
19	0.06716418	0.06976747	56	0.02272727	0.02347421	93	0.00452492	0.00490195
20	0.06493507	0.06716417	57	0.02197804	0.02272726	94	0.00414079	0.00452491
21	0.06299213	0.06493506	58	0.02139037	0.02197803	95	0.00375941	0.00414078
22	0.06122449	0.06299212	59	0.02083332	0.02139036	96	0.00345225	0.00375940
23	0.05945947	0.06122448	60	0.02024294	0.02083331	97	0.00308643	0.00345224
24	0.05789474	0.05945946	61	0.01960784	0.02024293	98	0.00243310	0.00308642
25	0.05627709	0.05789473	62	0.01898733	0.01960783	99	0.00000001	0.00243309
26	0.05477031	0.05627708	63	0.01840493	0.01898732	100	0.00000000	0.00000000
27	0.05309738	0.05477030	64	0.01777777	0.01840492			
28	0.05149055	0.05309737	65	0.01724140	0.01777776			
29	0.05015674	0.05149054	66	0.01673641	0.01724139			
30	0.04854371	0.05015673	67	0.01612904	0.01673640			
31	0.04712042	0.04854370	68	0.01556420	0.01612903			
32	0.04580157	0.04712041	69	0.01506027	0.01556419			
33	0.04455443	0.04580156	70	0.01449276	0.01506026			
34	0.04337901	0.04455442	71	0.01408451	0.01449275			
35	0.04201681	0.04337900	72	0.01368692	0.01408450			
36	0.04081634	0.04201680	73	0.01315791	0.01368691			
37	0.03960396	0.04081633	74	0.01265822	0.01315790			

Table A8. Ranges for Point Values for Injurious Falls (long-stay)

# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...
1	0.11242604	1.00000000	38	0.03921570	0.03989361	75	0.01932369	0.01992033
2	0.09865470	0.11242603	39	0.03862663	0.03921569	76	0.01881718	0.01932368
3	0.09183673	0.09865469	40	0.03804349	0.03862662	77	0.01831504	0.01881717
4	0.08620690	0.09183672	41	0.03738316	0.03804348	78	0.01785714	0.01831503
5	0.08264462	0.08620689	42	0.03673470	0.03738315	79	0.01724141	0.01785713
6	0.07894737	0.08264461	43	0.03617020	0.03673469	80	0.01666666	0.01724140
7	0.07547171	0.07894736	44	0.03557313	0.03617019	81	0.01600000	0.01666665
8	0.07246378	0.07547170	45	0.03503186	0.03557312	82	0.01550390	0.01599999
9	0.07017545	0.07246377	46	0.03435117	0.03503185	83	0.01486990	0.01550389
10	0.06818182	0.07017544	47	0.03378381	0.03435116	84	0.01428571	0.01486989
11	0.06622518	0.06818181	48	0.03333333	0.03378380	85	0.01365189	0.01428570
12	0.06451612	0.06622517	49	0.03278688	0.03333332	86	0.01307190	0.01365188
13	0.06278030	0.06451611	50	0.03225806	0.03278687	87	0.01249999	0.01307189
14	0.06117024	0.06278029	51	0.03171247	0.03225805	88	0.01183431	0.01249998
15	0.05992510	0.06117023	52	0.03124998	0.03171246	89	0.01119404	0.01183430
16	0.05844157	0.05992509	53	0.03070175	0.03124997	90	0.01056342	0.01119403
17	0.05714287	0.05844156	54	0.03012048	0.03070174	91	0.00990099	0.01056341
18	0.05586593	0.05714286	55	0.02958579	0.03012047	92	0.00917434	0.00990098
19	0.05479451	0.05586592	56	0.02903230	0.02958578	93	0.00852878	0.00917433
20	0.05376344	0.05479450	57	0.02857142	0.02903229	94	0.00769232	0.00852877
21	0.05263159	0.05376343	58	0.02801121	0.02857141	95	0.00692043	0.00769231
22	0.05172415	0.05263158	59	0.02747255	0.02801120	96	0.00617283	0.00692042
23	0.05084745	0.05172414	60	0.02696081	0.02747254	97	0.00516796	0.00617282
24	0.04999998	0.05084744	61	0.02649006	0.02696080	98	0.00411524	0.00516795
25	0.04918030	0.04999997	62	0.02597406	0.02649005	99	0.00000001	0.00411523
26	0.04827585	0.04918029	63	0.02551836	0.02597405	100	0.00000000	0.00000000
27	0.04761903	0.04827584	64	0.02497165	0.02551835			
28	0.04661019	0.04761902	65	0.02439025	0.02497164			
29	0.04580152	0.04661018	66	0.02395209	0.02439024			
30	0.04494383	0.04580151	67	0.02343750	0.02395208			
31	0.04402520	0.04494382	68	0.02293580	0.02343749			
32	0.04347825	0.04402519	69	0.02247190	0.02293579			
33	0.04269665	0.04347824	70	0.02197803	0.02247189			
34	0.04191617	0.04269664	71	0.02155171	0.02197802			
35	0.04123714	0.04191616	72	0.02097901	0.02155170			
36	0.04060913	0.04123713	73	0.02040817	0.02097900			
37	0.03989362	0.04060912	74	0.01992034	0.02040816			

Table A9. Ranges for Point Values for Moderate to Severe Pain (short-stay)

# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...
1	0.55021370	1.00000000	38	0.25974029	0.26341462	75	0.14444448	0.14814815
2	0.50000001	0.55021369	39	0.25688073	0.25974028	76	0.14079425	0.14444447
3	0.47058825	0.50000000	40	0.25333336	0.25688072	77	0.13725491	0.14079424
4	0.45238098	0.47058824	41	0.25000001	0.25333335	78	0.13333335	0.13725490
5	0.43902439	0.45238097	42	0.24793391	0.25000000	79	0.12982456	0.13333334
6	0.42543860	0.43902438	43	0.24437301	0.24793390	80	0.12565450	0.12982455
7	0.41312744	0.42543859	44	0.24161073	0.24437300	81	0.12138727	0.12565449
8	0.40336135	0.41312743	45	0.23870973	0.24161072	82	0.11764710	0.12138726
9	0.39354838	0.40336134	46	0.23604466	0.23870972	83	0.11363640	0.11764709
10	0.38571429	0.39354837	47	0.23305086	0.23604465	84	0.10958903	0.11363639
11	0.37931036	0.38571428	48	0.22969190	0.23305085	85	0.10493826	0.10958902
12	0.37209304	0.37931035	49	0.22666667	0.22969189	86	0.10000000	0.10493825
13	0.36568850	0.37209303	50	0.22364217	0.22666666	87	0.09523811	0.09999999
14	0.35922331	0.36568849	51	0.22053233	0.22364216	88	0.09090909	0.09523810
15	0.35327637	0.35922330	52	0.21739129	0.22053232	89	0.08614236	0.09090908
16	0.34782609	0.35327636	53	0.21400780	0.21739128	90	0.08108109	0.08614235
17	0.34285717	0.34782608	54	0.21052630	0.21400779	91	0.07692306	0.08108108
18	0.33780160	0.34285716	55	0.20731706	0.21052629	92	0.07017545	0.07692305
19	0.33333333	0.33780159	56	0.20454549	0.20731705	93	0.06404961	0.07017544
20	0.32786887	0.33333332	57	0.20189276	0.20454548	94	0.05675677	0.06404960
21	0.32352940	0.32786886	58	0.19999999	0.20189275	95	0.05000000	0.05675676
22	0.31999999	0.32352939	59	0.19672133	0.19999998	96	0.04225354	0.04999999
23	0.31528049	0.31999998	60	0.19354840	0.19672132	97	0.03225807	0.04225353
24	0.31081083	0.31528048	61	0.19047617	0.19354839	98	0.02127660	0.03225806
25	0.30769229	0.31081082	62	0.18736386	0.19047616	99	0.00000001	0.02127659
26	0.30327872	0.30769228	63	0.18382353	0.18736385	100	0.00000000	0.00000000
27	0.29906543	0.30327871	64	0.18055553	0.18382352			
28	0.29545454	0.29906542	65	0.17730496	0.18055552			
29	0.29166665	0.29545453	66	0.17391307	0.17730495			
30	0.28764279	0.29166664	67	0.17073171	0.17391306			
31	0.28409092	0.28764278	68	0.16740090	0.17073170			
32	0.28070175	0.28409091	69	0.16438358	0.16740089			
33	0.27710845	0.28070174	70	0.16157203	0.16438357			
34	0.27338131	0.27710844	71	0.15811089	0.16157202			
35	0.27007298	0.27338130	72	0.15486725	0.15811088			
36	0.26666666	0.27007297	73	0.15178570	0.15486724			
37	0.26341463	0.26666665	74	0.14814816	0.15178569			

Table A10. Ranges for Point Values for New or Worsening Pressure Ulcers (short-stay)

# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...	# of QM Points	For QM values between...	and...
1	0.13452014	1.00000000	38	0.02583748	0.02636927	75	0.01086162	0.01120371
2	0.10883101	0.13452013	39	0.02534601	0.02583747	76	0.01052086	0.01086161
3	0.09592925	0.10883100	40	0.02484264	0.02534600	77	0.01019203	0.01052085
4	0.08629456	0.09592924	41	0.02434118	0.02484263	78	0.00983792	0.01019202
5	0.07802406	0.08629455	42	0.02383593	0.02434117	79	0.00950380	0.00983791
6	0.07245638	0.07802405	43	0.02330015	0.02383592	80	0.00918290	0.00950379
7	0.06788562	0.07245637	44	0.02279341	0.02330014	81	0.00886953	0.00918289
8	0.06414852	0.06788561	45	0.02224432	0.02279340	82	0.00852750	0.00886952
9	0.06084105	0.06414851	46	0.02177988	0.02224431	83	0.00815060	0.00852749
10	0.05815502	0.06084104	47	0.02128635	0.02177987	84	0.00782173	0.00815059
11	0.05564444	0.05815501	48	0.02086486	0.02128634	85	0.00749773	0.00782172
12	0.05326868	0.05564443	49	0.02042721	0.02086485	86	0.00721188	0.00749772
13	0.05121378	0.05326867	50	0.01995593	0.02042720	87	0.00687972	0.00721187
14	0.04930100	0.05121377	51	0.01949074	0.01995592	88	0.00649209	0.00687971
15	0.04757251	0.04930099	52	0.01904054	0.01949073	89	0.00613770	0.00649208
16	0.04586227	0.04757250	53	0.01862829	0.01904053	90	0.00574815	0.00613769
17	0.04421453	0.04586226	54	0.01825354	0.01862828	91	0.00547570	0.00574814
18	0.04295776	0.04421452	55	0.01778955	0.01825353	92	0.00507157	0.00547569
19	0.04159162	0.04295775	56	0.01734542	0.01778954	93	0.00469273	0.00507156
20	0.04039880	0.04159161	57	0.01702819	0.01734541	94	0.00432205	0.00469272
21	0.03911690	0.04039879	58	0.01667450	0.01702818	95	0.00387715	0.00432204
22	0.03820998	0.03911689	59	0.01632526	0.01667449	96	0.00338817	0.00387714
23	0.03724137	0.03820997	60	0.01596636	0.01632525	97	0.00285981	0.00338816
24	0.03637246	0.03724136	61	0.01558444	0.01596635	98	0.00216835	0.00285980
25	0.03517900	0.03637245	62	0.01519570	0.01558443	99	0.00000001	0.00216834
26	0.03435345	0.03517899	63	0.01484637	0.01519569	100	0.00000000	0.00000000
27	0.03353207	0.03435344	64	0.01452469	0.01484636			
28	0.03256858	0.03353206	65	0.01418645	0.01452468			
29	0.03182388	0.03256857	66	0.01381782	0.01418644			
30	0.03107524	0.03182387	67	0.01348151	0.01381781			
31	0.03033281	0.03107523	68	0.01318045	0.01348150			
32	0.02955376	0.03033280	69	0.01282780	0.01318044			
33	0.02889856	0.02955375	70	0.01249683	0.01282779			
34	0.02821478	0.02889855	71	0.01218025	0.01249682			
35	0.02761758	0.02821477	72	0.01182922	0.01218024			
36	0.02690807	0.02761757	73	0.01154917	0.01182921			
37	0.02636928	0.02690806	74	0.01120372	0.01154916			

Table A11. Ranges for Point Values for ADL Decline (long-stay) - by State

State	# of QM Points	For QM values between...	and...	State	# of QM Points	For QM values between...	and...
Alabama	10	0.23312886	1.00000000	Arkansas	90	0.09134618	0.10798121
Alabama	20	0.18434342	0.23312885	Arkansas	100	0.00000000	0.09134617
Alabama	30	0.16338027	0.18434341	California	10	0.25208089	1.00000000
Alabama	40	0.13868615	0.16338026	California	20	0.19724775	0.25208088
Alabama	50	0.12269940	0.13868614	California	30	0.17142857	0.19724774
Alabama	60	0.10944209	0.12269939	California	40	0.14432990	0.17142856
Alabama	70	0.09440563	0.10944208	California	50	0.12500001	0.14432989
Alabama	80	0.07913670	0.09440562	California	60	0.10569107	0.12500000
Alabama	90	0.06382981	0.07913669	California	70	0.08783785	0.10569106
Alabama	100	0.00000000	0.06382980	California	80	0.06944444	0.08783784
Alaska	10	0.24489797	1.00000000	California	90	0.04524889	0.06944443
Alaska	20	0.24444445	0.24489796	California	100	0.00000000	0.04524888
Alaska	30	0.13225808	0.24444444	Colorado	10	0.28181818	1.00000000
Alaska	40	0.12121215	0.13225807	Colorado	20	0.24175823	0.28181817
Alaska	50	0.10948905	0.12121214	Colorado	30	0.21259844	0.24175822
Alaska	60	0.10447760	0.10948904	Colorado	40	0.18309860	0.21259843
Alaska	70	0.08490568	0.10447759	Colorado	50	0.16438359	0.18309859
Alaska	80	0.07692308	0.08490567	Colorado	60	0.14705884	0.16438358
Alaska	90	0.05405406	0.07692307	Colorado	70	0.13173653	0.14705883
Alaska	100	0.00000000	0.05405405	Colorado	80	0.10828026	0.13173652
Arizona	10	0.29268295	1.00000000	Colorado	90	0.08095239	0.10828025
Arizona	20	0.24012162	0.29268294	Colorado	100	0.00000000	0.08095238
Arizona	30	0.20918369	0.24012161	Connecticut	10	0.26258994	1.00000000
Arizona	40	0.17880794	0.20918368	Connecticut	20	0.22891568	0.26258993
Arizona	50	0.15789477	0.17880793	Connecticut	30	0.20512820	0.22891567
Arizona	60	0.13953491	0.15789476	Connecticut	40	0.18518519	0.20512819
Arizona	70	0.10695187	0.13953490	Connecticut	50	0.16831684	0.18518518
Arizona	80	0.08955226	0.10695186	Connecticut	60	0.15079368	0.16831683
Arizona	90	0.06060604	0.08955225	Connecticut	70	0.13333335	0.15079367
Arizona	100	0.00000000	0.06060603	Connecticut	80	0.11377247	0.13333334
Arkansas	10	0.27777779	1.00000000	Connecticut	90	0.08943091	0.11377246
Arkansas	20	0.24043717	0.27777778	Connecticut	100	0.00000000	0.08943090
Arkansas	30	0.21893488	0.24043716	Delaware	10	0.28070179	1.00000000
Arkansas	40	0.18674702	0.21893487	Delaware	20	0.23809526	0.28070178
Arkansas	50	0.16831686	0.18674701	Delaware	30	0.20535713	0.23809525
Arkansas	60	0.14973263	0.16831685	Delaware	40	0.18571428	0.20535712
Arkansas	70	0.13147411	0.14973262	Delaware	50	0.17333336	0.18571427
Arkansas	80	0.10798122	0.13147410	Delaware	60	0.15714285	0.17333335

State	# of QM Points	For QM values between...	and...
Delaware	70	0.14102568	0.15714284
Delaware	80	0.09583334	0.14102567
Delaware	90	0.07870370	0.09583333
Delaware	100	0.00000000	0.07870369
District of Columbia	10	0.28509250	1.00000000
District of Columbia	20	0.25373138	0.28509249
District of Columbia	30	0.18181819	0.25373137
District of Columbia	40	0.13592237	0.18181818
District of Columbia	50	0.11881189	0.13592236
District of Columbia	60	0.10169492	0.11881188
District of Columbia	70	0.08000002	0.10169491
District of Columbia	80	0.06666670	0.08000001
District of Columbia	90	0.06201551	0.06666669
District of Columbia	100	0.00000000	0.06201550
Florida	10	0.23239440	1.00000000
Florida	20	0.19844359	0.23239439
Florida	30	0.17676769	0.19844358
Florida	40	0.15816325	0.17676768
Florida	50	0.13692949	0.15816324
Florida	60	0.11894275	0.13692948
Florida	70	0.10204084	0.11894274
Florida	80	0.08661417	0.10204083
Florida	90	0.06425702	0.08661416
Florida	100	0.00000000	0.06425701
Georgia	10	0.27800833	1.00000000
Georgia	20	0.22891566	0.27800832
Georgia	30	0.20388351	0.22891565
Georgia	40	0.18681318	0.20388350
Georgia	50	0.16117218	0.18681317
Georgia	60	0.14354069	0.16117217
Georgia	70	0.12626265	0.14354068
Georgia	80	0.10714288	0.12626264
Georgia	90	0.08547009	0.10714287
Georgia	100	0.00000000	0.08547008
Hawaii	10	0.27972031	1.00000000
Hawaii	20	0.17647059	0.27972030
Hawaii	30	0.14418607	0.17647058
Hawaii	40	0.13675215	0.14418606
Hawaii	50	0.11428571	0.13675214

State	# of QM Points	For QM values between...	and...
Hawaii	60	0.10625003	0.11428570
Hawaii	70	0.09638551	0.10625002
Hawaii	80	0.08450703	0.09638550
Hawaii	90	0.06666669	0.08450702
Hawaii	100	0.00000000	0.06666668
Idaho	10	0.23931626	1.00000000
Idaho	20	0.20588235	0.23931625
Idaho	30	0.18471339	0.20588234
Idaho	40	0.16990292	0.18471338
Idaho	50	0.15789473	0.16990291
Idaho	60	0.14371260	0.15789472
Idaho	70	0.12068966	0.14371259
Idaho	80	0.10256411	0.12068965
Idaho	90	0.06250004	0.10256410
Idaho	100	0.00000000	0.06250003
Illinois	10	0.26190476	1.00000000
Illinois	20	0.21818184	0.26190475
Illinois	30	0.18644070	0.21818183
Illinois	40	0.16346157	0.18644069
Illinois	50	0.14492754	0.16346156
Illinois	60	0.12322276	0.14492753
Illinois	70	0.10465115	0.12322275
Illinois	80	0.07766991	0.10465114
Illinois	90	0.04999998	0.07766990
Illinois	100	0.00000000	0.04999997
Indiana	10	0.29268296	1.00000000
Indiana	20	0.26373626	0.29268295
Indiana	30	0.23999999	0.26373625
Indiana	40	0.21621624	0.23999998
Indiana	50	0.19626170	0.21621623
Indiana	60	0.18032786	0.19626169
Indiana	70	0.15789474	0.18032785
Indiana	80	0.13861389	0.15789473
Indiana	90	0.11320758	0.13861388
Indiana	100	0.00000000	0.11320757
Iowa	10	0.25695931	1.00000000
Iowa	20	0.21296294	0.25695930
Iowa	30	0.17692309	0.21296293
Iowa	40	0.16117215	0.17692308

State	# of QM Points	For QM values between...	and...
Iowa	50	0.14615388	0.16117214
Iowa	60	0.13274338	0.14615387
Iowa	70	0.11450385	0.13274337
Iowa	80	0.10126582	0.11450384
Iowa	90	0.08074535	0.10126581
Iowa	100	0.00000000	0.08074534
Kansas	10	0.25714288	1.00000000
Kansas	20	0.22159092	0.25714287
Kansas	30	0.19546743	0.22159091
Kansas	40	0.17647061	0.19546742
Kansas	50	0.15568865	0.17647060
Kansas	60	0.13186813	0.15568864
Kansas	70	0.11578949	0.13186812
Kansas	80	0.09876544	0.11578948
Kansas	90	0.07194243	0.09876543
Kansas	100	0.00000000	0.07194242
Kentucky	10	0.30459772	1.00000000
Kentucky	20	0.25925927	0.30459771
Kentucky	30	0.22348488	0.25925926
Kentucky	40	0.20524017	0.22348487
Kentucky	50	0.18333334	0.20524016
Kentucky	60	0.16346158	0.18333333
Kentucky	70	0.14634150	0.16346157
Kentucky	80	0.11450381	0.14634149
Kentucky	90	0.08219178	0.11450380
Kentucky	100	0.00000000	0.08219177
Louisiana	10	0.31097564	1.00000000
Louisiana	20	0.27491410	0.31097563
Louisiana	30	0.24581008	0.27491409
Louisiana	40	0.22624437	0.24581007
Louisiana	50	0.20833336	0.22624436
Louisiana	60	0.19034093	0.20833335
Louisiana	70	0.16836737	0.19034092
Louisiana	80	0.14532876	0.16836736
Louisiana	90	0.10931174	0.14532875
Louisiana	100	0.00000000	0.10931173
Maine	10	0.24404761	1.00000000
Maine	20	0.20833335	0.24404760
Maine	30	0.17964071	0.20833334

State	# of QM Points	For QM values between...	and...
Maine	40	0.16129034	0.17964070
Maine	50	0.14130438	0.16129033
Maine	60	0.12903226	0.14130437
Maine	70	0.11718752	0.12903225
Maine	80	0.10084036	0.11718751
Maine	90	0.06666667	0.10084035
Maine	100	0.00000000	0.06666666
Maryland	10	0.30196081	1.00000000
Maryland	20	0.25934065	0.30196080
Maryland	30	0.23295454	0.25934064
Maryland	40	0.20270271	0.23295453
Maryland	50	0.17771083	0.20270270
Maryland	60	0.15428571	0.17771082
Maryland	70	0.13602942	0.15428570
Maryland	80	0.11764709	0.13602941
Maryland	90	0.09025275	0.11764708
Maryland	100	0.00000000	0.09025274
Massachusetts	10	0.22183101	1.00000000
Massachusetts	20	0.19209041	0.22183100
Massachusetts	30	0.17073168	0.19209040
Massachusetts	40	0.15469615	0.17073167
Massachusetts	50	0.13931887	0.15469614
Massachusetts	60	0.12500000	0.13931886
Massachusetts	70	0.11397058	0.12499999
Massachusetts	80	0.10062893	0.11397057
Massachusetts	90	0.07638891	0.10062892
Massachusetts	100	0.00000000	0.07638890
Michigan	10	0.23295457	1.00000000
Michigan	20	0.19696969	0.23295456
Michigan	30	0.17578124	0.19696968
Michigan	40	0.15648856	0.17578123
Michigan	50	0.14197530	0.15648855
Michigan	60	0.12608698	0.14197529
Michigan	70	0.11160716	0.12608697
Michigan	80	0.09090911	0.11160715
Michigan	90	0.07453418	0.09090910
Michigan	100	0.00000000	0.07453417
Minnesota	10	0.23893806	1.00000000
Minnesota	20	0.21111112	0.23893805

State	# of QM Points	For QM values between...	and...	State	# of QM Points	For QM values between...	and...
Minnesota	30	0.18705040	0.21111111	Nebraska	20	0.19200001	0.23750001
Minnesota	40	0.16861829	0.18705039	Nebraska	30	0.17187500	0.19200000
Minnesota	50	0.15199999	0.16861828	Nebraska	40	0.15441180	0.17187499
Minnesota	60	0.13636362	0.15199998	Nebraska	50	0.14285714	0.15441179
Minnesota	70	0.12169315	0.13636361	Nebraska	60	0.12500000	0.14285713
Minnesota	80	0.10648146	0.12169314	Nebraska	70	0.11363638	0.12499999
Minnesota	90	0.08783785	0.10648145	Nebraska	80	0.10407237	0.11363637
Minnesota	100	0.00000000	0.08783784	Nebraska	90	0.08441560	0.10407236
Mississippi	10	0.27009646	1.00000000	Nebraska	100	0.00000000	0.08441559
Mississippi	20	0.24571431	0.27009645	Nevada	10	0.30158732	1.00000000
Mississippi	30	0.22123894	0.24571430	Nevada	20	0.27272727	0.30158731
Mississippi	40	0.20052772	0.22123893	Nevada	30	0.25373135	0.27272726
Mississippi	50	0.18090453	0.20052771	Nevada	40	0.22304834	0.25373134
Mississippi	60	0.15714287	0.18090452	Nevada	50	0.20095695	0.22304833
Mississippi	70	0.14285713	0.15714286	Nevada	60	0.15238096	0.20095694
Mississippi	80	0.11567167	0.14285712	Nevada	70	0.13095239	0.15238095
Mississippi	90	0.09142856	0.11567166	Nevada	80	0.11242604	0.13095238
Mississippi	100	0.00000000	0.09142855	Nevada	90	0.09243699	0.11242603
Missouri	10	0.24444444	1.00000000	Nevada	100	0.00000000	0.09243698
Missouri	20	0.20000005	0.24444443	New Hampshire	10	0.24844720	1.00000000
Missouri	30	0.17032971	0.20000004	New Hampshire	20	0.23684212	0.24844719
Missouri	40	0.14912280	0.17032970	New Hampshire	30	0.21343874	0.23684211
Missouri	50	0.13218394	0.14912279	New Hampshire	40	0.20588235	0.21343873
Missouri	60	0.11494252	0.13218393	New Hampshire	50	0.18784533	0.20588234
Missouri	70	0.09905660	0.11494251	New Hampshire	60	0.16831684	0.18784532
Missouri	80	0.07926831	0.09905659	New Hampshire	70	0.15021458	0.16831683
Missouri	90	0.05468751	0.07926830	New Hampshire	80	0.13461542	0.15021457
Missouri	100	0.00000000	0.05468750	New Hampshire	90	0.10714288	0.13461541
Montana	10	0.26865673	1.00000000	New Hampshire	100	0.00000000	0.10714287
Montana	20	0.20754720	0.26865672	New Jersey	10	0.27737225	1.00000000
Montana	30	0.18749999	0.20754719	New Jersey	20	0.23920267	0.27737224
Montana	40	0.16374272	0.18749998	New Jersey	30	0.20125786	0.23920266
Montana	50	0.14893618	0.16374271	New Jersey	40	0.17228465	0.20125785
Montana	60	0.12987013	0.14893617	New Jersey	50	0.15454547	0.17228464
Montana	70	0.10526317	0.12987012	New Jersey	60	0.13523135	0.15454546
Montana	80	0.09016394	0.10526316	New Jersey	70	0.11818181	0.13523134
Montana	90	0.06363639	0.09016393	New Jersey	80	0.10183642	0.11818180
Montana	100	0.00000000	0.06363638	New Jersey	90	0.07058823	0.10183641
Nebraska	10	0.23750002	1.00000000	New Jersey	100	0.00000000	0.07058822

State	# of QM Points	For QM values between...	and...	State	# of QM Points	For QM values between...	and...
New Mexico	10	0.27966106	1.00000000	North Dakota	100	0.00000000	0.10982659
New Mexico	20	0.26291083	0.27966105	Ohio	10	0.24800002	1.00000000
New Mexico	30	0.21585905	0.26291082	Ohio	20	0.21238939	0.24800001
New Mexico	40	0.20087339	0.21585904	Ohio	30	0.18867925	0.21238938
New Mexico	50	0.18064516	0.20087338	Ohio	40	0.16981133	0.18867924
New Mexico	60	0.16065575	0.18064515	Ohio	50	0.15294119	0.16981132
New Mexico	70	0.13605443	0.16065574	Ohio	60	0.13636365	0.15294118
New Mexico	80	0.10416667	0.13605442	Ohio	70	0.12162161	0.13636364
New Mexico	90	0.07246376	0.10416666	Ohio	80	0.10204086	0.12162160
New Mexico	100	0.00000000	0.07246375	Ohio	90	0.08064518	0.10204085
New York	10	0.23888892	1.00000000	Ohio	100	0.00000000	0.08064517
New York	20	0.21142859	0.23888891	Oklahoma	10	0.25773195	1.00000000
New York	30	0.19230768	0.21142858	Oklahoma	20	0.20779220	0.25773194
New York	40	0.17096777	0.19230767	Oklahoma	30	0.17482518	0.20779219
New York	50	0.15210358	0.17096776	Oklahoma	40	0.14754100	0.17482517
New York	60	0.13684213	0.15210357	Oklahoma	50	0.12857143	0.14754099
New York	70	0.11730210	0.13684212	Oklahoma	60	0.11013218	0.12857142
New York	80	0.09935207	0.11730209	Oklahoma	70	0.09420292	0.11013217
New York	90	0.07594938	0.09935206	Oklahoma	80	0.08333331	0.09420291
New York	100	0.00000000	0.07594937	Oklahoma	90	0.05829597	0.08333330
North Carolina	10	0.30379748	1.00000000	Oklahoma	100	0.00000000	0.05829596
North Carolina	20	0.26815644	0.30379747	Oregon	10	0.23863635	1.00000000
North Carolina	30	0.23958334	0.26815643	Oregon	20	0.20454546	0.23863634
North Carolina	40	0.22110554	0.23958333	Oregon	30	0.17307692	0.20454545
North Carolina	50	0.20560749	0.22110553	Oregon	40	0.14062502	0.17307691
North Carolina	60	0.18750003	0.20560748	Oregon	50	0.12658228	0.14062501
North Carolina	70	0.17171718	0.18750002	Oregon	60	0.11250002	0.12658227
North Carolina	80	0.14999998	0.17171717	Oregon	70	0.08988763	0.11250001
North Carolina	90	0.12500004	0.14999997	Oregon	80	0.07619051	0.08988762
North Carolina	100	0.00000000	0.12500003	Oregon	90	0.06349208	0.07619050
North Dakota	10	0.25396827	1.00000000	Oregon	100	0.00000000	0.06349207
North Dakota	20	0.21238941	0.25396826	Pennsylvania	10	0.26890757	1.00000000
North Dakota	30	0.20338984	0.21238940	Pennsylvania	20	0.22543354	0.26890756
North Dakota	40	0.18848167	0.20338983	Pennsylvania	30	0.20158102	0.22543353
North Dakota	50	0.17730499	0.18848166	Pennsylvania	40	0.18055554	0.20158101
North Dakota	60	0.15853660	0.17730498	Pennsylvania	50	0.16184975	0.18055553
North Dakota	70	0.15000004	0.15853659	Pennsylvania	60	0.14697411	0.16184974
North Dakota	80	0.13122173	0.15000003	Pennsylvania	70	0.12987014	0.14697410
North Dakota	90	0.10982660	0.13122172	Pennsylvania	80	0.11377246	0.12987013

State	# of QM Points	For QM values between...	and...
Pennsylvania	90	0.08955226	0.11377245
Pennsylvania	100	0.00000000	0.08955225
Rhode Island	10	0.26829271	1.00000000
Rhode Island	20	0.23298430	0.26829270
Rhode Island	30	0.21052632	0.23298429
Rhode Island	40	0.18348625	0.21052631
Rhode Island	50	0.15841585	0.18348624
Rhode Island	60	0.14492757	0.15841584
Rhode Island	70	0.12562816	0.14492756
Rhode Island	80	0.10256409	0.12562815
Rhode Island	90	0.07826086	0.10256408
Rhode Island	100	0.00000000	0.07826085
South Carolina	10	0.28750000	1.00000000
South Carolina	20	0.22891568	0.28749999
South Carolina	30	0.20370370	0.22891567
South Carolina	40	0.18691591	0.20370369
South Carolina	50	0.17142862	0.18691590
South Carolina	60	0.14925375	0.17142861
South Carolina	70	0.12714777	0.14925374
South Carolina	80	0.11111113	0.12714776
South Carolina	90	0.08333335	0.11111112
South Carolina	100	0.00000000	0.08333334
South Dakota	10	0.24590165	1.00000000
South Dakota	20	0.21649486	0.24590164
South Dakota	30	0.20504734	0.21649485
South Dakota	40	0.18965520	0.20504733
South Dakota	50	0.17488791	0.18965519
South Dakota	60	0.15789473	0.17488790
South Dakota	70	0.14761908	0.15789472
South Dakota	80	0.13333335	0.14761907
South Dakota	90	0.10769230	0.13333334
South Dakota	100	0.00000000	0.10769229
Tennessee	10	0.26250001	1.00000000
Tennessee	20	0.21666669	0.26250000
Tennessee	30	0.18750002	0.21666668
Tennessee	40	0.16949155	0.18750001
Tennessee	50	0.14823008	0.16949154
Tennessee	60	0.13215860	0.14823007
Tennessee	70	0.11071431	0.13215859

State	# of QM Points	For QM values between...	and...
Tennessee	80	0.09166668	0.11071430
Tennessee	90	0.07377048	0.09166667
Tennessee	100	0.00000000	0.07377047
Texas	10	0.32828287	1.00000000
Texas	20	0.28409092	0.32828286
Texas	30	0.25850341	0.28409091
Texas	40	0.23430961	0.25850340
Texas	50	0.21359223	0.23430960
Texas	60	0.19266057	0.21359222
Texas	70	0.17159766	0.19266056
Texas	80	0.14782608	0.17159765
Texas	90	0.11764704	0.14782607
Texas	100	0.00000000	0.11764703
Utah	10	0.26666667	1.00000000
Utah	20	0.20930231	0.26666666
Utah	30	0.18571432	0.20930230
Utah	40	0.16438353	0.18571431
Utah	50	0.14018692	0.16438352
Utah	60	0.12337661	0.14018691
Utah	70	0.10447759	0.12337660
Utah	80	0.09090909	0.10447758
Utah	90	0.07182321	0.09090908
Utah	100	0.00000000	0.07182320
Vermont	10	0.26799006	1.00000000
Vermont	20	0.24242424	0.26799005
Vermont	30	0.22529646	0.24242423
Vermont	40	0.20765029	0.22529645
Vermont	50	0.19801980	0.20765028
Vermont	60	0.17041799	0.19801979
Vermont	70	0.15811965	0.17041798
Vermont	80	0.13253011	0.15811964
Vermont	90	0.10795453	0.13253010
Vermont	100	0.00000000	0.10795452
Virginia	10	0.28571426	1.00000000
Virginia	20	0.24528303	0.28571425
Virginia	30	0.22935778	0.24528302
Virginia	40	0.20312503	0.22935777
Virginia	50	0.18846155	0.20312502
Virginia	60	0.17437724	0.18846154

State	# of QM Points	For QM values between...	and...	State	# of QM Points	For QM values between...	and...
Virginia	70	0.15028900	0.17437723	West Virginia	90	0.10489514	0.14666670
Virginia	80	0.12565447	0.15028899	West Virginia	100	0.00000000	0.10489513
Virginia	90	0.09836068	0.12565446	Wisconsin	10	0.25142859	1.00000000
Virginia	100	0.00000000	0.09836067	Wisconsin	20	0.22033898	0.25142858
Washington	10	0.23737375	1.00000000	Wisconsin	30	0.19318182	0.22033897
Washington	20	0.19409284	0.23737374	Wisconsin	40	0.17338712	0.19318181
Washington	30	0.16763009	0.19409283	Wisconsin	50	0.15605096	0.17338711
Washington	40	0.15000000	0.16763008	Wisconsin	60	0.13953491	0.15605095
Washington	50	0.13265304	0.14999999	Wisconsin	70	0.12871289	0.13953490
Washington	60	0.11885248	0.13265303	Wisconsin	80	0.11111114	0.12871288
Washington	70	0.10526319	0.11885247	Wisconsin	90	0.08791210	0.11111113
Washington	80	0.09271525	0.10526318	Wisconsin	100	0.00000000	0.08791209
Washington	90	0.07407410	0.09271524	Wyoming	10	0.28272251	1.00000000
Washington	100	0.00000000	0.07407409	Wyoming	20	0.24611400	0.28272250
West Virginia	10	0.28448277	1.00000000	Wyoming	30	0.21505378	0.24611399
West Virginia	20	0.24615384	0.28448276	Wyoming	40	0.19266058	0.21505377
West Virginia	30	0.22268909	0.24615383	Wyoming	50	0.17826089	0.19266057
West Virginia	40	0.20149255	0.22268908	Wyoming	60	0.15277776	0.17826088
West Virginia	50	0.18627454	0.20149254	Wyoming	70	0.14388494	0.15277775
West Virginia	60	0.16842108	0.18627453	Wyoming	80	0.12658228	0.14388493
West Virginia	70	0.16153851	0.16842107	Wyoming	90	0.09602649	0.12658227
West Virginia	80	0.14666671	0.16153850	Wyoming	100	0.00000000	0.09602648

Due to the small number of facilities, the cut-points for Guam, Puerto Rico, and the Virgin Islands are based on the national distribution of the ADL quality measure score