Methodology Report
U.S. News & World Report
2018-19 Nursing Home Finder

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Introduction

U.S. News & World Report’s Nursing Home Finder is a decision-support tool created to help consumers seeking a nursing facility for themselves or a family member in need of either short-term rehabilitation or long-term nursing care. The Nursing Home Finder reflects U.S. News’s analysis of data collected and published by the Federal government using a methodology defined by U.S. News. The Nursing Home Finder is not a substitute for medical advice, and consumers should consult their medical professional when looking for short-term rehabilitation or long-term nursing care.

As a decision-support tool, the Nursing Home Finder has wide potential relevance. On any given day, over 15,000 nursing facilities in the U.S. care for nearly 1.4 million people, most of them elderly. One of every ten Americans over the age of 85 is a nursing-home resident, and nearly one-third of older Americans spend time in a nursing home in their final months of life.

Generally, services offered at nursing facilities fall in two categories: 1. post-acute care, often involving rehabilitation therapy, following a hospitalization for surgery, heart attack, stroke, injury or other conditions; and 2. long-term care for residents who are no longer able to live independently and need medical supervision. This year, U.S. News introduced a new Short-Stay Rehabilitation Rating evaluating nursing homes on the quality of care they provide to patients requiring rehabilitation care during short-term post-acute stays. The Overall Rating reflects a nursing home’s care of all residents, both short- and long-stay.

Selecting a nursing home for a family member should involve an in-depth site visit, preferably more than one at different times and on different days. However, there are many homes to choose from, especially in metropolitan areas, and credible ratings can help consumers winnow down the options to a manageable starting point.

Background on U.S. News Ratings

U.S. News began publishing online ratings of nursing homes in 2009. Until the 2016-17 release, the tool reflected a snapshot of the star ratings posted on Nursing Home Compare (https://www.medicare.gov/nursinghomecompare), the consumer website administered by the federal Centers for Medicare & Medicaid Services, or CMS. CMS assigns an overall rating of one to

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1 Nursing homes, beds, residents, and occupancy rates in the United States provided by the CDC at https://www.cdc.gov/nchs/data/hus/2017/092.pdf


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five stars to nursing homes according to their performance in three areas or domains: state-conducted health inspections, nurse staffing and medical quality measures. Homes also receive a CMS star rating in each domain.

In the 2016-17 ratings, U.S. News modified the CMS ratings approach by evaluating nursing homes over a one year time period, rather than a one month snapshot, as the CMS star ratings often fluctuate from month to month. Furthermore, the U.S. News ratings added rating caps (limits) to nursing homes with low medical quality ratings and homes that provided residents classified as needing the highest levels of rehabilitative services with barely enough therapy to justify a higher Medicare reimbursement.

2018-19 methodology changes

For the 2018-19 U.S. News Best Nursing Home ratings, we further deviated from the CMS ratings approach in the following three ways:

- Most notably, a new rating specific to short-stay rehabilitation care was added. Short-stay care is defined by Medicare as visits lasting fewer than 100 days, and for Medicare beneficiaries it’s covered after a qualifying hospital stay. A type of measurement model, confirmatory factor analysis, was used to determine a composite score of the quality of care delivered by nursing homes to short-stay patients.

- The CMS overall rating was not used in calculating the U.S. News ratings. The U.S. News Overall Rating is based on the three domains for which CMS issues star ratings: staffing, inspections and quality. The base of the U.S. News Overall rating was a facility’s staffing rating. By contrast, the base of the CMS overall rating is the inspection rating. The decision to diverge from CMS on which domain forms the basis of the overall rating reflects expert opinion on the importance of staffing as well as the availability, since April 2018, of payroll-based nurse staffing data, which is considered to be more accurate than the previous, survey-based data-collection system.

- U.S. News primarily used CMS data released in April and July 2018 to generate its 2018-19 ratings. Prior U.S. News ratings averaged CMS data from 10 consecutive months. Using data from fewer months minimized data latency and ensured that the ratings were based on the most recent data that were feasible to use. This was particularly important in the 2018-19 ratings cycle because payroll-based staffing data were not available prior to April 2018, and because CMS froze its health inspection star ratings in February 2018 in order to allow a year’s worth of data from a new health inspection survey to accumulate.

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Eligibility Requirements

Nursing homes who received an overall star rating from CMS in July 2018 and a staffing star rating in either April or July 2018 received a U.S. News Overall Rating of High Performing, Better than Average, Average, Worse than Average, or Poor. Facilities with at least one short-stay claims-based outcome measure and staffing information on either physical therapists or registered and total nurse staffing received a Short-Stay Rehabilitation Rating of High Performing, Average, or Below Average. Figure 1 outlines the eligibility criteria for each rating.

All rated homes accept residents covered by Medicare, Medicaid or both. Facilities excluded from the analysis are displayed in the Nursing Home Finder (www.usnews.com/nursinghomes) without ratings and with information only about the facility’s location and basic characteristics. Nursing homes absent from the CMS data for July 2018 are not displayed on Nursing Home Finder, even if their CMS data were included in a prior or subsequent month.

In all, 15,317 nursing homes received a U.S. News overall rating and 12,956 homes received a U.S. News short-stay rehabilitation rating in the 2018-19 Nursing Home Finder.

Figure 1. Eligibility for U.S. News Ratings

Eligibility Tree for Overall Rating

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3 Nursing homes file data on the 1st date of every month that represent data from the previous month. For example, October 2016 data pertain to information from September and were filed October 1.
**Methods**

**Data sources**

All data used in the overall composite score and short-stay rehabilitation measure came from publicly available sources published by CMS. The overall star rating published by CMS is based on three elements or domains: state-conducted health inspections, amount of nurse staffing and measures of medical quality. CMS assigns a star rating from one to five for each domain. While the U.S. News overall rating primarily employed the star ratings for these three domains, the short-stay measure used the underlying data that CMS aggregated in these domain ratings. Both U.S. News ratings further employed data from certain CMS public use files.

**Domain details**

**Health inspections.** Nearly all nursing homes accept Medicare, Medicaid or both. They are therefore regulated by the federal government and by the states in which they operate. States conduct health inspections on behalf of CMS every 12 to 15 months. Inspections identify deficiencies in matters such as food preparation, infection control, medication management, residents’ rights and quality of life, and proper skin care.

A home’s CMS star rating in this domain depends on the seriousness and scope of the deficiencies found – that is, the degree of risk they pose and the relative number of residents who were or could have been harmed. The CMS rating is based on the two most recent health inspections that took place prior to the roll-out of the new Long-Term Care inspection process on
November 28, 2017. The most recent year’s health inspection results are weighted more heavily than the previous year’s. In part because the health inspection star rating has been frozen since February 2018 as CMS switches to the new survey instrument, the 2018-19 U.S. News overall rating prioritizes the CMS staffing rating over its health inspection rating. The health inspection rating displayed on the usnews.com website is based on the two most recent CMS health inspections of a home that took place in or before November 2017.

State inspectors also check for compliance with fire safety rules, although their findings do not factor into CMS or U.S. News ratings. The U.S. News Nursing Home Finder website displays results from all of the health inspections and fire inspections.

Nurse staffing. CMS rates nursing homes on how many hours of nursing care patients receive daily. This rating takes into account the severity of each nursing home’s residents’ needs. Until April 2018, this information was based on data reported to CMS by each home for designated two-week periods. Starting in 2018, this rating was based on data collected through the Payroll-Based Journal (PBJ) system. The advantage of the PBJ system is that it is auditable, increasing the accuracy of the available staffing numbers at each home (notwithstanding reported implementation problems⁴), and reflects average staffing over an entire quarter. Data on the average number of registered nurses, licensed practical nurses, licensed vocational nurses and certified nurse assistants are available through this system.

CMS compared the total staffing hours to the average number of residents during the same period to determine the daily minutes of nursing time per resident. To receive five stars in the CMS staffing ratings used by U.S. News, a home had to receive five stars in both the total nurse staffing and registered nurse staffing domains, requiring them to have an adjusted average of at least 4.238 hours of total nursing staff per resident per day and at least 0.884 hours of registered nurse hours per resident per day.

Medical quality measures. CMS requires all Medicare and Medicaid-certified nursing homes to submit certain clinical assessment-based data as part of the Minimum Data Set (MDS), which covers all residents. CMS also calculates three short-stay claims-based measures using Medicare Part A claims from the latest four calendar quarters. Short-stay indicators apply to patients who have spent fewer than 100 days in a skilled nursing facility; long-stay indicators apply to residents who have spent 100 days or more. In all, there are 24 short-stay and long-stay indicators. CMS quality measure star ratings are based on a subset of nine long-stay and seven short-stay indicators considered the most valid and reliable. The Short-Stay Rehabilitation rating uses a subset

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of the short-stay quality measures, including all three claims-based outcome measures and one MDS-based indicator (influenza immunization rates).

Rehabilitation therapy minutes. While the CMS star ratings do not take rehabilitation therapy data into account, the U.S. News ratings factor in quality measures related to the amount of rehabilitation therapy a home provides its residents. The rationale was published soon after CMS released facility-level data in the spring of 2016 on nursing homes’ utilization of rehabilitation therapy\(^5\). Besides incorporating the rehabilitation data into our ratings, U.S. News has also published two measures of rehabilitation utilization data on each facility’s usnews.com profile, along with medical quality measures obtained from CMS Nursing Home Compare data.

Calculation of U.S. News ratings

Overall Composite Rating

U.S. News evaluated each home using the CMS domain-specific star ratings. Data were downloaded from CMS Nursing Home Compare from the months of April and July 2018. The data underlying the CMS staffing and quality domain ratings are updated quarterly, though the stars themselves can change from month to month if the underlying distribution of data changes. While the staffing data reflects a three month period, the quality data is representative of a one year time period. For this reason, we decided to use an average of the April and July staffing star ratings, which reflects a six month period of PBJ staffing ratings. Since each quality rating is representative of a one-year time period, we used just the July quality star rating. The CMS health inspection domain rating has been frozen since February 2018, with slight fluctuations due to the distribution of stars. An average of the April and July health inspection star rating was used to account for this variation, which is purely the result of the distribution. All homes which were given an overall rating by CMS in July and a staffing rating by CMS in either April and July were eligible for a U.S. News overall rating. Where appropriate, rating caps were applied as an additional step.

The U.S. News scoring modification process was as follows:

1. A nursing home’s overall rating began with a base equal to the average CMS staffing star rating.

2. A nursing home’s base U.S. News overall rating was increased by 1 point if the home received an average health inspection rating from CMS greater than 4. A


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nursing home’s overall rating by U.S. News was decreased by 1 point if the home received an average health inspection rating from CMS less than or equal to 2.

3. A nursing home’s U.S. News overall rating was decreased by 1 point if the home received a CMS quality rating equal to 1.*

4. A nursing home’s U.S. News overall rating was capped at 4 if its pattern of rehabilitation therapy was more consistent with billing-centered care (as opposed to patient-centered care) than at least 90 percent of other facilities. Billing-centered care was defined as having a high proportion of high-needs residents who received rehabilitation therapy time no greater than 10 minutes over the minimum amount required for the facility to receive reimbursement at either the very high or ultra high resource utilization group (RUG) level.

5. A nursing home’s U.S. News overall rating was capped at 3 if it was under CMS Special Focus status in either April 2018 or June 2018. Special focus is a CMS designation indicating that a home has a history of serious or numerous quality issues.

* The quality measures rating displayed on the U.S. News profile of a nursing home was capped at 4 if the facility's staffing declined between the March MDS-reported value and April PBJ value, and the scale of that decline was greater than the decline at 90 percent or more of all nursing homes.
Figure 2. U.S. News Overall Score Methodology

Set the USN Overall Rating as equal to the facility's CMS Nurse Staffing Rating.

What is the facility’s CMS Health Inspection Rating?

Less than or equal to 2

Subtract 1 point from the USN Overall Rating.

Greater than 2 and less than or equal to 4

Add 1 point to the USN Overall Rating.

What is the facility’s CMS Quality Rating?

Equal to 1

Subtract 1 point from the USN Overall Rating.

Greater than 1

Did the facility provide a minimum number of rehabilitation minutes per threshold or reimbursement more frequently than 50% of its peers?

Yes

Cap the USN Overall Rating at a maximum of 4.

No

Did the facility have CMS Special Focus designation any of the months of analysis?

Yes

Cap the USN Overall Rating at a maximum of 3.

No

Set USN Overall ratings which are below 1 to 1, and above 5 to 5.

Round to the USN Overall Rating nearest whole number.

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The rating that U.S. News assigns a nursing home is not always the same as its CMS rating due to the differences in the two methodologies. The following crosstabulation shows the alignment between the U.S. News 2018-19 Overall Rating and the CMS rating that homes received in July 2018. Only nursing homes that received a star rating from CMS in July 2018 appear in the table.

<table>
<thead>
<tr>
<th>CMS July 2018 Rating</th>
<th>U.S. News 2018-19 Overall Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor (1 out of 5)</td>
</tr>
<tr>
<td>1 star</td>
<td>1,216</td>
</tr>
<tr>
<td>2 stars</td>
<td>1,015</td>
</tr>
<tr>
<td>3 stars</td>
<td>450</td>
</tr>
<tr>
<td>4 stars</td>
<td>145</td>
</tr>
<tr>
<td>5 stars</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>2,828</td>
</tr>
</tbody>
</table>

**Short-Stay Rehabilitation Rating**

Broadly, there are two populations of nursing home residents: those who require long-term care and those in need of short-term skilled nursing (often paired with rehabilitation therapy) subsequent to an episode of acute care. Despite the inherent differences between these groups in their respective needs, there exists only one composite rating available from CMS\(^6\), which encompasses both long-term and short-term care. The lack of ratings with specific relevance to either long-term-care residents or short-stay post-acute care patients is perceived by some experts to be an important gap in public reporting. U.S. News’ new Short-Stay Rehabilitation rating aims to provide this second group of patients, those seeking post-acute rehabilitative care before returning home, with a clearer view of the quality of care provided by nursing homes for similar patients.

U.S. News evaluated each home present in the July 2018 CMS provider file using publicly available data on nursing home quality. All homes which had at least one short-stay claims-based outcome measure and staffing information on either physical therapy time per resident or registered and total nurse staffing received a Short-Stay Rehabilitation rating. Data used in this rating were downloaded from the CMS Nursing Home Compare website for the months of March, April and

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July 2018. The 2015 Medicare Provider Utilization and Payment Data public use file (PUF) was also downloaded and incorporated into this rating; the corresponding 2016 PUF was not available during the period in which U.S. News performed its analysis.

**Theoretical Framework**

Quality of care has no ready definition or definitive metric, and there is no consensus on the best way to measure it, particularly in the nursing homes setting. Some aspects of healthcare quality are readily quantified, while others are more challenging to measure. The Short-Stay Rehabilitation rating, like the Best Hospitals: Procedures & Conditions ratings, uses the Donabedian paradigm, which reflects a relationship between structure, process and outcomes, to determine a composite measure of quality of care. Avedis Donabedian described this now-widely accepted paradigm in 1966, which has been applied to healthcare as follows:

- **Structure** refers to resources connected with patient care, such as the number of nurses or ownership status of the facility.

- **Process** refers to the way in which diagnoses, treatments, practices to avoid harm to patients and other care are rendered, for example, whether steps known to be effective in preventing infections and medical errors or improving patient health are built into nursing home routine.

- **Outcomes** refers to the results of care, such as whether a patient experiences a rehospitalization or an emergency room visit, and whether a patient ultimately returns home following the nursing home stay.

An important goal of this methodology is to give patients a clear bottom line. Notwithstanding the complexity and nuance of measurement and the usefulness of particular types of information such as average nursing time and rehospitalization rates, patients deserve an overall conclusion: How well does a nursing home perform compared to other nursing homes in providing post-acute rehabilitation and nursing services after surgery, stroke, accident, illness, or other episode-defining events? The ratings aggregate the measures into an overall assessment by placing a nursing home’s short-stay rehabilitation care into one of three composite bands: High Performing, Average, or Below Average.

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**Candidate Indicators**

Short-stay patient outcomes include the percentage who are rehospitalized or have an ER visit as well as the percentage who are successfully discharged from SNF back to the community. These measures came from the July 2018 “Quality MSR Claims” file and reflect one year of Medicare claims. All other short-stay medical quality measures came from the July “Quality MSR MDS” file, which also represents a one-year data-collection period. See Appendix A for a full list of candidate short-stay medical quality measures.

Information on complaints and incidents per resident, nursing home ownership, total residents, and whether a nursing home is attached to a hospital came from the July “Provider Info” file. All staffing measures were averaged over the April and July provider files to reflect six consecutive months of data, except in cases where a facility was missing data for one quarter or the other, in which case only the available data were used. Candidate staffing measures included the average amount of time a registered nurse, any member of the nursing staff, or physical therapist spent with each patient, as well as the ratio of registered nurses to total nursing staff.

The consistency of registered and total nurse staffing before and after the switch in reporting systems from MDS to payroll-based journaling was calculated using the March and April (or March and July when April data were not available) provider files. Using the difference between the staffing reported in each of the two months of data, we created a binary variable indicating whether or not the facility was in the 90th percentile or higher of a decline in staffing from March to the subsequent time period. One rationale for considering this candidate measure is the possibility that facilities with MDS assessment-based staffing data that are sharply at odds with payroll-verified data may have lower-quality data for other measures calculated from the MDS.

Health and fire deficiencies per resident, adjusted by state, came from each facility’s most recent health inspection survey. Lastly, the percentage of patients receiving rehabilitation time within 10 minutes of the the very high or ultra high therapy reimbursement threshold came from the 2015 PUF.

**Exploratory Factor Analysis**

All candidate indicators were evaluated using an exploratory factor analysis to understand how these measures are related and how many underlying constructs they define. Our a priori hypothesis was that these variables would estimate one underlying factor: quality of post-acute rehabilitation care. All indicators were first oriented so that higher numbers indicated better quality of care. The initial list of indicators was narrowed down by eliminating variables that were inversely...
correlated with the first underlying factor (including the medical quality measures of reported pain and patient pressure ulcers as well as the fire and health deficiency ratios).

The resulting list of candidate indicators included:

- Average amount of time a registered nurse spent with each patient
- Average amount of time all nursing staff spent with each patient
- Average amount of time a physical therapist spent with each patient
- The ratio of registered nurses to total nursing staff
- Consistency of registered and total nurse staffing before and after the switch in reporting systems from MDS assessment-based to payroll-based journaling
- The ownership type of the nursing home (nonprofit or for-profit)
- Percentages of nursing home residents qualifying for very high or ultra high rehabilitation who received more than 10 minutes of therapy over the minimum amount required for the facility to receive reimbursement at that RUG level
- The number of state-substantiated complaints per resident over a three-year period
- Percentage of short-stay residents who avoided rehospitalized after a nursing-home admission
- Percentage of short-stay residents who avoided an outpatient emergency department visit
- Percentage of short-stay residents successfully discharged to the community
- Percentage of short-stay residents assessed and appropriately given the seasonal influenza vaccine
- Percentage of residents who did not newly receive an antipsychotic medication

**Confirmatory Factor Analysis**

We hypothesized that certain of the candidate indicators listed above are caused by an underlying, or latent, variable that represents quality of post-acute rehabilitation care. Confirmatory factor analysis (CFA), a form of latent-variable modeling, is based on the statistical principle that variables sharing a common cause will be correlated. A CFA model can estimate the extent to which the values for each indicator are the result of a relationship with quality of care. The remaining variance in the indicator is attributed to measurement error. The degree to which an indicator is correlated with other indicators helps to determine its weight in the equation for the composite scores.

To develop a CFA-based model of post-acute rehab care, we evaluated all possible combinations of the above indicators that included one or two measures of staffing and at least two claims-based outcome measures. We eliminated models exhibiting unacceptable fit statistics or factor loadings.
We evaluated the fit of our confirmatory factor analysis models using three measures: the comparative fit index (CFI), the Tucker Lewis Index (TLI), and the root-mean-square error of association (RMSEA). The literature provides a variety of standards for acceptable model fit using these statistics. We sought final models with a CFI and TLI of .90 or greater, and RMSEA of .08 or lower. The final model was selected using the criteria of 1) an optimal number of indicators (models with more indicators produce more accurate factor scores), 2) model fit (models with a higher TLI and CFI and lower RMSEA were preferred), and 3) models with consistently higher factor loadings.

After selecting the final model, factor scores were calculated for each nursing home using confirmatory factor analysis.

We estimated fit statistics with the WLSMV estimator after multiply imputing missing data. We did not assign quality scores to nursing homes based on imputed data. To avoid using imputed data for that purpose, we fit final models separately using Full Information Maximum Likelihood with empirical Bayes estimation of nursing home factor scores and standard errors. These models are appropriate for use with missing data, but do not provide the fit statistics necessary to guide model development. Fit statistics can change depending on the estimator used, so there is no assurance that the fit statistics estimated apply directly to the models used for score estimation. However, we found the models, including factor loadings, fit statistics, and factor scores, to be consistent across a variety of estimators and software packages.

We assigned each short-stay rated nursing home to one of three performance tiers: Below Average, Average, or High Performing. Inference that a nursing home was below average or high performing was made at the 75% confidence level. Health researchers more commonly use a 95% confidence level, an approach that is geared toward minimizing the number of false positive results (in this context, incorrectly identifying average nursing homes as better or worse than the mean). However, because false negatives (identifying poor-performing nursing homes as average) can have serious consequences for patients, we sought to strike a balance between minimizing false positive and false negative results.

The final model’s fit statistics are shown in Table 1 and the indicators and factor loadings are shown in Table 2.

### Table 1: Confirmatory Factor Analysis Fit Statistics

<table>
<thead>
<tr>
<th></th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
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</thead>
<tbody>
<tr>
<td>Short-stay rehabilitation</td>
<td>0.927</td>
<td>0.895</td>
<td>0.058</td>
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To be recognized as one of the 2018-19 U.S. News Best Nursing Homes, a facility must have been “High Performing” in either the Overall or Short-Stay Rehabilitation rating and not worse than “Average” in the other. Of the 15,616 nursing homes evaluated by U.S. News, 1,874 facilities are labelled as “Best Nursing Homes: Short-Stay Rehabilitation 2018-19” and 1,837 are labelled as “Best Nursing Homes 2018-19.”

In all, 2,975 facilities are labelled Best Nursing Homes in one or both categories (cells shaded green with boldface type in the crosstabulation below). That includes 736 facilities that were High Performing in both.

### Recognition of U.S. News Best Nursing Homes

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Quality Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistency of staffing measurement</td>
<td>0.507</td>
</tr>
<tr>
<td>Discharging patients to community</td>
<td>0.288</td>
</tr>
<tr>
<td>Influenza immunization</td>
<td>0.268</td>
</tr>
<tr>
<td>Low or reasonable rate of complaints</td>
<td>0.199</td>
</tr>
<tr>
<td>Patient-centered rehabilitation therapy</td>
<td>0.313</td>
</tr>
<tr>
<td>Physical therapist staffing</td>
<td>0.412</td>
</tr>
<tr>
<td>Prevention of emergency-room visits</td>
<td>0.169</td>
</tr>
<tr>
<td>Readmission prevention</td>
<td>0.114</td>
</tr>
<tr>
<td>Training level of nursing staff</td>
<td>0.715</td>
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### Table 2: Indicator Correlations, Short-Stay Rehabilitation

#### U.S. News 2018-19 Overall Rating

<table>
<thead>
<tr>
<th>U.S. News Short-Stay Rehabilitation Rating</th>
<th>Poor (1 out of 5)</th>
<th>Worse than Average (2 out of 5)</th>
<th>Average (3 out of 5)</th>
<th>Better than Average (4 out of 5)</th>
<th>High Performing (5 out of 5)</th>
<th>Not Rated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below Average</td>
<td>1,190</td>
<td>638</td>
<td>295</td>
<td>82</td>
<td>7</td>
<td>1</td>
<td>2,213</td>
</tr>
<tr>
<td>Average</td>
<td>1,060</td>
<td>2,127</td>
<td>2,794</td>
<td>2,041</td>
<td>654</td>
<td>25</td>
<td>8,701</td>
</tr>
<tr>
<td>High Performing</td>
<td>18</td>
<td>150</td>
<td>443</td>
<td>684</td>
<td>736</td>
<td>11</td>
<td>2,042</td>
</tr>
<tr>
<td>Not Rated</td>
<td>560</td>
<td>366</td>
<td>505</td>
<td>520</td>
<td>447</td>
<td>262</td>
<td>2,660</td>
</tr>
<tr>
<td>Total</td>
<td>2,828</td>
<td>3,281</td>
<td>4,037</td>
<td>3,327</td>
<td>1,844</td>
<td>299</td>
<td>15,616</td>
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Acknowledgments

We thank Alpesh Amin, David C. Grabowski, Laura A. Hatfield, R. Tamara Konetzka, Vincent Mor, Dana B. Mukamel, Dara H. Sorkin and David L. Weimer for helpful discussions on nursing home quality and measurement. None of these individuals have endorsed the U.S. News methodology.

Appendix A: Measure Sources and Descriptions for the Short-Stay Rehabilitation Rating

Rehabilitation therapy measures
MDS assessment-based measures:

● Of patients who received very-high rehabilitation therapy, the percentage who received no more than 10 minutes over the minimum required for reimbursement at that RUG level
● Of patients who received ultra-high rehabilitation therapy, the percentage who received no more than 10 minutes over the minimum required for reimbursement at that RUG level

Nurse staffing measures
MDS assessment-based measures:

● Average certified nursing assistant time per patient-day
● Average licensed practical nursing and licensed vocational nursing time per patient-day
● Average registered nursing time per patient-day
● Average total nursing time per patient-day
● Average physical therapy staffing time per patient-day

Penalties and deficiencies
Inspection-based measures:

● Number of CMS-issued penalties
● Number of health deficiencies found on the two most recent inspection cycles
● Number of fire code deficiencies found on the two most recent inspection cycles

Provider information

● Medicare certification
● Medicaid certification
● Ownership type
● Existence of resident council
● Existence of family council

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• Continuing Care Retirement Community integration

Short-stay medical quality measures

MDS assessment-based measures:
• Percentage of residents whose physical function improved from admission to discharge
• Percentage of residents with new or worsened pressure ulcers (bed sores)
• Percentage of residents assessed and appropriately given the seasonal influenza vaccine
• Percentage of residents assessed and appropriately given the pneumococcal vaccine
• Percentage of residents who reported moderate to severe pain
• Percentage of residents who newly received an antipsychotic medication

Claims-based outcomes measures:
• Percentage of residents who were rehospitalized within 30 days of a nursing-home admission
• Percentage of residents who had an outpatient emergency department visit within 30 days of a nursing-home admission
• Percentage of residents successfully discharged to the community

Long-stay medical quality measures

MDS assessment-based measures:
• Percentage of residents whose ability to move independently worsened
• Percentage of residents needing increasing help with activities of daily living
• Percentage of high-risk residents with pressure ulcers
• Percentage of residents who have or had a catheter inserted and left in their bladder
• Percentage of residents who were physically restrained
• Percentage of residents with a urinary tract infection
• Percentage of residents who self-reported moderate to severe pain
• Percentage of residents who experienced one or more falls with major injury
• Percentage of residents who received an antipsychotic medication