

Performance of skilled nursing facilities for the Medicare population

Jill S. Herbold, FSA, MAAA
Anders Larson, FSA, MAAA



Introduction

With expenditures for skilled nursing facility (SNF) services over \$40 billion¹ for the Medicare population, SNF services are a significant area of focus for Medicare accountable care organizations (ACOs), Medicare Advantage health plans, and participants in other Medicare programs, such as bundled payments. These organizations strive to provide more cost-efficient healthcare, and reducing admissions to SNFs and managing costs during SNF stays are both important ways to control and reduce spending for SNF services. In focusing on the latter, our clients have sought to understand how they should measure the performance of SNFs, how to appropriately benchmark performance, and how much opportunity they have to reduce spending for SNF services by steering patients to more cost-efficient SNFs. In this report, we first discuss a framework and metrics for measuring SNF performance. We then explore SNF performance levels across the United States and provide a quantitative assessment of the opportunity to reduce spending for SNF services through steering of patients to more cost-efficient SNFs.

Measuring SNF performance

In this report, we evaluate SNFs on the following utilization and expenditure metrics:²

- Average length of stay
- Inpatient transfer rate
- Inpatient readmission rate
- Average emergency department (ED) visits per 100 days
- Average paid per day
- Average paid per discharge
- Average paid per discharge, including inpatient transfer costs

To understand why we focus on these metrics, it is useful to understand Medicare reimbursement for SNF services. Under Medicare fee-for-service, SNFs are reimbursed on a per diem basis. The reimbursement per day depends on the Resource

Utilization Group (RUG) score, which measures the level of care required for each patient and the location of the SNF. Assuming claims are appropriately coded, individual SNFs therefore have little control over their average reimbursements per day, but SNFs with a longer average length of stay will have higher overall reimbursements per discharge. Not surprisingly, average length of stay is often a key metric used to evaluate SNF performance.

The average length of stay in our analysis is higher than in some other analyses in part because of our methodology for handling inpatient transfers. In situations where a patient was transferred from a SNF to an inpatient facility and then transferred back to the same SNF, we consider it to be a single SNF discharge and we count all SNF days on either side of the inpatient transfer. Without this adjustment, the average length of stay will be lower for SNFs that frequently transfer patients back to the inpatient setting. This could distort comparisons between SNFs and inappropriately reward SNFs with high transfer rates.

In addition to inpatient transfers, it is possible for patients to have visits to the emergency department (ED) during the SNF stay. Some patients also return to the inpatient hospital setting within a short time of being discharged from the SNF (readmission). These costs are not reflected in the reimbursement directly to the SNF, but they are influenced by the care patients receive during their SNF stays and are important for an organization responsible for managing overall expenditures for a population, such as a Medicare Advantage health plan or ACO. Therefore, in addition to average length of stay, we evaluate the frequency of inpatient transfers, ED visits, and readmissions for each SNF.

Finally, we measure three expenditure metrics: average paid per day, average paid per discharge, and average paid per discharge including inpatient transfer costs. The average paid per day, as noted before, is mostly outside of the SNF's control, but it can provide useful context when evaluating the costs per discharge. When comparing SNFs in the same geographic area, the average paid per discharge including inpatient transfer costs generally provides the most complete view of overall SNF performance.

1 Estimate is for 2016, based upon information publicly available from the Centers for Medicare and Medicaid Services (CMS).

2 Definitions for each of these metrics can be found in the "Data Sources and Methodology" section of this paper.

National results

To begin understanding SNF performance metrics, it is helpful to understand national averages. The chart in Figure 1 presents 2014 national averages in total and at each RUG level³ for all of our utilization and expenditure metrics. Across all SNF discharges, the average length of stay was approximately 30 days and the average paid per discharge was approximately \$12,400. After including inpatient transfer costs, the average paid per discharge was approximately \$15,000.

Average length of stay and all of the expenditure metrics are higher at the higher RUG levels, whereas the inpatient transfer rate and the average ED visits per 100 days are lower at the higher RUG levels. The inpatient readmission rate was similar across RUG levels. The mix of discharges by RUG level can affect the overall results for an individual SNF, and therefore RUG levels should be considered when evaluating or comparing performance of individual SNFs.

3 See the “Data Sources and Methodology” section for more detail on how a RUG level was determined for each discharge.

Even within a RUG level, however, we found that there is significant variation in performance across SNFs. The chart in Figure 2 presents the 20th, 50th, and 80th percentiles for the average length of stay, inpatient transfer rate, inpatient readmission rate, and average ED visits per 100 days, by RUG level. Although these results are not adjusted for morbidity or other factors that may drive differences in results, it appears that there are significant differences in performance between SNFs. At the ultra high and very high RUG levels, the 80th percentile for inpatient transfer rate, average ED visits per 100 days, and inpatient readmission rate is approximately two to three times higher than seen in the 20th percentile. There is less variation in average length of stay, but the average length of stay at the 80th percentile is still approximately 1.5 times the length of stay at the 20th percentile for the ultra high and very high RUG levels. This variation can lead to savings opportunities for organizations managing the total cost of care, which is discussed in more detail in the “Potential savings for managed populations” section of this report below.

FIGURE 1: SNF PERFORMANCE METRICS BY RUG LEVEL, NATIONAL AVERAGE 2014 MEDICARE FEE-FOR-SERVICE POPULATION

RUG Level	Percent of Discharges	Inpatient Transfer Rate	Inpatient Readmission Rate	Average ER Visits per 100 Days	Average Length of Stay	Average Paid Per Day	Average Paid Per Discharge	Average Paid Per Discharge with Inpatient
Ultra High	52.8%	15.5%	9.4%	0.34	35.0	\$444	\$15,536	\$17,881
Very High	21.3%	18.4%	9.7%	0.48	30.1	\$350	\$10,559	\$13,293
High	7.2%	19.4%	9.2%	0.58	25.6	\$296	\$7,575	\$10,440
Medium	3.6%	20.2%	8.7%	0.63	21.1	\$261	\$5,512	\$8,459
Other	15.2%	19.7%	8.9%	0.83	16.5	\$488	\$8,057	\$11,309
All RUGs	100.0%	17.2%	9.4%	0.44	30.0	\$414	\$12,410	\$15,035

FIGURE 2: VARIATION IN SNF UTILIZATION METRICS BY RUG LEVEL NATIONALLY 2014 MEDICARE FEE-FOR-SERVICE POPULATION

RUG Level	Percent of Discharges	Inpatient Transfer Rate			Inpatient Readmission Rate		
		20th Percentile	50th Percentile	80th Percentile	20th Percentile	50th Percentile	80th Percentile
Ultra High	78.4%	10.5%	15.3%	21.0%	6.3%	9.2%	12.3%
Very High	16.4%	10.7%	16.9%	23.7%	6.6%	9.8%	13.7%
Other Levels	5.2%	5.7%	10.5%	23.4%	6.1%	9.3%	12.7%

RUG Level	Percent of Discharges	Average ER Visits Per 100 Days			Average Length of Stay		
		20th Percentile	50th Percentile	80th Percentile	20th Percentile	50th Percentile	80th Percentile
Ultra High	78.4%	0.19	0.30	0.48	28.6	34.9	42.1
Very High	16.4%	0.20	0.38	0.60	22.5	27.9	34.1
Other Levels	5.2%	-	0.13	0.60	9.4	13.9	21.6

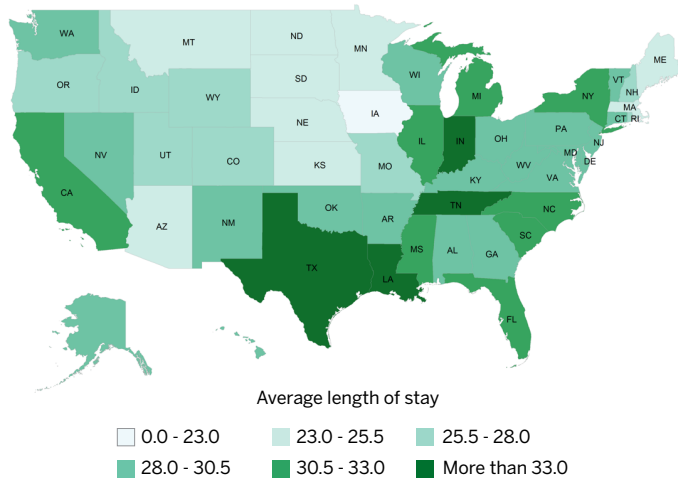
Note: Because of concerns with the credibility of results of smaller SNFs, we limited the results in this chart to SNFs with at least 50 discharges in each RUG level, and we have combined all RUG levels below very high into “other levels.”

Results by state

As part of our analysis, we also investigated how the metrics varied by state. We focused this analysis on utilization metrics rather than expenditure metrics because reimbursement differences are driven largely by Medicare’s geographic factors, which are outside of a SNF’s control. Utilization differences between states are more likely to be indicative of differences in the efficiency of care. The map in Figure 3 shows the average length of stay in each state. The darker shades of green indicate that the state has a longer average length of stay. Two states, Louisiana and Indiana, had an average length of stay greater than 34 days, which is approximately four days above the national average. Iowa had the lowest average length of stay at approximately 23 days.

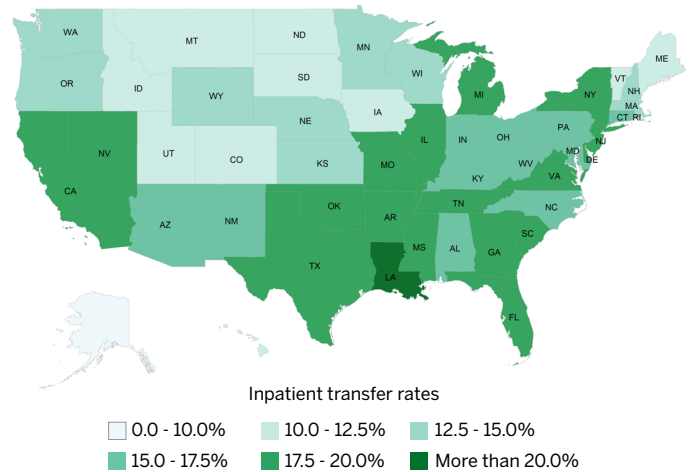
Note that these averages are not adjusted for the mix of RUG levels in each state. Twenty-seven states and the District of Columbia had between 65% and 80% of their discharges in the ultra high or very high RUG levels. Two notable outliers were Alaska and North Dakota, which both had less than 30% of discharges in the ultra high or very high RUG levels. It is unclear whether this is driven by claim coding differences, the types of services provided by SNFs in these states, or differences in the types of patients who are utilizing SNF services.

FIGURE 3: AVERAGE LENGTH OF STAY BY STATE 2014 MEDICARE FEE-FOR-SERVICE POPULATION



The next map in Figure 4 shows the inpatient transfer rate in each state. The darker shades of green indicate that the state has a higher inpatient transfer rate. Louisiana had the highest inpatient transfer rate at approximately 23%, which was the only state above 20%. Alaska had the lowest inpatient transfer rate at approximately 9%, although there were less than 900 SNF discharges in the entire state, by far the fewest of any state. Five other states had inpatient transfer rates below 12%.

FIGURE 4: AVERAGE INPATIENT TRANSFER RATE BY STATE 2014 MEDICARE FEE-FOR-SERVICE POPULATION

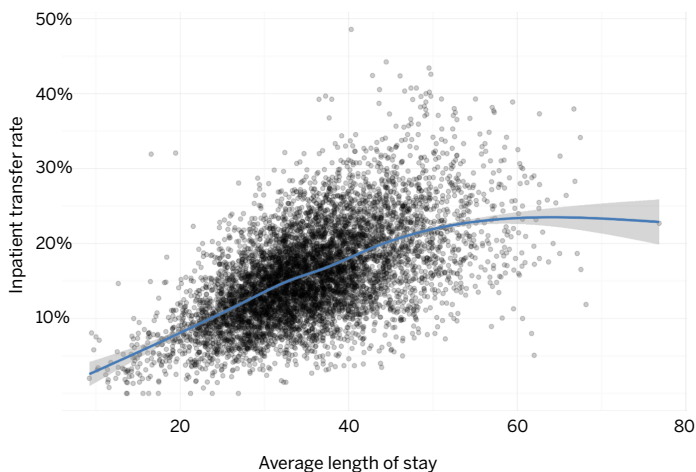


Although it is beyond the scope of this report, further investigation may be warranted to understand what factors are driving more efficient care in some states compared with others.

Relationships between metrics

We also explored relationships between various performance metrics. Two key metrics of interest were average length of stay and inpatient transfer rate. The chart in Figure 5 plots the average length of stay and inpatient transfer rate for discharges with an ultra high RUG level, which account for over 50% of all SNF discharges. We found a fairly strong relationship between higher average length of stay and higher inpatient transfer rates, indicating that SNFs with lower average lengths of stay also tend to have lower inpatient transfer rates. We found a similar relationship for discharges at the very high RUG level. However, note that we did not adjust for morbidity or other factors that may drive differences in results. Even within a RUG level, it is possible for the complexity of patients to vary by SNF. More complex patients likely would have longer stays and be transferred to an inpatient facility more frequently.

FIGURE 5: RELATIONSHIP BETWEEN AVERAGE LENGTH OF STAY AND INPATIENT TRANSFER RATE, ULTRA HIGH RUG LEVEL 2014 MEDICARE FEE-FOR-SERVICE POPULATION



Note: Limited to SNFs with at least 50 discharges at the ultra high RUG level.

At a high level, we looked for correlation between other utilization metrics. We did not find a particularly strong correlation between any other pairs of variables, excluding those that directly influence each other, such as average length of stay and average paid per discharge. We did find that, after adjusting for the mix of RUG levels by SNF, readmission rate had a weak negative correlation (-11%) with average length of stay. It is possible that the shorter length of stay at some SNFs puts the patients at increased risk of an inpatient readmission, although the relationship is not strong.

Potential savings for managed populations

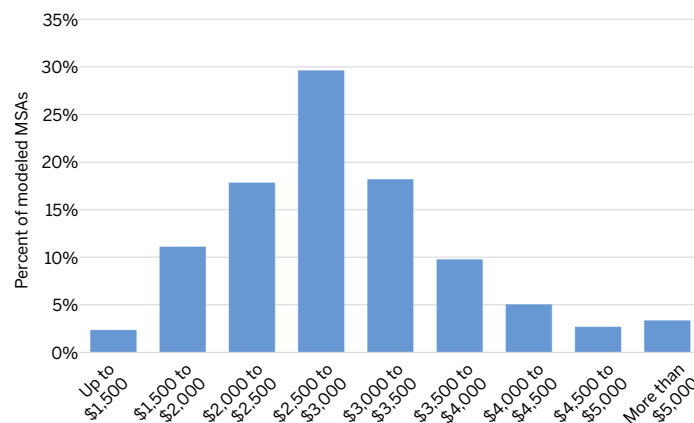
The differences in performance among SNFs presents an opportunity for cost savings for Medicare Advantage health plans, ACOs, and other organizations responsible for managing a population of Medicare beneficiaries. The savings opportunity per discharge will vary by area based on the amount of variation in SNF performance within the area. Additionally, the savings opportunity per beneficiary per year (PBPY) will vary based on the total volume of SNF discharges.

In our analysis, we modeled the impact of shifting all discharges within each metropolitan statistical area (MSA) to the higher-performing SNFs in each area. In order to model this, we sorted the SNFs in each MSA and RUG level by their average paid per discharge, including inpatient transfer costs. We then created a group of the SNFs with the lowest average paid per discharge, including inpatient transfer costs, which included enough SNFs to account for 50% of all discharges in the MSA and RUG level. We compared the average paid per discharge including inpatient transfer costs of this high-performing group with the entire MSA and RUG level. The difference was the average potential savings per discharge for the MSA and RUG level.

This represents a situation where an ACO or other organization initially has a SNF performance that is typical of the average for its area, but is then able to steer patients to the more efficient SNFs in its area, assuming these SNFs have capacity to take on these additional patients. The total volume of SNF discharges does not change, but savings is generated because of more efficient care for patients at the SNF. We limited our analysis to MSAs with at least 1,000 annual discharges and at least five unique SNFs with a discharge at each RUG level. A total of 297 MSAs met this criteria, and these MSAs included approximately 76% of all SNF discharges. Steerage was modeled separately at each RUG level.

The chart in Figure 6 illustrates the potential savings per discharge in each MSA. Approximately 87% of MSAs have an opportunity of savings between \$2,000 and \$4,000 per discharge, with several MSAs above \$5,000. There does not appear to be a strong relationship between the number of annual discharges in an area and the savings opportunity per discharge.

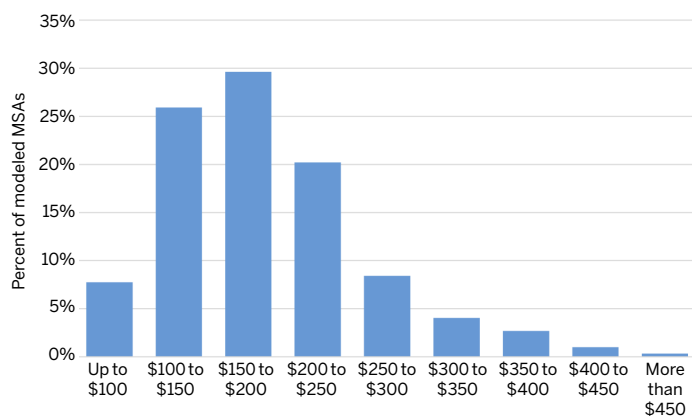
FIGURE 6: POTENTIAL SAVINGS OPPORTUNITY PER DISCHARGE, BY MSA 2014 MEDICARE FEE-FOR-SERVICE POPULATION



The chart in Figure 7 on page 5, illustrates the potential savings PBPY. Approximately 76% of MSAs have the opportunity for savings between \$100 and \$250 PBPY. Several MSAs have opportunities for savings above \$400 PBPY, which would represent nearly 4% of total expenditures for a typical Medicare Shared Savings Program (MSSP) ACO.⁴

⁴ According to the 2014 MSSP Public Use File, MSSP ACOs had average per capita expenditures of approximately \$10,173 in 2014. This value reflects the impact of claims being capped using the MSSP methodology.

FIGURE 7: POTENTIAL SAVINGS OPPORTUNITY PBPY, BY MSA 2014 MEDICARE FEE-FOR-SERVICE POPULATION



Potential savings opportunity per discharge and PBPY by MSA are provided in the appendix.⁵ In reviewing the results, one can note that the MSAs with the most potential savings PBPY are not necessarily the same as the MSAs with the most potential savings per discharge. For example, the MSA with the most potential savings per discharge (Salinas, California) had potential savings PBPY of only \$306, which is due to relatively low annual discharges per 1,000 (45.3). The MSA with the most potential savings PBPY (Monroe, Louisiana) had potential savings per discharge of approximately \$5,100 and also had very high annual discharges per 1,000 (95.0).

Conclusion

The analyses in this report not only establish baseline levels of performance across various metrics, but also quantify the observed differences that exist between facilities. This variation in performance indicates that steering patients to higher-performing SNFs and collaborating with SNF partners to improve their performance are worthwhile endeavors for Medicare ACOs, Medicare Advantage health plans, and other entities responsible for the SNF costs of a population as they strive to provide more cost-efficient healthcare. When developing programs to successfully manage SNF costs, our clients have considered the performance metrics discussed in this paper for each SNF within their geographic area(s) to compare SNFs against each other and against performance benchmarks. As with any efforts to reduce cost of care, organizations must also consider other factors, such as quality of care, which may not be reflected through these performance metrics. However, we believe that efforts to improve financial performance of SNF services can be successful without detrimentally affecting the patient experience.

⁵ <http://us.milliman.com/uploadedFiles/insight/2016/skilled-nursing-facilities-appendix.pdf>.

Data sources and methodology

This report is based on analysis of the Medicare 100% Statistical Analytical Files (SAF). The analysis included a total of approximately 1.8 million SNF discharges that began and ended in 2014. We identified facility inpatient admissions and emergency department visits using the 2016 Milliman Health Cost Guidelines™ Grouper.

RUG Levels are based on Crosswalk of Minimum Data Set (MDS) 3.0 Items and RUG-IV Groups from the Centers for Medicare and Medicaid Services (CMS). We assigned each RUG-IV code to a level (ultra high, very high, high, or medium). For all RUG-IV codes other than rehabilitation or rehabilitation plus extensive services or RUG-IV codes with a level lower than medium, we used the RUG level “other.” For discharges that included multiple RUG levels, we used the RUG level that was coded most frequently during the stay.

The performance metrics in this report were defined as follows:

- **SNF discharges:** The count of SNF discharges during the period. A single discharge can include multiple claims, which are generally billed on a monthly basis. We did not count transfers to an acute inpatient setting as a discharge from the SNF if the patient was readmitted to the original SNF after the acute inpatient stay.
- **Inpatient transfer rate:** The percentage of SNF discharges transferred to an acute inpatient facility. An acute inpatient admission must have occurred within one day after a SNF discharge to be considered a transfer.
- **Readmission rate:** The percentage of SNF discharges that resulted in an admission to an acute inpatient facility within two to 30 days of the SNF discharge.⁶ We counted inpatient admissions occurring within one day after a SNF discharge as transfers rather than readmissions.
- **ED visits per 100 days:** The average number of ED visits that occurred during a SNF stay per 100 SNF days. This includes ED visits leading to observation.
- **Average length of stay:** The average length of stay for SNF discharges during the period. This includes only days paid by Medicare. If a patient was transferred from a SNF to an acute inpatient setting, then transferred back to the original SNF, we calculated the length of stay as the number of days between the first SNF admission date and the last SNF discharge date, less the days spent in acute inpatient care.
- **Average paid per day:** Average paid per day in the SNF, including only days paid by Medicare.

⁶ Note that readmissions are defined differently in this report from CMS’s Skilled Nursing Facility Value-Based Purchasing Program (SNFVBP), which begins in fiscal year 2019. Readmissions in that program are required to occur within 30 days of the original inpatient discharge. Some readmissions in that program would be considered inpatient transfers in our analysis, and some readmissions in our analysis would not be considered readmissions in the SNFVBP.

- **Average paid per SNF discharge:** Average paid per SNF discharge for expenditures incurred in the SNF.
- **Average paid per discharge including inpatient costs:** Average paid per SNF discharge, including acute inpatient expenditures. For SNF discharges that resulted in a transfer to an acute inpatient facility, we included the cost of the inpatient admission with the SNF expenditures for that discharge.

We used the National Provider Identifier (NPI) on each SNF claim to identify the SNF. We identified the state and MSA for each SNF by mapping on information about each provider from the national NPI file.⁷ Note that this may vary from the state or MSA where the patient resides.

Limitations and qualifications

The information in this paper is intended to analyze the performance of skilled nursing facilities in the Medicare market and provide benchmarks for certain metrics. It may not be appropriate, and should not be used, for other purposes. The results of our analysis would be different for Medicaid, commercial, or uninsured populations.

⁷ See http://download.cms.gov/nppes/NPI_Files.html.

In performing the analysis for this paper, we relied on data made available by CMS. We have not audited or verified this data and other information. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete.

We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have not found material defects in the data. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent.

Guidelines issued by the American Academy of Actuaries require actuaries to include their professional qualifications in all actuarial communications. Jill S. Herbold and Anders Larson are members of the American Academy of Actuaries and meet the qualification standards for performing the analyses presented in this report.

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CONTACT

Jill S. Herbold
jill.herbold@milliman.com

Anders Larson
anders.larson@milliman.com