

Supplemental Online Content

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Sensitivity Analysis

This supplemental material has been provided by the authors to give readers additional information about their work.

eTable 1. Characteristics of Nursing Homes Associated With Daily Variation Measures Sensitivity Analysis: Total Outlier Days/Low Outliers Days at Threshold of 30%				
Independent Variables	Total Outlier Days		Low Outlier Days	
	RNs Daily Staffing Variation Measures	CNAs Daily Staffing Variation Measures	RNs Daily Staffing Variation Measures	CNAs Daily Staffing Variation Measures
CMS 5-Star, Quality	-4.37 <0.001	-1.25 <0.001	-2.70 <0.001	-0.66 <0.001
CMS 5-Star, Survey	-5.77 <0.001	-1.91 <0.001	-3.23 <0.001	-0.89 <0.001
Average case mix (RUGS IV)	-4.32 <0.001	-0.21 0.344	-2.64 <0.001	-0.16 0.232
Payers:				
Medicaid (Reference)				
Percent Medicare patients	-6.29 <0.001	0.81 <0.001	-3.73 <0.001	0.31 0.004
Percent other payers	-3.33 <0.001	0.48 0.021	-1.96 <0.001	0.13 0.279
Nursing Home is part of a chain	-6.38 <0.001	-2.41 <0.001	-3.72 <0.001	-1.16 <0.001
Ownership:				
For profit (Reference)				
Nonprofit ownership	-11.95 <0.001	-1.40 0.009	-6.61 <0.001	-0.49 0.116
Government ownership	-10.38 <0.001	-2.07 0.006	-7.36 <0.001	-0.81 0.062
Other ownership	-6.55 0.001	-0.92 0.181	-3.58 0.008	-0.24 0.547
Nursing Home is hospital based	-4.62 0.435	0.70 0.741	-4.34 0.215	0.81 0.513
Size: Resident annual average census	-34.20 <0.001	-10.75 <0.001	-19.57 <0.001	-4.72 <0.001
Sample size	23,398	23,503	23,398	23,503
Number of facilities	13,295	13,339	13,295	13,339

Note: Coefficients are reported as average marginal effects and all continuous variables are standardized. P values in parentheses.

eTable 2. Weighted κ Statistic for Agreement Between Mean Staffing and Daily Staffing Variation: Sensitivity Analysis With Measures Based on 30% Threshold		
	RNs	CNAs
	Weighted Kappa	Weighted Kappa
Total Outlier Days (TOD)	0.565	0.217
Low Outlier Days (LOD)	0.530	0.226

eTable 3. Characteristics of Nursing Homes Associated with CMS 5-Star Ranking: Staffing Sensitivity Analysis

Dependent Variables Independent Variables	Coefficient of Variation (COV)		Total Outlier Days (TOD)		Low Outlier Days (LOD)	
	RNs Daily Variation Measure	CNAs Daily Variation Measure	RNs Daily Variation Measure	CNAs Daily Variation Measure	RNs Daily Variation Measure	CNAs Daily Variation Measure
CMS 5-Star ranking, QMs	-0.012 <0.001	-0.004 <0.001	-3.43 <0.001	-2.46 <0.001	-2.19 <0.001	-1.26 <0.001
CMS 5-Star ranking, Survey	-0.019 <0.001	-0.006 <0.001	-4.22 <0.001	-3.98 <0.001	-2.40 <0.001	-1.89 <0.001
CMS 5-Star ranking, Staffing	-0.090 <0.001	-0.006 0.219	-14.44 <0.001	-2.06 <0.001	-9.67 <0.000	-1.07 <0.001
Average case mix (RUGS IV)	-0.027 <0.001	-0.002 0.014	-4.44 <0.001	-0.70 0.040	-2.78 <0.001	-0.41 0.027
Payers:						
Medicaid (Reference)						
Percent Medicare patients	-0.012 <0.001	0.004 0.001	-2.54 <0.001	1.74 <0.001	-1.32 <0.001	0.80 <0.001
Percent other payers	-0.002 0.514	0.002 0.044	-1.07 0.023	1.00 0.002	-0.49 <0.001	0.37 0.042
Nursing Home is part of a chain	-0.020 0.010	-0.008 <0.001	-6.08 <0.001	-5.28 <0.001	-3.43 <0.001	-2.51 <0.001
Ownership:						
For-Profit (Reference)						
Nonprofit ownership	0.032 0.026	-0.002 0.311	-2.88 0.029	-4.07 <0.001	-0.77 0.392	-2.09 <0.001
Government ownership	0.003 0.794	+0.000 0.978	-3.50 0.124	-3.76 0.005	-3.15 0.032	-1.97 0.006
Other ownership	0.004 0.741	-0.003 0.226	-1.62 0.377	-1.42 0.237	-0.31 0.809	-0.77 0.209
Nursing Home is hospital based	-0.035 0.158	0.002 0.771	-1.52 0.785	0.32 0.926	-1.97 0.578	1.40 0.511
Size: Resident annual average census	-0.137 <0.001	-0.025 <0.001	-29.28 <0.001	-22.12 <0.001	-18.23 <0.001	-10.34 <0.001
Sample size	23,398	23,503	23,398	23,503	23,398	23,503
Number of facilities	13,295	13,339	13,295	13,339	13,295	13,339