



Nursing Home Compare Quality Measure Technical Specifications

Appendices

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APPENDIX TABLE A

Risk-Adjustment Model for Short-Stay Residents who were Re-hospitalized after a Nursing Home Admission: Risk Variables and Coefficient Estimates

Note: This model is based on all SNF stays with admission from a hospital between January 1, 2023, and December 31, 2023.

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
Female age 18–64	0.0360	0.2653	0.0095	0.5522
Female age 65–69 (ref)	0.0493	0.2421		
Female age 70–74	0.0759	0.2233	-0.0377	0.0046
Female age 75–79	0.1015	0.2113	-0.0515	<.0001
Female age 80–84	0.1135	0.1969	-0.0781	<.0001
Female age 85–89	0.1085	0.1829	-0.1125	<.0001
Female age 9–94	0.0758	0.1672	-0.1695	<.0001
Female age GT 94	0.0346	0.1522	-0.2478	<.0001
Male age 18–64	0.0433	0.2688	-0.0038	0.8012
Male age 65–69	0.0501	0.2496	-0.0215	0.1347
Male age 70–74	0.0604	0.2448	-0.0110	0.4262
Male age 75–79	0.0700	0.2437	0.0232	0.0858
Male age 80–84	0.0731	0.2402	0.0542	<.0001
Male age 85–89	0.0614	0.2297	0.0483	0.0007
Male age 90–94	0.0350	0.2167	0.0235	0.1581
Male age GT 94	0.0115	0.2028	-0.0259	0.2962

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
Length of stay 1–3 days (ref)	0.1742	0.1709		
Length of stay 4–7 days	0.4767	0.1990	0.1257	<.0001
Length of stay 8–14 days	0.2506	0.2528	0.2997	<.0001
Length of stay GT 14 days	0.0986	0.3007	0.4363	<.0001
0 hospitalizations in prior year (ref)	0.4183	0.1623		
1–3 hospitalizations in prior year	0.4801	0.2347	0.1055	<.0001
4–6 hospitalizations in prior year	0.0811	0.3397	0.3515	<.0001
7–9 hospitalizations in prior year	0.0154	0.4365	0.6429	<.0001
10+ hospitalizations in prior year	0.0050	0.5503	1.0735	<.0001
Ever disabled	0.2466	0.2450	0.0029	0.658
ESRD	0.0505	0.3801	0.3983	<.0001
At least 1 day ICU (y/n)	0.1358	0.2800	0.1244	<.0001
203 Osteoarthritis (Ref)	0.0175	0.0836		
1 Tuberculosis	0.0000	0.2927	0.7313	0.0384
2 Septicemia (except in labor)	0.1385	0.2589	0.6672	<.0001
3 Bacterial infection; unspecified site	0.0010	0.2413	0.6008	<.0001
4 Mycoses	0.0008	0.3037	0.9656	<.0001
5 HIV infection	0.0001	0.2560	0.6869	0.0012
6 Hepatitis	0.0002	0.3475	0.9927	<.0001
7 Viral infection	0.0008	0.1850	0.5518	<.0001
8 Other infections; including parasitic	0.0001	0.2435	0.8833	<.0001
11 Cancer of head and neck	0.0006	0.2818	0.5943	<.0001
12 Cancer of esophagus	0.0003	0.3034	0.7509	<.0001

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
13 Cancer of stomach	0.0003	0.3183	0.8795	<.0001
14 Cancer of colon	0.0022	0.2295	0.5863	<.0001
15 Cancer of rectum and anus	0.0007	0.2594	0.6272	<.0001
16 Cancer of liver and intrahepatic bile duct	0.0004	0.3408	1.1231	<.0001
17 Cancer of pancreas	0.0006	0.2913	0.9193	<.0001
18 Cancer of other GI organs; peritoneum	0.0003	0.2982	0.8696	<.0001
19 Cancer of bronchus; lung	0.0017	0.3183	0.9700	<.0001
20 Cancer; other respiratory and intrathoracic	0.0000	0.3143	0.8914	0.0172
21 Cancer of bone and connective tissue	0.0002	0.2073	0.4814	0.0019
22 Melanomas of skin	0.0001	0.2740	0.9984	0.0002
23 Other non-epithelial cancer of skin	0.0002	0.2267	0.5851	0.0002
24 Cancer of breast	0.0004	0.2568	0.8540	<.0001
25 Cancer of uterus	0.0003	0.2920	0.9569	<.0001
26 Cancer of cervix	0.0001	0.3115	0.9466	0.0011
27 Cancer of ovary	0.0002	0.2857	0.9236	<.0001
28 Cancer of other female genital organs	0.0001	0.3050	1.0397	<.0001
29 Cancer of prostate	0.0004	0.2910	0.8436	<.0001
31 Cancer of other male genital organs	0.0000	0.4333	1.6137	<.0001
32 Cancer of bladder	0.0008	0.3437	1.0451	<.0001
33 Cancer of kidney and renal pelvis	0.0005	0.2978	1.0049	<.0001
34 Cancer of other urinary organs	0.0001	0.3178	1.0589	<.0001
35 Cancer of brain and nervous system	0.0006	0.2525	0.7097	<.0001
36 Cancer of thyroid	0.0000	0.2727	0.7235	0.0386

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
37 Hodgkin`s disease	0.0000	0.4412	1.4520	<.0001
38 Non-Hodgkin`s lymphoma	0.0009	0.3621	1.1034	<.0001
39 Leukemias	0.0006	0.3703	1.1341	<.0001
40 Multiple myeloma	0.0006	0.3113	0.9291	<.0001
41 Cancer; other and unspecified primary	0.0001	0.2286	0.7069	0.0031
42 Secondary malignancies	0.0036	0.3214	1.0011	<.0001
43 Malignant neoplasm without specification of site	0.0003	0.3255	1.0782	<.0001
44 Neoplasms of unspecified nature or uncertain behavior	0.0008	0.3097	1.0213	<.0001
45 Maintenance chemotherapy; radiotherapy	0.0005	0.2865	0.5291	<.0001
46 Benign neoplasm of uterus	0.0000	0.2642	0.9021	0.0052
47 Other and unspecified benign neoplasm	0.0013	0.2301	0.7262	<.0001
48 Thyroid disorders	0.0008	0.1938	0.5174	<.0001
50 Diabetes mellitus with complications	0.0223	0.2345	0.5686	<.0001
51 Other endocrine disorders	0.0043	0.2178	0.7426	<.0001
52 Nutritional deficiencies	0.0012	0.2099	0.5642	<.0001
54 Gout and other crystal arthropathies	0.0009	0.1652	0.5030	<.0001
55 Fluid and electrolyte disorders	0.0179	0.2307	0.7244	<.0001
57 Immunity disorders	0.0001	0.3837	1.2171	<.0001
58 Other nutritional; endocrine; and metabolic disorders	0.0051	0.2201	0.6936	<.0001
59 Deficiency and other anemia	0.0049	0.2822	0.8677	<.0001
60 Acute post-hemorrhagic anemia	0.0029	0.2921	0.8655	<.0001
61 Sickle cell anemia	0.0001	0.3718	0.9602	0.0001
62 Coagulation and hemorrhagic disorders	0.0021	0.2469	0.7182	<.0001

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
63 Diseases of white blood cells	0.0004	0.2306	0.5757	<.0001
64 Other hematologic conditions	0.0002	0.2316	0.7549	<.0001
76 Meningitis	0.0002	0.2918	0.9141	<.0001
77 Encephalitis	0.0004	0.2557	0.7159	<.0001
78 Other CNS infection and poliomyelitis	0.0004	0.2724	0.7270	<.0001
79 Parkinson`s disease	0.0024	0.1571	0.4742	<.0001
80 Multiple sclerosis	0.0005	0.1313	0.2824	0.0359
81 Other hereditary and degenerative nervous system conditions	0.0014	0.1637	0.4185	<.0001
82 Paralysis	0.0003	0.2145	0.7730	<.0001
83 Epilepsy; convulsions	0.0076	0.2021	0.5248	<.0001
84 Headache; including migraine	0.0002	0.1646	0.4921	0.0056
85 Coma; stupor; and brain damage	0.0001	0.2237	0.5300	0.0679
90 Inflammation; infection of eye	0.0002	0.2075	0.6375	<.0001
91 Other eye disorders	0.0001	0.2147	0.6671	0.0007
92 Otitis media and related conditions	0.0001	0.2319	0.7111	0.0007
93 Conditions associated with dizziness or vertigo	0.0014	0.1266	0.3770	<.0001
95 Other nervous system disorders	0.0154	0.2001	0.5971	<.0001
96 Heart valve disorders	0.0033	0.2275	0.5977	<.0001
97 Peri-, endo-, and myocarditis; cardiomyopathy	0.0008	0.3244	0.9486	<.0001
98 Essential hypertension	0.0001	0.1743	0.7440	0.0039
99 Hypertension with complications and secondary hypertension	0.0575	0.2703	0.7320	<.0001
100 Acute myocardial infarction	0.0094	0.2592	0.8234	<.0001
101 Coronary atherosclerosis and other heart disease	0.0037	0.2356	0.6634	<.0001

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
102 Nonspecific chest pain	0.0017	0.2159	0.6377	<.0001
103 Pulmonary heart disease	0.0054	0.2058	0.5593	<.0001
104 Other and ill-defined heart disease	0.0003	0.2069	0.6561	<.0001
105 Conduction disorders	0.0028	0.1786	0.4956	<.0001
106 Cardiac dysrhythmias	0.0116	0.2216	0.7461	<.0001
107 Cardiac arrest and ventricular fibrillation	0.0003	0.2465	0.4597	0.0004
108 Congestive heart failure; non-hypertensive	0.0034	0.2637	0.7692	<.0001
109 Acute cerebrovascular disease	0.0260	0.2044	0.6131	<.0001
110 Occlusion or stenosis of pre-cerebral arteries	0.0009	0.1886	0.5088	<.0001
111 Other and ill-defined cerebrovascular disease	0.0006	0.1881	0.4536	<.0001
112 Transient cerebral ischemia	0.0027	0.1630	0.5336	<.0001
113 Late effects of cerebrovascular disease	0.0021	0.1713	0.3324	<.0001
114 Peripheral and visceral atherosclerosis	0.0029	0.2513	0.7858	<.0001
115 Aortic; peripheral; and visceral artery aneurysms	0.0004	0.2172	0.5090	<.0001
116 Aortic and peripheral arterial embolism or thrombosis	0.0004	0.2777	0.9949	<.0001
117 Other circulatory disease	0.0067	0.1976	0.5927	<.0001
118 Phlebitis; thrombophlebitis and thromboembolism	0.0033	0.2071	0.6776	<.0001
119 Varicose veins of lower extremity	0.0003	0.1749	0.4525	0.0037
120 Hemorrhoids	0.0007	0.2721	0.8196	<.0001
121 Other diseases of veins and lymphatics	0.0010	0.1867	0.5421	<.0001
122 Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	0.0275	0.2320	0.5960	<.0001
123 Influenza	0.0020	0.1832	0.3994	<.0001

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
124 Acute and chronic tonsillitis	0.0000	0.3125	1.2411	0.0267
125 Acute bronchitis	0.0009	0.1570	0.3364	0.0003
126 Other upper respiratory infections	0.0004	0.1741	0.4145	0.0012
127 Chronic obstructive pulmonary disease and bronchiectasis	0.0086	0.2594	0.6985	<.0001
128 Asthma	0.0004	0.2122	0.5953	<.0001
129 Aspiration pneumonitis; food/vomitus	0.0117	0.2434	0.5700	<.0001
130 Pleurisy; pneumothorax; pulmonary collapse	0.0026	0.2838	0.7413	<.0001
131 Respiratory failure; insufficiency	0.0149	0.2879	0.7106	<.0001
132 Lung disease due to external agents	0.0002	0.3042	0.7748	<.0001
133 Other lower respiratory disease	0.0018	0.2606	0.7463	<.0001
134 Other upper respiratory disease	0.0005	0.2653	0.6299	<.0001
135 Intestinal infection	0.0049	0.2426	0.7422	<.0001
136 Disorders of teeth and jaw	0.0002	0.1875	0.4145	0.0238
137 Diseases of mouth; excluding dental	0.0004	0.1814	0.2918	0.0303
138 Esophageal disorders	0.0023	0.2377	0.6208	<.0001
139 Gastroduodenal ulcer (except hemorrhage)	0.0006	0.2083	0.5577	<.0001
140 Gastritis and duodenitis	0.0022	0.2712	0.7755	<.0001
141 Other disorders of stomach and duodenum	0.0020	0.3063	0.8006	<.0001
142 Appendicitis and other appendiceal conditions	0.0005	0.1887	0.5203	<.0001
143 Abdominal hernia	0.0035	0.1970	0.5654	<.0001
144 Regional enteritis and ulcerative colitis	0.0008	0.2839	0.8536	<.0001
145 Intestinal obstruction without hernia	0.0081	0.2172	0.6188	<.0001
146 Diverticulosis and diverticulitis	0.0055	0.2459	0.7271	<.0001

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
147 Anal and rectal conditions	0.0013	0.2279	0.6235	<.0001
148 Peritonitis and intestinal abscess	0.0005	0.3423	0.9659	<.0001
149 Biliary tract disease	0.0052	0.2213	0.7025	<.0001
151 Other liver diseases	0.0022	0.3919	1.1928	<.0001
152 Pancreatic disorders (not diabetes)	0.0017	0.2475	0.8005	<.0001
153 Gastrointestinal hemorrhage	0.0113	0.2618	0.6988	<.0001
154 Noninfectious gastroenteritis	0.0027	0.2280	0.7546	<.0001
155 Other gastrointestinal disorders	0.0052	0.2567	0.7414	<.0001
156 Nephritis; nephrosis; renal sclerosis	0.0001	0.3203	0.9534	<.0001
157 Acute and unspecified renal failure	0.0316	0.2415	0.7659	<.0001
158 Chronic kidney disease	0.0001	0.3613	0.9431	<.0001
159 Urinary tract infections	0.0433	0.1874	0.5861	<.0001
160 Calculus of urinary tract	0.0006	0.2486	0.7990	<.0001
161 Other diseases of kidney and ureters	0.0010	0.2580	0.8904	<.0001
162 Other diseases of bladder and urethra	0.0007	0.2906	0.9509	<.0001
163 Genitourinary symptoms and ill-defined conditions	0.0010	0.2234	0.6296	<.0001
164 Hyperplasia of prostate	0.0007	0.2453	0.8322	<.0001
165 Inflammatory conditions of male genital organs	0.0005	0.2121	0.4943	<.0001
166 Other male genital disorders	0.0001	0.3358	1.1351	<.0001
167 Nonmalignant breast conditions	0.0001	0.2083	0.4922	0.059
168 Inflammatory diseases of female pelvic organs	0.0001	0.2149	0.5530	0.0162
170 Prolapse of female genital organs	0.0001	0.1884	0.8238	0.0085
173 Menopausal disorders	0.0001	0.2230	0.5757	0.0066

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
175 Other female genital disorders	0.0003	0.2578	0.8187	<.0001
197 Skin and subcutaneous tissue infections	0.0137	0.1772	0.4532	<.0001
198 Other inflammatory condition of skin	0.0003	0.2732	0.9746	<.0001
199 Chronic ulcer of skin	0.0034	0.2179	0.5465	<.0001
200 Other skin disorders	0.0001	0.2216	0.6098	0.0017
201 Infective arthritis and osteomyelitis	0.0042	0.2054	0.4811	<.0001
202 Rheumatoid arthritis and related disease	0.0003	0.1890	0.7099	<.0001
204 Other non-traumatic joint disorders	0.0023	0.1286	0.3114	<.0001
205 Spondylosis; intervertebral disc disorders; other back problems	0.0141	0.1632	0.5515	<.0001
207 Pathological fracture	0.0146	0.1472	0.4333	<.0001
209 Other acquired deformities	0.0012	0.1649	0.6099	<.0001
210 Systemic lupus erythematosus and connective tissue disorders	0.0002	0.2357	0.6816	<.0001
211 Other connective tissue disease	0.0073	0.1423	0.3738	<.0001
212 Other bone disease and musculoskeletal deformities	0.0008	0.1467	0.3178	0.0012
213 Cardiac and circulatory congenital anomalies	0.0001	0.1761	0.3470	0.1047
214 Digestive congenital anomalies	0.0000	0.2500	0.6360	0.1128
215 Genitourinary congenital anomalies	0.0000	0.5714	2.0874	0.0002
225 Joint disorders and dislocations; trauma-related	0.0008	0.1461	0.4518	<.0001
226 Fracture of neck of femur (hip)	0.0606	0.1436	0.4313	<.0001
227 Spinal cord injury	0.0004	0.2651	0.9852	<.0001
228 Skull and face fractures	0.0009	0.1560	0.4497	<.0001
229 Fracture of upper limb	0.0105	0.1369	0.4135	<.0001
230 Fracture of lower limb	0.0220	0.1392	0.3916	<.0001

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
231 Other fractures	0.0303	0.1441	0.4171	<.0001
232 Sprains and strains	0.0015	0.1346	0.3992	<.0001
233 Intracranial injury	0.0066	0.2055	0.6577	<.0001
234 Crushing injury or internal injury	0.0031	0.1899	0.5614	<.0001
235 Open wounds of head; neck; and trunk	0.0009	0.1423	0.3571	0.0001
236 Open wounds of extremities	0.0009	0.2014	0.7169	<.0001
237 Complication of device; implant or graft	0.0412	0.2672	0.7261	<.0001
238 Complications of surgical procedures or medical care	0.0181	0.2747	0.6855	<.0001
239 Superficial injury; contusion	0.0037	0.1840	0.6200	<.0001
240 Burns	0.0004	0.2129	0.5448	<.0001
241 Poisoning by psychotropic agents	0.0003	0.2072	0.6628	<.0001
242 Poisoning by other medications and drugs	0.0015	0.2076	0.5515	<.0001
244 Other injuries and conditions due to external causes	0.0051	0.1662	0.5234	<.0001
245 Syncope	0.0031	0.1467	0.4049	<.0001
246 Fever of unknown origin	0.0003	0.1826	0.4382	0.0019
247 Lymphadenitis	0.0000	0.3438	1.4272	0.0002
248 Gangrene	0.0018	0.2556	0.7058	<.0001
249 Shock	0.0003	0.2746	0.5957	<.0001
250 Nausea and vomiting	0.0004	0.2268	0.6925	<.0001
251 Abdominal pain	0.0004	0.2398	0.7601	<.0001
252 Malaise and fatigue	0.0040	0.1641	0.5059	<.0001
253 Allergic reactions	0.0003	0.1875	0.4611	0.0032
257 Other aftercare	0.0008	0.1340	0.1543	0.1234

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
258 Other screening for suspected conditions (not mental disorders or infectious disease)	0.0002	0.2032	0.6492	0.0006
259 Residual codes; unclassified	0.0017	0.1708	0.4608	<.0001
650 MHSA: Adjustment disorders	0.0001	0.2123	0.6972	0.0008
651 MHSA: Anxiety disorders	0.0003	0.1735	0.4404	0.0032
653 MHSA: Delirium, dementia, and amnestic and other cognitive disorders	0.0086	0.1547	0.4816	<.0001
657 MHSA: Mood disorders	0.0041	0.1650	0.3286	<.0001
659 MHSA: Schizophrenia and other psychotic disorders	0.0067	0.1778	0.3662	<.0001
660 MHSA: Alcohol-related disorders	0.0039	0.2528	0.7760	<.0001
661 MHSA: Substance-related disorders	0.0004	0.2059	0.5733	<.0001
662 MHSA: Suicide and intentional self-inflicted injury	0.0003	0.1970	0.4747	0.001
670 MHSA: Miscellaneous mental disorders	0.0003	0.2305	0.6998	<.0001
CCS None	0.0554	0.2135	0.6213	<.0001
Nonsignificant CCS w/ protective effect	0.0004	0.0826	-0.2117	0.2272
Nonsignificant CCS w/ increased risk	0.0008	0.1515	0.2472	0.0117
2617 Adverse effects of medical drugs	0.0000	0.3103	1.1298	0.006
Re-hospitalizations-specific comorbidity index	-1.3165		0.4746	<.0001
End-stage prognosis	0.0068	0.1169	-1.0803	<.0001
Returned to nursing home following hospitalization	0.2621	0.2566	0.0863	<.0001
Anemia	0.3995	0.2497	0.0859	<.0001
Venous/Arterial ulcer present	0.0326	0.2595	0.0390	0.0022
Viral hepatitis	0.0107	0.2886	0.0605	0.0044
Internal bleeding	0.0077	0.4652	0.9601	<.0001

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
Cognitive status not completely intact	0.7021	0.2266	0.2060	<.0001
Cognitive assessment missing	0.0499	0.3539	0.7439	<.0001
Chemotherapy for cancer	0.0072	0.2906	0.1192	<.0001
IV medications	0.5086	0.2337	0.0846	<.0001
Ostomy care	0.0281	0.3039	0.2089	<.0001
Oxygen therapy	0.3306	0.2707	0.2336	<.0001
Radiation for cancer	0.0019	0.2964	0.0103	0.8362
First assessment is for significant change in status	0.0313	0.1796	-0.3910	<.0001
Rarely/never makes self understood by others	0.0269	0.2730	-0.4243	<.0001
Acute mental status change	0.0237	0.3317	0.5055	<.0001
Rejected care for past 4–7 days	0.0084	0.2409	0.0488	0.0512
Wandering once or more in the past week	0.0173	0.1999	0.0666	0.0004
Alzheimer's disease	0.0450	0.1714	-0.1500	<.0001
Non-Alzheimer's dementia	0.2172	0.1915	-0.1320	<.0001
Cancer	0.1233	0.2660	0.1097	<.0001
Ulcerative Colitis/Crohn's/inflammatory bowel disease	0.0208	0.2457	0.0784	<.0001
Seizure disorder or epilepsy	0.0847	0.2377	-0.0299	0.0007
Shortness of breath with exertion	0.1562	0.2605	-0.0388	<.0001
Shortness of breath when sitting at rest	0.0572	0.3471	0.4594	<.0001
Choke/cough during meals or swallowing medications	0.0929	0.2432	0.0539	<.0001
Parenteral/IV feeding	0.0210	0.3146	0.3769	<.0001
Feeding tube	0.0375	0.3626	0.3294	<.0001
Surgical wound	0.2273	0.1976	-0.0162	0.0206

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
Antibiotic received	0.3643	0.2329	0.0603	<.0001
Ventilator or respirator	0.0150	0.2769	-0.1505	<.0001
Transfusion	0.0030	0.3301	0.2596	<.0001
Respiratory therapy	0.0972	0.2332	-0.0514	<.0001
Constant			-2.0162	<.0001

APPENDIX TABLE B

Coefficient Estimates for Short-Stay Residents who were Re-hospitalized after a Nursing Home Admission, Resident-Level Comorbidity Index

Note: This model is based on all SNF stays with admission from a hospital between January 1, 2023, and December 31, 2023.

Charlson Condition	Coefficient	Standard Error	p-value
Myocardial infarction	0.1211	0.0073	<.0001
CHF	0.2067	0.0061	<.0001
Peripheral vascular disease	0.1198	0.0072	<.0001
Cerebrovascular disease	0.0455	0.0076	<.0001
Dementia	-0.0419	0.0064	<.0001
COPD	0.1935	0.0058	<.0001
Rheumatoid arthritis	0.0985	0.0118	<.0001
Ulcers	0.2041	0.0146	<.0001
Mild liver disease	0.2484	0.0107	<.0001
Diabetes mellitus	0.1450	0.0066	<.0001
Diabetes with sequelae	0.1006	0.0076	<.0001
Paralysis	0.1433	0.0123	<.0001
Chronic renal disease	0.2784	0.0065	<.0001
Cancer	0.2918	0.0096	<.0001
Moderate to severe liver disease	0.4540	0.0199	<.0001
Metastatic cancer	0.3104	0.0161	<.0001
HIV/AIDS	0.2479	0.0473	<.0001
Constant	-1.6081	0.0033	<.0001

APPENDIX TABLE C

Risk-Adjustment Model for Hospitalizations per 1,000 Long-Stay Resident Days: Risk Variables and Coefficient Estimates

Note: This model assumes a negative binomial distribution for the number of hospitalizations per long-stay resident.

Note: This model is based on all days, between January 1, 2023, and December 31, 2023, that residents were in the nursing home after they attained long-term resident status (i.e., after 100 cumulative days in the facility).

Variable	Mean	Mean Number of Hospitalizations Among Those with Covariate	Coefficient	p-Value
Number of long-stay days in target period	241.47		0.0172	<.0001
Number of long-stay days in target period, squared	76295.72		0.0000	<.0001
Long-stay hospitalizations-specific comorbidity index	0.1035		2.5520	<.0001
White (ref)	0.8077	0.3843		
Black	0.1294	0.5371	0.2490	<.0001
Hispanic	0.0203	0.5288	0.2662	<.0001
Asian	0.0173	0.4694	0.2434	<.0001
Other race/ethnicity	0.0178	0.4199	0.0953	<.0001
Unknown race/ethnicity	0.0076	0.4726	0.0464	0.0873
0 hospitalizations in prior year (ref)	0.5140	0.3029		
1–3 hospitalizations in prior year	0.4264	0.4666	0.2119	<.0001
4–6 hospitalizations in prior year	0.0506	0.8413	0.5397	<.0001
7–9 hospitalizations in prior year	0.0074	1.2963	0.8003	<.0001
10+ hospitalizations in prior year	0.0016	1.8437	1.0574	<.0001
Female age 65–69 (ref)	0.0446	0.5211		
Female age 18–64	0.0458	0.5677	0.0314	0.0348
Female age 70–74	0.0646	0.4889	-0.0104	0.4573
Female age 75–79	0.0850	0.4323	-0.0728	<.0001

Variable	Mean	Mean Number of Hospitalizations Among Those with Covariate	Coefficient	p-Value
Female age 80–84	0.1039	0.3789	-0.1368	<.0001
Female age 85–89	0.1168	0.3353	-0.2013	<.0001
Female age 9–94	0.1033	0.2835	-0.3078	<.0001
Female age GT 94	0.0654	0.2264	-0.4525	<.0001
Male age 18–64	0.0599	0.5567	0.0270	0.0553
Male age 65–69	0.0533	0.5129	0.0054	0.7084
Male age 70–74	0.0593	0.4747	-0.0223	0.1209
Male age 75–79	0.0581	0.4554	-0.0210	0.1499
Male age 80–84	0.0534	0.4368	-0.0168	0.2629
Male age 85–89	0.0454	0.3891	-0.0699	<.0001
Male age 90–94	0.0291	0.3402	-0.1629	<.0001
Male age GT 94	0.0120	0.2820	-0.2819	<.0001
Entered nursing home from a psychiatric facility	0.0173	0.4040	0.0181	0.3342
Rarely/never makes self understood by others	0.0610	0.3867	0.0479	0.0006
Moderate cognitive impairment	0.2370	0.4179	-0.0354	<.0001
Severe cognitive impairment	0.2888	0.3362	-0.0805	<.0001
Staff assessed cognitive status	0.0481	0.3308	-0.0970	<.0001
Cognitive assessment missing	0.0946	0.3742	-0.0703	<.0001
Rejected care for past 4–7 days	0.0173	0.4002	0.0190	0.3195
Shortness of breath with exertion	0.0718	0.5611	0.0666	<.0001
Shortness of breath lying down	0.1366	0.5499	0.0455	<.0001
Wandering once or more in the past week	0.0423	0.3022	-0.1048	<.0001
End-stage prognosis	0.0637	0.0893	-0.4005	<.0001
Internal bleeding	0.0019	0.5620	0.0855	0.1001
Respiratory failure	0.0867	0.7031	0.1477	<.0001
Anticoagulant received	0.2282	0.5092	0.0924	<.0001

Variable	Mean	Mean Number of Hospitalizations Among Those with Covariate	Coefficient	p-Value
Antibiotic received	0.1330	0.5644	0.1547	<.0001
Diuretic received	0.3080	0.4772	0.1270	<.0001
Chemotherapy for cancer	0.0029	0.5039	0.0759	0.0737
Radiation for cancer	0.0004	0.5574	0.2154	0.0537
Oxygen therapy	0.1290	0.6159	0.1857	<.0001
IV medications	0.0213	0.7275	0.1062	<.0001
Transfusion	0.0007	0.8678	0.4205	<.0001
Hospice care after nursing home admission	0.0704	0.0761	-1.2661	<.0001
Isolation or quarantine for active infectious disease	0.0372	0.4692	0.0726	<.0001
Speech Therapy	0.1139	0.4919	0.0301	<.0001
Respiratory therapy	0.0328	0.6405	0.0773	<.0001
Ulcerative Colitis/Crohn's/inflammatory bowel disease	0.0134	0.4943	0.1096	<.0001
Multidrug Resistant Organisms (MDRO)	0.0092	0.7672	0.0750	0.0007
Septicemia	0.0208	0.7550	0.1631	<.0001
Cerebrovascular accident, transient ischemic attack or stroke	0.1899	0.4569	0.0572	<.0001
Quadriplegia	0.0077	0.8579	0.2316	<.0001
Multiple Sclerosis	0.0152	0.5778	0.1433	<.0001
Parkinson's disease	0.0653	0.4191	0.0682	<.0001
Anxiety disorder	0.3473	0.4218	0.0729	<.0001
Gastroesophageal reflux disease (GERD) or ulcer	0.1018	0.4544	0.1314	<.0001
Neurogenic bladder	0.0450	0.7072	0.2982	<.0001
Constant			-2.7834	<.0001

APPENDIX TABLE D

Coefficient Estimates for Hospitalizations per 1,000 Long-Stay Resident Days, Resident-Level Comorbidity Index

Note: This model assumes a negative binomial distribution for the number of hospitalizations per long-stay resident.

Note: This model is based on all days, between January 1, 2023, and December 31, 2023, that residents were in the nursing home after they attained long-term resident status (i.e., after 100 cumulative days in the facility).

* Coefficients with p-values greater than .05 and for the number of long-stay days were excluded from the comorbidity construct.

Charlson Condition	Coefficient	Standard Error	p-value
Myocardial infarction	0.0505	0.0096	<.0001
CHF	0.2189	0.0073	<.0001
Peripheral vascular disease	0.0762	0.0096	<.0001
Cerebrovascular disease	0.0554	0.0082	<.0001
Dementia	-0.0353	0.0061	<.0001
COPD	0.3325	0.0070	<.0001
Rheumatoid arthritis	0.0521	0.0170	0.0022
Ulcers	0.1793	0.0194	<.0001
Mild liver disease	0.1812	0.0149	<.0001
Diabetes mellitus	0.2249	0.0075	<.0001
Diabetes with sequelae	0.2299	0.0092	<.0001
Paralysis	0.2838	0.0121	<.0001
Chronic renal disease	0.2224	0.0081	<.0001
Cancer	0.0827	0.0152	<.0001
Moderate to severe liver disease	0.3217	0.0306	<.0001
Metastatic cancer*	0.0209	0.0297	0.4803
HIV/AIDS	0.4039	0.0554	<.0001
Number of long-stay days in target period	0.0173	0.0001	<.0001
Number of long-stay days in target period, squared	0.0000	0.0000	<.0001
Constant	-2.5534	0.0100	<.0001

APPENDIX TABLE E

Risk-Adjustment Model for Short-Stay Residents who have had an Outpatient Emergency Department Visit: Risk Variables and Coefficient Estimates

Note: This model is based on all SNF stays with admission from a hospital between January 1, 2023, and December 31, 2023.

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
Female age 65–69 (ref)	0.0493	0.1196		
Female age 18–64	0.0360	0.1494	0.1501	<.0001
Female age 70–74	0.0759	0.1086	-0.0742	<.0001
Female age 75–79	0.1015	0.1025	-0.1062	<.0001
Female age 80–84	0.1135	0.0960	-0.1513	<.0001
Female age 85–89	0.1085	0.0923	-0.1732	<.0001
Female age 9–94	0.0758	0.0844	-0.2445	<.0001
Female age GT 94	0.0346	0.0750	-0.3482	<.0001
Male age 18–64	0.0433	0.1542	0.1552	<.0001
Male age 65–69	0.0501	0.1279	0.0274	0.133
Male age 70–74	0.0604	0.1228	0.0090	0.6093
Male age 75–79	0.0700	0.1190	0.0010	0.9561
Male age 80–84	0.0731	0.1171	0.0075	0.665
Male age 85–89	0.0614	0.1118	-0.0168	0.3591
Male age 90–94	0.0350	0.1068	-0.0352	0.1008
Male age GT 94	0.0115	0.0969	-0.1161	0.0004
Length of stay 1–3 days (ref)	0.1742	0.1023		
Length of stay 4–7 days	0.4767	0.1033	-0.0044	0.6176

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
Length of stay 8–14 days	0.2506	0.1158	0.0523	<.0001
Length of stay GT 14 days	0.0986	0.1305	0.0810	<.0001
0 hospitalizations in prior year (ref)	0.4183	0.0905		
1–3 hospitalizations in prior year	0.4801	0.1143	0.1450	<.0001
4–6 hospitalizations in prior year	0.0811	0.1487	0.3283	<.0001
7–9 hospitalizations in prior year	0.0154	0.1864	0.5256	<.0001
10+ hospitalizations in prior year	0.0050	0.2448	0.8097	<.0001
Ever disabled	0.2466	0.1294	0.0738	<.0001
ESRD	0.0505	0.1689	0.3096	<.0001
At least 1 day ICU (y/n)	0.1358	0.1243	0.0719	<.0001
1 Tuberculosis (ref)	0.0175	0.0749		
2 Septicemia (except in labor)	0.1385	0.1069	0.0743	0.0123
3 Bacterial infection; unspecified site	0.0010	0.1410	0.3754	<.0001
4 Mycoses	0.0008	0.1313	0.3143	0.0024
6 Hepatitis	0.0002	0.1454	0.3938	0.0229
11 Cancer of head and neck	0.0006	0.1742	0.4298	<.0001
12 Cancer of esophagus	0.0003	0.1734	0.4990	0.001
13 Cancer of stomach	0.0003	0.1253	0.2459	0.113
15 Cancer of rectum and anus	0.0007	0.1291	0.3506	0.0011
17 Cancer of pancreas	0.0006	0.1220	0.3635	0.0018
19 Cancer of bronchus; lung	0.0017	0.1044	0.2040	0.0108
21 Cancer of bone and connective tissue	0.0002	0.1418	0.4601	0.0091
24 Cancer of breast	0.0004	0.1253	0.4592	0.0012
25 Cancer of uterus	0.0003	0.1267	0.4300	0.0077
27 Cancer of ovary	0.0002	0.1290	0.5207	0.0112

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
28 Cancer of other female genital organs	0.0001	0.1489	0.6362	0.008
29 Cancer of prostate	0.0004	0.1294	0.3813	0.0122
32 Cancer of bladder	0.0008	0.1231	0.2896	0.0055
35 Cancer of brain and nervous system	0.0006	0.1318	0.3290	0.0042
36 Cancer of thyroid	0.0000	0.1818	0.6726	0.0888
38 Non-Hodgkin's lymphoma	0.0009	0.1116	0.1815	0.0865
39 Leukemias	0.0006	0.1254	0.3248	0.0067
40 Multiple myeloma	0.0006	0.1350	0.4460	0.0002
43 Malignant neoplasm without specification of site	0.0003	0.1376	0.5120	0.0029
44 Neoplasms of unspecified nature or uncertain behavior	0.0008	0.1531	0.5806	<.0001
47 Other and unspecified benign neoplasm	0.0013	0.1096	0.2170	0.0144
48 Thyroid disorders	0.0008	0.1130	0.2792	0.0123
50 Diabetes mellitus with complications	0.0223	0.1248	0.1879	<.0001
51 Other endocrine disorders	0.0043	0.1068	0.2605	<.0001
52 Nutritional deficiencies	0.0012	0.1212	0.2457	0.0056
55 Fluid and electrolyte disorders	0.0179	0.1113	0.2134	<.0001
58 Other nutritional; endocrine; and metabolic disorders	0.0051	0.1080	0.2006	<.0001
59 Deficiency and other anemia	0.0049	0.1141	0.2229	<.0001
60 Acute post-hemorrhagic anemia	0.0029	0.1217	0.2662	<.0001
62 Coagulation and hemorrhagic disorders	0.0021	0.1062	0.1905	0.0084
63 Diseases of white blood cells	0.0004	0.1238	0.3174	0.0385
64 Other hematologic conditions	0.0002	0.1525	0.6420	0.0025
76 Meningitis	0.0002	0.1479	0.4578	0.0106
77 Encephalitis	0.0004	0.1324	0.3163	0.0291
78 Other CNS infection and poliomyelitis	0.0004	0.1751	0.5452	<.0001

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
79 Parkinson's disease	0.0024	0.1265	0.4199	<.0001
81 Other hereditary and degenerative nervous system conditions	0.0014	0.1155	0.2816	0.0008
83 Epilepsy; convulsions	0.0076	0.1391	0.3361	<.0001
84 Headache; including migraine	0.0002	0.1728	0.7975	<.0001
93 Conditions associated with dizziness or vertigo	0.0014	0.0924	0.2662	0.0033
95 Other nervous system disorders	0.0154	0.1124	0.2447	<.0001
96 Heart valve disorders	0.0033	0.1101	0.2389	<.0001
97 Peri-, endo-, and myocarditis; cardiomyopathy	0.0008	0.1472	0.4160	<.0001
98 Essential hypertension	0.0001	0.1560	0.8044	0.0026
99 Hypertension with complications and secondary hypertension	0.0575	0.1071	0.1882	<.0001
100 Acute myocardial infarction	0.0094	0.1216	0.3577	<.0001
101 Coronary atherosclerosis and other heart disease	0.0037	0.1275	0.3497	<.0001
102 Nonspecific chest pain	0.0017	0.1287	0.3604	<.0001
103 Pulmonary heart disease	0.0054	0.1120	0.3100	<.0001
104 Other and ill-defined heart disease	0.0003	0.1149	0.3680	0.032
106 Cardiac dysrhythmias	0.0116	0.1070	0.2652	<.0001
107 Cardiac arrest and ventricular fibrillation	0.0003	0.1373	0.3325	0.035
108 Congestive heart failure; non-hypertensive	0.0034	0.1093	0.2621	<.0001
109 Acute cerebrovascular disease	0.0260	0.1198	0.3368	<.0001
110 Occlusion or stenosis of pre-cerebral arteries	0.0009	0.1242	0.3669	0.0002
111 Other and ill-defined cerebrovascular disease	0.0006	0.1254	0.3118	0.0107
112 Transient cerebral ischemia	0.0027	0.1042	0.2665	<.0001
113 Late effects of cerebrovascular disease	0.0021	0.1110	0.1371	0.0549

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
114 Peripheral and visceral atherosclerosis	0.0029	0.1179	0.2889	<.0001
115 Aortic; peripheral; and visceral artery aneurysms	0.0004	0.1352	0.3805	0.0052
116 Aortic and peripheral arterial embolism or thrombosis	0.0004	0.1456	0.5670	<.0001
117 Other circulatory disease	0.0067	0.1143	0.3059	<.0001
118 Phlebitis; thrombophlebitis and thromboembolism	0.0033	0.1173	0.3564	<.0001
120 Hemorrhoids	0.0007	0.1198	0.2970	0.0102
121 Other diseases of veins and lymphatics	0.0010	0.1046	0.2421	0.0184
122 Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	0.0275	0.1025	0.1282	0.0002
127 Chronic obstructive pulmonary disease and bronchiectasis	0.0086	0.1081	0.1990	<.0001
129 Aspiration pneumonitis; food/vomitus	0.0117	0.1109	0.1087	0.0065
130 Pleurisy; pneumothorax; pulmonary collapse	0.0026	0.1243	0.2838	<.0001
131 Respiratory failure; insufficiency	0.0149	0.1056	0.1126	0.0034
134 Other upper respiratory disease	0.0005	0.1651	0.5362	<.0001
135 Intestinal infection	0.0049	0.1059	0.1415	0.0064
136 Disorders of teeth and jaw	0.0002	0.1346	0.2917	0.1588
137 Diseases of mouth; excluding dental	0.0004	0.1152	0.1599	0.314
138 Esophageal disorders	0.0023	0.1231	0.2408	0.0003
139 Gastroduodenal ulcer (except hemorrhage)	0.0006	0.1131	0.2437	0.0444
140 Gastritis and duodenitis	0.0022	0.1126	0.1733	0.0123
141 Other disorders of stomach and duodenum	0.0020	0.1260	0.2535	0.0003
142 Appendicitis and other appendiceal conditions	0.0005	0.1208	0.3005	0.0281
143 Abdominal hernia	0.0035	0.1116	0.2703	<.0001
144 Regional enteritis and ulcerative colitis	0.0008	0.1188	0.2551	0.0185

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
145 Intestinal obstruction without hernia	0.0081	0.1124	0.2383	<.0001
146 Diverticulosis and diverticulitis	0.0055	0.1137	0.2598	<.0001
147 Anal and rectal conditions	0.0013	0.1197	0.2710	0.0015
148 Peritonitis and intestinal abscess	0.0005	0.1692	0.4896	<.0001
149 Biliary tract disease	0.0052	0.1155	0.2815	<.0001
151 Other liver diseases	0.0022	0.1510	0.4330	<.0001
152 Pancreatic disorders (not diabetes)	0.0017	0.1255	0.3664	<.0001
153 Gastrointestinal hemorrhage	0.0113	0.1108	0.1660	<.0001
154 Noninfectious gastroenteritis	0.0027	0.1153	0.2985	<.0001
155 Other gastrointestinal disorders	0.0052	0.1240	0.2674	<.0001
156 Nephritis; nephrosis; renal sclerosis	0.0001	0.2031	0.8197	0.0002
157 Acute and unspecified renal failure	0.0316	0.1128	0.2613	<.0001
159 Urinary tract infections	0.0433	0.1065	0.2172	<.0001
160 Calculus of urinary tract	0.0006	0.1208	0.2523	0.0339
161 Other diseases of kidney and ureters	0.0010	0.1362	0.4718	<.0001
162 Other diseases of bladder and urethra	0.0007	0.1466	0.4677	<.0001
163 Genitourinary symptoms and ill-defined conditions	0.0010	0.1447	0.5065	<.0001
164 Hyperplasia of prostate	0.0007	0.1429	0.4945	<.0001
165 Inflammatory conditions of male genital organs	0.0005	0.1448	0.3443	0.0048
197 Skin and subcutaneous tissue infections	0.0137	0.1033	0.1487	0.0001
198 Other inflammatory condition of skin	0.0003	0.1247	0.3389	0.0336
199 Chronic ulcer of skin	0.0034	0.1125	0.1211	0.0388
201 Infective arthritis and osteomyelitis	0.0042	0.1241	0.2047	<.0001
205 Spondylosis; intervertebral disc disorders; other back problems	0.0141	0.0989	0.2238	<.0001

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
207 Pathological fracture	0.0146	0.0926	0.2007	<.0001
209 Other acquired deformities	0.0012	0.1016	0.2450	0.0082
211 Other connective tissue disease	0.0073	0.0913	0.1307	0.0055
212 Other bone disease and musculoskeletal deformities	0.0008	0.1122	0.2941	0.0065
225 Joint disorders and dislocations; trauma-related	0.0008	0.0964	0.2154	0.0564
226 Fracture of neck of femur (hip)	0.0606	0.0946	0.1875	<.0001
227 Spinal cord injury	0.0004	0.1205	0.3186	0.0241
228 Skull and face fractures	0.0009	0.1090	0.2970	0.0039
229 Fracture of upper limb	0.0105	0.0869	0.1541	0.0003
231 Other fractures	0.0303	0.0892	0.1767	<.0001
233 Intracranial injury	0.0066	0.1301	0.4485	<.0001
234 Crushing injury or internal injury	0.0031	0.1139	0.3470	<.0001
235 Open wounds of head; neck; and trunk	0.0009	0.1084	0.3095	0.0027
237 Complication of device; implant or graft	0.0412	0.1385	0.3006	<.0001
238 Complications of surgical procedures or medical care	0.0181	0.1364	0.2311	<.0001
239 Superficial injury; contusion	0.0037	0.1039	0.2803	<.0001
240 Burns	0.0004	0.1242	0.2938	0.0723
242 Poisoning by other medications and drugs	0.0015	0.1182	0.2721	0.0008
244 Other injuries and conditions due to external causes	0.0051	0.0923	0.1382	0.0094
245 Syncope	0.0031	0.0918	0.1471	0.0222
246 Fever of unknown origin	0.0003	0.1281	0.3727	0.0197
248 Gangrene	0.0018	0.1208	0.2077	0.0048
250 Nausea and vomiting	0.0004	0.1439	0.4944	0.0006
251 Abdominal pain	0.0004	0.1619	0.6441	<.0001
252 Malaise and fatigue	0.0040	0.1028	0.2452	<.0001

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
253 Allergic reactions	0.0003	0.1285	0.4154	0.0206
258 Other screening for suspected conditions (not mental disorders or infectious disease)	0.0002	0.1337	0.4843	0.0264
259 Residual codes; unclassified	0.0017	0.1113	0.2432	0.0019
653 MHSA: Delirium, dementia, and amnestic and other cognitive disorders	0.0086	0.1165	0.3185	<.0001
654 MHSA: Developmental disorders	0.0000	0.2222	0.9939	0.0329
656 MHSA: Impulse control disorders, NEC	0.0000	0.2245	0.9416	0.0065
657 MHSA: Mood disorders	0.0041	0.1341	0.3620	<.0001
660 MHSA: Alcohol-related disorders	0.0039	0.1359	0.3541	<.0001
661 MHSA: Substance-related disorders	0.0004	0.1401	0.4352	0.0015
662 MHSA: Suicide and intentional self-inflicted injury	0.0003	0.1394	0.4662	0.0041
670 MHSA: Miscellaneous mental disorders	0.0003	0.2136	0.8508	<.0001
CCS None	0.0554	0.1095	0.2313	<.0001
Nonsignificant CCS w/ protective effect	0.0373	0.0826	-0.0375	0.2515
Nonsignificant CCS w/ increased risk	0.0212	0.0976	0.1106	0.0017
ED-specific Comorbidity Index	-2.1149		0.2411	<.0001
End-stage prognosis	0.0068	0.0648	-0.6173	<.0001
Returned to nursing home following hospitalization	0.2621	0.1216	-0.0113	0.1429
Respiratory failure	0.1917	0.1111	-0.0712	<.0001
Venous/Arterial ulcer present	0.0326	0.1096	-0.0833	<.0001
Viral hepatitis	0.0107	0.1404	0.0591	0.0269
Internal bleeding	0.0077	0.1697	0.4210	<.0001
Cognitive status not completely intact	0.7021	0.1129	0.1409	<.0001
Cognitive assessment missing	0.0499	0.1271	0.1008	<.0001

Variable	Mean	Proportion of Residents with Covariate who Triggered the Numerator	Coefficient	p-Value
IV medications	0.5086	0.1138	0.0672	<.0001
Ostomy care	0.0281	0.1342	0.0807	<.0001
Oxygen therapy	0.3306	0.1123	0.0138	0.0701
Tracheostomy care	0.0077	0.1587	-0.0167	0.6306
First assessment is for significant change in status	0.0313	0.1211	0.0576	0.001
Rarely/never makes self understood by others	0.0269	0.1167	-0.2536	<.0001
Acute mental status change	0.0237	0.1390	0.2073	<.0001
Rejected care for past 4–7 days	0.0084	0.1524	0.2620	<.0001
Cancer	0.1233	0.1134	0.0102	0.2801
Seizure disorder or epilepsy	0.0847	0.1315	0.0581	<.0001
Shortness of breath with exertion	0.1562	0.1153	0.0683	<.0001
Shortness of breath when sitting at rest	0.0572	0.1245	0.1020	<.0001
Choke/cough during meals or swallowing medications	0.0929	0.1148	-0.0071	0.5106
Parenteral/IV feeding	0.0210	0.1340	0.1582	<.0001
Feeding tube	0.0375	0.1749	0.4340	<.0001
Surgical wound	0.2273	0.1107	0.0749	<.0001
Burn(s)	0.0014	0.1149	-0.0322	0.713
Anticoagulant received	0.3949	0.1090	0.0097	0.1273
Antibiotic received	0.3643	0.1181	0.1348	<.0001
Ventilator or respirator	0.0150	0.1159	-0.0849	0.0013
Transfusion	0.0030	0.2287	0.7696	<.0001
Speech Therapy	0.3514	0.1147	0.0673	<.0001
Respiratory therapy	0.0972	0.1014	-0.1305	<.0001
Wandering once or more in the past week	0.0173	0.1632	0.4723	<.0001
Constant			-2.1920	<.0001

APPENDIX TABLE F

Coefficient Estimates for Short-Stay Residents who have had an Outpatient Emergency Department Visit, Resident-Level Comorbidity Index

Note: This model is based on all SNF stays with admission from a hospital between January 1, 2023, and December 31, 2023.

* Coefficients with p-values greater than .05 are excluded from the comorbidity construct.

Charlson Condition	Coefficient	Standard Error	p-Value
Myocardial infarction	0.0809	0.0098	<.0001
CHF	0.0242	0.0082	0.0029
Peripheral vascular disease	0.0544	0.0097	<.0001
Cerebrovascular disease	0.0852	0.0099	<.0001
Dementia	0.0790	0.0083	<.0001
COPD	0.1090	0.0077	<.0001
Rheumatoid arthritis	0.0475	0.0158	0.0026
Ulcers	0.1123	0.0194	<.0001
Mild liver disease	0.1763	0.0141	<.0001
Diabetes mellitus	0.1059	0.0087	<.0001
Diabetes with sequelae	0.0725	0.0102	<.0001
Paralysis	0.1477	0.0159	<.0001
Chronic renal disease	0.1057	0.0088	<.0001
Cancer	0.0768	0.0132	<.0001
Moderate to severe liver disease	0.1831	0.0263	<.0001
Metastatic cancer*	-0.0093	0.0228	0.6831
HIV/AIDS	0.1736	0.0617	0.0049
Constant	-2.2653	0.0042	<.0001

APPENDIX TABLE G

Risk-Adjustment Model for Outpatient Emergency Department Visits per 1,000 Long-Stay Resident Days: Risk Variables and Coefficient Estimates

Note: This model assumes a negative binomial distribution for the number of outpatient emergency department visits per long-stay resident.

Note: This model is based on all days, between January 1, 2023, and December 31, 2023, that residents were in the nursing home after they attained long-term resident status (i.e., after 100 cumulative days in the facility).

Variable	Mean	Mean Number of Outpatient ED Visits Among Those with Covariate	Coefficient	p-Value
Number of long-stay days in target period	241.47		0.0165	<.0001
Number of long-stay days in target period, squared	76295.72		0.0000	<.0001
Long-stay outpatient ED visits-specific comorbidity index	0.0655		3.8008	<.0001
White (ref)	0.8077	0.3831		
Black	0.1294	0.4516	0.0473	<.0001
Hispanic	0.0203	0.3974	-0.0622	0.0014
Asian	0.0173	0.3075	-0.2215	<.0001
Other race/ethnicity	0.0178	0.4033	0.0276	0.1803
Unknown race/ethnicity	0.0076	0.3733	-0.1604	<.0001
0 hospitalizations in prior year (ref)	0.5140	0.3401		
1–3 hospitalizations in prior year	0.4264	0.4189	0.2172	<.0001
4–6 hospitalizations in prior year	0.0506	0.5969	0.5283	<.0001
7–9 hospitalizations in prior year	0.0074	0.7882	0.7583	<.0001
10+ hospitalizations in prior year	0.0016	1.0972	1.0732	<.0001
Female age 65–69 (ref)	0.0446	0.4718		
Female age 18–64	0.0458	0.6047	0.2167	<.0001
Female age 70–74	0.0646	0.4297	-0.0750	<.0001
Female age 75–79	0.0850	0.3883	-0.1457	<.0001
Female age 80–84	0.1039	0.3578	-0.1882	<.0001
Female age 85–89	0.1168	0.3382	-0.2106	<.0001

Variable	Mean	Mean Number of Outpatient ED Visits Among Those with Covariate	Coefficient	p-Value
Female age 90–94	0.1033	0.3037	-0.2697	<.0001
Female age GT 94	0.0654	0.2518	-0.3968	<.0001
Male age 18–64	0.0599	0.5732	0.1651	<.0001
Male age 65–69	0.0533	0.4622	-0.0125	0.4531
Male age 70–74	0.0593	0.4205	-0.0795	<.0001
Male age 75–79	0.0581	0.4088	-0.0812	<.0001
Male age 80–84	0.0534	0.3842	-0.1049	<.0001
Male age 85–89	0.0454	0.3606	-0.1184	<.0001
Male age 90–94	0.0291	0.3187	-0.1950	<.0001
Male age GT 94	0.0120	0.2835	-0.2398	<.0001
Entered nursing home from a psychiatric facility	0.0173	0.5059	0.1387	<.0001
Rarely/never makes self understood by others	0.0610	0.3799	0.0712	0.0029
Rarely/never able to understand others	0.0522	0.3654	-0.1000	<.0001
Moderate cognitive impairment	0.2370	0.3942	0.0117	0.1127
Severe cognitive impairment	0.2888	0.3553	0.0212	0.0046
Staff assessed cognitive impairment	0.0481	0.3482	-0.0070	0.6182
Cognitive assessment missing	0.0946	0.3814	0.0441	0.0008
Rejected care for past 4–7 days	0.0173	0.4381	0.0781	0.0001
Wandering once or more in the past week	0.0423	0.4664	0.3079	<.0001
Shortness of breath with exertion	0.0718	0.5012	0.1914	<.0001
Choke/cough during meals or when swallowing medications	0.1366	0.4520	0.0020	0.822
End-stage prognosis	0.0637	0.1262	-0.2539	<.0001
Internal bleeding	0.0019	0.4671	0.0937	0.126
Surgical wound	0.0271	0.4476	-0.0085	0.6138
Respiratory failure	0.0867	0.4892	0.0166	0.1196
Antibiotic received	0.1330	0.4822	0.1677	<.0001
Diuretic received	0.3080	0.4199	0.0894	<.0001
Chemotherapy for cancer	0.0029	0.4041	0.0361	0.4789
Radiation for cancer	0.0004	0.4016	0.0527	0.7052
Oxygen therapy	0.1290	0.4589	0.0761	<.0001
IV medications	0.0213	0.5326	0.0728	<.0001

Variable	Mean	Mean Number of Outpatient ED Visits Among Those with Covariate	Coefficient	p-Value
Transfusion	0.0007	0.6520	0.4580	<.0001
Hospice care after nursing home admission	0.0704	0.1141	-0.8445	<.0001
Speech therapy	0.1139	0.4426	0.0623	<.0001
Respiratory therapy	0.0328	0.4547	-0.0185	0.2465
Tracheostomy care	0.0093	0.6382	0.2629	<.0001
Ventilator or respirator	0.0057	0.4664	-0.3740	<.0001
Septicemia	0.0208	0.4852	-0.0257	0.1741
Cerebrovascular accident , transient ischemic attack, or stroke	0.1899	0.4313	0.0562	<.0001
Quadriplegia	0.0077	0.6964	0.1513	<.0001
Multiple Sclerosis	0.0152	0.4641	-0.1075	<.0001
Parkinson's disease	0.0653	0.4403	0.1429	<.0001
Gastroesophageal reflux disease (GERD) or ulcer	0.1018	0.4449	0.1546	<.0001
Neurogenic bladder	0.0450	0.5763	0.2113	<.0001
Cancer	0.0768	0.3631	0.0055	0.6106
Constant			-3.1255	<.0001

APPENDIX TABLE H

Coefficient Estimates for Outpatient Emergency Department Visits per 1,000 Long-Stay Resident Days, Resident-Level Comorbidity Index

Note: This model assumes a negative binomial distribution for the number of outpatient emergency department visits per long-stay resident.

Note: This model is based on all days, between January 1, 2023, and December 31, 2023, that residents were in the nursing home after they attained long-term resident status (i.e., after 100 cumulative days in the facility).

* Coefficients with p-value greater than .05 excluded from the comorbidity construct, as are coefficients for the number of long-stay days.

Charlson Condition	Coefficient	Standard Error	p-Value
Myocardial infarction	0.0563	0.0114	<.0001
CHF	0.1014	0.0087	<.0001
Peripheral vascular disease	0.0300	0.0115	0.0091
Cerebrovascular disease	0.1034	0.0095	<.0001
Dementia	0.0410	0.0069	<.0001
COPD	0.2305	0.0083	<.0001
Rheumatoid arthritis	0.0658	0.0200	0.001
Ulcers	0.0954	0.0236	<.0001
Mild liver disease	0.1681	0.0180	<.0001
Diabetes mellitus	0.1667	0.0088	<.0001
Diabetes with sequelae	0.1441	0.0109	<.0001
Paralysis	0.2424	0.0143	<.0001
Chronic renal disease	0.1240	0.0095	<.0001
Cancer*	0.0150	0.0185	0.4162
Moderate to severe liver disease	0.2037	0.0384	<.0001
Metastatic cancer*	-0.0188	0.0365	0.6059
HIV/AIDS	0.1392	0.0705	0.0483
Number of long-stay days in target period	0.0167	0.0001	<.0001
Number of long-stay days in target period, squared	0.0000	0.0000	<.0001
Constant	-2.9158	0.0124	<.0001