Online Supplement

Emerging Risk Factors and Temporal Patterns in Hospitalized Patients With COPD: A Retrospective Analysis of the NIS Data (2019–2023)

Xin Li, Jiaqian Liu, Soumik Purkayastha, Victor Brodzik Talisa, Franziska J. Rosser and Ying Ding

Table S1. Diagnosis and ICD-10-CM Codes.

Diagnosis	ICD-10-CM Codes
Chronic obstructive pulmonary disease	J44
COVID-19	U07.1, U00, U49, U50, U85, J12.82
Malnutrition	E40, E41, E42, E43, E44, E45, E46
Obstructive sleep apnea	G47.33
Chronic heart failure	I50.22, I50.32, I50.42, I50.812, I50.814, I50.84
Chronic kidney disease	N18
Acute kidney injury	N17
AIDS/HIV	Identified using HCUP Elixhauser * comorbidity definitions
Alcohol abuse	Identified using HCUP Elixhauser comorbidity definitions
Autoimmune conditions	Identified using HCUP Elixhauser comorbidity definitions
Lymphoma	Identified using HCUP Elixhauser comorbidity definitions
Leukemia	Identified using HCUP Elixhauser comorbidity definitions
Metastatic cancer	Identified using HCUP Elixhauser comorbidity definitions
Carcinoma in situ	Identified using HCUP Elixhauser comorbidity definitions
Non-metastatic solid cancer	Identified using HCUP Elixhauser comorbidity definitions
Dementia	Identified using HCUP Elixhauser comorbidity definitions
Depression	Identified using HCUP Elixhauser comorbidity definitions
Diabetes, uncomplicated	Identified using HCUP Elixhauser comorbidity definitions
Diabetes, with complications	Identified using HCUP Elixhauser comorbidity definitions
Drug abuse	Identified using HCUP Elixhauser comorbidity definitions
Hypertension, complicated	Identified using HCUP Elixhauser comorbidity definitions
Hypertension, uncomplicated	Identified using HCUP Elixhauser comorbidity definitions
Chronic lung disease	Identified using HCUP Elixhauser comorbidity definitions
Obesity	Identified using HCUP Elixhauser comorbidity definitions
Peripheral vascular disease	Identified using HCUP Elixhauser comorbidity definitions
Hypothyroidism	Identified using HCUP Elixhauser comorbidity definitions
Other thyroid disorders	Identified using HCUP Elixhauser comorbidity definitions

* HCUP Elixhauser comorbidity measures are derived from the AHRQ Elixhauser Comorbidity Software Refined for ICD-10-CM and identify pre-existing comorbid conditions using secondary diagnosis codes. Additional details are available at the HCUP website.

Table S2. Multivariable Logistic Regression Model Results for In-Hospital Mortality, 2019-2023.

Variable	2019			2020			2021			2022			2023		
	aOR	95% CI	*P*	aOR	95% CI	*P*	aOR	95% CI	*P*	aOR	95% CI	*P*	aOR	95% CI	*P*
COVID-19	*N/A*	*N/A*	*N/A*	5.954	(5.783, 6.130)	<0.001	4.908	(4.778, 5.041)	<0.001	2.262	(2.193, 2.333)	<0.001	1.484	(1.413, 1.558)	<0.001
Metastatic cancer	3.134	(3.008, 3.265)	<0.001	2.801	(2.684, 2.922)	<0.001	2.594	(2.485, 2.707)	<0.001	2.837	(2.721, 2.958)	<0.001	3.070	(2.945, 3.201)	<0.001
Malnutrition	2.044	(1.981, 2.109)	<0.001	1.897	(1.840, 1.957)	<0.001	1.928	(1.871, 1.988)	<0.001	1.995	(1.936, 2.056)	<0.001	1.950	(1.891, 2.011)	<0.001
Non-metastatic solid cancer	1.683	(1.608, 1.762)	<0.001	1.631	(1.558, 1.707)	<0.001	1.496	(1.429, 1.566)	<0.001	1.553	(1.484, 1.626)	<0.001	1.655	(1.581, 1.733)	<0.001
Patient Characteristics															
Age	1.028	(1.027, 1.030)	<0.001	1.028	(1.026, 1.029)	<0.001	1.025	(1.024, 1.026)	<0.001	1.026	(1.025, 1.027)	<0.001	1.025	(1.023, 1.026)	<0.001
Female sex	0.911	(0.889, 0.933)	<0.001	0.903	(0.882, 0.924)	<0.001	0.894	(0.874, 0.915)	<0.001	0.914	(0.893, 0.937)	<0.001	0.934	(0.911, 0.958)	<0.001
Elective admission	0.718	(0.686, 0.751)	<0.001	0.709	(0.678, 0.742)	<0.001	0.743	(0.711, 0.777)	<0.001	0.684	(0.652, 0.718)	<0.001	0.749	(0.714, 0.785)	<0.001
Median Household Income															
26 - 50th vs. 0-25th percentile	0.985	(0.956, 1.016)	0.347	0.978	(0.950, 1.006)	0.120	0.957	(0.931, 0.984)	0.002	0.961	(0.933, 0.989)	0.007	1.013	(0.982, 1.044)	0.413
51 - 75th vs. 0-25th percentile	0.969	(0.938, 1.002)	0.064	0.946	(0.916, 0.976)	<0.001	0.907	(0.879, 0.935)	<0.001	0.920	(0.891, 0.950)	<0.001	0.985	(0.952, 1.019)	0.379
76 - 100th vs. 0-25th percentile	0.990	(0.954, 1.028)	0.606	0.972	(0.938, 1.008)	0.125	0.921	(0.889, 0.954)	<0.001	0.938	(0.904, 0.973)	<0.001	0.969	(0.932, 1.008)	0.121
Injury Diagnosis Reported															
Primary injury vs. No injury	0.806	(0.756, 0.860)	<0.001	0.727	(0.681, 0.776)	<0.001	0.738	(0.693, 0.787)	<0.001	0.784	(0.737, 0.834)	<0.001	0.818	(0.768, 0.871)	<0.001
Second injury vs. No injury	1.774	(1.697, 1.855)	<0.001	1.542	(1.473, 1.615)	<0.001	1.616	(1.546, 1.689)	<0.001	1.569	(1.501, 1.640)	<0.001	1.646	(1.573, 1.722)	<0.001
Insurance Status															
Medicaid vs. Medicare	1.057	(1.005, 1.111)	0.031	1.073	(1.024, 1.124)	0.003	1.025	(0.980, 1.072)	0.276	0.997	(0.951, 1.045)	0.895	1.012	(0.961, 1.066)	0.649
Private Insurance vs. Medicare	1.369	(1.316, 1.424)	<0.001	1.257	(1.211, 1.305)	<0.001	1.271	(1.225, 1.318)	<0.001	1.256	(1.209, 1.306)	<0.001	1.292	(1.243, 1.344)	<0.001
Other vs. Medicare	1.892	(1.798, 1.990)	<0.001	1.606	(1.531, 1.685)	<0.001	1.601	(1.529, 1.676)	<0.001	1.525	(1.453, 1.600)	<0.001	1.693	(1.615, 1.776)	<0.001
Hospital Characteristics															
Bed Size															
Medium vs. Small	1.181	(1.141, 1.221)	<0.001	1.184	(1.147, 1.222)	<0.001	1.207	(1.171, 1.245)	<0.001	1.166	(1.130, 1.204)	<0.001	1.130	(1.092, 1.169)	<0.001
Large vs. Small	1.279	(1.239, 1.320)	<0.001	1.259	(1.223, 1.297)	<0.001	1.225	(1.190, 1.261)	<0.001	1.204	(1.168, 1.240)	<0.001	1.230	(1.192, 1.269)	<0.001
Hospital Teaching Status															
Urban nonteaching vs. Rural	1.095	(1.045, 1.148)	<0.001	1.139	(1.090, 1.190)	<0.001	1.062	(1.019, 1.108)	0.005	0.977	(0.935, 1.021)	0.303	0.970	(0.925, 1.018)	0.213
Urban teaching vs. Rural	1.312	(1.260, 1.367)	<0.001	1.293	(1.245, 1.343)	<0.001	1.170	(1.129, 1.213)	<0.001	1.106	(1.065, 1.147)	<0.001	1.112	(1.069, 1.158)	<0.001
Control/ownership of hospital															
Private, not-profit vs. Government	0.938	(0.902, 0.976)	0.001	0.945	(0.911, 0.980)	0.003	0.900	(0.869, 0.933)	<0.001	0.970	(0.934, 1.007)	0.112	0.974	(0.936, 1.013)	0.193
Private, invest-own vs. Government	0.823	(0.783, 0.865)	<0.001	0.806	(0.770, 0.844)	<0.001	0.803	(0.767, 0.841)	<0.001	0.798	(0.760, 0.838)	<0.001	0.789	(0.749, 0.831)	<0.001
Comorbidity															
Obstructive sleep apnea	0.733	(0.704, 0.764)	<0.001	0.748	(0.720, 0.776)	<0.001	0.748	(0.721, 0.775)	<0.001	0.680	(0.654, 0.708)	<0.001	0.608	(0.583, 0.635)	<0.001
Chronic kidney disease	1.014	(0.983, 1.045)	0.378	0.983	(0.955, 1.012)	0.242	0.954	(0.928, 0.982)	0.001	0.937	(0.910, 0.965)	<0.001	0.952	(0.923, 0.982)	0.002
Chronic heart failure	0.843	(0.814, 0.873)	<0.001	0.818	(0.791, 0.845)	<0.001	0.859	(0.832, 0.886)	<0.001	0.838	(0.811, 0.866)	<0.001	0.834	(0.806, 0.862)	<0.001
Alcohol abuse	1.080	(1.024, 1.139)	.004	0.956	(0.907, 1.008)	.097	0.972	(0.923, 1.023)	.275	1.040	(0.988, 1.095)	.137	1.099	(1.042, 1.160)	<0.001
Autoimmune conditions	*N/A*	*N/A*	*N/A*	0.917	(0.866, 0.971)	.003	0.967	(0.916, 1.021)	.222	0.982	(0.928, 1.038)	.515	0.977	(0.922, 1.036)	.438

Dementia	1.177	(1.134, 1.223)	<0.001	1.180	(1.140, 1.222)	<0.001	1.111	(1.071, 1.152)	<0.001	1.132	(1.091, 1.175)	<0.001	1.234	(1.188, 1.282)	<0.001
Depression	0.700	(0.675, 0.726)	<0.001	0.695	(0.672, 0.719)	<0.001	0.687	(0.664, 0.710)	<0.001	0.673	(0.650, 0.698)	<0.001	0.706	(0.681, 0.732)	<0.001
Diabetes, uncomplicated	0.915	(0.877, 0.955)	<0.001	0.923	(0.887, 0.961)	<0.001	0.868	(0.834, 0.904)	<0.001	0.838	(0.803, 0.875)	<0.001	0.892	(0.852, 0.934)	<0.001
Diabetes, with complications	0.986	(0.957, 1.016)	.350	1.035	(1.007, 1.064)	.015	1.066	(1.037, 1.095)	<0.001	0.995	(0.967, 1.023)	.718	1.038	(1.007, 1.069)	.014
Drug abuse	0.717	(0.668, 0.770)	<0.001	0.688	(0.642, 0.736)	<0.001	0.705	(0.661, 0.751)	<0.001	0.709	(0.665, 0.757)	<0.001	0.762	(0.713, 0.815)	<0.001
Hypertension, complicated	1.205	(1.169, 1.243)	<0.001	1.119	(1.086, 1.152)	<0.001	1.153	(1.120, 1.188)	<0.001	1.150	(1.116, 1.185)	<0.001	1.187	(1.149, 1.225)	<0.001
Hypertension, uncomplicated	0.589	(0.569, 0.610)	<0.001	0.584	(0.565, 0.603)	<0.001	0.623	(0.604, 0.643)	<0.001	0.571	(0.552, 0.591)	<0.001	0.597	(0.576, 0.619)	<0.001
Obesity	0.859	(0.830, 0.889)	<0.001	0.973	(0.944, 1.003)	0.082	0.990	(0.961, 1.019)	.478	0.952	(0.923, 0.982)	.002	0.934	(0.904, 0.964)	<0.001
Peripheral vascular disease	1.145	(1.106, 1.184)	<0.001	0.998	(0.964, 1.034)	0.916	1.009	(0.975, 1.044)	.616	0.998	(0.964, 1.034)	.924	1.120	(1.082, 1.160)	<0.001
Hypothyroidism	0.819	(0.792, 0.847)	<0.001	0.847	(0.821, 0.874)	<0.001	0.855	(0.829, 0.881)	<0.001	0.882	(0.855, 0.910)	<0.001	0.880	(0.852, 0.909)	<0.001
Autoimmune conditions were not available in the 2019 NIS and are reported as *N/A*.															

Table S3. Multivariable Logistic Regression Model Results for Acute Kidney Injury, 2019-2023.

Variable	2019			2020			2021			2022			2023		
	aOR	**95% CI**	***P***	**aOR**	**95% CI**	***P***	**aOR**	**95% CI**	***P***	**aOR**	**95% CI**	***P***	**aOR**	**95% CI**	***P***
Chronic kidney disease	3.372	(3.326, 3.419)	<0.001	3.066	(3.022, 3.111)	<0.001	2.991	(2.948, 3.034)	<0.001	3.046	(3.002, 3.090)	<0.001	3.139	(3.094, 3.183)	<0.001
Malnutrition	1.510	(1.483, 1.537)	<0.001	1.566	(1.537, 1.596)	<0.001	1.465	(1.437, 1.493)	<0.001	1.442	(1.416, 1.469)	<0.001	1.412	(1.387, 1.437)	<0.001
COVID-19	*N/A*	*N/A*	*N/A*	1.532	(1.498, 1.568)	<0.001	1.477	(1.448, 1.507)	<0.001	1.223	(1.200, 1.247)	<0.001	1.079	(1.051, 1.108)	<0.001
Obesity	1.309	(1.292, 1.327)	<0.001	1.335	(1.317, 1.354)	<0.001	1.313	(1.295, 1.331)	<0.001	1.293	(1.275, 1.311)	<0.001	1.327	(1.309, 1.345)	<0.001
Patient Characteristics															
Age	1.015	(1.014, 1.015)	<0.001	1.015	(1.014, 1.016)	<0.001	1.014	(1.014, 1.015)	<0.001	1.014	(1.013, 1.014)	<0.001	1.012	(1.012, 1.013)	<0.001
Female sex	0.817	(0.808, 0.827)	<0.001	0.828	(0.818, 0.837)	<0.001	0.819	(0.809, 0.829)	<0.001	0.820	(0.811, 0.830)	<0.001	0.831	(0.821, 0.841)	<0.001
Elective admission	0.421	(0.412, 0.431)	<0.001	0.416	(0.407, 0.426)	<0.001	0.403	(0.394, 0.413)	<0.001	0.398	(0.389, 0.408)	<0.001	0.395	(0.386, 0.405)	<0.001
Median Household Income															
26 - 50th vs. 0-25th percentile	0.961	(0.948, 0.974)	<0.001	0.972	(0.959, 0.986)	<0.001	0.966	(0.952, 0.980)	<0.001	0.962	(0.949, 0.976)	<0.001	0.956	(0.943, 0.970)	<0.001
51 - 75th vs. 0-25th percentile	0.960	(0.946, 0.975)	<0.001	0.959	(0.944, 0.975)	<0.001	0.943	(0.928, 0.958)	<0.001	0.956	(0.941, 0.971)	<0.001	0.961	(0.946, 0.976)	<0.001
76 - 100th vs. 0-25th percentile	0.956	(0.939, 0.973)	<0.001	0.978	(0.960, 0.996)	0.019	0.933	(0.916, 0.950)	<0.001	0.937	(0.920, 0.955)	<0.001	0.964	(0.946, 0.982)	<0.001
Injury Diagnosis Reported															
Primary injury vs. No injury	0.787	(0.765, 0.810)	<0.001	0.761	(0.739, 0.783)	<0.001	0.793	(0.770, 0.816)	<0.001	0.757	(0.735, 0.779)	<0.001	0.807	(0.785, 0.829)	<0.001
Second injury vs. No injury	1.364	(1.332, 1.398)	<0.001	1.305	(1.272, 1.339)	<0.001	1.290	(1.257, 1.324)	<0.001	1.284	(1.252, 1.317)	<0.001	1.286	(1.255, 1.318)	<0.001
Insurance Status															
Medicaid vs. Medicare	1.076	(1.054, 1.097)	<0.001	1.071	(1.049, 1.093)	<0.001	1.065	(1.043, 1.087)	<0.001	1.060	(1.038, 1.082)	<0.001	1.047	(1.025, 1.069)	<0.001
Private Insurance vs. Medicare	1.053	(1.033, 1.073)	<0.001	1.090	(1.069, 1.111)	<0.001	1.064	(1.044, 1.085)	<0.001	1.038	(1.018, 1.059)	<0.001	1.008	(0.989, 1.027)	0.423
Other vs. Medicare	1.043	(1.014, 1.072)	0.003	1.031	(1.003, 1.059)	0.031	1.002	(0.976, 1.030)	0.857	1.021	(0.994, 1.049)	0.127	1.021	(0.995, 1.048)	0.111

Hospital Characteristics															
Bed Size															
Medium vs. Small	1.063	(1.047, 1.079)	<0.001	1.086	(1.069, 1.103)	<0.001	1.086	(1.069, 1.103)	<0.001	1.071	(1.054, 1.088)	<0.001	1.051	(1.035, 1.067)	<0.001
Large vs. Small	1.125	(1.110, 1.141)	<0.001	1.133	(1.117, 1.150)	<0.001	1.092	(1.076, 1.108)	<0.001	1.082	(1.066, 1.098)	<0.001	1.080	(1.065, 1.095)	<0.001
Hospital Teaching Status															
Urban nonteaching vs. Rural	1.183	(1.158, 1.208)	<0.001	1.174	(1.149, 1.200)	<0.001	1.163	(1.138, 1.189)	<0.001	1.125	(1.100, 1.150)	<0.001	1.103	(1.079, 1.128)	<0.001
Urban teaching vs. Rural	1.349	(1.325, 1.374)	<0.001	1.320	(1.295, 1.345)	<0.001	1.266	(1.243, 1.291)	<0.001	1.222	(1.199, 1.245)	<0.001	1.174	(1.152, 1.196)	<0.001
Control/ownership of hospital															
Private, not-profit vs. Government	1.010	(0.992, 1.029)	0.274	1.024	(1.004, 1.044)	0.017	0.996	(0.977, 1.016)	0.715	0.988	(0.969, 1.007)	0.215	1.018	(0.999, 1.038)	0.066
Private, invest-own vs. Government	1.137	(1.112, 1.163)	<0.001	1.187	(1.160, 1.215)	<0.001	1.134	(1.108, 1.162)	<0.001	1.166	(1.139, 1.194)	<0.001	1.228	(1.199, 1.257)	<0.001
Comorbidity															
Obstructive sleep apnea	0.960	(0.945, 0.975)	<0.001	0.917	(0.902, 0.933)	<0.001	0.905	(0.890, 0.920)	<0.001	0.876	(0.861, 0.890)	<0.001	0.888	(0.874, 0.902)	<0.001
Chronic heart failure	0.933	(0.918, 0.947)	<0.001	0.906	(0.892, 0.921)	<0.001	0.915	(0.901, 0.930)	<0.001	0.923	(0.909, 0.938)	<0.001	0.908	(0.894, 0.922)	<0.001
Alcohol abuse	1.128	(1.101, 1.155)	<0.001	1.091	(1.065, 1.118)	<0.001	1.069	(1.043, 1.095)	<0.001	1.090	(1.064, 1.118)	<0.001	1.123	(1.096, 1.151)	<0.001
Autoimmune conditions	*N/A*	*N/A*	*N/A*	0.993	(0.966, 1.021)	0.621	0.974	(0.947, 1.001)	0.054	0.981	(0.955, 1.008)	0.171	0.986	(0.961, 1.012)	0.294
Metastatic cancer	1.111	(1.079, 1.144)	<0.001	1.079	(1.047, 1.113)	<0.001	1.081	(1.048, 1.115)	<0.001	1.099	(1.066, 1.133)	<0.001	1.109	(1.077, 1.143)	<0.001
Non-metastatic solid cancer	1.079	(1.052, 1.108)	<0.001	1.068	(1.040, 1.098)	<0.001	1.037	(1.009, 1.066)	0.009	1.015	(0.987, 1.043)	0.291	1.033	(1.006, 1.060)	0.016
Dementia	1.148	(1.127, 1.170)	<0.001	1.166	(1.144, 1.189)	<0.001	1.119	(1.097, 1.142)	<0.001	1.131	(1.109, 1.154)	<0.001	1.114	(1.092, 1.136)	<0.001
Depression	0.924	(0.911, 0.938)	<0.001	0.902	(0.888, 0.916)	<0.001	0.918	(0.904, 0.932)	<0.001	0.898	(0.884, 0.911)	<0.001	0.927	(0.913, 0.941)	<0.001
Diabetes, uncomplicated	1.028	(1.008, 1.048)	0.005	1.028	(1.007, 1.049)	0.008	1.018	(0.997, 1.039)	0.097	1.041	(1.019, 1.063)	<0.001	1.060	(1.038, 1.083)	<0.001
Diabetes, with complications	1.273	(1.257, 1.290)	<0.001	1.283	(1.266, 1.300)	<0.001	1.281	(1.264, 1.298)	<0.001	1.274	(1.258, 1.292)	<0.001	1.285	(1.268, 1.302)	<0.001
Drug abuse	1.187	(1.158, 1.218)	<0.001	1.155	(1.126, 1.186)	<0.001	1.174	(1.145, 1.205)	<0.001	1.124	(1.095, 1.153)	<0.001	1.204	(1.175, 1.235)	<0.001
Hypertension, complicated	1.237	(1.219, 1.254)	<0.001	1.199	(1.182, 1.218)	<0.001	1.211	(1.193, 1.229)	<0.001	1.211	(1.193, 1.230)	<0.001	1.238	(1.220, 1.257)	<0.001
Hypertension, uncomplicated	0.834	(0.820, 0.847)	<0.001	0.798	(0.785, 0.812)	<0.001	0.808	(0.795, 0.822)	<0.001	0.813	(0.800, 0.827)	<0.001	0.828	(0.814, 0.842)	<0.001
Peripheral vascular disease	1.034	(1.017, 1.051)	<0.001	0.972	(0.955, 0.989)	0.002	0.972	(0.954, 0.989)	0.002	0.970	(0.953, 0.987)	<0.001	1.042	(1.025, 1.060)	<0.001
Hypothyroidism	0.987	(0.973, 1.001)	0.067	0.988	(0.973, 1.003)	0.116	0.980	(0.965, 0.995)	0.008	0.993	(0.979, 1.008)	0.389	1.020	(1.005, 1.034)	0.009

Autoimmune conditions were not available in the 2019 NIS and are reported as *N/A*.

Table S4. Multivariable Log-Transformation Linear Regression Model Results for Total Charges, 2019-2023.

Variable	2019			2020			2021			2022			2023		
	%	95% CI	*P*	%	95% CI	*P*	%	95% CI	*P*	%	95% CI	*P*	%	95% CI	*P*
Malnutrition	38.4	(37.6%, 39.3%)	<0.001	39.7	(38.8%, 40.7%)	<0.001	38.5	(37.5%, 39.5%)	<0.001	38.6	(37.6%, 39.5%)	<0.001	40.7	(39.8%, 41.6%)	<0.001
COVID-19	*N/A*	*N/A*	*N/A*	17.8	(16.8%, 18.8%)	<0.001	27.7	(26.8%, 28.7%)	<0.001	15.4	(14.6%, 16.2%)	<0.001	14.9	(13.9%, 16.0%)	<0.001
Peripheral vascular disease	18.2	(17.5%, 18.8%)	<0.001	17.5	(16.8%, 18.2%)	<0.001	17.1	(16.4%, 17.9%)	<0.001	17.8	(17.1%, 18.6%)	<0.001	19.0	(18.3%, 19.7%)	<0.001
Hypertension, complicated	16.2	(15.6%, 16.8%)	<0.001	17.1	(16.5%, 17.8%)	<0.001	15.5	(14.9%, 16.1%)	<0.001	15.9	(15.2%, 16.5%)	<0.001	17.6	(17.0%, 18.2%)	<0.001
Discharge disposition															
Routine Discharge vs. Died	-35.6	(-36.2%, -35.0%)	<0.001	-36.3	(-36.9%, -35.7%)	<0.001	-39.0	(-39.6%, -38.5%)	<0.001	-36.8	(-37.4%, -36.2%)	<0.001	-34.3	(-34.9%, -33.6%)	<0.001
Transfer to acute hospital vs. Died	-31.9	(-32.9%, -30.8%)	<0.001	-34.8	(-35.8%, -33.8%)	<0.001	-35.9	(-36.9%, -34.8%)	<0.001	-33.0	(-34.1%, -31.9%)	<0.001	-29.3	(-30.5%, -28.2%)	<0.001
Transfer to another facility vs. Died	-0.6	(-1.6%, 0.4%)	0.240	-2.9	(-3.9%, -1.9%)	<0.001	-6.7	(-7.6%, -5.7%)	<0.001	-3.3	(-4.3%, -2.3%)	<0.001	0.7	(-0.3%, 1.8%)	0.183
Patient Characteristics															
Age	-0.3	(-0.3%, -0.2%)	<0.001	-0.2	(-0.3%, -0.2%)	<0.001	-0.3	(-0.3%, -0.3%)	<0.001	-0.4	(-0.4%, -0.3%)	<0.001	-0.4	(-0.4%, -0.4%)	<0.001
Female sex	-4.1	(-4.5%, -3.8%)	<0.001	-4.1	(-4.5%, -3.7%)	<0.001	-4.5	(-4.9%, -4.1%)	<0.001	-4.0	(-4.4%, -3.6%)	<0.001	-4.9	(-5.3%, -4.5%)	<0.001
Elective admission	49.8	(49.0%, 50.7%)	<0.001	49.6	(48.7%, 50.6%)	<0.001	49.9	(48.9%, 50.9%)	<0.001	51.5	(50.5%, 52.5%)	<0.001	53.7	(52.7%, 54.6%)	<0.001
Median Household Income															
26 - 50th vs. 0-25th percentile	-0.3	(-0.7%, 0.1%)	0.192	0.8	(0.3%, 1.3%)	.002	1.5	(0.9%, 2.0%)	<0.001	2.9	(2.4%, 3.4%)	<0.001	0.0	(-0.5%, 0.4%)	0.863
51 - 75th vs. 0-25th percentile	4.0	(3.5%, 4.6%)	<0.001	4.6	(4.1%, 5.2%)	<0.001	3.9	(3.3%, 4.5%)	<0.001	5.9	(5.3%, 6.4%)	<0.001	2.8	(2.3%, 3.3%)	<0.001
76 - 100th vs. 0-25th percentile	11.9	(11.2%, 12.5%)	<0.001	12.7	(11.9%, 13.4%)	<0.001	13.0	(12.2%, 13.7%)	<0.001	15.4	(14.6%, 16.1%)	<0.001	6.9	(6.2%, 7.6%)	<0.001
Injury Diagnosis Reported															
Primary injury vs. No injury	15.5	(14.5%, 16.5%)	<0.001	20.2	(19.1%, 21.4%)	<0.001	19.6	(18.5%, 20.8%)	<0.001	22.8	(21.6%, 23.9%)	<0.001	20.0	(18.9%, 21.1%)	<0.001
Second injury vs. No injury	21.8	(20.8%, 22.9%)	<0.001	19.3	(18.2%, 20.5%)	<0.001	18.3	(17.1%, 19.4%)	<0.001	18.3	(17.2%, 19.4%)	<0.001	16.2	(15.2%, 17.3%)	<0.001
Insurance Status															
Medicaid vs. Medicare	-0.9	(-1.5%, -0.3%)	0.005	-2.5	(-3.1%, -1.8%)	<0.001	-2.9	(-3.6%, -2.3%)	<0.001	-2.8	(-3.5%, -2.1%)	<0.001	-4.5	(-5.1%, -3.8%)	<0.001
Private Insurance vs. Medicare	3.0	(2.4%, 3.6%)	<0.001	3.2	(2.6%, 3.9%)	<0.001	3.2	(2.5%, 3.9%)	<0.001	1.2	(0.5%, 1.9%)	<0.001	1.3	(0.6%, 1.9%)	<0.001
Other vs. Medicare	-6.1	(-6.9%, -5.3%)	<0.001	-7.0	(-7.8%, -6.1%)	<0.001	-8.7	(-9.6%, -7.9%)	<0.001	-7.8	(-8.7%, -7.0%)	<0.001	-7.7	(-8.5%, -6.9%)	<0.001
Hospital Characteristics															
Bed Size															
Medium vs. Small	22.2	(21.6%, 22.8%)	<0.001	21.9	(21.2%, 22.5%)	<0.001	21.4	(20.8%, 22.1%)	<0.001	20.2	(19.5%, 20.8%)	<0.001	19.8	(19.2%, 20.4%)	<0.001
Large vs. Small	45.3	(44.7%, 46.0%)	<0.001	44.7	(43.9%, 45.4%)	<0.001	43.4	(42.7%, 44.1%)	<0.001	43.6	(42.9%, 44.4%)	<0.001	41.0	(40.4%, 41.7%)	<0.001
Hospital Teaching Status															
Urban nonteaching vs. Rural	53.1	(52.1%, 54.1%)	<0.001	51.3	(50.3%, 52.4%)	<0.001	47.6	(46.5%, 48.7%)	<0.001	46.1	(45.1%, 47.2%)	<0.001	47.6	(46.5%, 48.7%)	<0.001
Urban teaching vs. Rural	84.0	(83.0%, 85.0%)	<0.001	82.3	(81.1%, 83.4%)	<0.001	78.3	(77.2%, 79.5%)	<0.001	77.6	(76.5%, 78.7%)	<0.001	78.1	(77.0%, 79.1%)	<0.001
Control/ownership of hospital															
Private, not-profit vs. Government	2.8	(2.2%, 3.4%)	<0.001	1.8	(1.1%, 2.4%)	<0.001	1.5	(0.8%, 2.2%)	<0.001	1.8	(1.1%, 2.4%)	<0.001	0.5	(-0.1%, 1.2%)	0.094
Private, invest-own vs. Government	88.8	(87.4%, 90.1%)	<0.001	87.8	(86.3%, 89.3%)	<0.001	84.9	(83.4%, 86.4%)	<0.001	88.7	(87.1%, 90.2%)	<0.001	97.6	(96.1%, 99.2%)	<0.001
Comorbidity															
Obstructive sleep apnea	2.8	(2.3%, 3.4%)	<0.001	1.1	(0.5%, 1.7%)	<0.001	0.3	(-0.3%, 0.9%)	0.334	-0.3	(-0.8%, 0.3%)	0.391	-0.6	(-1.1%, -0.0%)	0.036
Chronic kidney disease	-3.3	(-3.7%, -2.8%)	<0.001	-4.5	(-5.0%, -4.0%)	<0.001	-5.3	(-5.9%, -4.8%)	<0.001	-4.3	(-4.8%, -3.7%)	<0.001	-4.6	(-5.1%, -4.1%)	<0.001
Chronic heart failure	-7.6	(-8.1%, -7.1%)	<0.001	-8.0	(-8.5%, -7.4%)	<0.001	-7.9	(-8.4%, -7.3%)	<0.001	-6.5	(-7.0%, -5.9%)	<0.001	-8.0	(-8.6%, -7.5%)	<0.001
Alcohol abuse	0.6	(-0.2%, 1.4%)	0.119	-0.2	(-1.0%, 0.6%)	0.671	-0.7	(-1.5%, 0.1%)	0.100	1.8	(1.0%, 2.7%)	<0.001	2.2	(1.4%, 3.0%)	<0.001
Autoimmune conditions	*N/A*	*N/A*	*N/A*	1.9	(1.0%, 2.9%)	<0.001	2.1	(1.1%, 3.0%)	<0.001	2.2	(1.3%, 3.2%)	<0.001	2.8	(1.9%, 3.7%)	<0.001
Metastatic cancer	10.1	(9.1%, 11.2%)	<0.001	9.4	(8.3%, 10.5%)	<0.001	9.3	(8.1%, 10.4%)	<0.001	10.6	(9.4%, 11.8%)	<0.001	10.2	(9.1%, 11.3%)	<0.001
Non-metastatic solid cancer	5.5	(4.6%, 6.5%)	<0.001	4.9	(3.9%, 5.9%)	<0.001	3.6	(2.6%, 4.6%)	<0.001	4.2	(3.2%, 5.2%)	<0.001	4.4	(3.5%, 5.3%)	<0.001
Dementia	-9.8	(-10.4%, -9.2%)	<0.001	-10.2	(-10.8%, -9.5%)	<0.001	-8.8	(-9.4%, -8.1%)	<0.001	-7.9	(-8.6%, -7.2%)	<0.001	-7.1	(-7.7%, -6.4%)	<0.001
Depression	-4.4	(-4.9%, -4.0%)	<0.001	-5.6	(-6.1%, -5.1%)	<0.001	-5.4	(-5.9%, -4.9%)	<0.001	-5.7	(-6.1%, -5.2%)	<0.001	-3.8	(-4.3%, -3.3%)	<0.001
Diabetes, uncomplicated	-2.6	(-3.2%, -2.1%)	<0.001	-2.6	(-3.2%, -1.9%)	<0.001	-3.1	(-3.8%, -2.5%)	<0.001	-3.4	(-4.0%, -2.7%)	<0.001	-3.1	(-3.8%, -2.5%)	<0.001
Diabetes, with complications	9.8	(9.3%, 10.3%)	<0.001	11.2	(10.6%, 11.7%)	<0.001	10.8	(10.3%, 11.4%)	<0.001	11.3	(10.7%, 11.8%)	<0.001	11.2	(10.7%, 11.7%)	<0.001
Drug abuse	-2.2	(-3.0%, -1.4%)	<0.001	-3.6	(-4.4%, -2.7%)	<0.001	-2.5	(-3.4%, -1.6%)	<0.001	-1.2	(-2.0%, -0.3%)	0.009	-2.9	(-3.7%, -2.1%)	<0.001
Hypertension, uncomplicated	-1.4	(-1.9%, -1.0%)	<0.001	-1.8	(-2.3%, -1.3%)	<0.001	-2.4	(-3.0%, -1.9%)	<0.001	-2.0	(-2.6%, -1.5%)	<0.001	-1.2	(-1.7%, -0.7%)	<0.001
Obesity	12.5	(12.0%, 13.1%)	<0.001	14.1	(13.5%, 14.7%)	<0.001	15.2	(14.6%, 15.8%)	<0.001	14.6	(14.0%, 15.2%)	<0.001	16.0	(15.5%, 16.6%)	<0.001

Hypothyroidis	-0.4	(-0.9%, 0.1%)	0.121	-0.7	(-1.3%, -0.2%)	0.006	-0.8	(-1.4%, -0.3%)	0.002	-0.7	(-1.2%, -0.2%)	0.009	0.6	(0.1%, 1.1%)	0.016

%: Percent Change (in Total Charges)
Autoimmune conditions were not available in the 2019 NIS and are reported as *N/A*.

Table S5. Multivariable Fine-Gray Subdistribution Model Results for Time-to-Routine Discharge, 2019-2023.

Variable	2019			2020			2021			2022			2023		
	sHR	**95% CI**	***P***	**sHR**	**95% CI**	***P***	**sHR**	**95% CI**	***P***	**sHR**	**95% CI**	***P***	**sHR**	**95% CI**	***P***
COVID-19	*N/A*	*N/A*	*N/A*	0.528	(0.522, 0.535)	<0.001	0.652	(0.646, 0.659)	<0.001	0.814	(0.807, 0.822)	<0.001	0.841	(0.830, 0.852)	<0.001
Dementia	0.519	(0.512, 0.526)	<0.001	0.523	(0.517, 0.530)	<0.001	0.548	(0.541, 0.556)	<0.001	0.545	(0.538, 0.551)	<0.001	0.536	(0.529, 0.543)	<0.001
Malnutrition	0.576	(0.571, 0.581)	<0.001	0.582	(0.576, 0.588)	<0.001	0.586	(0.579, 0.592)	<0.001	0.589	(0.584, 0.595)	<0.001	0.593	(0.588, 0.598)	<0.001
Metastatic cancer	0.761	(0.753, 0.770)	<0.001	0.796	(0.785, 0.806)	<0.001	0.802	(0.789, 0.815)	<0.001	0.789	(0.778, 0.800)	<0.001	0.781	(0.771, 0.791)	<0.001
Patient Characteristics															
Age	0.986	(0.986, 0.986)	<0.001	0.988	(0.988, 0.988)	<0.001	0.988	(0.988, 0.988)	<0.001	0.988	(0.987, 0.988)	<0.001	0.987	(0.987, 0.988)	<0.001
Female sex	0.966	(0.962, 0.971)	<0.001	0.985	(0.980, 0.990)	<0.001	0.990	(0.985, 0.995)	<0.001	0.984	(0.979, 0.988)	<0.001	0.979	(0.974, 0.984)	<0.001
Elective admission	1.134	(1.126, 1.141)	<0.001	1.154	(1.145, 1.163)	<0.001	1.167	(1.158, 1.176)	<0.001	1.178	(1.168, 1.188)	<0.001	1.180	(1.170, 1.191)	<0.001
Median Household Income															
26 - 50th vs. 0-25th percentile	0.992	(0.987, 0.998)	0.006	0.997	(0.990, 1.003)	0.300	0.998	(0.992, 1.005)	0.630	1.011	(1.004, 1.018)	0.002	1.004	(0.998, 1.011)	0.200
51 - 75th vs. 0-25th percentile	0.993	(0.986, 0.999)	0.031	1.007	(0.999, 1.014)	0.085	1.007	(1.000, 1.014)	0.041	1.012	(1.005, 1.020)	<0.001	1.022	(1.015, 1.030)	<0.001
76 - 100th vs. 0-25th percentile	0.969	(0.963, 0.976)	<0.001	0.985	(0.977, 0.994)	0.001	0.993	(0.985, 1.000)	0.062	1.005	(0.997, 1.013)	0.230	1.009	(1.000, 1.018)	0.043
Injury Diagnosis Reported															
Primary injury vs. No injury	0.440	(0.433, 0.447)	<0.001	0.485	(0.478, 0.493)	<0.001	0.469	(0.461, 0.477)	<0.001	0.457	(0.450, 0.465)	<0.001	0.443	(0.436, 0.449)	<0.001
Second injury vs. No injury	0.629	(0.620, 0.637)	<0.001	0.654	(0.645, 0.662)	<0.001	0.637	(0.627, 0.648)	<0.001	0.638	(0.629, 0.647)	<0.001	0.640	(0.632, 0.649)	<0.001
Insurance Status															
Medicaid vs. Medicare	1.036	(1.028, 1.044)	<0.001	1.035	(1.026, 1.044)	<0.001	1.046	(1.038, 1.055)	<0.001	1.040	(1.031, 1.049)	<0.001	1.020	(1.011, 1.028)	<0.001
Private Insurance vs. Medicare	1.127	(1.118, 1.135)	<0.001	1.127	(1.118, 1.136)	<0.001	1.112	(1.104, 1.120)	<0.001	1.130	(1.119, 1.140)	<0.001	1.115	(1.107, 1.124)	<0.001
Other vs. Medicare	1.140	(1.129, 1.150)	<0.001	1.125	(1.112, 1.138)	<0.001	1.108	(1.095, 1.120)	<0.001	1.113	(1.100, 1.126)	<0.001	1.107	(1.094, 1.120)	<0.001
Hospital Characteristics															
Bed Size															
Medium vs. Small	0.998	(0.992, 1.005)	0.640	0.998	(0.992, 1.004)	0.560	0.991	(0.983, 0.998)	0.012	0.993	(0.987, 1.000)	0.047	0.988	(0.981, 0.995)	<0.001
Large vs. Small	0.988	(0.983, 0.993)	<0.001	0.991	(0.984, 0.998)	0.010	0.986	(0.980, 0.993)	<0.001	0.990	(0.983, 0.997)	0.007	0.984	(0.979, 0.990)	<0.001

Hospital Teaching Status															
Urban nonteaching vs. Rural	1.026	(1.016, 1.035)	<0.001	1.035	(1.025, 1.045)	<0.001	1.026	(1.016, 1.037)	<0.001	1.028	(1.017, 1.038)	<0.001	1.056	(1.045, 1.067)	<0.001
Urban teaching vs. Rural	0.998	(0.990, 1.007)	0.700	1.010	(1.003, 1.018)	0.009	0.999	(0.991, 1.007)	0.800	1.001	(0.992, 1.011)	0.790	1.015	(1.006, 1.024)	<0.001
Control/ ownership of hospital															
Private, not-profit vs. Government	1.056	(1.048, 1.064)	<0.001	1.041	(1.033, 1.050)	<0.001	1.044	(1.034, 1.054)	<0.001	1.035	(1.025, 1.044)	<0.001	1.049	(1.040, 1.058)	<0.001
Private, invest-own vs. Government	1.047	(1.037, 1.058)	<0.001	1.040	(1.028, 1.052)	<0.001	1.039	(1.028, 1.050)	<0.001	1.037	(1.027, 1.048)	<0.001	1.057	(1.045, 1.068)	<0.001
Comorbidity															
Obstructive sleep apnea	1.054	(1.047, 1.060)	<0.001	1.082	(1.074, 1.090)	<0.001	1.087	(1.079, 1.095)	<0.001	1.096	(1.088, 1.105)	<0.001	1.097	(1.089, 1.106)	<0.001
Chronic kidney disease	0.963	(0.957, 0.969)	<0.001	0.986	(0.980, 0.993)	<0.001	0.996	(0.989, 1.004)	0.310	0.989	(0.982, 0.997)	0.006	0.988	(0.981, 0.994)	<0.001
Chronic heart failure	1.025	(1.017, 1.032)	<0.001	1.035	(1.026, 1.044)	<0.001	1.032	(1.025, 1.039)	<0.001	1.024	(1.018, 1.031)	<0.001	1.034	(1.026, 1.042)	<0.001
Alcohol abuse	0.880	(0.872, 0.888)	<0.001	0.894	(0.885, 0.904)	<0.001	0.887	(0.878, 0.897)	<0.001	0.894	(0.885, 0.903)	<0.001	0.890	(0.881, 0.898)	<0.001
Autoimmune conditions	*N/A*	*N/A*	*N/A*	1.000	(0.989, 1.010)	0.950	0.994	(0.982, 1.007)	0.400	1.002	(0.992, 1.013)	0.630	0.988	(0.975, 1.002)	0.089
Non-metastatic solid cancer	0.934	(0.924, 0.944)	<0.001	0.925	(0.914, 0.937)	<0.001	0.953	(0.941, 0.966)	<0.001	0.950	(0.937, 0.963)	<0.001	0.966	(0.955, 0.977)	<0.001
Depression	0.930	(0.925, 0.936)	<0.001	0.952	(0.945, 0.959)	<0.001	0.951	(0.946, 0.956)	<0.001	0.945	(0.938, 0.952)	<0.001	0.936	(0.929, 0.942)	<0.001
Diabetes, uncomplicated	1.010	(1.003, 1.017)	0.005	1.006	(0.997, 1.014)	0.190	1.015	(1.006, 1.023)	0.001	1.015	(1.006, 1.025)	0.002	1.009	(1.001, 1.018)	0.030
Diabetes, with complications	0.883	(0.878, 0.888)	<0.001	0.876	(0.871, 0.881)	<0.001	0.876	(0.870, 0.881)	<0.001	0.870	(0.865, 0.876)	<0.001	0.864	(0.858, 0.870)	<0.001
Drug abuse	0.980	(0.971, 0.989)	<0.001	1.004	(0.993, 1.015)	0.470	1.011	(1.002, 1.021)	0.020	1.006	(0.996, 1.015)	0.270	0.984	(0.973, 0.994)	0.002
Hypertension, complicated	0.890	(0.884, 0.895)	<0.001	0.895	(0.889, 0.902)	<0.001	0.901	(0.894, 0.908)	<0.001	0.898	(0.892, 0.904)	<0.001	0.895	(0.888, 0.901)	<0.001
Hypertension, uncomplicated	1.098	(1.092, 1.104)	<0.001	1.110	(1.102, 1.118)	<0.001	1.112	(1.104, 1.121)	<0.001	1.110	(1.102, 1.118)	<0.001	1.099	(1.092, 1.107)	<0.001
Obesity	0.882	(0.877, 0.888)	<0.001	0.880	(0.875, 0.886)	<0.001	0.866	(0.860, 0.872)	<0.001	0.868	(0.862, 0.874)	<0.001	0.856	(0.851, 0.861)	<0.001
Peripheral vascular disease	0.955	(0.948, 0.962)	<0.001	0.978	(0.971, 0.985)	<0.001	0.983	(0.975, 0.991)	<0.001	0.973	(0.966, 0.981)	<0.001	0.943	(0.936, 0.950)	<0.001
Hypothyroidism	0.965	(0.959, 0.972)	<0.001	0.969	(0.962, 0.975)	<0.001	0.968	(0.960, 0.975)	<0.001	0.959	(0.951, 0.967)	<0.001	0.954	(0.948, 0.960)	<0.001

Autoimmune conditions were not available in the 2019 NIS and are reported as *N/A*.

Table S6. In-Hospital Mortality by Year and COVID-19 Status Among Patients With COPD as the Primary Diagnosis, 2019–2023.

	2019	2020			2021			2022			2023		
	Overall	Overall	Without COVID-19	With COVID-19	Overall	Without COVID-19	With COVID-19	Overall	Without COVID-19	With COVID-19	Overall	Without COVID-19	With COVID-19
	N = 96,454	N = 58,149	N = 58,001	N = 148	N = 51,033	N = 50,725	N = 308	N = 50,620	N = 49,905	N = 715	N = 51,126	N = 50,700	N = 426
In-Hospital Mortality													
Alive	95,468 (99.0%)	57,476 (98.9%)	57,341 (98.9%)	135 (91.8%)	50,367 (98.7%)	50,080 (98.8%)	287 (93.2%)	49,960 (98.7%)	49,269 (98.8%)	691 (96.9%)	50,558 (98.9%)	50,142 (98.9%)	416 (97.7%)
Died	957 (1.0%)	648 (1.1%)	636 (1.1%)	12 (8.2%)	649 (1.3%)	628 (1.2%)	21 (6.8%)	638 (1.3%)	616 (1.2%)	22 (3.1%)	558 (1.1%)	548 (1.1%)	10 (2.3%)

Table S7. Multivariable Logistic Regression Model for In-Hospital Mortality Among Patients With COPD as the Primary Diagnosis, 2019–2023.

Variable	2019			2020			2021			2022			2023		
	aOR	95% CI	*P*	aOR	95% CI	*P*	aOR	95% CI	*P*	aOR	95% CI	*P*	aOR	95% CI	*P*
COVID-19	*N/A*	*N/A*	*N/A*	8.017	(4.330, 14.844)	<0.001	5.372	(3.369, 8.566)	<0.001	2.313	(1.490, 3.591)	<0.001	2.126	(1.120, 4.034)	0.021
Metastatic cancer	4.107	(3.070, 5.493)	<0.001	3.720	(2.623, 5.276)	<0.001	3.246	(2.258, 4.666)	<0.001	3.551	(2.504, 5.035)	<0.001	4.204	(2.907, 6.078)	<0.001
Malnutrition	2.404	(1.989, 2.906)	<0.001	2.275	(1.801, 2.873)	<0.001	2.528	(2.024, 3.159)	<0.001	2.689	(2.179, 3.319)	<0.001	2.608	(2.082, 3.266)	<0.001
Non-metastatic solid cancer	1.828	(1.414, 2.364)	<0.001	2.116	(1.566, 2.859)	<0.001	1.701	(1.239, 2.335)	0.001	1.601	(1.160, 2.210)	0.004	2.478	(1.835, 3.345)	<0.001
Patient Characteristics															
Age	1.044	(1.036, 1.051)	<0.001	1.038	(1.028, 1.047)	<0.001	1.035	(1.025, 1.044)	<0.001	1.043	(1.033, 1.053)	<0.001	1.042	(1.032, 1.053)	<0.001
Female sex	1.058	(0.924, 1.211)	0.415	0.972	(0.826, 1.145)	0.738	0.811	(0.688, 0.957)	0.013	0.875	(0.741, 1.032)	0.113	1.029	(0.859, 1.233)	0.753
Elective admission	2.342	(1.834, 2.992)	<0.001	2.914	(2.196, 3.867)	<0.001	2.590	(1.905, 3.520)	<0.001	1.419	(0.954, 2.109)	0.084	1.974	(1.356, 2.876)	<0.001
Median Household Income															
26 - 50th vs. 0-25th percentile	1.046	(0.885, 1.236)	0.600	0.940	(0.765, 1.155)	0.555	1.008	(0.826, 1.230)	0.939	1.324	(1.087, 1.612)	0.005	1.049	(0.851, 1.292)	0.656
51 - 75th vs. 0-25th percentile	1.073	(0.895, 1.288)	0.446	1.176	(0.940, 1.472)	0.156	0.910	(0.725, 1.142)	0.414	1.023	(0.810, 1.291)	0.852	0.918	(0.718, 1.173)	0.493
76 - 100th vs. 0-25th percentile	1.111	(0.903, 1.366)	0.320	1.397	(1.094, 1.784)	0.007	0.963	(0.743, 1.248)	0.775	0.987	(0.756, 1.290)	0.925	0.894	(0.669, 1.196)	0.451
Injury Diagnosis Reported															
Second injury vs. No injury	2.475	(1.934, 3.169)	<0.001	2.935	(2.190, 3.934)	<0.001	2.943	(2.227, 3.890)	<0.001	2.133	(1.549, 2.937)	<0.001	2.667	(1.954, 3.641)	<0.001
Insurance Status															
Medicaid vs. Medicare	0.925	(0.696, 1.230)	0.594	0.910	(0.663, 1.249)	0.559	1.043	(0.779, 1.398)	0.776	0.813	(0.591, 1.118)	0.203	0.609	(0.409, 0.909)	0.015
Private Insurance vs. Medicare	1.585	(1.289, 1.950)	<0.001	1.135	(0.860, 1.497)	0.371	1.039	(0.783, 1.378)	0.792	1.041	(0.790, 1.371)	0.774	0.912	(0.676, 1.232)	0.548
Other vs. Medicare	2.299	(1.772, 2.984)	<0.001	1.704	(1.245, 2.334)	<0.001	1.677	(1.245, 2.259)	<0.001	0.965	(0.663, 1.405)	0.853	1.659	(1.208, 2.278)	0.002
Hospital Characteristics															
Bed Size															
Medium vs. Small	1.099	(0.928, 1.302)	0.274	0.966	(0.782, 1.193)	0.748	1.003	(0.816, 1.233)	0.975	1.238	(1.003, 1.527)	0.047	1.089	(0.874, 1.356)	0.449
Large vs. Small	1.112	(0.947, 1.306)	0.196	1.131	(0.935, 1.369)	0.206	1.025	(0.845, 1.243)	0.804	1.253	(1.026, 1.531)	0.027	1.077	(0.874, 1.326)	0.486
Hospital Teaching Status															
Urban nonteaching vs. Rural	1.022	(0.818, 1.278)	0.845	0.949	(0.726, 1.240)	0.702	0.854	(0.647, 1.125)	0.262	0.836	(0.635, 1.100)	0.201	0.751	(0.552, 1.022)	0.068
Urban teaching vs. Rural	1.270	(1.046, 1.542)	0.016	1.091	(0.865, 1.376)	0.460	1.146	(0.913, 1.438)	0.239	1.017	(0.811, 1.275)	0.883	1.066	(0.838, 1.357)	0.602
Control/ownership of hospital															
Private, not-profit vs. Government	0.877	(0.724, 1.062)	0.180	1.018	(0.800, 1.295)	0.885	0.746	(0.597, 0.931)	0.010	0.947	(0.746, 1.202)	0.653	0.932	(0.724, 1.200)	0.586
Private, invest-own vs. Government	0.723	(0.559, 0.935)	0.013	1.038	(0.766, 1.406)	0.811	0.942	(0.703, 1.262)	0.689	1.009	(0.734, 1.386)	0.957	0.902	(0.637, 1.277)	0.561
Comorbidity															

Obstructive sleep apnea	0.767	(0.605, 0.973)	0.029	0.629	(0.469, 0.845)	0.002	0.861	(0.656, 1.131)	0.282	0.709	(0.527, 0.952)	0.022	0.533	(0.382, 0.744)	<0.001
Chronic kidney disease	1.018	(0.845, 1.227)	0.848	1.199	(0.958, 1.502)	0.113	0.982	(0.782, 1.233)	0.876	0.807	(0.636, 1.024)	0.077	0.945	(0.739, 1.209)	0.653
Chronic heart failure	0.834	(0.687, 1.012)	0.066	0.633	(0.494, 0.811)	<0.001	0.69	(0.543, 0.877)	0.002	0.592	(0.462, 0.760)	<0.001	0.790	(0.619, 1.009)	0.059
Alcohol abuse	1.357	(1.004, 1.833)	0.047	1.017	(0.705, 1.466)	0.928	0.927	(0.640, 1.343)	0.689	0.952	(0.643, 1.410)	0.806	1.266	(0.857, 1.872)	0.236
Autoimmune conditions	*N/A*	*N/A*	*N/A*	0.665	(0.402, 1.099)	0.111	0.637	(0.380, 1.070)	0.089	1.175	(0.793, 1.742)	0.421	0.788	(0.483, 1.286)	0.341
Dementia	0.998	(0.776, 1.283)	0.986	1.405	(1.065, 1.854)	0.016	1.253	(0.934, 1.682)	0.132	1.048	(0.764, 1.437)	0.771	0.842	(0.581, 1.219)	0.362
Depression	0.809	(0.668, 0.979)	0.029	0.770	(0.611, 0.972)	0.028	0.771	(0.610, 0.975)	0.030	0.610	(0.472, 0.788)	<0.001	0.789	(0.617, 1.008)	0.058
Diabetes, uncomplicated	0.843	(0.667, 1.065)	0.152	0.770	(0.574, 1.033)	0.082	0.647	(0.472, 0.887)	0.007	0.647	(0.474, 0.884)	0.006	0.805	(0.582, 1.114)	0.190
Diabetes, with complications	1.136	(0.951, 1.357)	0.161	0.987	(0.792, 1.231)	0.909	1.066	(0.858, 1.324)	0.563	0.855	(0.677, 1.081)	0.191	1.053	(0.835, 1.326)	0.664
Drug abuse	0.740	(0.487, 1.123)	0.157	0.904	(0.591, 1.380)	0.639	0.612	(0.382, 0.978)	0.040	0.989	(0.658, 1.488)	0.958	0.833	(0.519, 1.338)	0.450
Hypertension, complicated	1.210	(1.003, 1.458)	0.046	0.994	(0.796, 1.240)	0.956	1.158	(0.925, 1.449)	0.201	1.185	(0.945, 1.486)	0.142	1.223	(0.949, 1.575)	0.119
Hypertension, uncomplicated	0.624	(0.522, 0.746)	<0.001	0.482	(0.387, 0.600)	<0.001	0.537	(0.430, 0.669)	<0.001	0.553	(0.445, 0.687)	<0.001	0.693	(0.545, 0.880)	0.003
Obesity	0.686	(0.553, 0.852)	<0.001	1.124	(0.898, 1.408)	0.307	0.72	(0.565, 0.919)	0.008	0.959	(0.758, 1.213)	0.727	1.135	(0.894, 1.441)	0.300
Peripheral vascular disease	1.245	(1.012, 1.530)	0.038	0.911	(0.689, 1.205)	0.516	1.085	(0.836, 1.409)	0.538	1.095	(0.838, 1.430)	0.506	1.085	(0.816, 1.442)	0.574
Hypothyroidism	0.811	(0.671, 0.981)	0.031	0.852	(0.677, 1.073)	0.174	0.997	(0.794, 1.252)	0.977	0.821	(0.648, 1.040)	0.102	0.967	(0.766, 1.222)	0.781

Autoimmune conditions were not available in the 2019 NIS and are reported as *N/A*.