

Table S1: Disposition of the Patient Population.

	Total		2016		2017		2018		2019		p-Value
	(n = 4,645,483)		(n = 1,145,359)		(n = 1,174,452)		(n = 1,137,276)		(n = 1,188,396)		
Disposition of patient (uniform) from ED											
Routine	3,881,001	(83.5%)	952,763	(83.2%)	973,924	(82.9%)	951,524	(83.7%)	1,002,790	(84.4%)	0.0246
Transfer to short-term hospital	95,784	(2.1%)	25,467	(2.2%)	23,552	(2.0%)	22,297	(2.0%)	24,468	(2.1%)	
Skilled Nursing Facility (SNF)	81,749	(1.8%)	19,368	(1.7%)	20,959	(1.8%)	20,017	(1.8%)	21,406	(1.8%)	
Home Health Care (HHC)	54,042	(1.2%)	11,299	(1.0%)	14,061	(1.2%)	13,768	(1.2%)	14,914	(1.3%)	
Against medical advice (AMA)	156,651	(3.4%)	37,105	(3.2%)	41,714	(3.6%)	37,099	(3.3%)	40,733	(3.4%)	
Admitted inpatient to this hospital	374,947	(8.1%)	98,894	(8.6%)	99,912	(8.5%)	92,344	(8.1%)	83,798	(7.1%)	
Died in ED	1,309	(0.0%)	464	(0.0%)	330	(0.0%)	227	(0.0%)	288	(0.0%)	
Disposition of patient (uniform) from IP											
Routine	245,120	(65.4%)	65,759	(66.5%)	65,099	(65.2%)	60,044	(65.0%)	54,219	(64.7%)	0.0253
Transfer to short-term hospital	5,560	(1.5%)	1,461	(1.5%)	1,458	(1.5%)	1,423	(1.5%)	1,218	(1.5%)	
Skilled Nursing Facility (SNF)	56,198	(15.0%)	15,302	(15.5%)	14,941	(15.0%)	13,488	(14.6%)	12,467	(14.9%)	
Home Health Care (HHC)	54,554	(14.5%)	12,857	(13.0%)	14,968	(15.0%)	13,883	(15.0%)	12,846	(15.3%)	
Against medical advice (AMA)	12,586	(3.4%)	3,227	(3.3%)	3,211	(3.2%)	3,304	(3.6%)	2,844	(3.4%)	
Died in ED	929	(0.2%)	287	(0.3%)	235	(0.2%)	203	(0.2%)	204	(0.2%)	

Table S2: Hospital Demographics.

	Total		2016		2017		2018		2019		<i>p</i> -Value
	(n = 4,645,483)		(n = 1,145,359)		(n = 1,174,452)		(n = 1,137,276)		(n = 1,188,396)		
Control/ownership of the hospital											
Government or private	2,017,771	(43.4%)	819,639	(71.6%)	862,422	(73.4%)	159,803	(14.1%)	175,906	(14.8%)	< 0.001
Government, nonfederal	377,271	(8.1%)	52,146	(4.6%)	53,784	(4.6%)	135,361	(11.9%)	135,979	(11.4%)	
Private, not-for-profit	1,430,591	(30.8%)	149,819	(13.1%)	140,108	(11.9%)	503,342	(44.3%)	637,322	(53.6%)	
Private, investor-owned	360,767	(7.8%)	64,161	(5.6%)	63,181	(5.4%)	118,161	(10.4%)	115,263	(9.7%)	
Private	459,084	(9.9%)	59,593	(5.2%)	54,957	(4.7%)	220,609	(19.4%)	123,925	(10.4%)	
Region of hospital											
Northeast	935,245	(20.1%)	225,265	(19.7%)	237,677	(20.2%)	233,475	(20.5%)	238,827	(20.1%)	1
Midwest	1,034,363	(22.3%)	259,122	(22.6%)	258,084	(22.0%)	249,113	(21.9%)	268,044	(22.6%)	
South	1,752,100	(37.7%)	429,525	(37.5%)	450,707	(38.4%)	425,176	(37.4%)	446,693	(37.6%)	
West	923,775	(19.9%)	231,447	(20.2%)	227,985	(19.4%)	229,512	(20.2%)	234,832	(19.8%)	
Teaching status of the hospital											
Metropolitan non-teaching	1,140,700	(24.6%)	335,392	(29.3%)	302,280	(25.7%)	260,522	(22.9%)	242,505	(20.4%)	< 0.001
Metropolitan teaching	2,835,167	(61.0%)	642,257	(56.1%)	707,586	(60.2%)	708,181	(62.3%)	777,143	(65.4%)	
Non-metropolitan hospital	669,616	(14.4%)	167,710	(14.6%)	164,587	(14.0%)	168,572	(14.8%)	168,747	(14.2%)	
Hospital urban-rural designation											
Large metropolitan	2,434,656	(52.4%)	594,776	(51.9%)	614,437	(52.3%)	599,271	(52.7%)	626,171	(52.7%)	< 0.001
Small metropolitan	1,468,398	(31.6%)	364,988	(31.9%)	378,345	(32.2%)	353,976	(31.1%)	371,089	(31.2%)	
Micropolitan areas	379,372	(8.2%)	91,020	(7.9%)	88,808	(7.6%)	94,662	(8.3%)	104,881	(8.8%)	
Not metropolitan or micropolitan	207,053	(4.5%)	52,333	(4.6%)	51,996	(4.4%)	51,852	(4.6%)	50,872	(4.3%)	

Table S3: Elixhauser Comorbidity Indices of the Patient Population.

	Total		2016		2017		2018		2019		p-Value
	(n = 4,645,483)		(n = 1,145,359)		(n = 1,174,452)		(n = 1,137,276)		(n = 1,188,396)		
Hypertension, Uncomplicated	1,522,125	(32.8%)	396,318	(34.6%)	388,954	(33.1%)	362,781	(31.9%)	374,071	(31.5%)	< 0.001
Cardiac Arrhythmias	720,176	(15.5%)	166,000	(14.5%)	180,669	(15.4%)	179,898	(15.8%)	193,608	(16.3%)	< 0.001
Fluid and Electrolyte Disorders	672,863	(14.5%)	160,183	(14.0%)	167,846	(14.3%)	171,049	(15.0%)	173,785	(14.6%)	0.0228
Diabetes, Uncomplicated	484,394	(10.4%)	130,952	(11.4%)	123,531	(10.5%)	112,420	(9.9%)	117,489	(9.9%)	< 0.001
Chronic Pulmonary Disease	444,555	(9.6%)	105,206	(9.2%)	112,837	(9.6%)	112,663	(9.9%)	113,849	(9.6%)	0.0801
Hypertension, Complicated	373,160	(8.0%)	63,601	(5.6%)	94,545	(8.1%)	101,050	(8.9%)	113,964	(9.6%)	< 0.001
Hypothyroidism	320,596	(6.9%)	76,431	(6.7%)	82,281	(7.0%)	80,053	(7.0%)	81,831	(6.9%)	0.2352
Renal Failure	299,530	(6.4%)	66,991	(5.8%)	74,820	(6.4%)	74,973	(6.6%)	82,746	(7.0%)	< 0.001
Depression	268,992	(5.8%)	60,975	(5.3%)	69,875	(5.9%)	68,603	(6.0%)	69,539	(5.9%)	0.0106
Congestive Heart Failure	264,362	(5.7%)	58,661	(5.1%)	66,339	(5.6%)	67,155	(5.9%)	72,207	(6.1%)	< 0.001
Diabetes, Complicated	248,525	(5.3%)	44,187	(3.9%)	63,610	(5.4%)	66,211	(5.8%)	74,518	(6.3%)	< 0.001
Other Neurological Disorders	231,279	(5.0%)	55,258	(4.8%)	58,384	(5.0%)	56,663	(5.0%)	60,974	(5.1%)	0.1529
Obesity	184,258	(4.0%)	37,956	(3.3%)	44,553	(3.8%)	49,279	(4.3%)	52,471	(4.4%)	< 0.001
Valvular Disease	165,882	(3.6%)	38,815	(3.4%)	41,473	(3.5%)	42,332	(3.7%)	43,263	(3.6%)	0.3366
Peripheral Vascular Disorders	146,736	(3.2%)	36,553	(3.2%)	36,316	(3.1%)	36,236	(3.2%)	37,630	(3.2%)	0.9179
Drug Abuse	131,533	(2.8%)	29,553	(2.6%)	32,686	(2.8%)	34,756	(3.1%)	34,538	(2.9%)	0.0006
Alcohol Abuse	113,412	(2.4%)	29,852	(2.6%)	27,780	(2.4%)	28,033	(2.5%)	27,748	(2.3%)	0.003
Rheumatoid Arthritis/Collagen Vascular	60,798	(1.3%)	13,813	(1.2%)	15,762	(1.3%)	15,242	(1.3%)	15,981	(1.3%)	0.0162
Solid Tumor Without Metastasis	57,704	(1.2%)	13,869	(1.2%)	14,246	(1.2%)	14,016	(1.2%)	15,573	(1.3%)	0.1828
Deficiency Anemia	49,834	(1.1%)	11,295	(1.0%)	12,392	(1.1%)	12,819	(1.1%)	13,329	(1.1%)	0.0115
Coagulopathy	48,972	(1.1%)	12,052	(1.1%)	12,982	(1.1%)	11,967	(1.1%)	11,971	(1.0%)	0.196
Pulmonary Circulation Disorders	41,608	(0.9%)	9,536	(0.8%)	10,385	(0.9%)	10,909	(1.0%)	10,778	(0.9%)	0.0567
Liver Disease	41,212	(0.9%)	9,116	(0.8%)	10,311	(0.9%)	10,531	(0.9%)	11,254	(0.9%)	0.0049
Psychoses	33,974	(0.7%)	7,463	(0.7%)	8,395	(0.7%)	8,792	(0.8%)	9,324	(0.8%)	0.016

Lee S. et al, Novel Machine Learning Approach to Predict and Personalize Length of Stay for Patients Admitted with Syncope from the Emergency Department

Weight Loss	29,585	(0.6%)	6,477	(0.6%)	7,555	(0.6%)	7,679	(0.7%)	7,874	(0.7%)	0.0094
Metastatic Cancer	18,150	(0.4%)	4,156	(0.4%)	4,235	(0.4%)	4,781	(0.4%)	4,979	(0.4%)	0.0155
Lymphoma	12,141	(0.3%)	2,930	(0.3%)	2,968	(0.3%)	2,808	(0.2%)	3,435	(0.3%)	0.0632
Paralysis	6,925	(0.1%)	1,627	(0.1%)	1,797	(0.2%)	1,665	(0.1%)	1,836	(0.2%)	0.6787
Peptic Ulcer Disease Excluding Bleeding	6,863	(0.1%)	1,961	(0.2%)	1,819	(0.2%)	1,537	(0.1%)	1,546	(0.1%)	0.0046
AIDS/HIV	6,586	(0.1%)	1,387	(0.1%)	1,771	(0.2%)	1,528	(0.1%)	1,900	(0.2%)	0.2316
Blood Loss Anemia	5,649	(0.1%)	1,242	(0.1%)	1,543	(0.1%)	1,404	(0.1%)	1,460	(0.1%)	0.205

Table S4: The Sum of Elixhauser Comorbidity Index score of the Patient Population Stratified by the Calendar Year.

	Total		2016		2017		2018		2019	
	(n = 4,645,483)		(n = 1,145,359)		(n = 1,174,452)		(n = 1,137,276)		(n = 1,188,396)	
0	1,670,288	(36.0%)	426,332	(37.2%)	421,696	(35.9%)	403,301	(35.5%)	418,959	(35.3%)
1	1,133,290	(24.4%)	281,388	(24.6%)	285,393	(24.3%)	277,458	(24.4%)	289,052	(24.3%)
2	772,046	(16.6%)	189,505	(16.5%)	196,974	(16.8%)	187,604	(16.5%)	197,962	(16.7%)
3	484,450	(10.4%)	116,117	(10.1%)	122,405	(10.4%)	119,534	(10.5%)	126,395	(10.6%)
4	286,699	(6.2%)	66,122	(5.8%)	73,210	(6.2%)	72,124	(6.3%)	75,242	(6.3%)
5	156,813	(3.4%)	35,238	(3.1%)	39,583	(3.4%)	39,911	(3.5%)	42,081	(3.5%)
6	80,047	(1.7%)	17,418	(1.5%)	20,008	(1.7%)	20,990	(1.8%)	21,631	(1.8%)
7	37,003	(0.8%)	8,059	(0.7%)	9,217	(0.8%)	9,643	(0.8%)	10,084	(0.8%)
8	15,777	(0.3%)	3,299	(0.3%)	3,680	(0.3%)	4,366	(0.4%)	4,432	(0.4%)
9	6,361	(0.1%)	1,357	(0.1%)	1,682	(0.1%)	1,619	(0.1%)	1,703	(0.1%)
10	1,964	(0.0%)	377	(0.0%)	467	(0.0%)	468	(0.0%)	652	(0.1%)
11	611	(0.0%)	102	(0.0%)	122	(0.0%)	210	(0.0%)	177	(0.0%)
12	92	(0.0%)	27	(0.0%)	7	(0.0%)	32	(0.0%)	27	(0.0%)
13	38	(0.0%)	14	(0.0%)	9	(0.0%)	16	(0.0%)	0	(0.0%)
14	4	(0.0%)	4	(0.0%)	0	(0.0%)	0	(0.0%)	0	(0.0%)

The p-value for significance is 0.5889. The Sum Elixhauser Comorbidity Index is presented here as a continuous variable.