

eTable 1. Diagnosis and procedure codes, ICD-9 CM and CCS, used in classifying patients

Diagnoses/Procedures	DX (ICD9 Codes)	DXCCS (CCS Codes for diagnoses)	PRCCS (CCS Codes for procedures)
Inflammatory Bowel Disease	555.0, 555.1, 555.2, 555.9, 556.0, 556.1, 556.2, 556.3, 556.6, 556.8	144	-
Chronic Liver Diseases	070, 070.0, 070.1, 070.2, 070.20, 070.21, 070.22, 070.23, 070.3, 070.30, 070.31, 070.32, 070.33, 070.4, 070.41, 070.42, 070.43, 070.44, 070.49, 070.5, 070.51, 070.52, 070.53, 070.54, 070.59, 070.6, 070.7, 070.70, 070.71, 070.9, 570, 571, 571.0, 571.1, 571.2, 571.3, 571.4, 571.40, 571.41, 571.42, 571.49, 571.5, 571.6, 571.8, 571.9, 572, 572.0, 572.1, 572.2, 572.3, 572.4, 572.8, 573, 573.0, 573.1, 573.2, 573.3, 573.4, 573.5, 573.8, 573.9, 789.5, 567.23, 456.1, 456.21, 571.0, 571.1, 571.2, 571.3, 070.7, 070.41, 070.44, 070.51, 070.54, 070.2, 070.3, 789.5, 789.59, 567.23, 572.2	150, 151	-
Functional/motility disorders	530.0, 530.5, 536.2, 536.3, 536.8, 536.9, 564, 564.0, 564.00, 564.01, 564.02, 564.09, 564.1, 564.2, 564.3, 564.4, 564.5, 564.7, 564.8, 564.81, 564.89, 564.9, 306.4	-	-
Gastrointestinal hemorrhage	456.0, 456.20, 530.21, 530.7, 530.82, 531.0, 531.2, 531.4, 531.6, 532.0, 532.2, 532.4, 532.6, 533.0, 533.2, 533.4, 533.6, 534.0, 534.2, 534.4, 534.6, 535.01, 535.11, 535.21, 535.31, 535.41, 535.51, 535.61, 535.71, 537.83, 562.02, 562.03, 562.12, 562.13, 569.85, 569.86, 569.3, 578.0, 578.1, 578.9, 772.4	153	-
Pancreatic disease	577.0	152	-
Inflammatory Bowel Diseases			
Gastrointestinal or hepatic procedures	-	-	68, 69, 70, 71, 72, 73, 74, 75, 76, 77,

			78, 79, 80, 81, 82, 83, 84, 87, 88, 89, 90, 92, 93, 94, 95, 96, 97, 98, 99, 221
Gastrointestinal surgeries	-	-	72, 73, 75, 78, 79, 89, 90
Blood transfusions	-	-	222
Parenteral or enteral nutrition	-	-	223
Inflammatory bowel related procedures	-	-	70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 81, 87, 89, 92, 93, 94, 95, 96, 97, 98, 99
Chronic Liver Diseases			
Gastrointestinal or hepatic procedures	-	-	68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 87, 88, 89, 90, 92, 93, 94, 95, 96, 97, 98, 99, 221
Liver specific surgical procedures	-	-	68, 88, 83, 56
Blood transfusions	-	-	222
Parenteral or enteral nutrition	-	-	223
Liver related procedures	-	-	68, 82, 83, 88
Liver transplantations	50.5, 50.51, 50.59	-	-

Functional/motility disorders			
Gastrointestinal or hepatic procedures	-	-	68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 87, 88, 89, 90, 92, 93, 94, 95, 96, 97, 98, 99, 221
Blood transfusions	-	-	222
Parenteral or enteral nutrition	-	-	223
Gastrointestinal hemorrhage			
Gastrointestinal or hepatic procedures	-	-	68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 87, 88, 89, 90, 92, 93, 94, 95, 96, 97, 98, 99, 221
Blood transfusions	-	-	222
Parenteral or enteral nutrition	-	-	223
Pancreatic disorders			
Gastrointestinal or hepatic procedures	-	-	68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 87, 88, 89, 90, 92, 93, 94, 95, 96, 97, 98, 99, 221
Blood transfusions	-	-	222

Parenteral or enteral nutrition	-	-	223
Pancreatic-related procedures	-	-	82, 84, 87, 89

eTable 2. Diagnosis codes used in grouping causes of admission

Diagnoses/Procedures	DXCCS (CCS Codes for diagnoses)
<i>Inflammatory Bowel Disease</i>	
Cardiac	96, 100, 101, 102, 104, 105, 106, 107, 108, 109, 112
Respiratory	122, 124, 125, 127, 128, 129, 130, 131, 133, 134
Infections	2, 4, 159, 197, 246
Genitourinary	156, 157, 158, 160, 161, 163, 165, 166
Gastrointestinal	138, 140, 141, 143, 145, 146, 147, 151 152, 154, 155, 250, 251, 60, 144, 148, 149, 153, 135, 14, 15
Endocrine/metabolic	49, 50, 51, 52, 54, 55
Neuropsychiatric	83, 84, 85, 93, 95, 653, 660, 661
Hematological/neoplasms	59, 32, 42, 44
Others	199, 204, 209, 211, 252, 253, 254, 257, 226, 229, 230, 231, 233, 235, 239, 242, 244
Inflammatory bowel disease specific	144, 148, 149, 153, 135, 14, 15

<i>Chronic Liver Diseases</i>	
Cardiac	96, 100, 101, 102, 104, 105, 106, 107, 108, 109, 112
Respiratory	122, 124, 125, 127, 128, 129, 130, 131, 133, 134
Infections	2, 4, 159, 197, 246
Genitourinary	156, 157, 158, 160, 161, 163, 165, 166
Gastrointestinal	138, 140, 141, 143, 145, 146, 147, 151 152, 154, 155, 250, 251, 60, 16, 150, 153, 157, 158, 85
Endocrine/metabolic	49, 50, 51, 52, 54, 55
Neuropsychiatric	83, 84, 85, 93, 95, 653, 660, 661
Hematological/neoplasms	59, 32, 42, 44
Others	199, 204, 209, 211, 252, 253, 254, 257, 226, 229, 230, 231, 233, 235, 239, 242, 244
Chronic liver disease specific	16, 150, 153, 157, 158, 85
<i>Functional/motility disorders</i>	
Cardiac	96, 100, 101, 102, 104, 105, 106, 107, 108, 109, 112

Respiratory	122, 124, 125, 127, 128, 129, 130, 131, 133, 134
Infections	2, 4, 159, 197, 246
Genitourinary	156, 157, 158, 160, 161, 163, 165, 166
Gastrointestinal	138, 140, 141, 143, 145, 146, 147, 151 152, 153, 154, 155, 250, 251, 60, 66, 67, 69, 70, 71, 72, 74, 75
Endocrine/metabolic	49, 50, 51, 52, 54, 55
Neuropsychiatric	83, 84, 85, 93, 95, 653, 660, 661
Hematological/neoplasms	59, 32, 42, 44
Others	199, 204, 209, 211, 252, 253, 254, 257, 226, 229, 230, 231, 233, 235, 239, 242, 244
Functional/motility specific	66, 67, 69, 70, 71, 72, 74, 75
<i>Gastrointestinal hemorrhage</i>	
Cardiac	96, 100, 101, 102, 104, 105, 106, 107, 108, 109, 112
Respiratory	122, 124, 125, 127, 128, 129, 130, 131, 133, 134
Infections	2, 4, 159, 197, 246

Genitourinary	156, 157, 158, 160, 161, 163, 165, 166
Gastrointestinal	138, 140, 141, 143, 145, 146, 147, 151 152, 154, 155, 250, 251, 60, 153
Endocrine/metabolic	49, 50, 51, 52, 54, 55
Neuropsychiatric	83, 84, 85, 93, 95, 653, 660, 661
Hematological/neoplasms	59, 32, 42, 44
Others	199, 204, 209, 211, 252, 253, 254, 257, 226, 229, 230, 231, 233, 235, 239, 242, 244
Gastrointestinal hemorrhage specific	153
<i>Pancreatic disorders</i>	
Cardiac	96, 100, 101, 102, 104, 105, 106, 107, 108, 109, 112
Respiratory	122, 124, 125, 127, 128, 129, 130, 131, 133, 134
Infections	2, 4, 159, 197, 246
Genitourinary	156, 157, 158, 160, 161, 163, 165, 166
Gastrointestinal	138, 140, 141, 143, 145, 146, 147, 151 152, 153, 154, 155, 250, 251, 60, 17, 148, 149

Endocrine/metabolic	49, 50, 51, 52, 54, 55
Neuropsychiatric	83, 84, 85, 93, 95, 653, 660, 661
Hematological/neoplasms	59, 32, 42, 44
Others	199, 204, 209, 211, 252, 253, 254, 257, 226, 229, 230, 231, 233, 235, 239, 242, 244
Pancreatic disorder specific	17, 148, 149

eTable 3. ICD-9-CM Coding For Agency for Agency for Healthcare Research and Quality (AHRQ) Preventive Quality Indicators (PQI)*

PQI Number	Preventive Quality Indicator	Definition*	ICD-9 Codes
1	Diabetes short term complications	Discharges with a principal ICD-9-CM diagnosis for diabetes short-term complications (ketoacidosis, hyperosmolarity, or coma)	250.10, 250.11, 250.12, 250.13, 250.20, 250.21, 250.22, 250.23, 250.30, 250.31, 250.32, 250.33
2	Perforated appendix	Discharges with any listed-listed ICD-9-CM diagnosis codes for perforations or abscesses of appendix	540.0, 540.1, 540.9, 541
3	Diabetes long term complications	Discharges with a principal ICD-9-CM diagnosis code for diabetes with long-term complications (renal, eye, neurological, circulatory, or complications not otherwise specified)	250.40, 250.41, 250.42, 250.43, 250.50, 250.51, 250.52, 250.53, 250.60, 250.61, 250.62, 250.63, 250.70, 250.71, 250.72, 250.73, 250.80, 250.81, 250.82, 250.83, 250.90, 250.91, 250.92, 250.93
5	Chronic obstructive pulmonary disease or Asthma in Older Adults	<p>Discharges with a principal ICD-9-CM diagnosis code for COPD or asthma</p> <p><u>Excluded cases</u> Any listed ICD-9-CM codes for cystic fibrosis and anomalies of the respiratory system</p>	<p><u>COPD (excluding acute bronchitis)</u> 491.0, 491.1, 491.20, 491.21, 491.22, 491.8, 491.9, 492.0, 492.8, 494, 494.0, 494.1, 496</p> <p><u>Asthma</u> 493.00, 493.01, 493.02, 493.10, 493.11, 493.12, 493.20, 493.21, 493.22, 493.81, 493.82, 493.90, 493.91, 493.92</p> <p><u>Excluded cases</u> 277.0, 277.01, 277.02, 277.03, 277.09, 516.61, 516.62, 516.63, 516.64, 516.69, 747.21, 748.3, 748.4, 748.5, 748.60, 748.61, 748.69, 748.8, 748.9, 750.3, 759.3, 770.7</p>
7	Hypertension	<p>Discharges with a principal ICD-9-CM diagnosis code for hypertension</p> <p><u>Excluded cases</u> With any listed ICD-9-CM procedure codes for cardiac procedure or any listed ICD-9-</p>	<p>401.0, 401.9, 402.00, 402.10, 402.90, 403.00, 403.10, 403.90, 404.00, 404.10, 404.90</p> <p><u>Excluded cases</u> 403.00, 403.10, 404.00, 404.10, 404.90</p>

		CM diagnosis codes for Stage I-IV kidney disease, only if accompanied by any listed ICD-9-CM procedure codes for dialysis access	<p style="text-align: center;"><i>Procedure codes</i></p> 00.50, 00.51, 00.52, 00.53, 00.54, 00.56, 00.57, 00.66, 17.51, 17.52, 17.55, 35.00, 35.01, 35.02, 35.03, 35.04, 35.05, 35.06, 35.07, 35.08, 35.09, 35.10, 35.11, 35.12, 35.13, 35.14, 35.20, 35.22, 35.23, 35.24, 35.25, 35.26, 35.27, 35.28, 35.31, 35.32, 35.33, 35.34, 35.35, 35.39, 35.41, 35.42, 35.35, 35.39, 35.41, 35.42, 35.50, 35.51, 35.52, 35.53, 35.54, 35.55, 35.60, 35.61, 35.62, 35.63, 35.70, 35.71, 35.72, 35.73, 35.81, 35.82, 35.83, 35.84, 35.91, 35.92, 35.93, 35.94, 35.95, 35.96, 35.97, 35.98, 35.99, 36.01, 36.02, 36.03, 36.04, 36.05, 36.06, 36.07, 36.09, 36.10, 36.11, 36.12, 36.13, 36.14, 36.15, 36.16, 36.17, 36.19, 36.2, 36.3, 36.31, 36.32, 36.33, 36.34, 36.39, 36.91, 36.99, 37.31, 37.32, 37.33, 37.34, 37.35, 37.36, 37.37, 37.41, 37.5, 37.51, 37.52, 37.53, 37.54, 37.55, 37.60, 37.61, 37.62, 37.63, 37.64, 37.65, 37.66, 37.70, 37.71, 37.72, 37.73, 37.74, 37.75, 37.76, 37.77, 37.78, 37.79, 37.80, 37.81, 37.82, 37.83, 37.85, 37.86, 37.87, 37.89, 37.94, 37.95, 37.96, 37.97, 37.98, 38.26 38.95, 39.27, 39.29, 39.42, 39.43, 39.93, 39.94
8	Congestive heart failure	Discharges with a principal ICD-9-CM diagnosis code for heart failure	398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 428.0, 428.1, 428.20, 428.21, 428.22, 428.23, 428.30, 428.31, 428.32, 428.33, 428.40, 428.41, 428.42, 428.43, 428.9
10	Dehydration	Discharges with either a principal ICD-9-CM diagnosis code for dehydration or any secondary ICD-9-CM diagnosis codes for dehydration and a principal ICD-9-CM	276.5, 276.50, 276.51, 276.52, 276.0, 008.61, 008.62, 008.63, 008.64, 008.65, 008.66, 008.67, 008.69, 008.8, 009.0, 009.1, 009.2, 009.3, 558.9, 584.5, 584.6, 584.7, 584.8,

		<p>diagnosis code for hyperosmolality and/or hypernatremia, gastroenteritis, or acute kidney injury</p> <p><u>Excluded cases</u> Any listed ICD-9-CM diagnosis codes for chronic renal failure</p>	<p>584.9, 586, 997.5</p> <p><u>Exclude cases</u> 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 585.5, 585.6</p>
11	Bacterial pneumonia	<p>Discharges with a principal ICD-9-CM diagnosis code for bacterial pneumonia</p> <p><u>Excluded cases</u> Any listed ICD-9-CM diagnosis codes for sickle cell anemia or HB-S disease. Any listed ICD-9-CM diagnosis codes or any listed ICD-9-CM procedure codes for immunocompromised state</p>	<p>481, 4822, 48230, 48231, 48232, 48239, 48240, 48241, 48242, 48249, 4829, 4830, 4831, 4838, 485, 486</p> <p><u>Excluded cases</u> 42, 136.3, 199.2, 238.73, 238.76, 238.77, 238.79, 260, 261, 262, 279.00, 279.01, 279.02, 279.03, 279.04, 279.05, 279.06, 279.09, 279.10, 279.11, 279.12, 279.13, 279.19, 279.2, 279.3, 279.4, 27941, 279.50, 279.51, 27952, 279.53, 279.8, 279.9, 284.09, 284.1, 284.11, 284.1, 284.19, 288.0, 288.00, 288.01, 288.02, 288.03, 288.09, 288.1, 288.2, 288.4, 288.50, 288.51, 288.59, 289.53, 289.83, 403.01, 403.11, 439.1, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 579.3, 585, 585.5, 585.6, 996.8, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.88, 996.89, V420, V421, V426, V427, V428, V4281, V428.2, V428.3, V4284, V4289, V451, V451.1, V560, V561, V562</p> <p><u>Procedure codes</u> 00.18, 33.5, 33.50, 33.51, 33.52, 33.6, 37.5, 37.51, 41.0, 41.00, 41.01, 41.02, 41.03, 41.04, 41.05, 41.06, 41.07, 41.08, 41.09, 4697, 50.51, 50.59, 52.80, 52.81, 52.82, 52.83, 52.85, 52.86, 55.69</p>

12	Urinary tract infection	Discharges with a principal ICD-9-CM diagnosis code for urinary tract infection <u>Excluded cases</u> With any listed ICD-9-CM diagnosis codes for kidney/urinary tract disorder. With any listed ICD-9-CM diagnosis codes or any listed ICD-9-CM procedure codes for immunocompromised state	590.10, 590.11, 590.2, 590.3, 590.80, 590.81, 590.9, 595.0, 595.9, 599.0 <u>Excluded cases</u> 590.00, 590.01, 593.70, 593.71, 593.72, 593.73, 753.0, 753.10, 753.11, 753.12, 753.13, 753.14, 753.15, 753.16, 753.17, 753.19, 753.20, 753.21, 753.22, 753.23, 753.29, 753.3, 753.4, 753.5, 753.6, 753.8, 753.9
13	Angina without procedure	Discharges with a principal diagnosis code for angina <u>Excluded cases</u> With any listed ICD-9-CM procedure codes for cardiac procedure	411.81, 411.89, 413.0, 413.1, 413.9
14	Uncontrolled diabetes	Discharges with a principal diagnosis code for uncontrolled diabetes without mention of a short-term or long-term complication	250.02, 250.03
15	Asthma in younger adults	Discharges with a principal ICD-9-CM diagnosis code for asthma <u>Excluded cases</u> With any listed ICD-9 diagnosis codes for cystic fibrosis and anomalies of the respiratory system	493.00, 493.01, 493.02, 493.10, 493.11, 493.12, 493.20, 493.21, 493.22, 493.81, 493.82, 493.90, 493.91, 493.92
16	Lower-extremity amputation among diabetics	Any listed ICD-9-CM procedure codes for lower-extremity amputation and any-listed ICD-9-CM diagnosis codes for diabetes <u>Excluded cases</u> 89.50, 89.51, 89.60, 89.61, 89.62, 89.63, 89.70, 89.71, 89.72, 89.73, 89.72, 89.73, 89.74, 89.75, 89.76, 89.77	<i>Procedure codes</i> 84.10, 84.12, 84.13, 84.14, 84.15, 84.16, 84.17, 84.18, 84.19 <i>Diagnosis codes</i> 250.00, 250.01, 250.02, 250.03, 250.10, 250.11, 250.12, 250.13, 250.20, 250.21, 250.22, 250.23, 250.30, 250.31, 250.32, 250.33, 250.40, 250.41, 250.42, 250.43, 250.50, 250.51, 250.52, 250.53, 250.60, 250.61, 250.62, 250.63, 250.70, 250.71,

			250.72, 250.73, 250.80, 250.81, 250.82, 250.83, 250.90, 250.91, 250.92, 250.93
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*ICD9 codes for Prevention Quality Indicators (PQIs), which are a set of measures that can be used with hospital inpatient discharge data to identify quality of care for ambulatory conditions for which good outpatient care can potentially prevent hospitalization, complications, or more severe disease. PQIs were developed by the Agency for Healthcare Research and Quality (AHRQ).

eTable 4. Unique, non-overlapping patients with different gastrointestinal diseases, within our NRD cohort

Index diagnosis	Total number of index hospitalizations without accounting for overlap	Proportion of patients without overlapping diagnoses	Percentage of unique index hospitalization
Inflammatory Bowel Disease	44,104	36,733	83.3%
Chronic Liver Diseases	354,918	281,607	79.3%
Functional/motility disorders	345,519	293,969	85.1%
Gastrointestinal hemorrhage	180,013	136,475	75.8%
Pancreatic disease	96,136	63,437	65.9%

eTable 5. Burden of hospitalizations due to chronic gastrointestinal and liver diseases, by deciles and standardized by per month of follow-up

Deciles	Inflammatory bowel disease	Chronic liver diseases	Functional/motility disorders	Gastrointestinal hemorrhage	Pancreatic disease
	Median IQR 5 th -95 th range	Median IQR 5 th -95 th range	Median IQR 5 th -95 th range	Median IQR 5 th -95 th range	Median IQR 5 th -95 th range
Total days spent in the hospital					
1 st	0.13 0.10-0.17 0.08-0.18	0.13 0.10-0.17 0.08-0.18	0.14 0.10-0.18 0.08-0.20	0.13 0.10-0.17 0.08-0.18	0.14 0.10-0.18 0.08-0.20
2 nd	0.25 0.22-0.25 0.20-0.25	0.25 0.22-0.27 0.20-0.29	0.27 0.25-0.29 0.22-0.30	0.25 0.22-0.25 0.20-0.27	0.25 0.25-0.27 0.22-0.29
3 rd	0.30 0.29-0.33 0.27-0.36	0.33 0.33-0.38 0.30-0.40	0.38 0.33-0.42 0.33-0.43	0.33 0.30-0.36 0.29-0.38	0.33 0.33-0.36 0.30-0.38
4 th	0.42 0.40-0.43 0.38-0.44	0.45 0.43-0.50 0.42-0.50	0.50 0.45-0.55 0.44-0.56	0.44 0.42-0.50 0.40-0.50	0.44 0.42-0.50 0.40-0.50
5 th	0.55 0.50-0.57 0.45-0.60	0.60 0.57-0.67 0.55-0.70	0.64 0.58-0.67 0.57-0.71	0.60 0.57-0.64 0.55-0.67	0.57 0.56-0.60 0.55-0.63
6 th	0.71 0.67-0.75 0.63-0.80	0.82 0.75-0.88 0.71-0.92	0.83 0.75-0.89 0.73-0.92	0.78 0.73-0.86 0.70-0.90	0.73 0.67-0.78 0.64-0.83
7 th	0.92 0.88-1.00 0.82-1.08	1.10 1.00-1.18 1.00-1.25	1.10 1.00-1.18 1.00-1.25	1.09 1.00-1.17 0.91-1.25	1.00 0.89-1.00 0.86-1.13
8 th	1.29 1.18-1.43 1.11-1.56	1.50 1.40-1.67 1.29-1.78	1.50 1.38-1.64 1.29-1.75	1.50 1.38-1.63 1.29-1.75	1.33 1.25-1.50 1.14-1.60
9 th	2.00 1.75-2.20 1.60-2.45	2.25 2.00-2.55 1.86-2.82	2.22 2.00-2.50 1.86-2.78	2.20 2.00-2.50 1.83-2.78	2.20 1.82-2.30 1.67-2.60
10 th	3.71 3.00-5.08 2.63-9.10	4.14 3.42-5.63 3.00-9.89	4.13 3.36-5.63 3.00-9.86	4.12 3.36-5.58 2.92-9.82	3.90 3.18-5.40 2.75-9.56

Total number of hospital admissions					
1 st	0.09 0.08-0.11 0.08-0.14	0.09 0.08-0.11 0.08-0.14	0.10 0.09-0.11 0.08-0.14	0.09 0.08-0.11 0.08-0.14	0.10 0.09-0.11 0.08-0.14
2 nd	0.11 0.10-0.13 0.08-0.13	0.11 0.09-0.13 0.08-0.17	0.11 0.09-0.13 0.08-0.17	0.10 0.09-0.13 0.08-0.13	0.11 0.09-0.13 0.08-0.17
3 rd	0.10 0.09-0.14 0.08-0.18	0.10 0.10-0.13 0.08-0.20	0.11 0.09-0.14 0.08-0.20	0.11 0.10-0.14 0.08-0.20	0.11 0.09-0.13 0.08-0.20
4 th	0.13 0.10-0.20 0.08-0.22	0.13 0.09-0.14 0.08-0.25	0.11 0.10-0.17 0.08-0.25	0.11 0.10-0.14 0.08-0.25	0.11 0.10-0.14 0.08-0.25
5 th	0.13 0.10-0.18 0.08-0.25	0.13 0.10-0.18 0.08-0.29	0.14 0.10-0.18 0.08-0.29	0.14 0.10-0.18 0.08-0.29	0.13 0.11-0.18 0.08-0.29
6 th	0.14 0.11-0.22 0.08-0.30	0.14 0.11-0.22 0.08-0.33	0.14 0.11-0.22 0.08-0.33	0.14 0.11-0.22 0.09-0.33	0.14 0.10-0.20 0.08-0.30
7 th	0.18 0.13-0.25 0.08-0.36	0.18 0.13-0.27 0.08-0.42	0.18 0.13-0.25 0.09-0.38	0.18 0.13-0.27 0.08-0.40	0.18 0.13-0.25 0.09-0.38
8 th	0.22 0.14-0.30 0.09-0.44	0.25 0.14-0.33 0.09-0.50	0.25 0.14-0.33 0.09-0.50	0.25 0.14-0.33 0.09-0.50	0.25 0.14-0.33 0.09-0.50
9 th	0.29 0.18-0.40 0.10-0.58	0.29 0.17-0.43 0.09-0.67	0.29 0.18-0.42 0.10-0.63	0.29 0.17-0.42 0.09-0.63	0.29 0.18-0.43 0.09-0.67
10 th	0.42 0.27-0.58 0.11-1.00	0.40 0.25-0.60 0.10-1.00	0.43 0.27-0.63 0.11-1.00	0.40 0.25-0.57 0.10-1.00	0.43 0.25-0.64 0.11-1.08
Total charges across all hospitalizations (in dollars)					
1 st	427 291-662 153-1529	480 308-788 166-1713	452 298-735 161-1639	414 291-600 165-1166	422 294-627 171-1190
2 nd	538 384-807 229-1791	643 437-1002 253-2079	645 437-1050 259-2218	560 415-778 265-1378	603 433-878 277-1548

3 rd	672 478-1008 286-2202	796 552-1198 321-2379	827 564-1321 339-2741	736 546-1018 353-1793	737 528-1041 340-1785
4 th	847 603-1238 373-2507	1014 711-1482 415-2875	1014 708-1515 428-3138	959 708-1330 465-2360	951 695-1331 444-2264
5 th	1053 758-1497 471-2926	1295 912-1877 537-3522	1273 891-1884 536-3780	1261 931-1743 603-3035	1190 871-1633 569-2733
6 th	1399 1016-1976 640-3597	1701 1214-2441 728-4470	1602 1144-2292 698-4298	1660 1226-2304 811-3987	1458 1086-1990 710-3383
7 th	1855 1359-2557 860-4486	2270 1633-3215 991-5744	2081 1496-2946 924-5308	2222 1651-3059 1096-5186	1926 1436-2618 956-4397
8 th	2537 1868-3433 1202-5681	3118 2263-4390 1382-7614	2796 2043-3889 1248-6687	3088 2296-4226 1519-7047	2650 1997-3586 1307-6085
9 th	3788 2816-5040 1832-8167	4612 3343-6488 2010-11113	4071 2980-5631 1793-9504	4542 3394-6206 2255-10261	4006 3011-5427 1994-8956
10 th	7502 5270-11348 3391-22805	8925 6045-13858 3475-28473	7794 5353-11742 3082-22946	8983 6269-13560 3969-27575	8221 5722-12579 3546-26461

eTable 6. Inflammatory Bowel Disease - baseline patient, hospital, and hospitalization characteristics at index and Subsequent admissions stratified by deciles and presented as 1th, 5th, and 10th deciles.

Characteristics	1 th decile	5 th decile	10 th decile	p-value
Hospital Characteristics				
Teaching status				
1. Metropolitan non-teaching	2320 (42%)	2061 (41%)	1793 (38%)	<0.0001
2. Metropolitan teaching	2657 (49%)	2511 (50%)	2671 (57%)	
3. Non-metropolitan	495 (9%)	464 (9%)	253 (5%)	
Location				
1. Metropolitan	4977 (91%)	4572 (91%)	4464 (95%)	<0.0001
2. Non-metropolitan	495 (9%)	464 (9%)	253 (5%)	
Bed-size				
1. Small	678 (12%)	520 (10%)	353 (7%)	<0.0001
2. Medium	1347 (25%)	1176 (23%)	1026 (22%)	
3. Large	3447 (63%)	3340 (66%)	3338 (71%)	
Patient Characteristics				
Mean age	51.0 ± 18.7	53.5 ± 19.4	54.9 ± 18.7	<0.0001
Length of stay (unadjusted by month of follow-up)				<0.0001
• Median	1	5	9	
• IQR	1-2	3-5	4-19	
• 5 th – 95 th range	1-2	1-6	2-43	
Female sex	3019 (55%)	2968 (59%)	2634 (56%)	<0.0001
Primary expected payer				
1. Medicare/Medicaid	2305 (42%)	2542 (51%)	3090 (66%)	<0.0001
2. Private insurance	2575 (47%)	1985 (39%)	1263 (27%)	
3. Self-pay	325 (6%)	248 (5%)	170 (4%)	
4. No charge/others	264 (5%)	253 (5%)	191 (4%)	
Median household income				
1. 0-25 th percentile (\$1 - \$37,99)	1095 (20%)	1123 (23%)	1207 (26%)	<0.0001
2. 26 th to 50 th percentile (\$38,000	1316 (24%)	1246 (25%)	1188 (26%)	

- \$47,999)				
3. 51 st to 75 th percentile (\$48,000 - \$63,999)	1449 (27%)	1298 (26%)	1100 (24%)	
4. 76 th to 100 th percentile (\$64,000 or more)	1537 (28%)	1311 (26%)	1150 (25%)	
Index Hospitalization Comorbidities				
Smoking	1464 (27%)	1405 (28%)	1209 (26%)	0.04
Obesity	351 (6%)	438 (9%)	501 (11%)	<0.0001
Anemia	653 (12%)	1102 (22%)	1534 (33%)	<0.0001
Congestive heart failure	111 (2%)	202 (4%)	480 (10%)	<0.0001
Chronic lung disease	696 (13%)	770 (15%)	990 (21%)	<0.0001
Depression (combine uncomplicated and complicated)	623 (11%)	695 (14%)	733 (16%)	<0.0001
Diabetes (combine uncomplicated and complicated)	621 (11%)	596 (12%)	758 (16%)	<0.0001
Hypertension (combine uncomplicated and complicated)	1904 (35%)	1951 (39%)	1936 (41%)	<0.0001
Coagulation disorder	120 (2%)	205 (4%)	435 (9%)	<0.0001
Liver disorder	145 (3%)	194 (4%)	298 (6%)	<0.0001
Electrolyte abnormalities	1175 (21%)	1683 (33%)	2226 (47%)	<0.0001
Peripheral vascular disease	121 (2%)	179 (4%)	273 (6%)	<0.0001
Psychoses	158 (3%)	233 (5%)	352 (7%)	<0.0001
Renal failure	259 (5%)	350 (7%)	716 (15%)	<0.0001
Index Hospitalization Characteristics				
Gastrointestinal or hepatic procedures	948 (17%)	1746 (35%)	2074 (44%)	<0.0001

Blood transfusions	249 (5%)	484 (10%)	1074 (23%)	<0.0001
Parenteral or enteral nutrition	7 (0.1%)	45 (0.9%)	637 (14%)	<0.0001
Inflammatory bowel related procedures	772 (14%)	1581 (31%)	1913 (41%)	<0.0001
Unadjusted mortality	156 (3%)	72 (1%)	112 (2%)	<0.0001
Hospitalization Characteristics Across All Subsequent Admissions				
Gastrointestinal or hepatic procedures				
1. 0	4520 (83%)	3019 (60%)	1264 (27%)	<0.0001
2. 1	949 (17%)	1889 (38%)	1653 (35%)	
3. 2	3 (0.1%)	126 (3%)	1037 (22%)	
4. 3 or more	0 (0%)	2 (0.04%)	763 (16%)	
Blood transfusions				
1. 0	5221 (95%)	4481 (89%)	2547 (54%)	<0.0001
2. 1	250 (5%)	510 (10%)	1287 (27%)	
3. 2	1 (0.02%)	42 (0.8%)	530 (11%)	
4. 3 or more	0 (0%)	3 (0.1%)	353 (7%)	
Parenteral or enteral nutrition				
1. 0	5465 (99%)	4987 (9%)	3381 (72%)	<0.0001
2. 1	7 (0.1%)	49 (1%)	926 (20%)	
3. 2	0 (0%)	0 (0%)	243 (5%)	
4. 3 or more	0 (0%)	0 (0%)	167 (3%)	
Inflammatory bowel related procedures				
1. 0	4696 (86%)	3209 (64%)	1418 (30%)	<0.0001
2. 1	773 (14%)	1738 (35%)	1754 (37%)	
3. 2	3 (0%)	88 (2%)	990 (21%)	
4. 3 or more	0 (0%)	1 (0%)	555 (12%)	
Unadjusted mortality	156 (3%)	99 (2%)	459 (10%)	<0.0001

eTable 7. Risk factors for high utilization of healthcare resources in patients with inflammatory bowel diseases.

Variable at Index Hospitalization	Odds Ratio (95% Confidence Interval)	p-value
Age	0.99 (0.98 – 0.99)	<0.01
Female	0.94 (0.88 – 1.00)	0.05
IBD-related surgery at index hospitalization	0.89 (0.73 – 1.10)	0.30
Payer (reference is medicare/medicaid)		
Private insurance	0.53 (0.49 – 0.58)	<0.01
Self-pay	0.57 (0.49 – 0.68)	<0.01
Other	0.70 (0.59 – 0.82)	<0.01
Urban versus rural location	0.59 (0.51 – 0.68)	<0.01
Median household income quartiles (reference is 1 st quartile)		
2 nd quartile	0.90 (0.83 – 0.99)	0.02
3 rd quartile	0.82 (0.75 – 0.90)	<0.01
4 th quartile	0.87 (0.79 – 0.95)	<0.01
Hospital bed size (reference is small)		
Medium	1.25 (1.10 – 1.43)	<0.01
Large	1.49 (1.32 – 1.67)	<0.01
Charlson Comorbidity Index (reference is 0)		
1	1.39 (1.27 – 1.51)	<0.01
2 or more	2.63 (2.42 – 2.85)	<0.01
Smoking	0.89 (0.83 – 0.95)	<0.01
Depression	1.12 (1.03 – 1.22)	0.01
Obesity	1.17 (1.05 – 1.30)	<0.01
IBD-related admission (reference)		
Cardiac-related	0.62 (0.54 – 0.71)	<0.01

Respiratory related	0.79 (0.68 – 0.92)	<0.01
Infection-related	1.43 (1.28 – 1.60)	<0.01
Genitourinary-related	0.78 (0.64 – 0.94)	0.01
Gastrointestinal-related	0.89 (0.81 – 0.99)	0.03
Neuropsychiatric-related	0.77 (0.61 – 0.98)	0.03
Other causes	0.82 (0.75 – 0.89)	<0.01

*Regression model also inclusive of endocrine-related and hematologic-related causes.

eTable 8. Chronic liver diseases - baseline patient and hospital characteristics at index and subsequent admissions stratified by deciles and presented as 1th decile, 5th decile, and 10th decile.

Characteristics	1 th decile	5 th decile	10 th decile	p-value
Hospital Characteristics				
Teaching status				
1. Metropolitan non-teaching	17151 (44%)	16369 (44%)	13788 (37%)	<0.0001
2. Metropolitan teaching	18707 (47%)	18023 (48%)	21937 (59%)	
3. Non-metropolitan	3647 (9%)	3182 (8%)	1568 (4%)	
Location				
1. Metropolitan	36217 (91%)	34392 (92%)	35725 (96%)	<0.0001
2. Non-metropolitan	3647 (9%)	3182 (8%)	1568 (4%)	
Bed-size				
1. Small	4449 (11%)	3823 (10%)	2707 (7%)	<0.0001
2. Medium	9861 (25%)	8901 (24%)	7461 (20%)	
3. Large	25554 (64%)	24850 (66%)	27125 (73%)	
Patient Characteristics				
Mean age	55.8 ± 16.6	59.6 ± 16.6	57.7 ± 15.1	<0.0001
Female sex	18793 (47%)	17582 (47%)	16207 (43%)	<0.0001
Length of stay (unadjusted by month of follow-up)				
• Median	1	5	11	<0.001
• IQR	1-2	4-6	5-26	
• 5 th – 95 th range	1-2	2-7	2-54	
Primary expected payer				
1. Medicare/Medicaid	21415 (54%)	23915 (64%)	27311 (73%)	<0.0001
2. Private insurance	11362 (29%)	8104 (22%)	6191 (17%)	
3. Self-pay	4102 (10%)	3074 (8%)	1890 (5%)	
4. No charge/others	2926 (7%)	2420 (6%)	1868 (5%)	
Median household income				
1. 0-25 th percentile (\$1 - \$37,99)	11057 (28%)	11153 (30%)	12361 (34%)	<0.0001
2. 26 th to 50 th percentile (\$38,000 - \$47,999)	10368 (27%)	9890 (27%)	9186 (25%)	

3. 51 st to 75 th percentile (\$48,000 - \$63,999)	9691 (25%)	8765 (24%)	8111 (22%)	
4. 76 th to 100 th percentile (\$64,000 or more)	7973 (20%)	7063 (19%)	6917 (19%)	
Index Hospitalization Comorbidities				
Smoking	13427 (34%)	13157 (35%)	11054 (30%)	<0.0001
Obesity	4589 (12%)	4854 (13%)	4897 (13%)	<0.0001
Anemia	5085 (13%)	8694 (23%)	12353 (33%)	<0.0001
Congestive heart failure	2060 (5%)	3571 (10%)	5994 (16%)	<0.0001
Chronic lung disease	6400 (16%)	7729 (21%)	8754 (23%)	<0.0001
Depression (combine uncomplicated and complicated)	4737 (12%)	4769 (13%)	4739 (13%)	<0.0001
Diabetes (combine uncomplicated and complicated)	7963 (20%)	8257 (22%)	8434 (23%)	<0.0001
Hypertension (combine uncomplicated and complicated)	19209 (48%)	19659 (52%)	19007 (51%)	<0.0001
Coagulation disorder	4492 (11%)	6408 (17%)	8754 (23%)	<0.0001
Electrolyte abnormalities	11026 (28%)	15139 (40%)	19057 (51%)	<0.0001
Peripheral vascular disease	1487 (4%)	1947 (5%)	2786 (7%)	<0.0001
Psychoses	2061 (5%)	2442 (7%)	3259 (9%)	<0.0001
Renal failure	3435 (9%)	5045 (13%)	8829 (24%)	<0.0001
Index Hospitalization Characteristics				
Gastrointestinal or hepatic procedures	7253 (18%)	10108 (27%)	12891 (35%)	<0.0001
Blood transfusions	2458 (6%)	4633 (12%)	9727 (26%)	<0.0001
Parenteral or enteral nutrition	45 (0.1%)	395 (1%)	3122 (8%)	<0.0001

Liver related procedures	1274 (3%)	2992 (8%)	4975 (13%)	<0.0001
Liver transplantations	1 (0%)	65 (0.2%)	218 (0.6%)	<0.0001
Unadjusted mortality	3978 (10%)	2011 (5%)	1572 (4%)	<0.0001
Hospitalization Characteristics Across All Subsequent Admissions				
Gastrointestinal or hepatic procedures				
1. 0	32569 (82%)	26016 (69%)	16302 (44%)	<0.0001
2. 1	7260 (18%)	10178 (27%)	11380 (31%)	
3. 2	35 (0.1%)	1240 (3%)	4979 (13%)	
4. 3 or more	0 (0%)	140 (0.4%)	4632 (12%)	
Blood transfusions				
1. 0	37393 (94%)	32017 (85%)	18924 (51%)	<0.0001
2. 1	2462 (6%)	4971 (13%)	10120 (27%)	
3. 2	9 (0.02%)	520 (1%)	4343 (12%)	
4. 3 or more	0 (0%)	66 (0.2%)	3906 (10%)	
Parenteral or enteral nutrition				
1. 0	39819 (99%)	37130 (9%)	31369 (84%)	<0.0001
2. 1	45 (0.1%)	429 (1%)	4775 (13%)	
3. 2	0 (0%)	5 (0%)	744 (2%)	
4. 3 or more	0 (0%)	0 (0%)	405 (1%)	
Liver related procedures				
1. 0	38573 (97%)	34108 (91%)	28520 (76%)	<0.0001
2. 1	1280 (3%)	3061 (8%)	4937 (13%)	
3. 2	11 (0%)	339 (1%)	1819 (5%)	
4. 3 or more	0 (0%)	66 (0.2%)	2017 (5%)	
Liver transplantations				
1. 0	39862 (99%)	37503 (99%)	36631 (98%)	<0.0001
2. 1	2 (0%)	71 (0.2%)	651 (2%)	
3. 2	0 (0%)	0 (0%)	10 (0%)	
4. 3 or more	0 (0%)	0 (0%)	1 (0%)	
Unadjusted mortality	4009 (10%)	2738 (7%)	6137 (16%)	<0.0001

eTable 9. Risk factors for high utilization of healthcare resources in patients with chronic liver disease.

Variable at Index Hospitalization	Odds Ratio (95% Confidence Interval)	p-value
Age	0.99 (0.98 – 0.99)	<0.01
Female	0.91 (0.89 – 0.93)	<0.01
Payer (reference is medicare/medicaid)		
Private insurance	0.65 (0.63 – 0.67)	<0.01
Self-pay	0.53 (0.50 – 0.56)	
Other	0.64 (0.60 – 0.67)	
Urban versus rural location	0.57 (0.54 – 0.60)	<0.01
Median household income quartiles (reference is 1 st quartile)		
2 nd quartile	0.91 (0.88 – 0.94)	<0.01
3 rd quartile	0.88 (0.85 – 0.91)	<0.01
4 th quartile	0.97 (0.94 – 1.00)	0.05
Hospital bed size (reference is small)		
Medium	1.06 (1.01 – 1.11)	0.02
Large	1.35 (1.30 – 1.41)	<0.01
Charlson Comorbidity Index		
1 or less	1.55 (1.49 – 1.61)	<0.01
2 or more	2.98 (2.89 – 3.07)	<0.01
Liver-specific procedures	1.31 (1.25 – 1.38)	<0.01
Liver-related admission (reference)		
Respiratory-related	1.07 (1.02 – 1.12)	<0.01
Infection-related	1.54 (1.48 – 1.60)	<0.01
Genitourinary-related	0.78 (0.66 – 0.94)	<0.01
Gastrointestinal-related	0.90 (0.87 – 0.94)	<0.01

Endocrine-related	1.16 (1.09 – 1.24)	<0.01
Hematologic-related	1.05 (0.98 – 1.12)	0.20
Other causes	1.22 (1.18 – 1.26)	<0.01

*Regression model also inclusive of depression, obesity, cardiac-related and neuropsychiatric-related admissions. Liver specific procedures included injection/ligation of esophageal varices, abdominal paracentesis, liver biopsies, and creation of vascular bypass and shunt, not heart.

eTable 10. Functional gastrointestinal disorders - baseline patient and hospital characteristics at index and subsequent admissions stratified by deciles and presented as 1th decile, 5th decile, and 10th decile.

Characteristics	1 th decile	5 th decile	10 th decile	p-value
Hospital Characteristics				
Teaching status				
1. Metropolitan non-teaching	15250 (43%)	14417 (42%)	12996 (37%)	<0.0001
2. Metropolitan teaching	16846 (47%)	16099 (47%)	20015 (57%)	
3. Non-metropolitan	3549 (10%)	3485 (10%)	1899 (5%)	
Location				
1. Metropolitan	32096 (90%)	30516 (90%)	33011 (95%)	<0.0001
2. Non-metropolitan	3549 (10%)	3485 (10%)	1899 (5%)	
Bed-size				
1. Small	4427 (12%)	3812 (11%)	2687 (8%)	<0.0001
2. Medium	8805 (25%)	8125 (24%)	7157 (21%)	
3. Large	22413 (63%)	22064 (65%)	25066 (72%)	
Patient Characteristics				
Mean age	59.9 ± 19.0	65.0 ± 18.4	59.7 ± 17.8	<0.00001
Female sex	23163 (65%)	21319 (63%)	19835 (57%)	<0.0001
Length of stay (unadjusted by month of follow-up)				
• Median	1	5	10	<0.0001
• IQR	1-2	4-6	5-21	
• 5 th – 95 th range	1-2	2-7	2-47	
Primary expected payer				
1. Medicare/Medicaid	21432 (60%)	24557 (72%)	27252 (78%)	<0.0001
2. Private insurance	10756 (30%)	6904 (20%)	5519 (16%)	
3. Self-pay	1842 (5%)	1216 (4%)	1013 (3%)	
4. No charge/others	1588 (4%)	1287 (4%)	1092 (3%)	
Median household income				
1. 0-25 th percentile (\$1 - \$37,99)	9130 (26%)	9331 (28%)	11179 (33%)	<0.0001
2. 26 th to 50 th percentile (\$38,000 - \$47,999)	9354 (27%)	8926 (27%)	8733 (25%)	

3. 51 st to 75 th percentile (\$48,000 - \$63,999)	8946 (25%)	8171 (24%)	7797 (23%)	
4. 76 th to 100 th percentile (\$64,000 or more)	7671 (22%)	7004 (21%)	6646 (19%)	
Index Hospitalization Comorbidities				
Smoking	9411 (26%)	9487 (28%)	9331 (27%)	<0.0001
Obesity	3851 (11%)	4501 (13%)	5223 (15%)	<0.0001
Anemia	4525 (13%)	7814 (23%)	12132 (35%)	<0.0001
Congestive heart failure	1587 (4%)	3236 (10%)	5183 (15%)	<0.0001
Chronic lung disease	6166 (17%)	7581 (22%)	9135 (26%)	<0.0001
Depression (combine uncomplicated and complicated)	5902 (17%)	5633 (17%)	5917 (17%)	0.29
Diabetes (combine uncomplicated and complicated)	5638 (16%)	6750 (20%)	7360 (21%)	<0.0001
Hypertension (combine uncomplicated and complicated)	18237 (51%)	20142 (59%)	20036 (57%)	<0.0001
Coagulation disorder	864 (2%)	1846 (5%)	3108 (9%)	<0.0001
Liver disorder	1024 (3%)	1199 (4%)	1785 (5%)	<0.0001
Electrolyte abnormalities	7915 (22%)	11638 (34%)	15334 (44%)	<0.0001
Peripheral vascular disease	1489 (4%)	2269 (7%)	3044 (9%)	<0.0001
Psychoses	1679 (5%)	1977 (6%)	2882 (8%)	<0.0001
Renal failure	2844 (8%)	4506 (13%)	8033 (23%)	<0.0001
Index Hospitalization Characteristics				
Gastrointestinal or hepatic procedures	5457 (15%)	6075 (18%)	8283 (24%)	<0.0001
Blood transfusions	1260 (4%)	3341 (10%)	6651 (19%)	<0.0001

Parenteral or enteral nutrition	51 (0.1%)	300 (0.9%)	2280 (7%)	<0.0001
Unadjusted mortality	850 (2%)	571 (2%)	429 (1%)	<0.0001
Hospitalization Characteristics Across All Subsequent Admissions				
Gastrointestinal or hepatic procedures				
1. 0	30145 (85%)	26876 (79%)	18513 (53%)	<0.0001
2. 1	5483 (15%)	6647 (20%)	9787 (28%)	
3. 2	17 (0.1%)	455 (1%)	4048 (12%)	
4. 3 or more	0 (0%)	23 (0.1%)	2562 (7%)	
Blood transfusions				
1. 0	34371 (96%)	30084 (88%)	20185 (58%)	<0.0001
2. 1	1262 (4%)	3646 (11%)	8098 (23%)	
3. 2	12 (0%)	240 (1%)	3652 (10%)	
4. 3 or more	0 (0%)	31 (0.1%)	2975 (9%)	
Parenteral or enteral nutrition				
1. 0	35594 (99%)	33655 (99%)	29472 (84%)	<0.0001
2. 1	51 (0.1%)	332 (1%)	3928 (11%)	
3. 2	0 (0%)	14 (0%)	891 (3%)	
4. 3 or more	0 (0%)	0 (0%)	619 (2%)	
Unadjusted mortality	143 (6%)	164 (5%)	696 (13%)	<0.0001

eTable 11. Risk factors for high utilization of healthcare resources in patients with functional GI disorders.

Variable at Index Hospitalization	Odds Ratio (95% Confidence Interval)	p-value
Age	0.98 (0.97 – 0.98)	<0.01
Female	0.85 (0.83 – 0.87)	<0.01
Payer (reference is medicare/medicaid)		
Private insurance	0.58 (0.56 – 0.60)	<0.01
Self-pay	0.56 (0.52 – 0.60)	
Other	0.61 (0.57 – 0.65)	
Urban versus rural location	0.59 (0.56 – 0.62)	<0.01
Median household income quartiles (reference is 1 st quartile)		
2 nd quartile	0.90 (0.87 – 0.93)	<0.01
3 rd quartile	0.88 (0.85 – 0.90)	
4 th quartile	0.93 (0.90 – 0.96)	
Hospital bed size (reference is small)		
Medium	1.13 (1.08 – 1.19)	<0.01
Large	1.40 (1.34 – 1.46)	
Charlson Comorbidity Index		
1 or less	1.52 (1.46 – 1.57)	<0.01
2 or more	3.10 (3.02 – 3.20)	
Functional-related admission (reference)		
Cardiac-related	1.22 (1.14 – 1.31)	<0.01
Respiratory-related	1.48 (1.38 – 1.59)	<0.01
Infection-related	1.60 (1.49 – 1.72)	<0.01
Genitourinary-related	0.80 (0.68 – 0.94)	<0.01
Gastrointestinal-related	1.17 (1.10 – 1.26)	<0.01

Endocrine-related	1.53 (1.42 – 1.65)	<0.01
Neuropsychiatric-related	1.57 (1.44 – 1.72)	<0.01
Hematologic-related	1.38 (1.26 – 1.51)	<0.01
Other causes	1.46 (1.37 – 1.56)	<0.01

*Regression model also inclusive of obesity.

eTable 12. Gastrointestinal hemorrhage - baseline patient and hospital characteristics at index and subsequent admissions stratified by deciles and presented as 1th decile, 5th decile, and 10th decile.

Characteristics	1 th decile	5 th decile	10 th decile	p-value
Hospital Characteristics				
Teaching status				
1. Metropolitan non-teaching	9632 (48%)	7890 (46%)	7520 (40%)	<0.0001
2. Metropolitan teaching	8086 (40%)	7251 (43%)	10301 (55%)	
3. Non-metropolitan	2336 (12%)	1865 (11%)	1043 (6%)	
Location				
1. Metropolitan	17718 (88%)	15141 (89%)	17821 (94%)	<0.0001
2. Non-metropolitan	2336 (12%)	1865 (11%)	1043 (6%)	
Bed-size				
1. Small	2527 (13%)	1852 (11%)	1332 (7%)	<0.0001
2. Medium	5275 (26%)	4367 (26%)	4251 (23%)	
3. Large	12252 (61%)	10787 (63%)	13281 (70%)	
Patient Characteristics				
Mean age	64.1 ± 18.0	69.5 ± 16.1	65.4 ± 15.6	<0.00001
Female sex	9007 (45%)	8465 (50%)	8958 (47%)	<0.0001
Length of stay (unadjusted by month of follow-up)				
• Median	1	5	12	<0.00001
• IQR	1-2	3-6	6-27	
• 5 th – 95 th range	1-2	2-7	2-56	
Primary expected payer				
1. Medicare/Medicaid	12625 (63%)	13005 (77%)	15326 (81%)	<0.0001
2. Private insurance	4763 (24%)	2523 (15%)	2324 (12%)	
3. Self-pay	1586 (8%)	825 (5%)	584 (3%)	
4. No charge/others	1061 (5%)	634 (4%)	615 (3%)	
Median household income				
1. 0-25 th percentile (\$1 - \$37,99)	5113 (26%)	4943 (30%)	6060 (33%)	<0.0001
2. 26 th to 50 th percentile (\$38,000 - \$47,999)	5253 (27%)	4665 (28%)	4713 (25%)	

3. 51 st to 75 th percentile (\$48,000 - \$63,999)	5069 (26%)	3924 (23%)	4164 (22%)	
4. 76 th to 100 th percentile (\$64,000 or more)	4237 (22%)	3201 (19%)	3629 (20%)	
Index Hospitalization Comorbidities				
Smoking	5409 (27%)	4467 (26%)	4105 (22%)	<0.0001
Obesity	1571 (8%)	1635 (10%)	2445 (13%)	<0.0001
Anemia	3502 (17%)	3941 (23%)	6099 (32%)	<0.0001
Congestive heart failure	1437 (7%)	2549 (15%)	4795 (25%)	<0.0001
Chronic lung disease	2966 (15%)	3580 (21%)	5076 (27%)	<0.0001
Depression (combine uncomplicated and complicated)	1813 (9%)	1844 (11%)	2050 (11%)	<0.0001
Diabetes (combine uncomplicated and complicated)	3739 (19%)	4029 (24%)	4790 (25%)	<0.0001
Hypertension (combine uncomplicated and complicated)	11373 (57%)	10868 (64%)	11169 (59%)	<0.0001
Coagulation disorder	1357 (7%)	1933 (11%)	3575 (19%)	<0.0001
Liver disorder	1358 (7%)	1482 (9%)	2171 (12%)	<0.0001
Electrolyte abnormalities	4820 (24%)	6242 (37%)	10106 (54%)	<0.0001
Peripheral vascular disease	1096 (5%)	1501 (9%)	2115 (11%)	<0.0001
Psychoses	577 (3%)	650 (4%)	1216 (6%)	<0.0001
Renal failure	2109 (11%)	3230 (19%)	6077 (32%)	<0.0001
Index Hospitalization Characteristics				
Gastrointestinal or hepatic procedures	11907 (59%)	11747 (69%)	13016 (69%)	<0.0001
Blood transfusions	6375 (32%)	8183 (48%)	9904 (53%)	<0.0001

Parenteral or enteral nutrition	38 (0.2%)	183 (1%)	2007 (11%)	<0.0001
Unadjusted mortality	2031 (10%)	801 (5%)	1049 (6%)	<0.0001
Hospitalization Characteristics Across All Subsequent Admissions				
Gastrointestinal or hepatic procedures				
1. 0	1124 (42%)	611 (20%)	685 (14%)	<0.0001
2. 1	1453 (55%)	1894 (62%)	1824 (37%)	
3. 2	63 (2%)	474 (15%)	1018 (21%)	
4. 3 or more	10 (0.4%)	87 (3%)	1371 (28%)	
Blood transfusions				
1. 0	1644 (62%)	1375 (45%)	1440 (29%)	<0.0001
2. 1	956 (36%)	1365 (45%)	1490 (30%)	
3. 2	44 (2%)	268 (9%)	877 (18%)	
4. 3 or more	6 (0.2%)	58 (2%)	1091 (22%)	
Parenteral or enteral nutrition				
1. 0	2644 (99%)	3012 (98%)	4017 (82%)	<0.0001
2. 1	6 (0.2%)	52 (2%)	718 (15%)	
3. 2	0 (0%)	2 (0.1%)	112 (2%)	
4. 3 or more	0 (0%)	0 (0%)	51 (1%)	
Unadjusted mortality	2044 (10%)	1126 (7%)	2521 (19%)	<0.0001

eTable 13. Risk factors for high utilization of healthcare resources in patients with gastrointestinal hemorrhage.

Variable at Index Hospitalization	Odds Ratio (95% Confidence Interval)	p-value
Age	0.98 (0.98 – 0.99)	<0.01
Female	1.03 (0.99 – 1.07)	0.05
Payer (reference is medicare/medicaid)		
Private insurance	0.60 (0.57 – 0.63)	<0.01
Self-pay	0.45 (0.41 – 0.50)	
Other	0.57 (0.52 – 0.62)	
Urban versus rural location	0.56 (0.53 – 0.60)	<0.01
Median household income quartiles (reference is 1 st quartile)		
2 nd quartile	0.90 (0.87 – 0.94)	<0.01
3 rd quartile	0.89 (0.86 – 0.93)	
Hospital bed size (reference is small)		
Medium	1.19 (1.11 – 1.27)	<0.01
Large	1.50 (1.41 – 1.60)	
Charlson Comorbidity Index		
1 or less	1.48 (1.40 – 1.56)	<0.01
2 or more	2.88 (2.75 – 3.02)	
Obesity	1.19 (1.13 – 1.24)	<0.01
GI-bleed related admission (reference)		
Cardiac-related	2.43 (2.29 – 2.59)	<0.01
Respiratory-related	3.00 (2.79 – 3.22)	<0.01
Genitourinary-related	1.89 (1.34 – 2.68)	<0.01
Gastrointestinal-related	1.37 (1.31 – 1.43)	<0.01
Endocrine-related	2.71 (2.43 – 3.03)	<0.01

Hematologic-related	2.27 (1.98 – 2.60)	<0.01
Other causes	1.45 (1.34 – 1.58)	<0.01

*Regression model also inclusive of infection-related and neuropsychiatric-related admission and fourth quartile of income.

eTable 14. Pancreatic disease - baseline patient and hospital characteristics at index admission stratified by deciles and presented as 1th decile, 5th decile, and 10th decile.

Characteristics	1 th decile	5 th decile	10 th decile	p-value
Hospital Characteristics				
Teaching status				
1. Metropolitan non-teaching	5168 (47%)	3457 (47%)	3716 (39%)	<0.0001
2. Metropolitan teaching	4424 (40%)	3126 (43%)	5375 (56%)	
3. Non-metropolitan	1385 (13%)	767 (10%)	557 (6%)	
Location				
1. Metropolitan	9592 (87%)	6583 (90%)	9091 (94%)	<0.0001
2. Non-metropolitan	1385 (13%)	767 (10%)	557 (6%)	
Bed-size				
1. Small	1546 (14%)	867 (12%)	703 (7%)	<0.0001
2. Medium	2829 (26%)	1867 (25%)	2049 (21%)	
3. Large	6602 (60%)	4616 (63%)	6896 (71%)	
Patient Characteristics				
Mean age	53.5 ± 17.6	56.5 ± 18.0	55.4 ± 16.8	<0.00001
Female sex	5327 (49%)	3800 (52%)	4534 (47%)	<0.0001
Length of stay (unadjusted by month of follow-up)				
• Median	1	5	10	<0.00001
• IQR	1-2	4-5	5-21	
• 5 th – 95 th range	1-2	2-7	2-49	
Primary expected payer				
1. Medicare/Medicaid	5270 (48%)	4053 (55%)	6682 (69%)	<0.0001
2. Private insurance	3569 (33%)	2095 (29%)	1820 (19%)	
3. Self-pay	1396 (13%)	749 (10%)	637 (7%)	
4. No charge/others	734 (7%)	442 (6%)	500 (5%)	
Median household income				
1. 0-25 th percentile (\$1 - \$37,99)	3066 (28%)	2044 (28%)	3132 (33%)	<0.0001
2. 26 th to 50 th percentile (\$38,000 - \$47,999)	2937 (27%)	2004 (28%)	2403 (25%)	

3. 51 st to 75 th percentile (\$48,000 - \$63,999)	2742 (25%)	1735 (24%)	2128 (22%)	
4. 76 th to 100 th percentile (\$64,000 or more)	2057 (19%)	1421 (20%)	1837 (19%)	
Index Hospitalization Comorbidities				
Smoking	3711 (34%)	2392 (33%)	2815 (29%)	<0.0001
Obesity	1195 (11%)	1049 (14%)	1030 (11%)	<0.0001
Anemia	1024 (9%)	1269 (17%)	3025 (31%)	<0.0001
Congestive heart failure	318 (3%)	372 (5%)	1183 (12%)	<0.0001
Chronic lung disease	1336 (12%)	1151 (16%)	2087 (22%)	<0.0001
Depression (combine uncomplicated and complicated)	1180 (11%)	903 (12%)	1456 (15%)	<0.0001
Diabetes (combine uncomplicated and complicated)	2351 (21%)	1709 (23%)	2444 (25%)	<0.0001
Hypertension (combine uncomplicated and complicated)	5304 (48%)	4051 (55%)	5244 (54%)	<0.0001
Coagulation disorder	470 (4%)	553 (8%)	1425 (15%)	<0.0001
Liver disorder	973 (9%)	802 (11%)	1388 (14%)	<0.0001
Electrolyte abnormalities	2919 (27%)	2869 (39%)	5185 (54%)	<0.0001
Peripheral vascular disease	293 (3%)	314 (4%)	622 (6%)	<0.0001
Psychoses	374 (3%)	327 (4%)	855 (9%)	<0.0001
Renal failure	640 (6%)	648 (9%)	2038 (21%)	<0.0001
Index Hospitalization Characteristics				
Gastrointestinal or hepatic procedures	1964 (18%)	2794 (38%)	3988 (41%)	<0.0001
Blood transfusions	202 (2%)	306 (4%)	1853 (19%)	<0.0001

Parenteral or enteral nutrition	12 (0.1%)	60 (0.8%)	1180 (12%)	<0.0001
Pancreatic-related procedures	930 (8%)	1507 (21%)	831 (9%)	<0.0001
Unadjusted mortality	430 (4%)	94 (1%)	283 (3%)	<0.0001
Hospitalization Characteristics Across All Subsequent Admissions				
Gastrointestinal or hepatic procedures				
1. 0	8997 (82%)	4261 (58%)	2951 (31%)	<0.0001
2. 1	1976 (18%)	2956 (40%)	3460 (26%)	
3. 2	4 (0%)	129 (2%)	1819 (19%)	
3 or more	0 (0%)	4 (0%)	1418 (15%)	
Blood transfusions				
1. 0	10774 (98%)	6973 (95%)	5609 (58%)	<0.0001
2. 1	203 (2%)	365 (5%)	2489 (26%)	
3. 2	0 (0%)	10 (0.1%)	875 (9%)	
3 or more	0 (0%)	2 (0%)	675 (7%)	
Parenteral or enteral nutrition				
1. 0	10965 (99%)	7283 (99%)	7326 (76%)	<0.0001
2. 1	12 (0.1%)	65 (1%)	1755 (18%)	
3. 2	0 (0%)	2 (0%)	363 (4%)	
3 or more	0 (0%)	0 (0%)	204 (2%)	
Pancreatic-related procedures				
1. 0	10040 (91%)	5731 (78%)	7993 (83%)	<0.0001
2. 1	936 (9%)	1614 (22%)	1516 (16%)	
3. 2	1 (0%)	5 (0.1%)	124 (1%)	
3 or more	0 (0%)	0 (0%)	15 (0.2%)	
Unadjusted mortality	432 (4%)	157 (2%)	1125 (12%)	

eTable 15. Risk factors for high utilization of healthcare resources in patients with pancreatic disorders.

Variable at Index Hospitalization	Odds Ratio (95% Confidence Interval)	p-value
Age	0.98 (0.98 – 0.99)	<0.01
Female	0.88 (0.84 – 0.92)	<0.01
Payer (reference is medicare/medicaid)		
Private insurance	0.60 (0.57 – 0.64)	<0.01
Self-pay	0.55 (0.51 – 0.61)	<0.01
Other	0.69 (0.62 – 0.76)	<0.01
Urban versus rural location	0.60 (0.55 – 0.66)	<0.01
Median household income quartiles (reference is 1 st quartile)		
2 nd quartile	0.91 (0.86 – 0.96)	<0.01
3 rd quartile	0.90 (0.85 – 0.95)	<0.01
Hospital bed size (reference is small)		
Medium	1.24 (1.13 – 1.35)	<0.01
Large	1.58 (1.45 – 1.71)	<0.01
Charlson Comorbidity Index		
1 or less	1.59 (1.50 – 1.70)	<0.01
2 or more	2.90 (2.75 – 3.07)	<0.01
Obesity	0.87 (0.81 – 0.93)	<0.01
Pancreatic-related admission (reference)		
Cardiac-related	1.93 (1.73 – 2.16)	<0.01
Respiratory-related	2.41 (2.17 – 2.68)	<0.01
Infection-related	3.00 (2.77 – 3.25)	<0.01
Genitourinary-related	1.41 (0.96 – 2.08)	0.08
Gastrointestinal-related	1.69 (1.58 – 1.82)	<0.01

Endocrine-related	1.81 (1.62 – 2.03)	<0.01
Neuropsychiatric-related	1.95 (1.72 – 2.20)	<0.01
Hematologic-related	1.65 (1.36 – 2.00)	<0.01
Other causes	2.21 (2.07 – 2.36)	<0.01

*Regression model also inclusive of fourth quartile of income.

eTable 16. Preventable admissions in patients with inflammatory bowel diseases stratified by deciles and presented as 1th decile, 5th decile, and 10th decile.

Characteristics	1th decile	5th decile	10th decile	<i>p</i>-value
PQ1. Diabetes, short term complications	9 (0.2%)	16 (0.3%)	38 (0.8%)	<0.0001
PQ2. Perforated appendix	8 (0.2%)	12 (0.2%)	8 (0.2%)	0.56
PQ3. Diabetes, long term complications	12 (0.2%)	15 (0.3%)	86 (1.8%)	<0.0001
PQ5. Chronic obstructive pulmonary disease or asthma	65 (1%)	116 (2%)	211 (4%)	<0.0001
PQ7. Hypertension	26 (0.5%)	6 (0.1%)	23 (0.5%)	<0.0001
PQ8. Congestive Heart Failure	32 (0.6%)	50 (1%)	247 (5%)	<0.0001
PQ10. Dehydration	120 (2%)	108 (2%)	293 (6%)	<0.0001
PQ11. Bacterial Pneumonia	73 (1%)	124 (2%)	215 (5%)	<0.0001
PQ12. Urinary Tract Infection	51 (0.9%)	61 (1%)	224 (5%)	<0.0001
PQ13. Angina without procedure	11 (0.2%)	6 (0.1%)	3 (0.1%)	0.16
PQ14. Uncontrolled diabetes	4 (0.1%)	5 (0.1%)	12 (0.3%)	0.03
PQ16. Lower-extremity amputation among diabetics	0 (0%)	1 (0.02%)	20 (0.4%)	<0.0001

eTable 17. Preventable admissions in patients with chronic liver diseases stratified by deciles and presented as 1th decile, 5th decile, and 10th decile.

Characteristics	1th decile	5th decile	10th decile	<i>p</i>-value
PQ1. Diabetes, short term complications	290 (0.7%)	345 (0.9%)	643 (2%)	<0.0001
PQ2. Perforated appendix	33 (0.1%)	66 (0.2%)	29 (0.1%)	<0.0001
PQ3. Diabetes, long term complications	190 (0.5%)	373 (1%)	1685 (5%)	<0.0001
PQ5. Chronic obstructive pulmonary disease or asthma	781 (2%)	1205 (3%)	1946 (5%)	<0.0001
PQ7. Hypertension	368 (0.9%)	194 (0.5%)	279 (0.8%)	<0.0001
PQ8. Congestive Heart Failure	722 (2%)	1805 (5%)	4374 (12%)	<0.0001
PQ10. Dehydration	698 (2%)	640 (2%)	1090 (3%)	<0.0001
PQ11. Bacterial Pneumonia	737 (2%)	1419 (4%)	1973 (5%)	<0.0001
PQ12. Urinary Tract Infection	446 (1%)	692 (2%)	1336 (4%)	<0.0001
PQ13. Angina without procedure	101 (0.3%)	42 (0.1%)	72 (0.2%)	<0.0001
PQ14. Uncontrolled diabetes	103 (0.3%)	112 (0.3%)	225 (0.6%)	<0.0001
PQ16. Lower-extremity amputation among diabetics	5 (0%)	28 (0.1%)	444 (1%)	<0.0001

eTable 18. Preventable admissions in patients with functional disorders stratified by deciles and presented as 1th decile, 5th decile, and 10th decile.

Characteristics	1th decile	5th decile	10th decile	<i>p</i>-value
PQ1. Diabetes, short term complications	326 (0.9%)	407 (1%)	1190 (3%)	<0.0001
PQ2. Perforated appendix	34 (0.1%)	62 (0.2%)	20 (0.1%)	<0.0001
PQ3. Diabetes, long term complications	509 (1%)	796 (2%)	3117 (9%)	<0.0001
PQ5. Chronic obstructive pulmonary disease or asthma	684 (2%)	1482 (4%)	2824 (8%)	<0.0001
PQ7. Hypertension	254 (0.7%)	194 (0.6%)	445 (1%)	<0.0001
PQ8. Congestive Heart Failure	416 (1%)	1127 (3%)	3804 (11%)	<0.0001
PQ10. Dehydration	729 (2%)	597 (2%)	1232 (4%)	<0.0001
PQ11. Bacterial Pneumonia	639 (2%)	1562 (5%)	2544 (7%)	<0.0001
PQ12. Urinary Tract Infection	809 (2%)	1128 (3%)	2268 (7%)	<0.0001
PQ13. Angina without procedure	80 (0.2%)	24 (0.1%)	76 (0.2%)	<0.0001
PQ14. Uncontrolled diabetes	47 (0.1%)	68 (0.2%)	252 (0.7%)	<0.0001
PQ16. Lower-extremity amputation among diabetics	2 (0%)	36 (0.1%)	641 (2%)	<0.0001

eTable 19. Preventable admissions in patients with gastrointestinal hemorrhage stratified by deciles and presented as 1th decile, 5th decile, and 10th decile.

Characteristics	1th decile	5th decile	10th decile	<i>p</i>-value
PQ1. Diabetes, short term complications	58 (0.3%)	118 (0.7%)	345 (2%)	<0.0001
PQ2. Perforated appendix	0 (0%)	8 (0.1%)	15 (0.1%)	<0.0001
PQ3. Diabetes, long term complications	28 (0.1%)	98 (0.6%)	937 (5%)	<0.0001
PQ5. Chronic obstructive pulmonary disease or asthma	51 (0.3%)	293 (2%)	1021 (5%)	<0.0001
PQ7. Hypertension	14 (0.1%)	54 (0.3%)	131 (0.7%)	<0.0001
PQ8. Congestive Heart Failure	54 (0.3%)	448 (3%)	2321 (12%)	<0.0001
PQ10. Dehydration	153 (0.8%)	226 (1%)	532 (3%)	<0.0001
PQ11. Bacterial Pneumonia	62 (0.3%)	361 (2%)	1136 (6%)	<0.0001
PQ12. Urinary Tract Infection	44 (0.2%)	232 (1%)	857 (5%)	<0.0001
PQ13. Angina without procedure	7 (0%)	12 (0.1%)	36 (0.2%)	<0.0001
PQ14. Uncontrolled diabetes	2 (0%)	14 (0.1%)	77 (0.4%)	<0.0001
PQ16. Lower-extremity amputation among diabetics	0 (0%)	7 (0%)	334 (2%)	<0.0001

eTable 20. Preventable admissions in patients with pancreatic disorders stratified by deciles and presented as 1th decile, 5th decile, and 10th decile.

Characteristics	1th decile	5th decile	10th decile	<i>p</i>-value
PQ1. Diabetes, short term complications	107 (1%)	149 (2%)	396 (4%)	<0.0001
PQ2. Perforated appendix	3 (0%)	6 (0.1%)	10 (0.1%)	0.08
PQ3. Diabetes, long term complications	48 (0.4%)	58 (0.8%)	566 (6%)	<0.0001
PQ5. Chronic obstructive pulmonary disease or asthma	48 (0.4%)	83 (1%)	439 (5%)	<0.0001
PQ7. Hypertension	25 (0.2%)	22 (0.3%)	88 (0.9%)	<0.0001
PQ8. Congestive Heart Failure	22 (0.2%)	55 (0.8%)	524 (5%)	<0.0001
PQ10. Dehydration	133 (1%)	92 (1%)	360 (4%)	<0.0001
PQ11. Bacterial Pneumonia	61 (0.6%)	83 (1%)	459 (5%)	<0.0001
PQ12. Urinary Tract Infection	69 (0.6%)	78 (1%)	346 (4%)	<0.0001
PQ13. Angina without procedure	7 (0.1%)	4 (0.1%)	18 (0.2%)	<0.0001
PQ14. Uncontrolled diabetes	34 (0.3%)	16 (0.2%)	113 (1%)	<0.0001
PQ16. Lower-extremity amputation among diabetics	0 (0%)	1 (0%)	67 (0.7%)	<0.0001

METHODS

Data Sources – Nationwide Readmissions Database

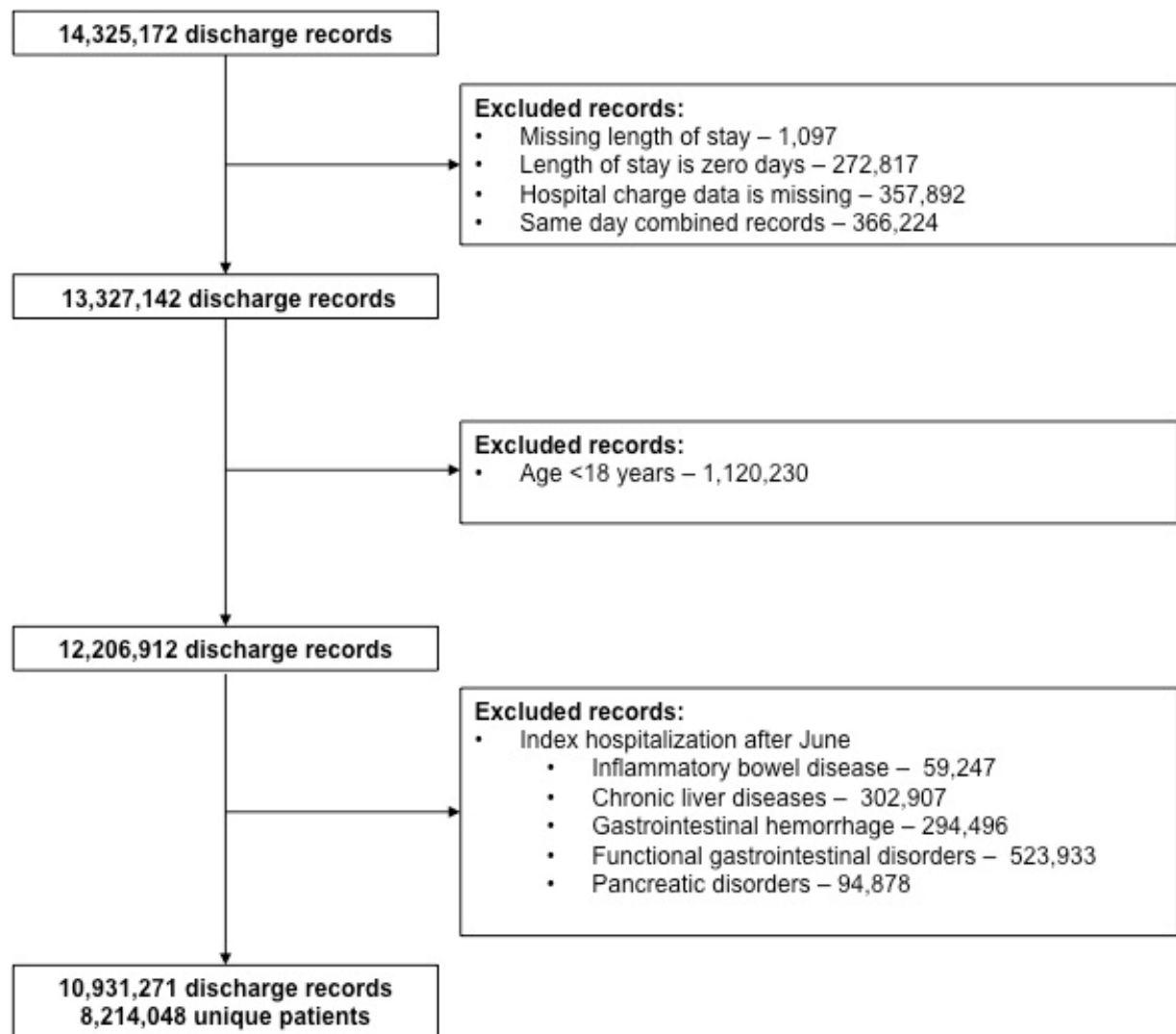
The NRD is drawn from State Inpatient Databases and contains reliable, verified patient linkage numbers that tracks patients hospitalized within a state, over the course of one year, and contains more than 100 demographic (age, sex, income quartile), clinical (diagnoses and procedure codes, comorbidities), and non-clinical variables (community, academic, urban-rural designation, bed size, expected payment source, hospital charges and costs etc.) from all community hospitals (as defined by the American Hospital Association), public hospitals and academic medical centers, located in 21 geographically diverse states. The NRD captures over 85% of all discharges from these states, which account for 49.3% of the US population.

Clinical Classification Software

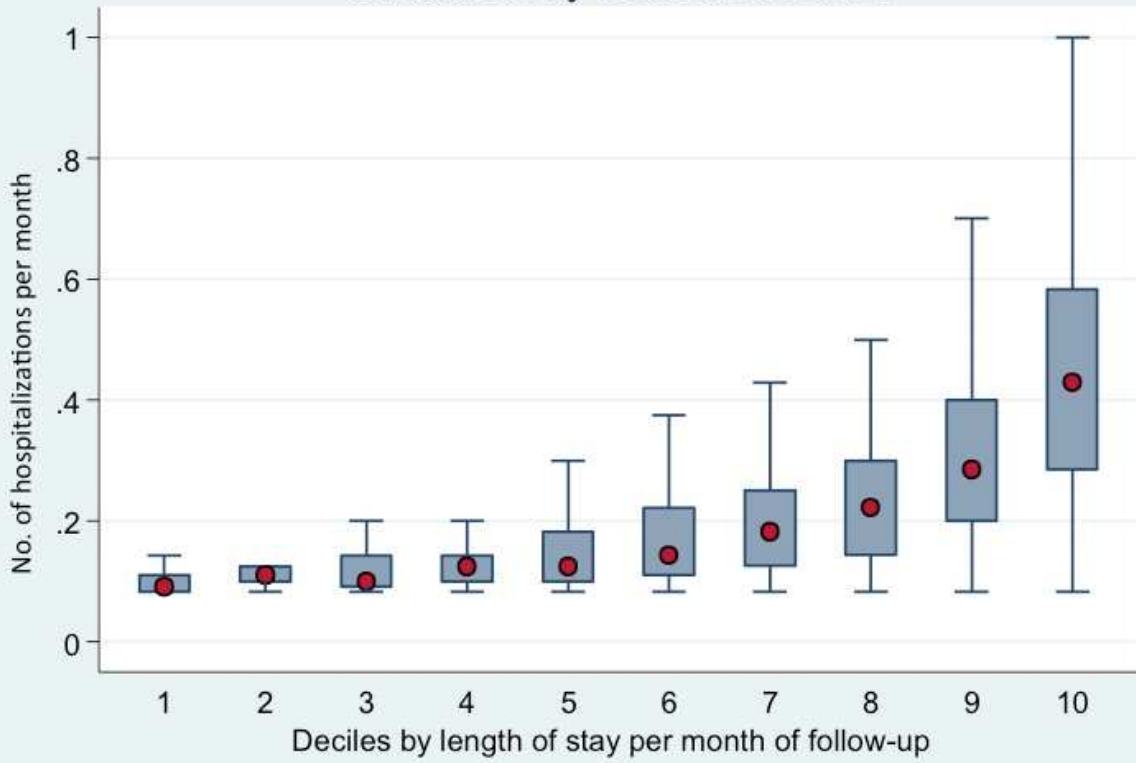
CCS for ICD-9-CM is a categorization scheme for diagnoses and procedures which collapses ICD-9-CM's expansive codes – which contains over 14,000 diagnosis codes and 3,900 procedure codes – into smaller number of categories that are both clinically meaningful and more useful for presenting descriptive statistics, and are developed by HCUP.

Patient and Hospital Characteristics

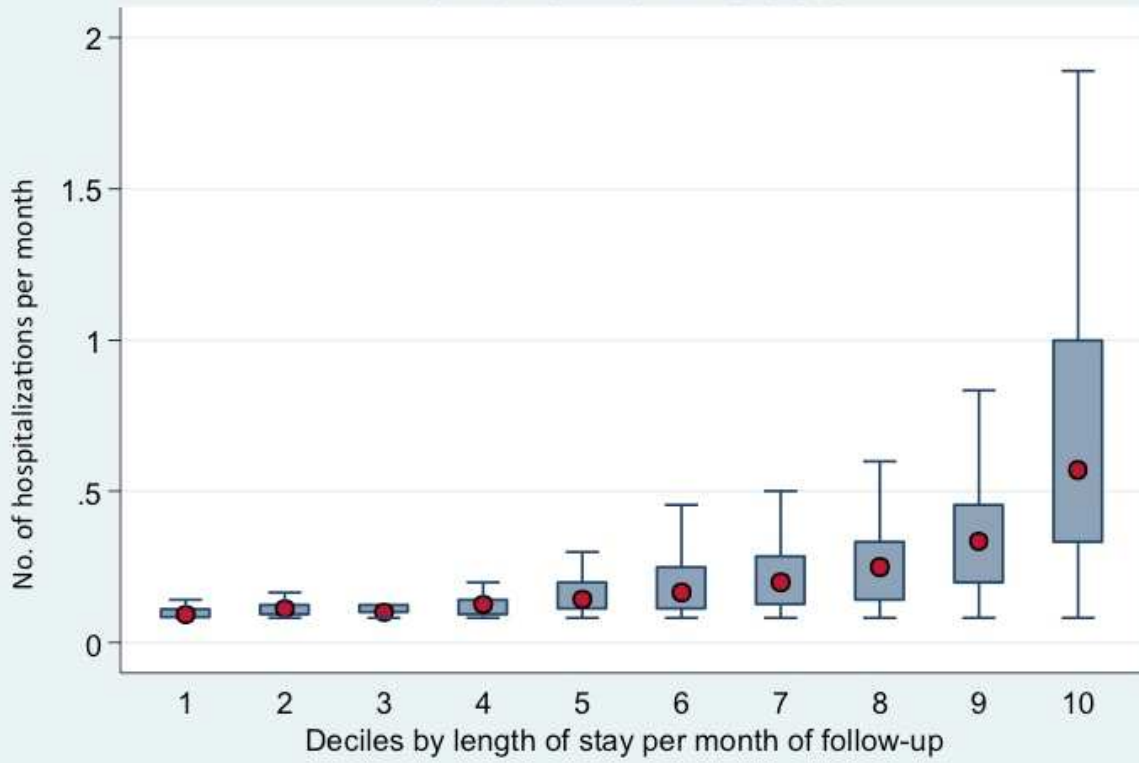
The following patient characteristics were reported: age, sex, primary expected payment source (Medicare, Medicaid, private insurance, self-pay, and other insurance types), income quartile based on the median household income of the patient's ZIP Code, and relevant comorbidities (smoking, obesity, anemia, congestive heart failure, chronic lung disease, depression, diabetes, hypertension, coagulation disorder, liver disorder, electrolyte abnormalities, peripheral vascular disease, psychoses, and renal failure). Hospital characteristics included: location, teaching status, and bed size (small, medium, large).



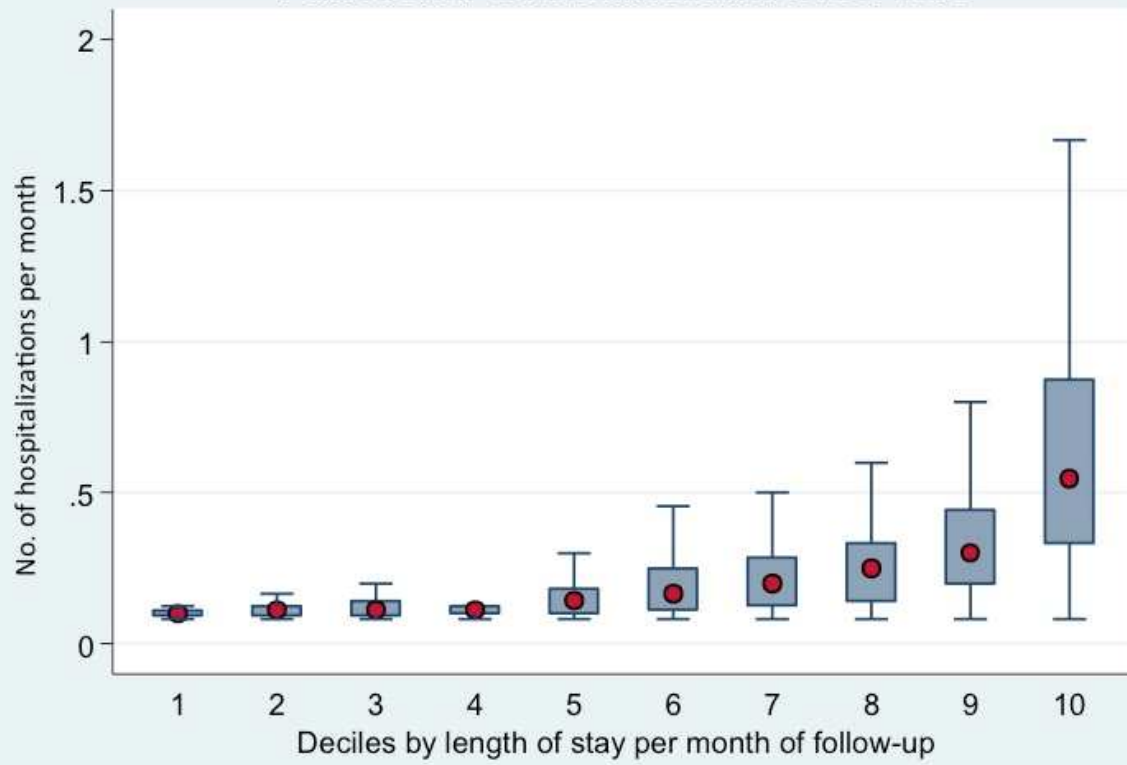
Inflammatory Bowel Diseases



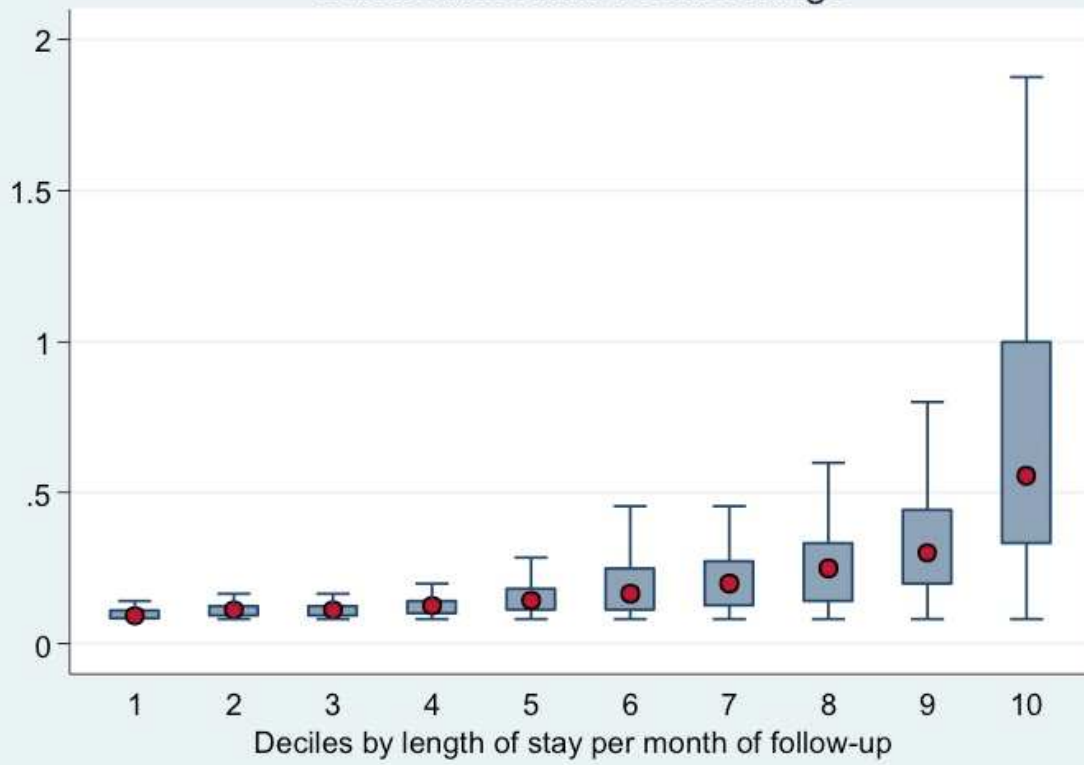
Chronic Liver Diseases



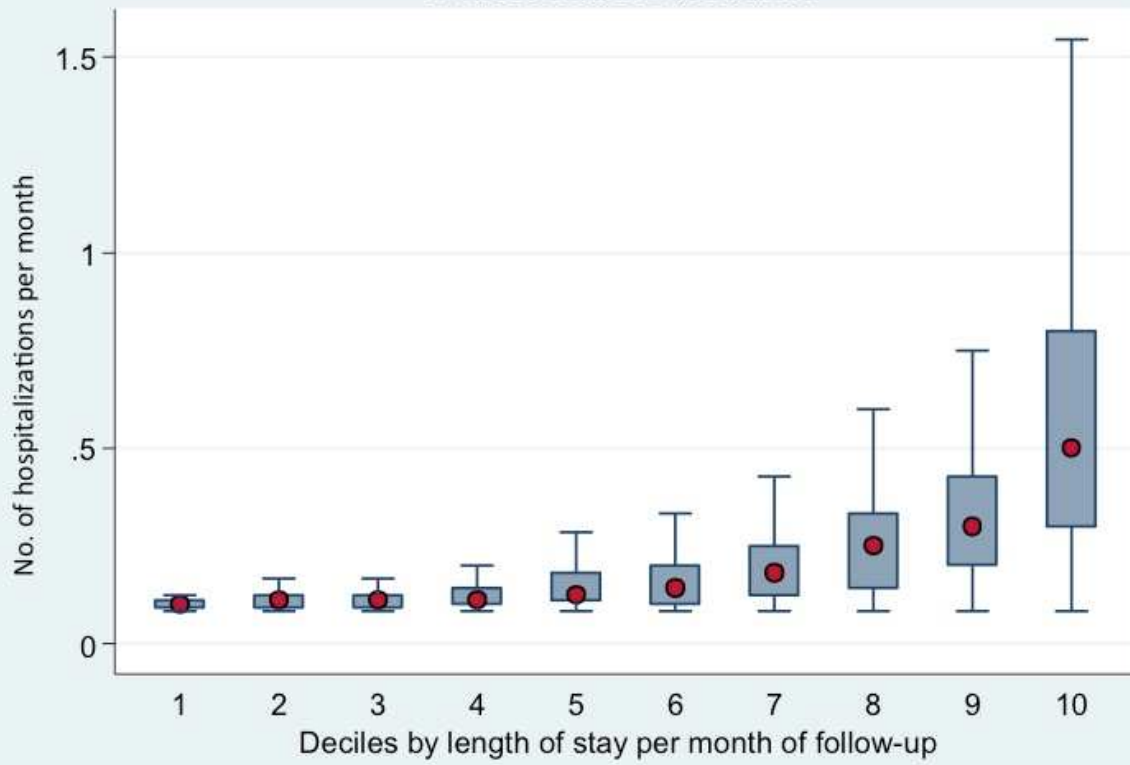
Functional Gastrointestinal Disorders



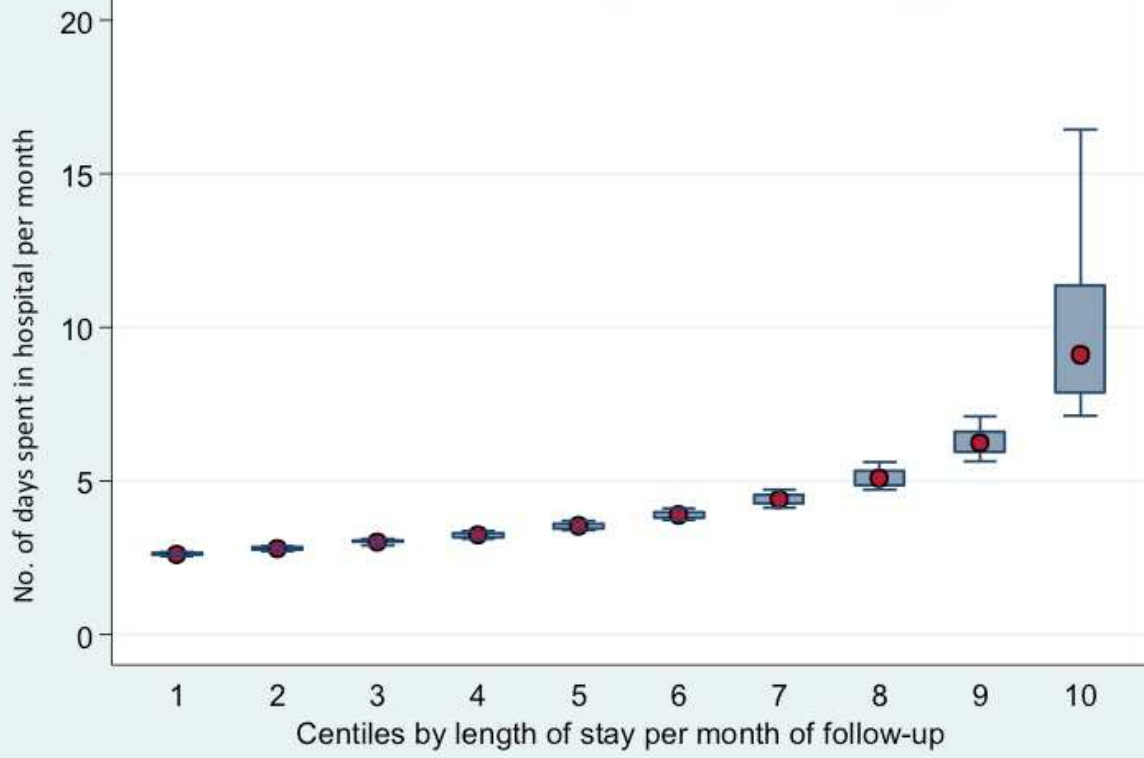
Gastrointestinal Hemorrhage



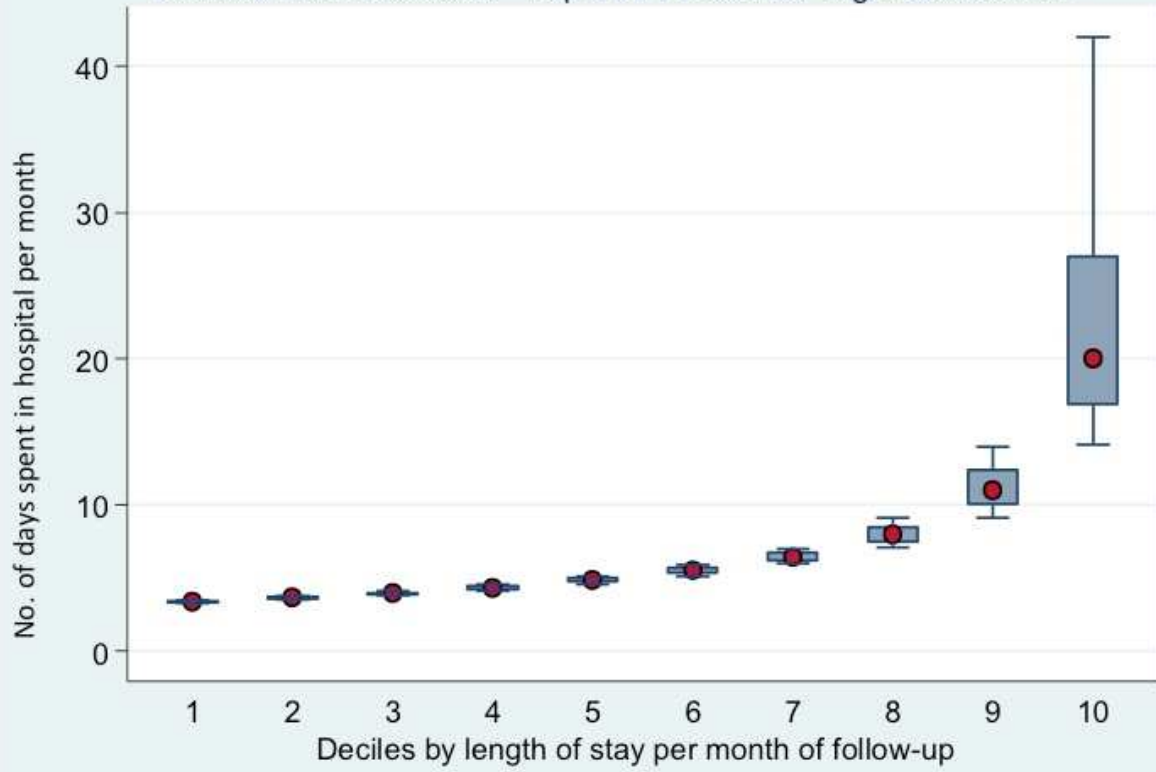
Pancreatic Disorders



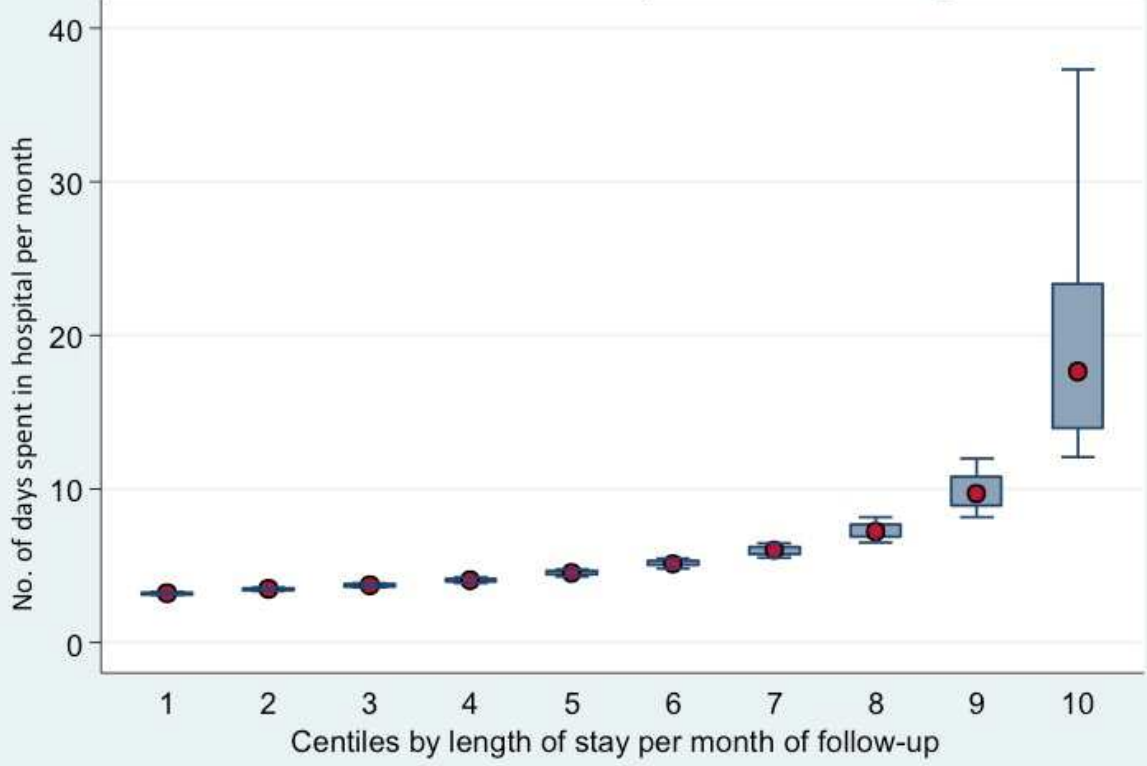
Inflammatory Bowel Diseases - Top Ten Percent of High-Consumers



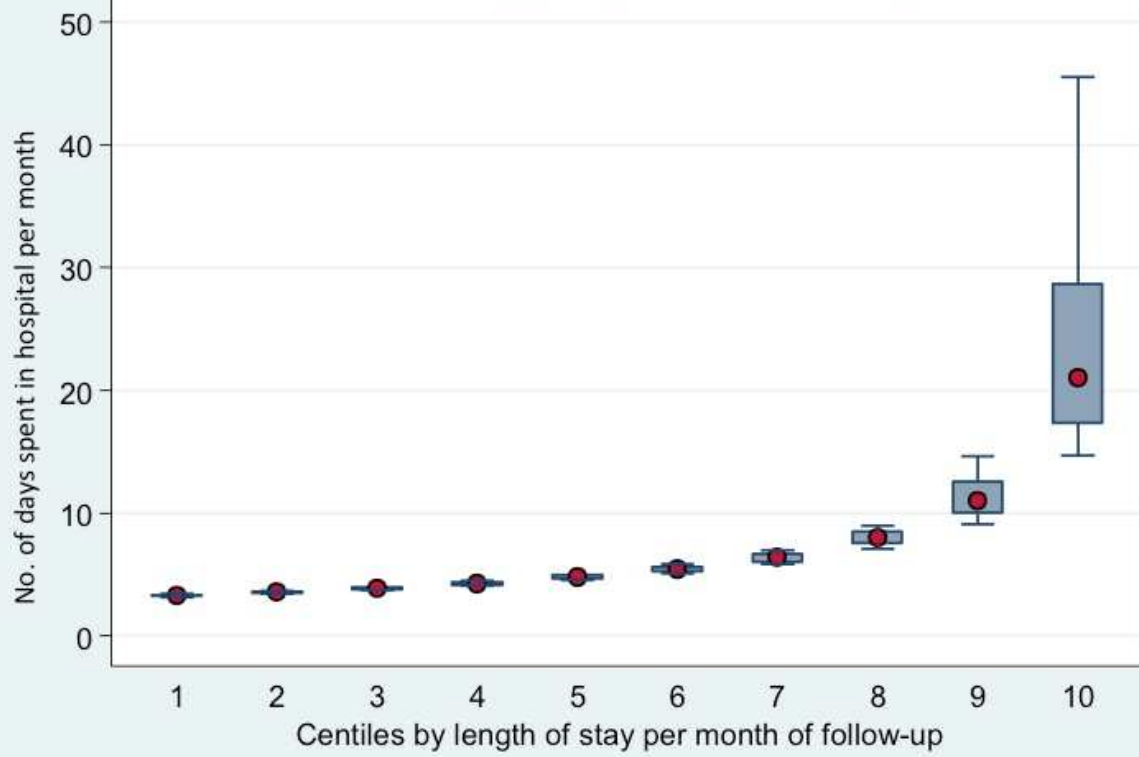
Chronic Liver Diseases - Top Ten Percent of High-Consumers



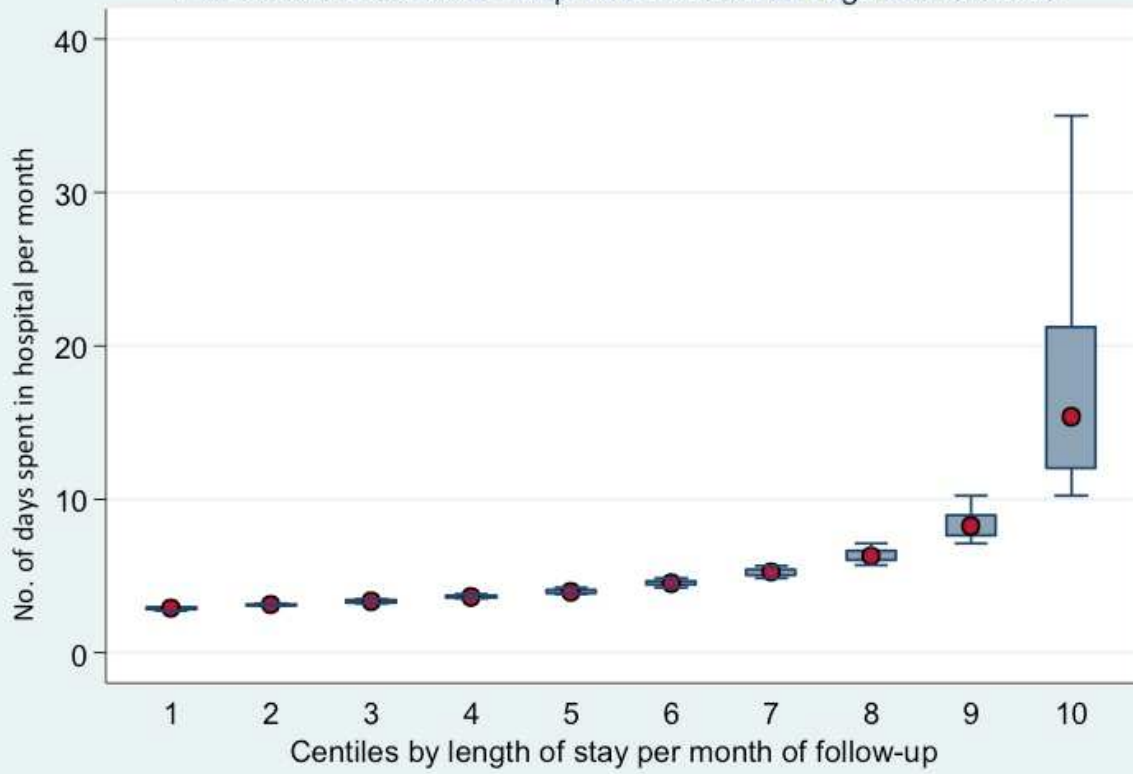
Functional Gastrointestinal Disorders - Top Ten Percent of High-Consumers



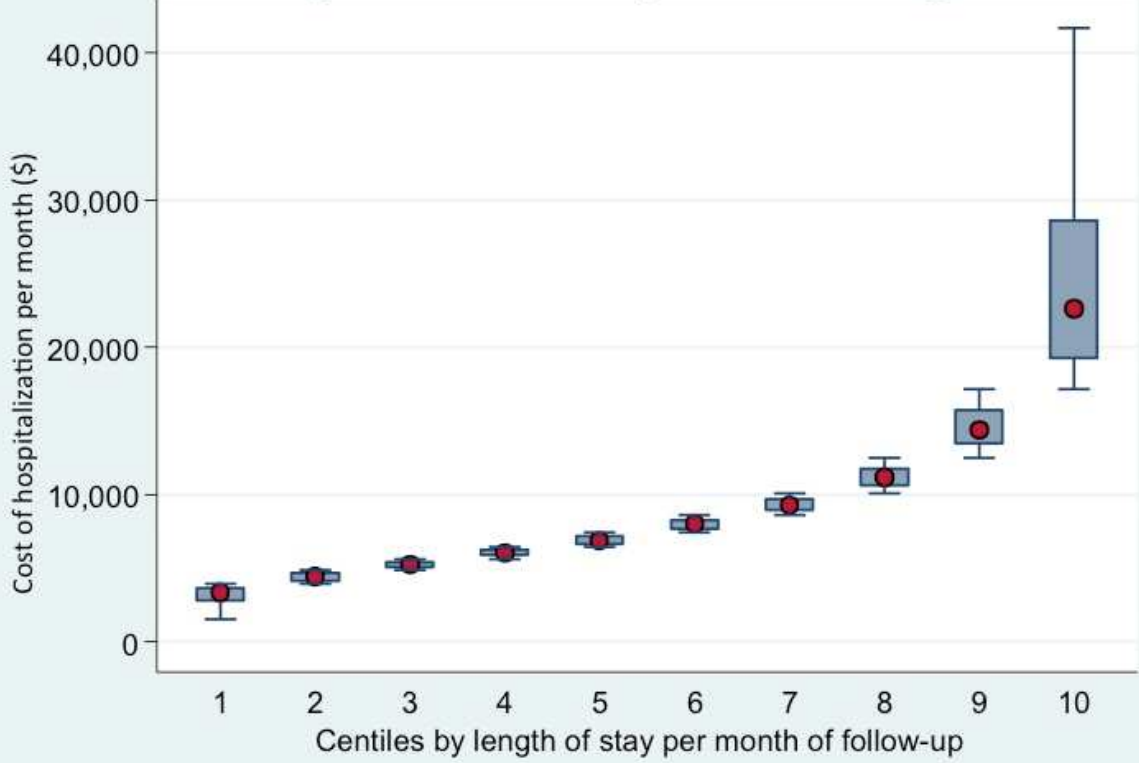
Gastrointestinal Hemorrhage - Top Ten Percent of High-Consumers



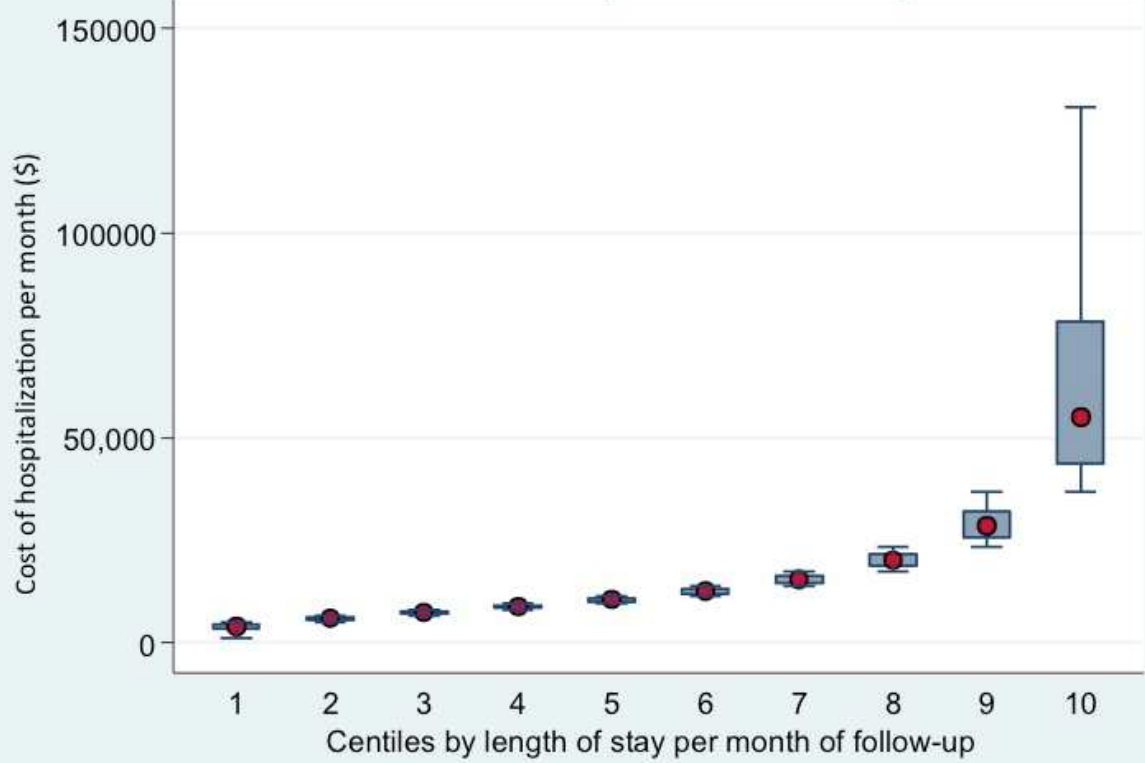
Pancreatic Disorders - Top Ten Percent of High-Consumers



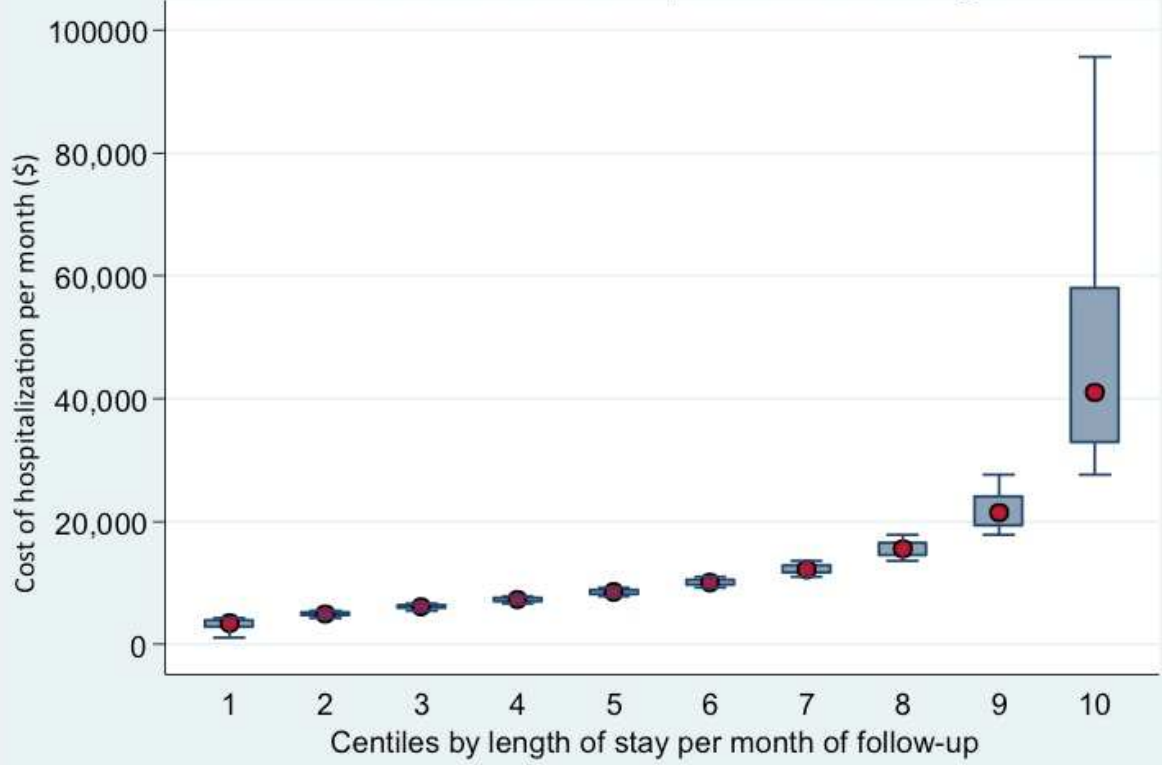
Inflammatory Bowel Diseases - Top Ten Percent of High-Consumers

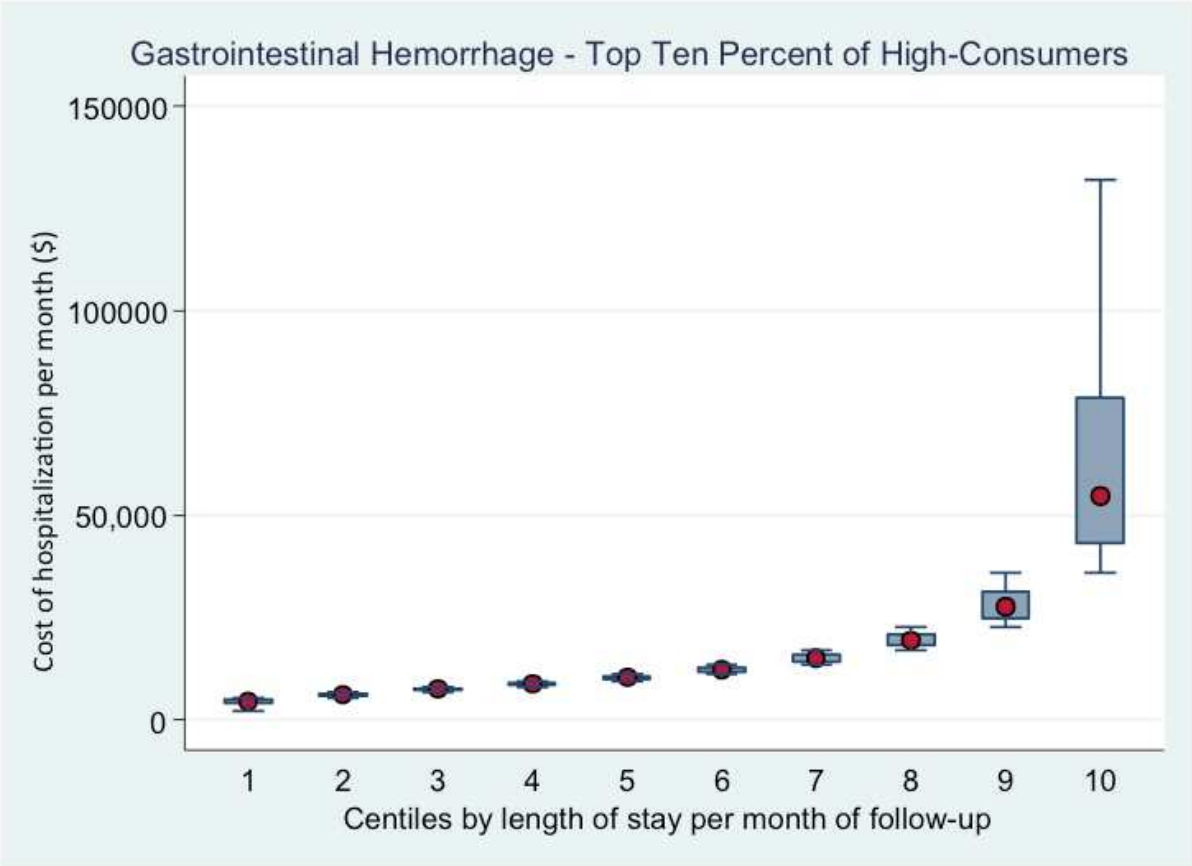


Chronic Liver Diseases - Top Ten Percent of High-Consumers

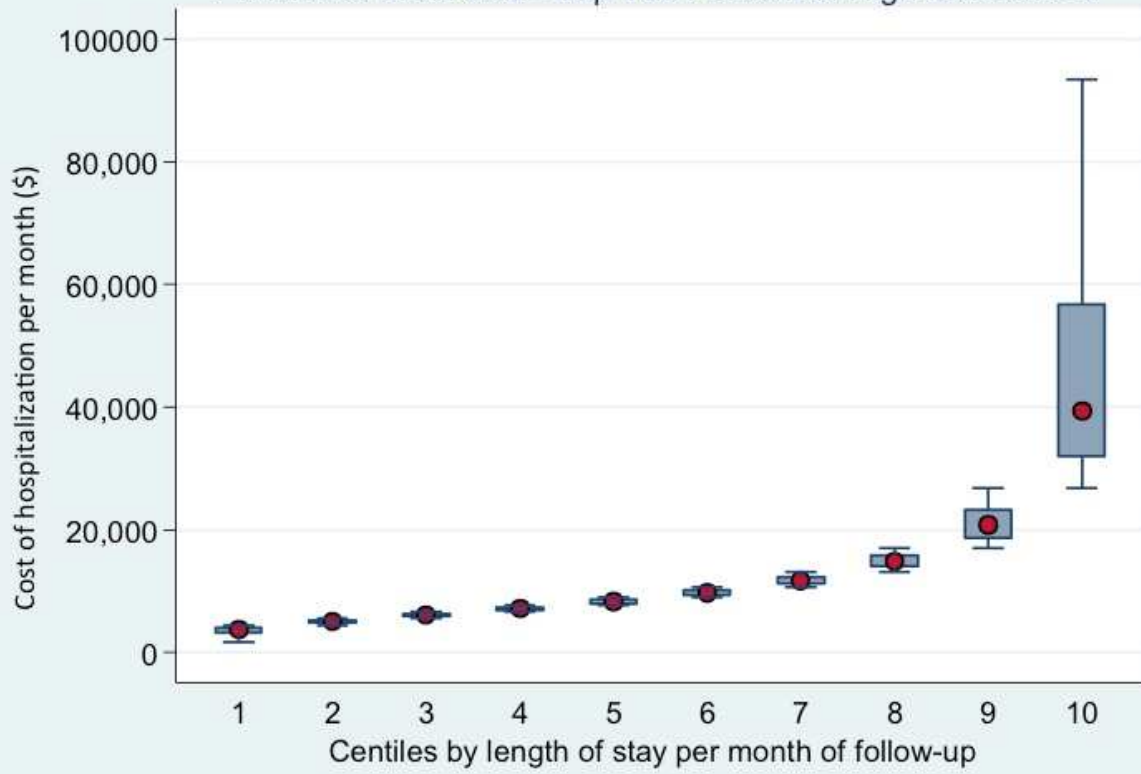


Functional Gastrointestinal Disorders - Top Ten Percent of High-Consumers

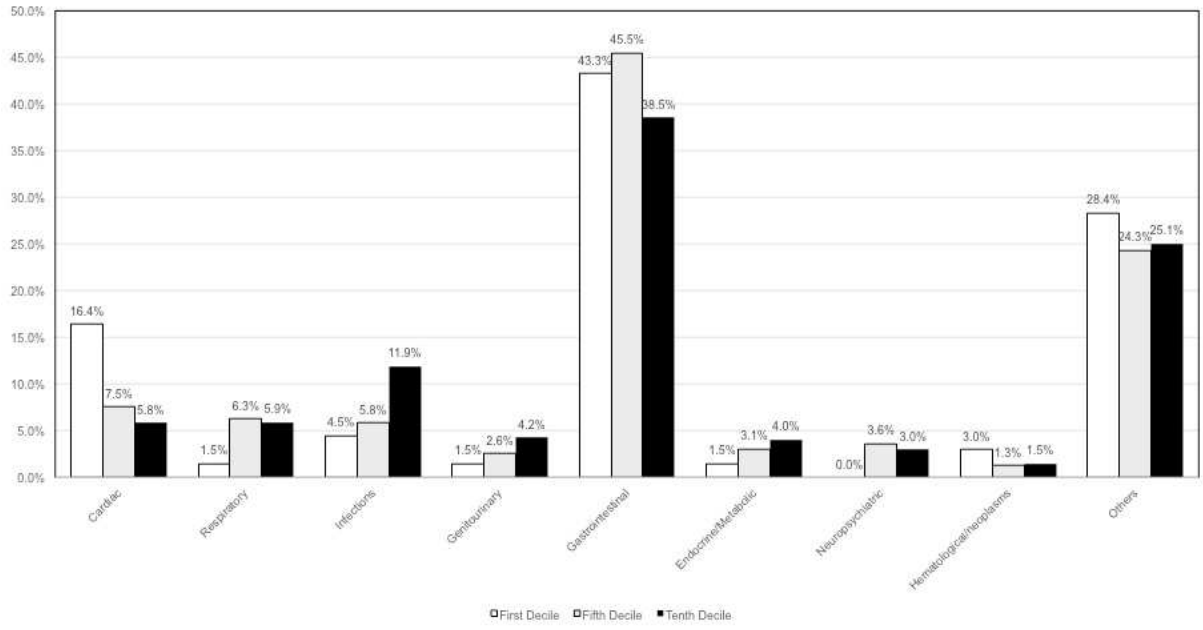




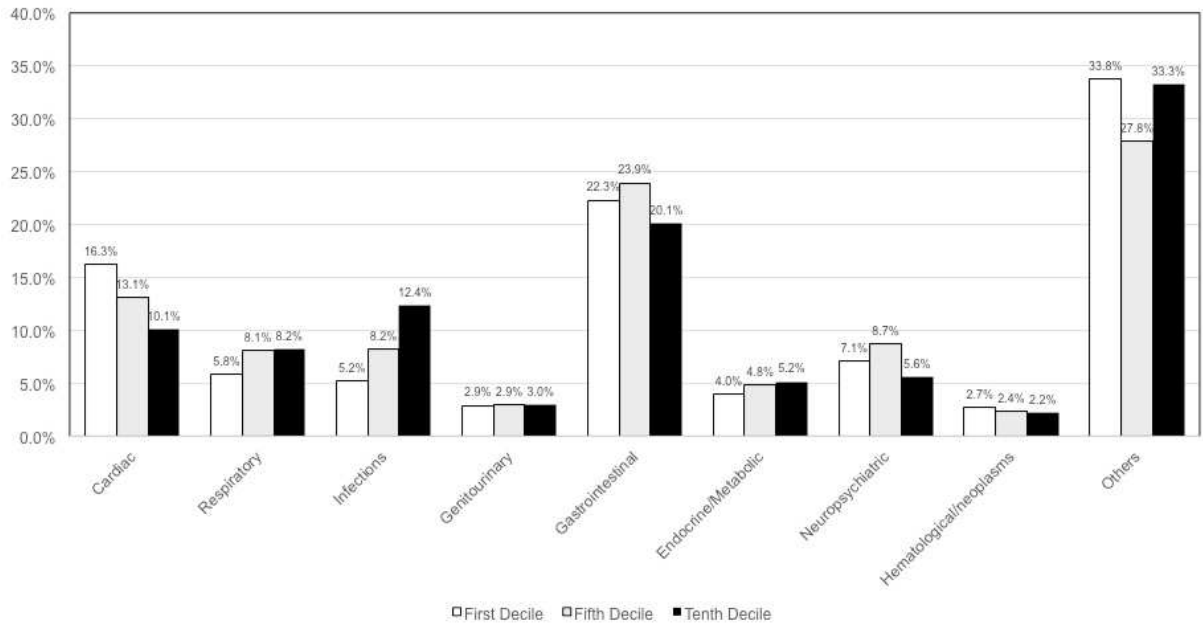
Pancreatic Disorders - Top Ten Percent of High-Consumers



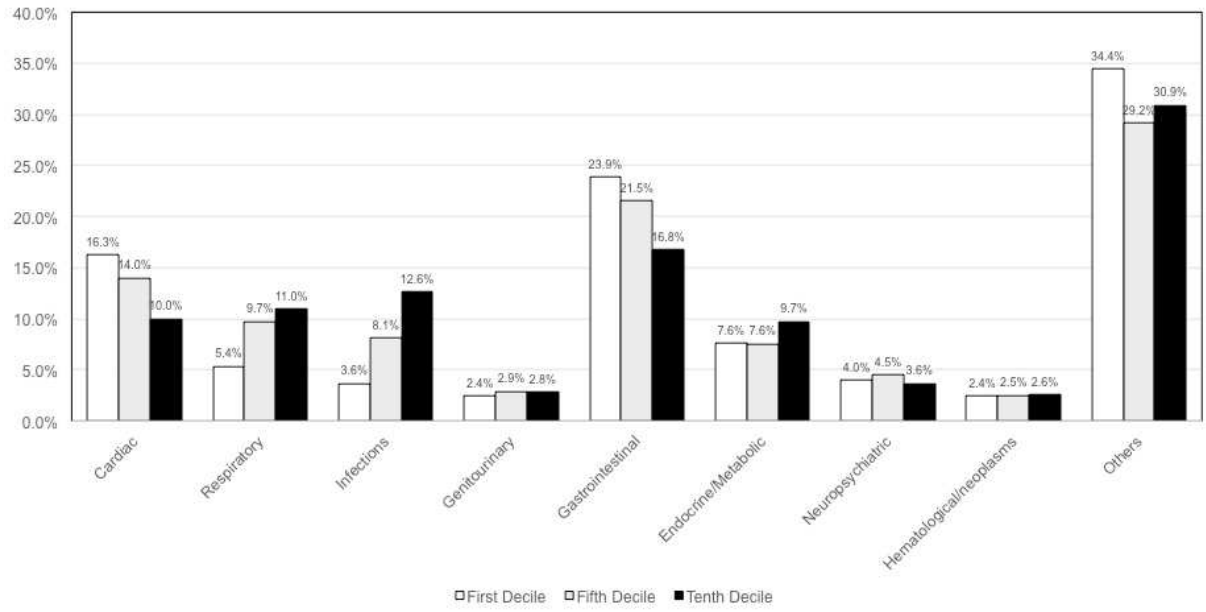
Inflammatory Bowel Disease - All Cause Readmissions



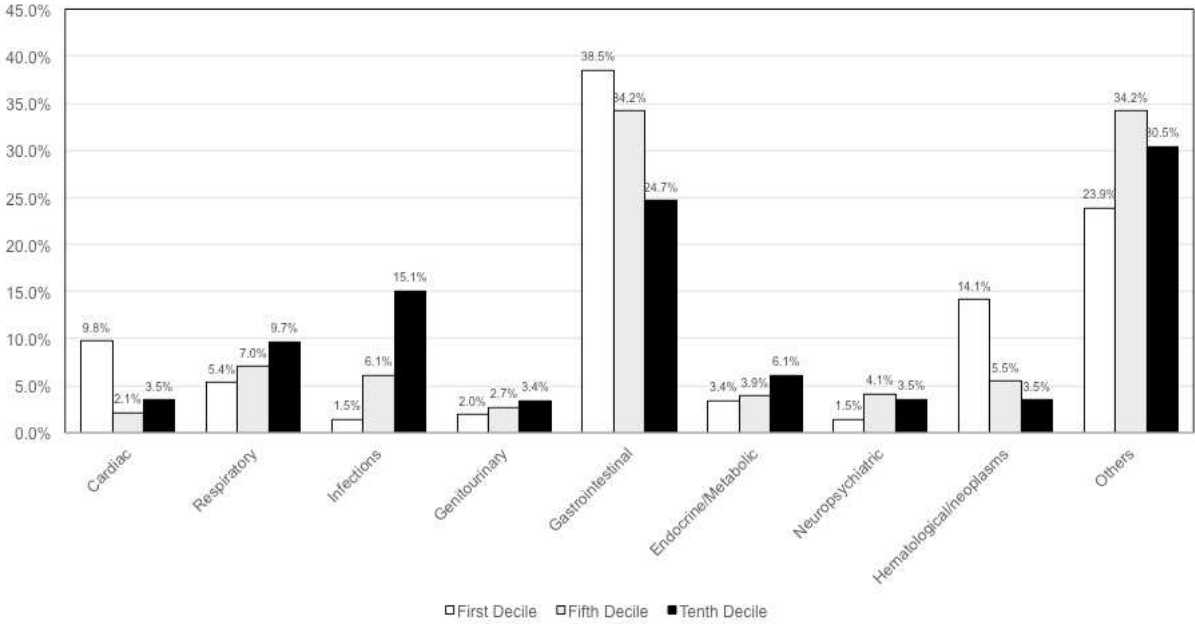
Chronic Liver Diseases - All Cause Readmissions



Functional Gastrointestinal Disorders



Gastrointestinal Bleed - All Cause Readmissions



Pancreatic Disorders - All Cause Readmissions

