

Supplementary Online Content

Dharmarajan K, Wang Y, Lin Z, et al. Association of changing hospital readmission rates with mortality rates after hospital discharge. *JAMA*. doi:10.1001/jama.2017.8444

eTable 1. *ICD-9-CM* Codes Used to Define Heart Failure, Acute Myocardial Infarction, and Pneumonia Cohorts

eTable 2. Comorbidities Among Medicare FFS Beneficiaries Discharged After Hospitalization for Heart Failure, Acute Myocardial Infarction, or Pneumonia, 2008-2014

eTable 3. Hospital Number and Hospitalization Volume by Month for Calculating Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 30-Day Risk-Adjusted Mortality Rates After Discharge, 2008-2014

eTable 4. Hospital Number and Hospitalization Volume by Month for Calculating the Correlation of Paired Monthly Trends in Hospital 30-Day Risk-Adjusted Readmission Rates With Hospital 30-Day and 90-Day Risk-Adjusted Mortality Rates After Discharge, 2008-2014

eTable 5. Hospital Number and Hospitalization Volume by Month for Calculating the Correlation of Paired Monthly Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 30-Day Risk-Adjusted Mortality Rates After Discharge, April 2010–September 2012

eTable 6. Hospital Number and Hospitalization Volume by Month for Calculating the Correlation of Paired Monthly Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date, 2008-2014

eTable 7. Hospital Number and Hospitalization Volume by Month for Calculating Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date for Heart Failure, 2008-2014

eFigure 1. Flow Diagrams Describing Study Population Selection in Heart Failure, Acute Myocardial Infarction, and Pneumonia Cohorts

eFigure 2. Correlation of Paired Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 30-Day Risk-Adjusted Mortality Rates After Discharge, April 2010–September 2012

eFigure 3. Correlation of Paired Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After Discharge, 2008-2014

eFigure 4. Correlation of Paired Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date, 2008-2014

eFigure 5. Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date for Heart Failure, 2008-2014

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

eTable 1. ICD-9-CM Codes Used to Define Heart Failure, Acute Myocardial Infarction, and Pneumonia Cohorts

Cohort Name	Constituent ICD-9-CM Codes
Heart failure	402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 428.xx
Acute myocardial infarction	410.xx excluding those with 410.x2 (acute myocardial infarction, subsequent episode of care)
Pneumonia	480.x, 481, 482.xx, 483.x, 485, 486, 487.0, and 488.11

ICD-9-CM: International Classification of Diseases, Ninth Revision, Clinical Modification.

eTable 2. Comorbidities Among Medicare FFS Beneficiaries Discharged After Hospitalization for Heart Failure, Acute Myocardial Infarction, or Pneumonia, 2008-2014

Comorbidity	2008	2009	2010	2011	2012	2013	2014
<i>Heart Failure Cohort (n)</i>	<i>449,135</i>	<i>450,536</i>	<i>441,674</i>	<i>425,890</i>	<i>410,057</i>	<i>400,040</i>	<i>385,222</i>
Coronary Artery Bypass Graft Surgery (%)	10.46	9.58	9.21	19.39	19.98	19.78	19.54
Congestive Heart failure (%)	76.20	76.48	76.83	77.28	77.00	76.48	75.55
Acute coronary syndrome (%)	18.44	17.91	17.33	17.19	17.21	17.09	16.74
Arrhythmias (%)	64.23	65.04	65.78	67.74	68.91	69.05	69.11
Cardio-respiratory failure and shock (%)	21.87	23.14	24.44	26.20	27.77	29.10	30.52
Valvular or Rheumatic Heart Disease (%)	46.71	46.67	46.51	52.81	54.19	54.08	54.77
Vascular or Circulatory Disease (%)	49.32	50.39	50.68	52.98	54.22	53.82	53.50
Chronic atherosclerosis (%)	73.32	72.60	72.16	75.15	75.16	74.13	73.06
Other and unspecified heart disease (%)	32.40	31.97	31.13	33.11	33.89	33.25	33.61
Hemiplegia, Paralysis, Functional Disability (%)	7.25	7.34	7.54	8.42	8.83	8.79	8.58
Stroke (%)	10.32	10.07	9.92	9.79	9.65	9.45	9.23
Renal Failure (%)	40.92	43.68	46.61	49.45	51.61	52.50	53.00
Chronic Obstructive Pulmonary Disease (%)	46.27	46.45	46.52	49.45	49.76	49.52	48.81
Diabetes and DM Complications (%)	51.54	52.11	52.62	54.39	55.02	55.02	55.01
Disorders of fluid/electrolyte/acid-base (%)	42.47	43.76	44.97	48.61	50.13	50.29	50.24
Other urinary tract disorders (%)	31.83	30.96	30.39	33.56	33.78	32.68	31.67
Decubitus ulcer or chronic skin ulcer (%)	13.56	13.70	13.75	14.65	14.73	14.74	14.67
Other gastrointestinal disorder (%)	53.72	54.33	54.35	62.25	64.28	64.40	64.77
Peptic ulcer, hemorrhage, other specified gastrointestinal disorders (%)	15.45	15.60	15.22	15.53	15.74	15.43	15.20
Severe hematological disorders (%)	3.98	4.15	4.38	4.48	3.05	2.36	2.29
Nephritis (%)	2.84	2.87	2.75	3.59	4.31	4.29	4.38
Dementia and Senility (%)	20.96	20.97	21.19	24.35	24.73	24.52	24.28
Metastatic Cancer and Acute Leukemia (%)	2.24	2.23	2.18	2.16	2.22	2.29	2.31
Cancer (%)	20.78	20.94	20.65	21.30	21.67	21.44	21.34
Liver and biliary disease (%)	8.64	8.88	9.14	10.66	11.37	11.24	11.45
End-stage renal disease or dialysis	3.73	3.77	3.89	4.61	4.80	4.61	4.55
Asthma (%)	8.67	8.75	8.69	9.58	9.79	10.01	10.14
Iron deficiency and other/unspecified anemias and blood disease (%)	53.55	54.99	55.76	63.26	64.67	64.01	64.14
Pneumonia (%)	43.31	43.84	44.06	45.24	45.31	46.12	45.50
Drug/alcohol abuse/dependence/psychosis (%)	9.28	9.36	9.18	12.67	13.97	14.54	14.72
Major psychiatric disorders (%)	9.06	9.34	9.56	10.62	10.90	10.95	10.99

eTable 2. Comorbidities Among Medicare FFS Beneficiaries Discharged After Hospitalization for Heart Failure, Acute Myocardial Infarction, or Pneumonia, 2008-2014 (continued)

Comorbidity	2008	2009	2010	2011	2012	2013	2014
Heart Failure Cohort (n)	449,135	450,536	441,674	425,890	410,057	400,040	385,222
Depression (%)	13.49	13.52	13.69	19.94	21.61	22.16	22.12
Other psychiatric disorders (%)	10.49	10.70	11.06	15.36	18.93	20.88	21.97
Fibrosis of lung and other chronic lung disorders (%)	12.02	12.04	11.86	12.27	10.90	9.97	9.62
Protein-Calorie Malnutrition (%)	6.76	7.72	8.31	9.50	10.00	10.08	9.98
Acute Myocardial Infarction Cohort (n)	189,074	178,495	176,275	174,314	176,637	171,526	163,618
Percutaneous Transluminal Coronary Angioplasty (%)	8.81	8.90	9.48	16.59	17.90	18.58	19.37
Coronary Artery Bypass Graft Surgery (%)	6.28	5.96	6.08	11.64	12.22	12.20	12.02
Congestive Heart failure (%)	33.33	33.23	32.77	33.19	32.44	31.59	30.57
Acute coronary syndrome (%)	22.95	22.76	22.61	23.05	22.23	21.91	20.96
Anterior Myocardial Infarction (%)	8.62	8.03	7.96	7.35	7.09	6.85	6.74
Other Location of Myocardial Infarction (%)	11.99	11.79	11.49	11.16	10.98	10.86	10.92
Angina pectoris/old myocardial infarction (%)	23.36	22.84	22.96	27.77	28.45	28.22	28.28
Coronary atherosclerosis/other chronic ischemic heart disease (%)	80.58	80.57	80.90	86.28	86.60	86.74	86.37
Valvular or Rheumatic Heart Disease (%)	28.08	27.31	26.86	31.95	32.40	31.93	32.11
Arrhythmias (%)	33.62	34.17	34.32	35.61	35.84	35.85	35.43
Cerebrovascular Disease (%)	20.10	20.14	20.11	21.31	21.32	20.94	20.24
Stroke (%)	8.25	7.92	7.72	7.60	7.50	7.22	7.09
Vascular or Circulatory Disease (%)	34.73	35.59	35.59	36.74	36.89	36.42	35.65
Hemiplegia, Paralysis, Functional Disability (%)	5.90	5.87	5.97	6.49	6.65	6.55	6.49
Diabetes and DM Complications (%)	43.10	43.70	44.49	46.85	47.22	47.76	47.52
Renal Failure (%)	21.40	22.92	24.71	26.70	27.60	28.00	28.10
End-stage renal disease or dialysis (%)	2.27	2.39	2.62	3.16	3.32	3.37	3.43
Other urinary tract disorders (%)	21.06	20.23	19.76	22.54	22.54	21.49	21.03
Chronic Obstructive Pulmonary Disease (%)	29.38	28.75	28.72	31.55	31.08	30.90	29.92
Pneumonia (%)	24.61	23.89	23.25	23.74	22.83	22.82	21.72
Asthma (%)	6.05	5.95	6.00	6.61	6.80	6.99	7.06
Disorders of fluid/electrolyte/acid-base (%)	25.32	25.65	26.29	28.62	28.77	28.87	28.63
History of infection (%)	25.99	26.27	26.57	27.03	27.08	27.05	26.30
Metastatic Cancer and Acute Leukemia (%)	2.14	2.12	2.07	2.04	2.09	2.00	2.11
Cancer (%)	19.07	18.98	18.82	19.21	19.37	18.98	18.97

eTable 2. Comorbidities Among Medicare FFS Beneficiaries Discharged After Hospitalization for Heart Failure, Acute Myocardial Infarction, or Pneumonia, 2008-2014 (continued)

Comorbidity	2008	2009	2010	2011	2012	2013	2014
Acute Myocardial Infarction Cohort (n)	189,074	178,495	176,275	174,314	176,637	171,526	163,618
Iron deficiency and other/unspecified anemias and blood disease (%)	39.40	40.29	41.07	48.20	48.43	47.62	47.09
Decubitus ulcer or chronic skin ulcer (%)	7.80	7.87	7.75	8.06	7.93	7.79	7.60
Dementia and Senility (%)	17.68	17.70	17.76	20.11	20.01	19.52	19.16
Protein-Calorie Malnutrition (%)	4.63	5.15	5.39	6.27	6.41	6.17	6.14
Pneumonia Cohort (n)	405,375	373,137	369,456	380,337	360,164	351,498	304,563
Coronary Artery Bypass Graft Surgery (%)	4.68	4.45	4.45	9.10	9.44	9.25	9.34
History of infection (%)	36.41	37.21	37.29	38.45	38.75	38.78	38.23
Septicemia/shock (%)	6.87	7.40	7.65	8.11	8.55	9.06	9.99
Metastatic Cancer and Acute Leukemia (%)	4.68	4.88	4.86	5.00	5.26	5.15	5.22
Lung cancer (%)	6.33	6.82	6.96	6.95	7.19	7.13	7.22
Lymphatic, head and neck, brain, and other major cancers; breast, prostate, colorectal and other cancers and tumors (%)	17.12	17.58	17.56	17.83	18.10	17.95	17.86
Diabetes and DM Complications (%)	38.41	39.90	40.46	41.85	42.41	42.25	42.29
Protein-Calorie Malnutrition (%)	9.82	11.07	11.58	12.60	12.70	12.78	12.71
Disorders of fluid/electrolyte/acid-base (%)	35.55	36.94	37.53	40.23	41.08	41.48	41.53
Other gastrointestinal disorders (%)	57.50	58.56	58.65	64.92	66.27	66.42	66.67
Severe hematological disorders (%)	4.02	4.30	4.32	4.27	2.74	2.19	2.15
Iron deficiency and other/unspecified anemias and blood disease (%)	49.30	51.35	51.90	57.74	58.35	57.81	57.51
Dementia and Senility (%)	28.58	28.40	28.62	31.28	31.16	30.84	30.31
Drug/alcohol abuse/dependence/psychosis (%)	12.04	12.49	12.57	15.61	16.72	17.16	17.40
Major psychiatric disorders (%)	12.33	12.56	12.86	13.93	14.17	14.35	14.24
Other psychiatric disorders (%)	12.48	13.07	13.44	17.35	21.05	23.01	24.23
Hemiplegia, Paralysis, Functional Disability (%)	8.04	8.26	8.26	8.71	9.01	8.97	8.77
Cardio-respiratory failure and shock (%)	17.32	18.94	19.92	21.34	22.35	23.27	24.49
Congestive Heart failure (%)	38.15	38.86	39.03	39.26	39.12	38.49	38.41
Acute coronary syndrome (%)	7.92	7.89	7.58	7.59	7.61	7.57	7.56
Chronic atherosclerosis (%)	47.15	47.73	47.45	49.87	50.22	49.45	49.04
Valvular or Rheumatic Heart Disease (%)	22.53	22.30	22.00	24.56	25.45	25.49	25.99
Arrhythmias (%)	39.74	41.08	41.87	43.26	44.61	44.89	45.33
Stroke (%)	10.22	9.88	9.64	9.40	9.17	8.94	8.75

eTable 2. Comorbidities Among Medicare FFS Beneficiaries Discharged After Hospitalization for Heart Failure, Acute Myocardial Infarction, or Pneumonia, 2008-2014 (continued)

Comorbidity	2008	2009	2010	2011	2012	2013	2014
<i>Pneumonia Cohort (n)</i>	405,375	373,137	369,456	380,337	360,164	351,498	304,563
Vascular or Circulatory Disease (%)	39.67	40.90	41.39	42.57	43.27	43.09	42.85
Chronic Obstructive Pulmonary Disease (%)	53.52	54.59	54.53	55.64	55.46	55.00	54.27
Fibrosis of lung and other chronic lung disorders (%)	16.28	16.75	16.48	16.66	15.39	14.32	13.81
Asthma (%)	11.16	11.23	11.02	11.58	11.61	11.92	11.99
Pneumonia (%)	43.65	44.11	43.53	44.02	43.17	43.02	41.76
Pleural effusion/pneumothorax (%)	13.70	15.04	15.62	16.33	16.77	16.71	17.11
Other lung disorders (%)	46.28	47.18	46.45	47.53	45.61	45.14	43.26
End-stage renal disease or dialysis (%)	2.32	2.40	2.60	3.04	3.30	3.50	3.66
Renal Failure (%)	21.63	24.27	26.16	28.31	29.83	30.88	31.78
Urinary tract infection (%)	27.37	28.17	28.58	28.76	28.60	28.10	28.02
Other urinary tract disorders (%)	23.29	23.31	22.95	25.03	25.31	24.55	24.06
Decubitus ulcer or chronic skin ulcer (%)	10.84	10.98	10.89	11.42	11.40	11.32	11.17
Vertebral fractures (%)	5.07	5.01	5.00	5.02	5.08	5.11	5.30
Other injuries (%)	32.92	34.57	37.40	38.80	38.90	39.24	39.90

FFS: fee-for-service.

eTable 3. Hospital Number and Hospitalization Volume by Month for Calculating Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 30-Day Risk-Adjusted Mortality Rates After Discharge, 2008-2014^a

Month	Heart Failure Cohort					Acute Myocardial Infarction Cohort					Pneumonia Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
1	4201	10.62	7	1	96	2762	6.33	3	1	56	4440	10.12	7	1	79
2	4139	9.65	6	1	88	2802	6.17	3	1	60	4483	10.91	8	1	78
3	4154	9.91	6	1	99	2804	6.13	3	1	70	4499	10.72	8	1	88
4	4140	9.54	6	1	99	2724	6.01	3	1	59	4380	8.70	6	1	72
5	4140	9.29	6	1	91	2664	5.94	3	1	47	4313	7.43	6	1	54
6	4045	8.44	5	1	78	2569	5.55	3	1	51	4191	6.52	5	1	51
7	4006	8.50	5	1	81	2575	5.71	3	1	51	4105	6.07	4	1	53
8	4003	8.16	5	1	86	2590	5.53	3	1	48	4038	5.69	4	1	46
9	3999	8.08	5	1	73	2578	5.57	3	1	49	4147	5.95	4	1	42
10	4056	9.22	6	1	82	2640	5.96	3	1	50	4241	6.78	5	1	48
11	4031	8.73	6	1	90	2553	5.86	3	1	47	4207	6.68	5	1	53
12	4065	9.76	6	1	108	2714	6.11	3	1	52	4367	8.34	6	1	68
13	4126	10.50	6	1	134	2690	6.10	3	1	53	4363	8.88	6	1	91
14	4066	9.31	6	1	98	2537	5.71	3	1	46	4341	7.73	6	1	75
15	4157	10.18	6	1	140	2658	5.95	3	1	61	4375	8.68	6	1	84
16	4073	9.86	6	1	125	2607	5.88	3	1	47	4354	8.02	6	1	70
17	4096	9.17	6	1	98	2561	5.73	3	1	47	4274	7.42	5	1	65
18	4012	9.02	6	1	121	2533	5.67	3	1	45	4227	6.75	5	1	57
19	4018	8.67	5	1	100	2550	5.66	3	1	46	4110	6.28	5	1	60
20	3956	8.16	5	1	90	2494	5.39	3	1	43	4026	5.61	4	1	48
21	3948	8.51	5	1	87	2493	5.60	3	1	63	4114	6.04	4	1	44
22	4000	9.20	6	1	86	2571	5.92	3	1	55	4222	7.11	5	1	56
23	4006	8.88	6	1	89	2520	5.70	3	1	46	4201	7.06	5	1	55
24	4041	9.92	6	1	124	2586	6.18	3	1	57	4287	8.11	6	1	60
25	4051	10.81	7	1	131	2584	6.01	3	1	53	4317	8.76	6	1	80
26	4017	9.19	6	1	115	2540	5.66	3	1	47	4245	7.63	6	1	71
27	4137	10.52	6	1	131	2622	6.19	4	1	65	4393	9.23	7	1	91
28	4023	9.66	6	1	113	2535	5.80	3	1	51	4273	7.83	6	1	66

eTable 3. Hospital Number and Hospitalization Volume by Month for Calculating Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 30-Day Risk-Adjusted Mortality Rates After Discharge, 2008-2014 (continued)^a

Month	Heart Failure Cohort					Acute Myocardial Infarction Cohort					Pneumonia Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
29	4002	9.14	6	1	89	2541	5.70	3	1	48	4227	7.24	5	1	69
30	3941	8.71	5	1	95	2468	5.73	3	1	54	4161	6.82	5	1	65
31	3937	8.49	5	1	96	2507	5.69	3	1	53	4108	6.23	4	1	59
32	3883	8.24	5	1	102	2448	5.60	3	1	43	4068	5.79	4	1	53
33	3895	8.48	5	1	90	2505	5.61	3	1	51	4103	6.11	4	1	56
34	3971	8.96	5	1	89	2522	5.71	3	1	51	4198	6.75	5	1	58
35	3958	8.86	5	1	94	2521	5.74	3	1	56	4162	6.87	5	1	64
36	3954	9.75	6	1	123	2600	6.12	4	1	62	4288	8.18	6	1	92
37	4015	10.51	6	1	139	2601	6.07	4	1	62	4383	9.54	7	1	122
38	3967	9.31	6	1	123	2514	5.72	3	1	49	4327	8.39	6	1	76
39	4043	10.24	6	1	131	2548	6.20	4	1	55	4348	9.31	7	1	76
40	3960	9.48	6	1	86	2497	5.90	4	1	64	4274	8.19	6	1	76
41	3987	9.22	6	1	116	2480	5.93	4	1	59	4273	7.89	6	1	65
42	3899	8.59	5	1	81	2509	5.57	3	1	46	4149	7.16	5	1	64
43	3857	8.13	5	1	84	2476	5.43	3	1	47	4027	6.27	4	1	52
44	3851	8.21	5	1	72	2477	5.65	3	1	49	3992	5.99	4	1	55
45	3833	8.20	5	1	104	2460	5.60	3	1	51	4018	6.10	4	1	50
46	3863	8.53	5	1	89	2462	5.73	3	1	62	4121	6.60	5	1	58
47	3874	8.67	5	1	95	2468	5.83	4	1	45	4131	7.01	5	1	60
48	3903	9.40	6	1	123	2521	6.02	4	1	57	4225	7.94	6	1	58
49	4003	10.13	6	1	123	2561	6.02	4	1	53	4269	9.08	6	1	93
50	3889	9.13	6	1	109	2481	5.75	4	1	48	4255	7.99	6	1	90
51	3942	9.78	6	1	107	2519	6.23	4	1	53	4319	8.90	6	1	79
52	3845	8.90	5	1	89	2473	5.83	4	1	50	4195	7.49	5	1	56
53	3897	8.89	5	1	95	2511	5.88	4	1	52	4118	7.07	5	1	55
54	3836	8.26	5	1	81	2431	5.67	3	1	50	4022	6.32	4	1	51
55	3763	8.04	5	1	89	2465	5.66	3	1	48	3954	5.98	4	1	49
56	3776	8.26	5	1	78	2515	5.72	4	1	58	3947	5.93	4	1	52

eTable 3. Hospital Number and Hospitalization Volume by Month for Calculating Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 30-Day Risk-Adjusted Mortality Rates After Discharge, 2008-2014 (continued)^a

Month	Heart Failure Cohort					Acute Myocardial Infarction Cohort					Pneumonia Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
57	3799	7.82	5	1	90	2421	5.76	4	1	54	3978	5.76	4	1	62
58	3857	8.81	5	1	88	2465	6.16	4	1	57	4096	6.59	5	1	62
59	3820	8.82	5	1	106	2475	6.17	4	1	60	4110	6.93	5	1	76
60	3891	9.27	6	1	122	2521	6.17	4	1	52	4263	8.80	6	1	71
61	3943	10.31	6	1	110	2585	6.60	4	1	56	4401	12.23	8	1	126
62	3785	8.86	5	1	107	2466	5.64	4	1	45	4240	7.86	5	1	77
63	3886	9.63	6	1	96	2466	6.22	4	1	50	4226	8.08	6	1	90
64	3820	9.32	6	1	87	2442	5.95	4	1	52	4184	7.62	5	1	73
65	3834	9.17	6	1	90	2439	5.93	4	1	64	4090	7.17	5	1	77
66	3776	8.05	5	1	82	2369	5.60	4	1	51	4008	6.23	4	1	52
67	3716	8.14	5	1	92	2375	5.71	4	1	52	3930	6.00	4	1	62
68	3725	8.19	5	1	96	2380	5.81	4	1	54	3928	5.51	4	1	48
69	3670	7.81	5	1	74	2348	5.45	3	1	46	3906	5.59	4	1	52
70	3768	8.55	5	1	97	2440	5.89	4	1	54	3953	6.07	4	1	61
71	3708	8.39	5	1	102	2370	5.80	4	1	42	3991	6.02	4	1	49
72	3785	9.12	6	1	100	2444	5.99	4	1	45	4101	7.08	5	1	73
73	3745	9.93	6	1	138	2381	6.20	4	1	53	4110	8.83	6	1	94
74	3657	8.66	5	1	117	2298	5.73	4	1	49	3926	6.70	5	1	67
75	3706	9.59	6	1	118	2348	6.00	4	1	54	3966	7.09	5	1	75
76	3678	9.35	6	1	90	2333	6.09	4	1	41	3937	7.20	5	1	74
77	3651	9.13	6	1	100	2334	5.96	4	1	54	3894	6.75	5	1	70
78	3575	8.19	5	1	87	2262	5.59	4	1	41	3829	5.83	4	1	51
79	3567	8.33	5	1	97	2266	5.74	4	1	57	3716	5.58	4	1	60
80	3528	8.07	5	1	96	2260	5.78	4	1	46	3677	5.24	4	1	49
81	3512	7.96	5	1	96	2249	5.75	4	1	47	3751	5.26	4	1	51
82	3599	8.75	5	1	101	2306	5.99	4	1	52	3773	5.70	4	1	59
83	3560	8.37	5	1	102	2265	5.74	4	1	58	3726	5.54	4	1	47
84	3669	9.92	6	1	132	2334	6.43	4	1	48	4044	8.66	6	1	99

^aFigure 1 data. Study month 1 was January 2008 and study month 84 was December 2014.

eTable 4. Hospital Number and Hospitalization Volume by Month for Calculating the Correlation of Paired Monthly Trends in Hospital 30-Day Risk-Adjusted Readmission Rates With Hospital 30-Day and 90-Day Risk-Adjusted Mortality Rates After Discharge, 2008-2014^a

Month	Heart Failure Cohort					Acute Myocardial Infarction Cohort					Pneumonia Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
1	3913	11.17	7	1	96	2193	7.55	5	1	56	4253	10.39	8	1	79
2	3885	10.09	7	1	88	2208	7.40	5	1	60	4278	11.23	9	1	78
3	3882	10.40	7	1	99	2217	7.35	5	1	70	4299	11.03	8	1	88
4	3878	9.99	6	1	99	2201	7.08	5	1	59	4207	8.92	7	1	72
5	3900	9.69	6	1	91	2168	6.97	5	1	47	4144	7.62	6	1	54
6	3835	8.75	6	1	78	2116	6.42	4	1	51	4059	6.65	5	1	51
7	3795	8.83	6	1	81	2121	6.63	4	1	51	3987	6.17	5	1	53
8	3800	8.47	6	1	86	2126	6.43	4	1	48	3922	5.79	4	1	46
9	3801	8.38	6	1	73	2112	6.49	4	1	49	4020	6.07	5	1	42
10	3861	9.57	6	1	82	2173	6.93	5	1	50	4123	6.89	5	1	48
11	3833	9.06	6	1	90	2147	6.69	4	1	47	4100	6.80	5	1	53
12	3866	10.14	6	1	108	2193	7.23	5	1	52	4236	8.52	6	1	68
13	3914	10.93	7	1	134	2180	7.20	5	1	53	4228	9.08	7	1	91
14	3879	9.65	6	1	98	2116	6.57	4	1	46	4209	7.89	6	1	75
15	3922	10.65	7	1	140	2174	6.95	5	1	61	4223	8.91	7	1	84
16	3886	10.23	6.5	1	125	2145	6.85	5	1	47	4225	8.20	6	1	70
17	3896	9.54	6	1	98	2143	6.58	4	1	47	4147	7.59	6	1	65
18	3845	9.32	6	1	121	2122	6.50	4	1	45	4118	6.87	5	1	57
19	3856	8.95	6	1	100	2134	6.52	4	1	46	4011	6.38	5	1	60
20	3802	8.41	5	1	90	2101	6.15	4	1	43	3946	5.69	4	1	48
21	3780	8.81	6	1	87	2107	6.39	4	1	63	4026	6.13	5	1	44
22	3814	9.56	6	1	86	2160	6.80	5	1	55	4128	7.22	5	1	56
23	3814	9.24	6	1	89	2131	6.50	4	1	46	4096	7.19	5	1	55
24	3866	10.28	7	1	124	2178	7.07	5	1	57	4189	8.25	6	1	60
25	3881	11.19	7	1	131	2146	6.97	4	1	53	4195	8.96	6	1	80
26	3832	9.55	6	1	115	2122	6.52	4	1	47	4140	7.78	6	1	71
27	3949	10.93	7	1	131	2180	7.18	5	1	65	4261	9.46	7	1	91
28	3865	9.99	6	1	113	2146	6.59	4	1	51	4182	7.96	6	1	66

© 2017 American Medical Association. All rights reserved.

eTable 4. Hospital Number and Hospitalization Volume by Month for Calculating the Correlation of Paired Monthly Trends in Hospital 30-Day Risk-Adjusted Readmission Rates With Hospital 30-Day and 90-Day Risk-Adjusted Mortality Rates After Discharge, 2008-2014 (continued)^a

Month	Heart Failure Cohort					Acute Myocardial Infarction Cohort					Pneumonia Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
29	3845	9.45	6	1	89	2134	6.54	4.5	1	48	4135	7.37	5	1	69
30	3796	8.98	6	1	95	2115	6.47	4	1	54	4075	6.94	5	1	65
31	3788	8.76	5	1	96	2133	6.47	4	1	53	4030	6.32	4	1	59
32	3763	8.45	5	1	102	2104	6.32	4	1	43	3994	5.87	4	1	53
33	3763	8.72	6	1	90	2138	6.35	4	1	51	4034	6.19	5	1	56
34	3825	9.24	6	1	89	2130	6.53	4	1	51	4119	6.85	5	1	58
35	3803	9.16	6	1	94	2152	6.51	4	1	56	4088	6.97	5	1	64
36	3826	10.02	6	1	123	2184	7.05	5	1	62	4206	8.32	6	1	92
37	3859	10.87	7	1	139	2188	6.98	5	1	62	4287	9.72	7	1	122
38	3815	9.62	6	1	123	2146	6.49	4	1	49	4225	8.55	6	1	76
39	3901	10.56	7	1	131	2169	7.08	5	1	55	4249	9.49	7	1	76
40	3825	9.76	6	1	86	2138	6.70	5	1	64	4176	8.34	6	1	76
41	3838	9.52	6	1	116	2132	6.70	4	1	59	4183	8.04	6	1	65
42	3764	8.86	5	1	81	2159	6.28	4	1	46	4076	7.26	5	1	64
43	3733	8.35	5	1	84	2129	6.13	4	1	47	3975	6.33	4	1	52
44	3733	8.43	5	1	72	2118	6.42	4	1	49	3940	6.05	4	1	55
45	3726	8.40	5	1	104	2133	6.28	4	1	51	3955	6.18	4	1	50
46	3745	8.76	6	1	89	2140	6.42	4	1	62	4062	6.67	5	1	58
47	3746	8.93	5	1	95	2135	6.55	4	1	45	4066	7.10	5	1	60
48	3782	9.66	6	1	123	2163	6.82	5	1	57	4157	8.05	6	1	58
49	3800	10.46	7	1	123	2148	6.88	5	1	53	4140	9.20	6	1	93
50	3714	9.37	6	1	109	2115	6.47	4	1	48	4118	8.10	6	1	90
51	3769	10.03	6	1	107	2122	7.10	5	1	53	4179	9.03	6	1	79
52	3684	9.09	6	1	89	2115	6.55	4	1	50	4077	7.58	5	1	56
53	3714	9.11	6	1	95	2134	6.64	5	1	52	4003	7.12	5	1	55
54	3673	8.44	5	1	81	2087	6.34	4	1	50	3922	6.36	5	1	51
55	3609	8.22	5	1	89	2115	6.33	4	1	48	3848	6.02	4	1	49
56	3614	8.47	5	1	78	2141	6.45	4	1	58	3852	5.96	4	1	52

eTable 4. Hospital Number and Hospitalization Volume by Month for Calculating the Correlation of Paired Monthly Trends in Hospital 30-Day Risk-Adjusted Readmission Rates With Hospital 30-Day and 90-Day Risk-Adjusted Mortality Rates After Discharge, 2008-2014 (continued)^a

Month	Heart Failure Cohort					Acute Myocardial Infarction Cohort					Pneumonia Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
57	3639	7.99	5	1	90	2060	6.49	4.5	1	54	3874	5.80	4	1	62
58	3676	9.05	6	1	88	2132	6.85	5	1	57	3979	6.64	5	1	62
59	3639	9.05	6	1	106	2115	6.93	5	1	60	3978	7.01	5	1	76
60	3708	9.50	6	1	122	2143	6.98	5	1	52	4118	8.93	6	1	71
61	3761	10.56	6	1	110	2167	7.54	5	1	56	4237	12.41	9	1	126
62	3626	9.04	6	1	107	2104	6.33	4	1	45	4090	7.98	6	1	77
63	3722	9.83	6	1	96	2119	6.95	5	1	50	4075	8.21	6	1	90
64	3649	9.52	6	1	87	2091	6.66	5	1	52	4045	7.72	5	1	73
65	3647	9.41	6	1	90	2101	6.61	4	1	64	3964	7.24	5	1	77
66	3600	8.25	5	1	82	2070	6.16	4	1	51	3891	6.27	4	1	52
67	3560	8.31	5	1	92	2057	6.34	4	1	52	3809	6.06	4	1	62
68	3563	8.36	5	1	96	2062	6.45	4	1	54	3805	5.56	4	1	48
69	3510	7.98	5	1	74	2038	6.03	4	1	46	3790	5.64	4	1	52
70	3591	8.75	5	1	97	2092	6.58	5	1	54	3843	6.11	4	1	61
71	3534	8.60	6	1	102	2068	6.39	5	1	42	3861	6.09	4	1	49
72	3593	9.37	6	1	100	2097	6.70	5	1	45	3969	7.17	5	1	73
73	3552	10.21	6	1	138	2032	6.97	5	1	53	3940	9.02	6	1	94
74	3465	8.90	6	1	117	1987	6.35	5	1	49	3782	6.80	5	1	67
75	3518	9.85	6	1	118	2020	6.68	5	1	54	3827	7.17	5	1	75
76	3496	9.58	6	1	90	2025	6.74	5	1	41	3790	7.28	5	1	72
77	3472	9.36	6	1	100	2011	6.63	5	1	54	3758	6.83	5	1	70
78	3397	8.40	5	1	87	1971	6.13	4	1	41	3703	5.89	4	1	51
79	3401	8.53	5	1	97	1983	6.31	4	1	57	3579	5.67	4	1	60
80	3359	8.27	5	1	96	1975	6.34	4	1	46	3552	5.30	4	1	49
81	3336	8.15	5	1	96	1938	6.38	5	1	47	3619	5.32	4	1	51
82	3417	8.98	6	1	101	1998	6.64	5	1	52	3631	5.79	4	1	59
83	3378	8.59	6	1	102	1972	6.31	4	1	58	3586	5.63	4	1	47
84	3467	10.22	6	1	132	2003	7.19	5	1	48	3874	8.86	6	1	99

^aFigure 2 and eFigure 3 data. Study month 1 was January 2008 and study month 84 was December 2014.

eTable 5. Hospital Number and Hospitalization Volume by Month for Calculating the Correlation of Paired Monthly Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 30-Day Risk-Adjusted Mortality Rates After Discharge, April 2010–September 2012^a

Month	Heart Failure Cohort					Acute Myocardial Infarction Cohort					Pneumonia Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
1	3863	9.98	6	1	113	2181	6.51	4	1	51	4186	7.95	6	1	66
2	3856	9.42	6	1	89	2166	6.46	4	1	48	4138	7.36	5	1	69
3	3804	8.96	6	1	95	2136	6.42	4	1	54	4080	6.93	5	1	65
4	3801	8.73	5	1	96	2167	6.38	4	1	53	4036	6.31	4	1	59
5	3771	8.44	5	1	102	2132	6.25	4	1	43	4003	5.86	4	1	53
6	3778	8.69	6	1	90	2164	6.28	4	1	51	4039	6.19	4	1	56
7	3833	9.22	6	1	89	2167	6.44	4	1	51	4117	6.84	5	1	58
8	3816	9.14	6	1	94	2193	6.41	4	1	56	4086	6.97	5	1	64
9	3837	9.99	6	1	123	2231	6.93	5	1	62	4206	8.31	6	1	92
10	3867	10.85	7	1	139	2220	6.89	5	1	62	4281	9.72	7	1	122
11	3829	9.59	6	1	123	2193	6.38	4	1	49	4231	8.54	6	1	76
12	3924	10.51	7	1	131	2210	6.97	5	1	55	4243	9.50	7	1	76
13	3844	9.72	6	1	86	2173	6.61	4	1	64	4190	8.32	6	1	76
14	3846	9.51	6	1	116	2165	6.62	4	1	59	4191	8.02	6	1	65
15	3771	8.84	5	1	81	2187	6.22	4	1	46	4084	7.25	5	1	64
16	3755	8.31	5	1	84	2169	6.04	4	1	47	3983	6.32	4	1	52
17	3747	8.41	5	1	72	2160	6.31	4	1	49	3937	6.05	4	1	55
18	3737	8.38	5	1	104	2171	6.19	4	1	51	3968	6.16	4	1	50
19	3761	8.73	6	1	89	2182	6.32	4	1	62	4069	6.66	5	1	58
20	3759	8.90	5	1	95	2173	6.46	4	1	45	4069	7.10	5	1	60
21	3788	9.65	6	1	123	2201	6.73	4	1	57	4162	8.04	6	1	58
22	3813	10.43	6	1	123	2180	6.80	5	1	53	4143	9.19	6	1	93
23	3734	9.33	6	1	109	2139	6.41	4	1	48	4125	8.09	6	1	90
24	3782	10.00	6	1	107	2158	7.01	5	1	53	4186	9.02	6	1	79
25	3700	9.06	6	1	89	2140	6.49	4	1	50	4076	7.58	5	1	56
26	3732	9.07	6	1	95	2166	6.56	4	1	52	4006	7.12	5	1	55
27	3686	8.42	5	1	81	2116	6.26	4	1	50	3915	6.37	5	1	51
28	3615	8.21	5	1	89	2146	6.26	4	1	48	3856	6.01	4	1	49

© 2017 American Medical Association. All rights reserved.

eTable 5. Hospital Number and Hospitalization Volume by Month for Calculating the Correlation of Paired Monthly Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 30-Day Risk-Adjusted Mortality Rates After Discharge, April 2010–September 2012 (continued)^a

Month	Heart Failure Cohort					Acute Myocardial Infarction Cohort					Pneumonia Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
29	3618	8.46	5	1	78	2163	6.39	4	1	58	3845	5.97	4	1	52
30	3657	7.95	5	1	90	2099	6.39	4	1	54	3871	5.81	4	1	62

^aeFigure 2 data. Study month 1 was April 2010 and study month 30 was September 2012.

eTable 6. Hospital Number and Hospitalization Volume by Month for Calculating the Correlation of Paired Monthly Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date, 2008-2014^a

Month	Heart Failure Cohort					Acute Myocardial Infarction Cohort					Pneumonia Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
1	3731	10.59	7	1	87	2138	7.61	6	1	54	4193	10.24	8	1	78
2	3712	9.68	7	1	81	2155	7.46	5	1	50	4207	11.16	9	1	78
3	3674	9.96	7	1	89	2151	7.45	5	1	63	4231	11.00	8	1	87
4	3682	9.44	6	1	91	2130	7.13	5	1	52	4134	8.82	7	1	69
5	3698	9.09	6	1	79	2098	6.98	5	1	43	4050	7.51	6	1	51
6	3614	8.24	6	1	71	2048	6.42	5	1	44	3968	6.52	5	1	50
7	3567	8.27	6	1	73	2055	6.61	5	1	47	3869	6.10	5	1	51
8	3553	7.98	6	1	78	2052	6.45	5	1	43	3780	5.75	4	1	46
9	3557	7.93	6	1	71	2045	6.50	5	1	43	3885	6.01	5	1	43
10	3647	9.04	6	1	74	2101	6.94	5	1	45	4008	6.82	5	1	48
11	3617	8.66	6	1	77	2075	6.74	5	1	44	4003	6.71	5	1	50
12	3679	9.82	7	1	102	2125	7.38	5	1	46	4152	8.48	7	1	68
13	3709	10.39	7	1	115	2119	7.23	5	1	48	4147	9.00	7	1	89
14	3682	9.27	6	1	93	2042	6.60	5	1	41	4129	7.84	6	1	73
15	3727	10.13	7	1	127	2106	7.01	5	1	58	4146	8.83	7	1	81
16	3684	9.66	7	1	117	2077	6.84	5	1	42	4150	8.08	6	1	72
17	3649	9.05	6	1	88	2061	6.61	5	1	38	4054	7.47	6	1	65
18	3620	8.76	6	1	112	2060	6.48	5	1	39	3996	6.79	5	1	54
19	3590	8.44	6	1	86	2066	6.51	5	1	41	3881	6.32	5	1	59
20	3560	7.91	6	1	78	2035	6.15	5	1	42	3823	5.63	4	1	50
21	3521	8.34	6	1	78	2031	6.39	5	1	59	3884	6.09	5	1	42
22	3602	9.06	6	1	77	2099	6.79	5	1	52	4026	7.11	6	1	54
23	3593	8.83	6	1	78	2061	6.51	5	1	42	4001	7.12	5	1	56
24	3684	9.92	7	1	114	2113	7.20	5	1	53	4113	8.22	6	1	59
25	3693	10.59	7	1	121	2080	7.01	5	1	53	4115	8.85	7	1	76
26	3649	9.11	6	1	104	2063	6.51	5	1	47	4057	7.73	6	1	68
27	3741	10.42	7	1	123	2125	7.15	5	1	60	4173	9.35	7	1	90
28	3648	9.46	6	1	103	2073	6.58	5	1	47	4104	7.82	6	1	66

eTable 6. Hospital Number and Hospitalization Volume by Month for Calculating the Correlation of Paired Monthly Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date, 2008-2014 (continued)^a

Month	Heart Failure Cohort					Acute Myocardial Infarction Cohort					Pneumonia Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
29	3610	8.93	6	1	77	2064	6.51	5	1	43	4046	7.21	5	1	67
30	3590	8.40	6	1	81	2060	6.41	5	1	45	3976	6.81	5	1	64
31	3552	8.21	6	1	84	2061	6.43	5	1	48	3903	6.24	5	1	53
32	3527	7.92	5	1	93	2033	6.30	5	1	40	3864	5.79	4	1	51
33	3543	8.18	6	1	81	2072	6.31	5	1	48	3936	6.07	5	1	56
34	3611	8.73	6	1	78	2059	6.53	5	1	49	4015	6.73	5	1	56
35	3593	8.75	6	1	88	2087	6.52	5	1	44	3990	6.86	5	1	61
36	3639	9.65	6	1	111	2114	7.13	5	1	60	4119	8.25	6	1	88
37	3671	10.33	7	1	127	2119	7.01	5	1	52	4198	9.62	7	1	117
38	3624	9.24	6	1	113	2078	6.51	5	1	52	4148	8.46	6	1	73
39	3688	10.12	7	1	121	2098	7.09	5	1	52	4162	9.38	7	1	74
40	3632	9.22	6	1	77	2067	6.65	5	1	56	4094	8.19	6	1	72
41	3629	8.98	6	1	103	2060	6.68	5	1	55	4094	7.89	6	1	65
42	3538	8.36	6	1	74	2081	6.22	5	1	40	3965	7.13	5	1	63
43	3473	7.92	5	1	73	2043	6.10	5	1	43	3845	6.25	5	1	52
44	3498	7.93	5	1	60	2025	6.42	5	1	46	3805	5.98	5	1	54
45	3491	7.90	5	1	92	2061	6.23	5	1	48	3844	6.05	5	1	47
46	3530	8.34	6	1	78	2057	6.43	5	1	59	3951	6.59	5	1	57
47	3549	8.48	6	1	82	2053	6.58	5	1	43	3964	7.00	5	1	61
48	3580	9.37	6	1	113	2085	6.91	5	1	53	4061	8.00	6	1	59
49	3602	9.93	7	1	115	2085	6.86	5	1	48	4054	9.06	7	1	91
50	3509	9.03	6	1	104	2051	6.47	5	1	45	4030	8.01	6	1	90
51	3564	9.56	7	1	101	2054	7.05	5	1	49	4100	8.90	7	1	77
52	3486	8.61	6	1	82	2047	6.52	5	1	41	3980	7.48	6	1	54
53	3494	8.62	6	1	87	2042	6.64	5	1	50	3874	7.04	5	1	55
54	3432	8.02	6	1	72	2015	6.28	5	1	47	3804	6.25	5	1	50
55	3413	7.69	5	1	80	2045	6.30	5	1	47	3730	5.93	4	1	47
56	3386	8.00	6	1	71	2046	6.43	5	1	57	3730	5.86	4	1	51

eTable 6. Hospital Number and Hospitalization Volume by Month for Calculating the Correlation of Paired Monthly Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date, 2008-2014 (continued)^a

Month	Heart Failure Cohort					Acute Myocardial Infarction Cohort					Pneumonia Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
57	3439	7.51	5	1	80	2005	6.40	5	1	51	3745	5.74	4	1	62
58	3469	8.62	6	1	79	2067	6.80	5	1	56	3860	6.55	5	1	61
59	3437	8.67	6	1	95	2044	6.92	5	1	53	3891	6.89	5	1	75
60	3514	9.29	6	1	115	2082	7.03	5	1	53	4036	8.90	7	1	70
61	3564	10.15	7	1	105	2117	7.51	6	1	51	4162	12.31	9	1	122
62	3431	8.76	6	1	99	2021	6.36	5	1	39	3997	7.96	6	1	79
63	3544	9.36	6	1	90	2053	6.92	5	1	42	4002	8.11	6	1	86
64	3466	9.05	6	1	81	2015	6.64	5	1	47	3956	7.61	6	1	71
65	3442	8.95	6	1	86	2035	6.53	5	1	53	3861	7.12	5	1	76
66	3372	7.85	6	1	77	1991	6.13	5	1	41	3783	6.18	5	1	50
67	3353	7.84	5	1	83	1985	6.30	5	1	44	3679	6.00	4	1	61
68	3344	7.90	6	1	85	1993	6.35	5	1	48	3687	5.47	4	1	45
69	3293	7.57	5	1	67	1976	5.97	5	1	41	3663	5.58	4	1	50
70	3382	8.40	6	1	87	2022	6.54	5	1	51	3748	6.01	4	1	61
71	3365	8.24	6	1	94	2004	6.35	5	1	39	3763	6.02	5	1	48
72	3412	9.16	6	1	92	2037	6.76	5	1	43	3886	7.16	5	1	72
73	3387	9.83	7	1	128	1983	6.99	6	1	45	3867	8.99	6	1	92
74	3290	8.63	6	1	108	1924	6.39	5	1	48	3709	6.80	5	1	66
75	3347	9.50	6	1	109	1958	6.73	5	1	49	3737	7.15	5	1	74
76	3319	9.22	6	1	82	1957	6.80	5	1	40	3706	7.21	5	1	72
77	3282	9.00	6	1	92	1951	6.61	5	1	55	3668	6.76	5	1	70
78	3221	8.03	5	1	78	1903	6.17	5	1	40	3594	5.86	4	1	52
79	3205	8.16	6	1	90	1916	6.34	5	1	54	3475	5.62	4	1	60
80	3156	7.93	5	1	86	1906	6.33	5	1	40	3432	5.28	4	1	47
81	3155	7.79	5	1	88	1896	6.41	5	1	45	3504	5.30	4	1	49
82	3199	8.68	6	1	90	1938	6.64	5	1	48	3522	5.76	4	1	57
83	3195	8.36	6	1	91	1905	6.39	5	1	54	3494	5.60	4	1	47
84	3318	10.03	7	1	123	1949	7.32	6	1	48	3796	8.88	6	1	97

^aFigure 4 data. Study month 1 was January 2008 and study month 84 was December 2014.

eTable 7. Hospital Number and Hospitalization Volume by Month for Calculating Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date for Heart Failure, 2008-2014^a

Month	Heart Failure Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
1	4079	9.94	7	1	87
2	4031	9.12	6	1	81
3	4005	9.36	6	1	89
4	3998	8.89	6	1	91
5	3996	8.60	6	1	79
6	3877	7.85	5	1	71
7	3819	7.88	6	1	73
8	3802	7.59	5	1	78
9	3804	7.55	5	1	71
10	3905	8.59	6	1	74
11	3872	8.22	6	1	77
12	3938	9.32	6	1	102
13	3994	9.81	6	1	115
14	3925	8.83	6	1	93
15	4020	9.55	6	1	127
16	3932	9.18	6	1	117
17	3900	8.59	6	1	88
18	3829	8.39	6	1	112
19	3812	8.06	5	1	86
20	3754	7.60	5	1	78
21	3737	7.96	5	1	78
22	3829	8.63	6	1	77
23	3837	8.37	6	1	78
24	3907	9.46	6	1	114
25	3925	10.08	7	1	121
26	3884	8.67	6	1	104
27	3983	9.90	6	1	123
28	3857	9.04	6	1	103
29	3825	8.52	6	1	77
30	3767	8.08	5	1	81
31	3735	7.89	5	1	84
32	3691	7.64	5	1	93
33	3718	7.87	5	1	81
34	3803	8.37	6	1	78
35	3788	8.37	6	1	88
36	3824	9.26	6	1	111
37	3891	9.83	6	1	127
38	3832	8.82	6	1	113
39	3885	9.67	6	1	121
40	3803	8.87	6	1	77

eTable 7. Hospital Number and Hospitalization Volume by Month for Calculating Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date for Heart Failure, 2008-2014 (continued)^a

Month	Heart Failure Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
41	3820	8.60	6	1	103
42	3719	8.02	5	1	74
43	3627	7.64	5	1	73
44	3653	7.66	5	1	60
45	3641	7.63	5	1	92
46	3683	8.04	5	1	78
47	3716	8.16	5	1	82
48	3757	8.99	6	1	113
49	3853	9.51	6	1	115
50	3726	8.70	6	1	104
51	3799	9.18	6	1	101
52	3667	8.38	6	1	82
53	3712	8.33	6	1	87
54	3641	7.75	5	1	72
55	3591	7.47	5	1	80
56	3585	7.73	5	1	71
57	3629	7.28	5	1	80
58	3682	8.32	6	1	79
59	3670	8.33	5	1	95
60	3740	8.96	6	1	115
61	3802	9.77	6	1	105
62	3627	8.49	6	1	99
63	3757	9.06	6	1	90
64	3676	8.76	6	1	81
65	3657	8.65	6	1	86
66	3582	7.59	5	1	77
67	3541	7.61	5	1	83
68	3539	7.67	5	1	85
69	3497	7.32	5	1	67
70	3590	8.13	5	1	87
71	3564	7.99	5	1	94
72	3645	8.81	6	1	92
73	3630	9.43	6	1	128
74	3521	8.31	6	1	108
75	3585	9.13	6	1	109
76	3532	8.92	6	1	82
77	3504	8.67	6	1	92
78	3428	7.76	5	1	78

eTable 7. Hospital Number and Hospitalization Volume by Month for Calculating Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date for Heart Failure, 2008-2014 (continued)^a

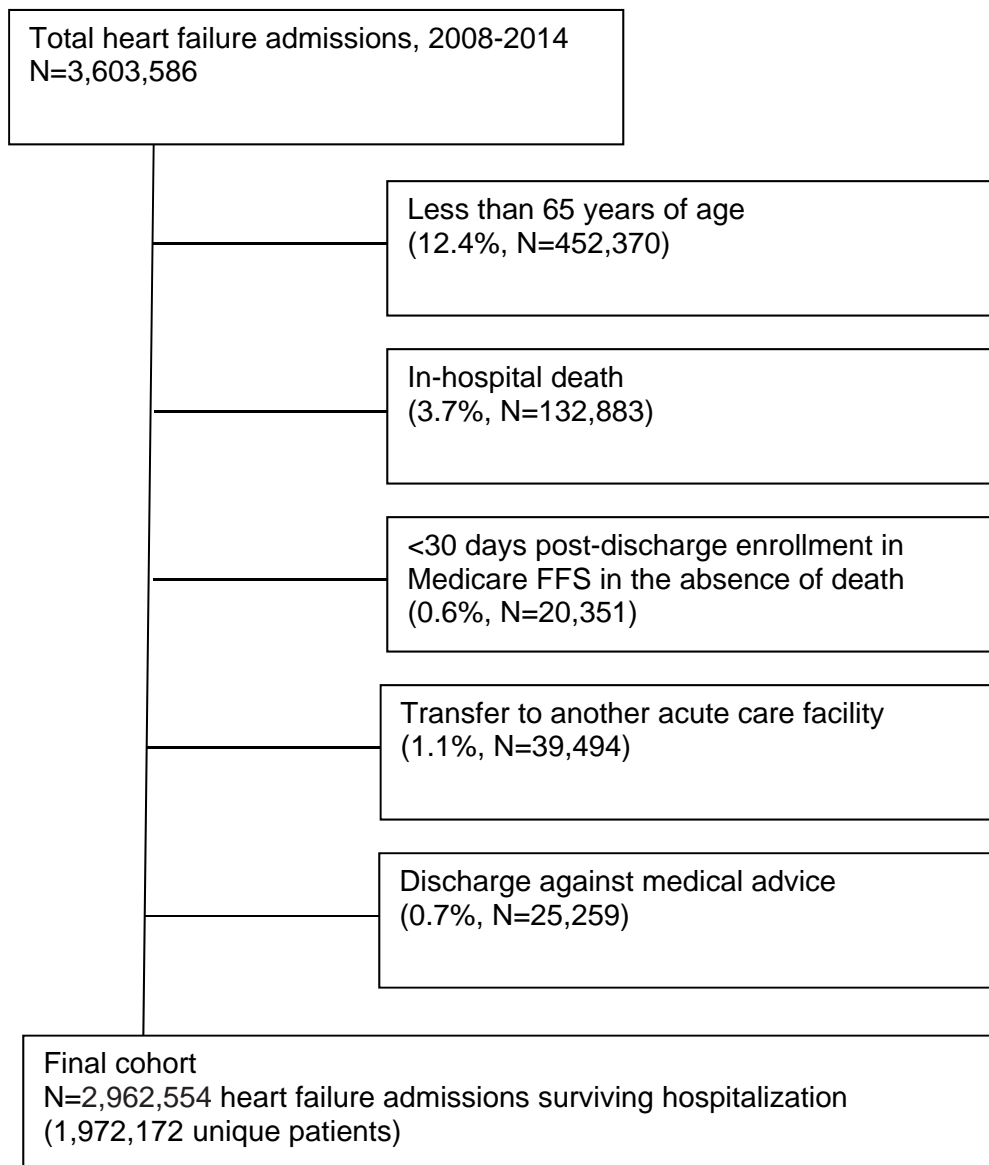
Month	Heart Failure Cohort				
	Hospital Number	Mean Volume	Median Volume	Min Volume	Max Volume
79	3408	7.88	5	1	90
80	3354	7.67	5	1	86
81	3361	7.54	5	1	88
82	3429	8.35	5	1	90
83	3407	8.07	5	1	91
84	3569	9.61	6	1	123

^aeFigure 5 data. Study month 1 was January 2008 and study month 84 was December 2014.

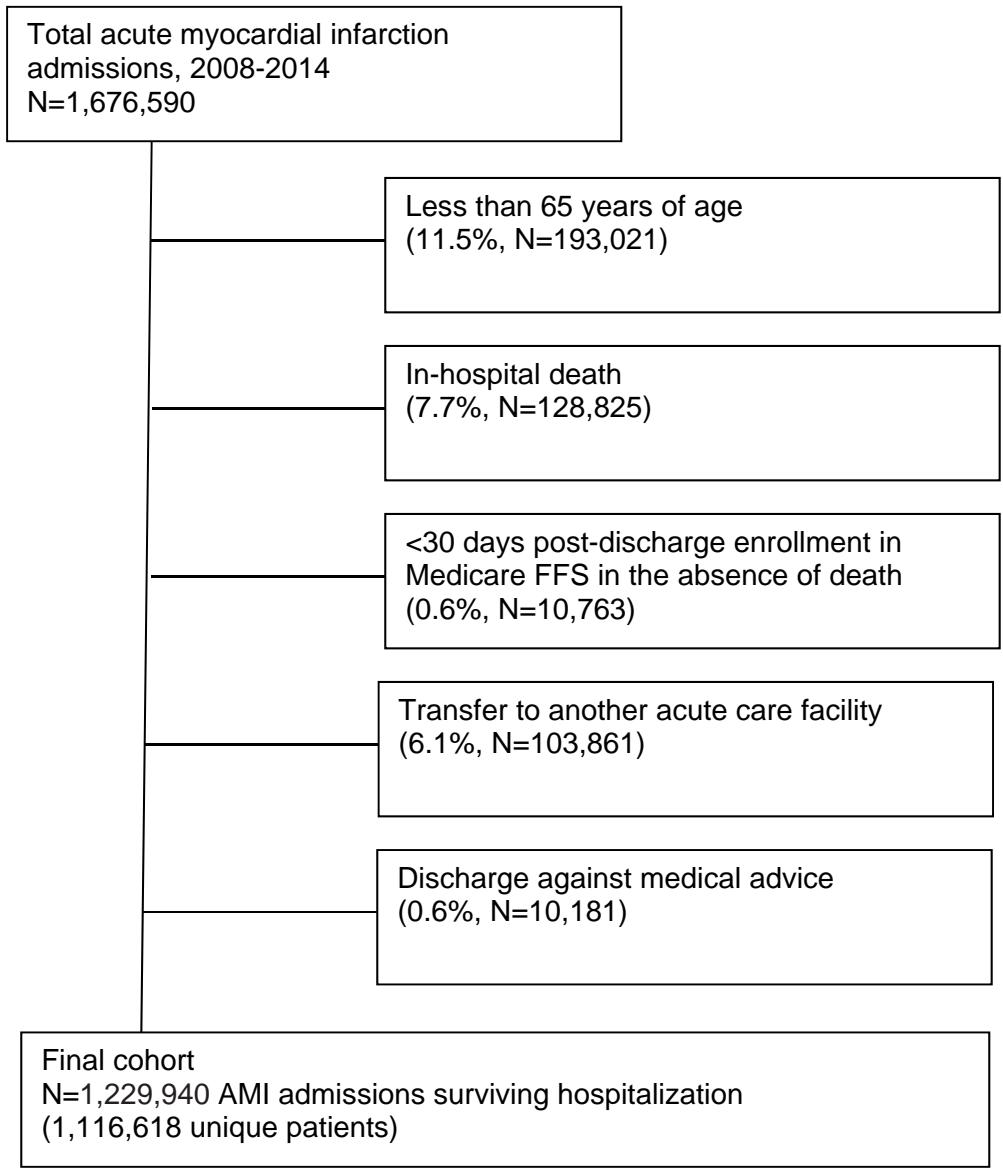
eFigure 1. Flow Diagrams Describing Study Population Selection in Heart Failure, Acute Myocardial Infarction, and Pneumonia Cohorts

Composite data are presented for all study years. Data for heart failure, acute myocardial infarction, and pneumonia are presented in panels A, B, and C, respectively. We did not double count 30-day readmissions as index hospitalizations. Cohort exclusions are not mutually exclusive.

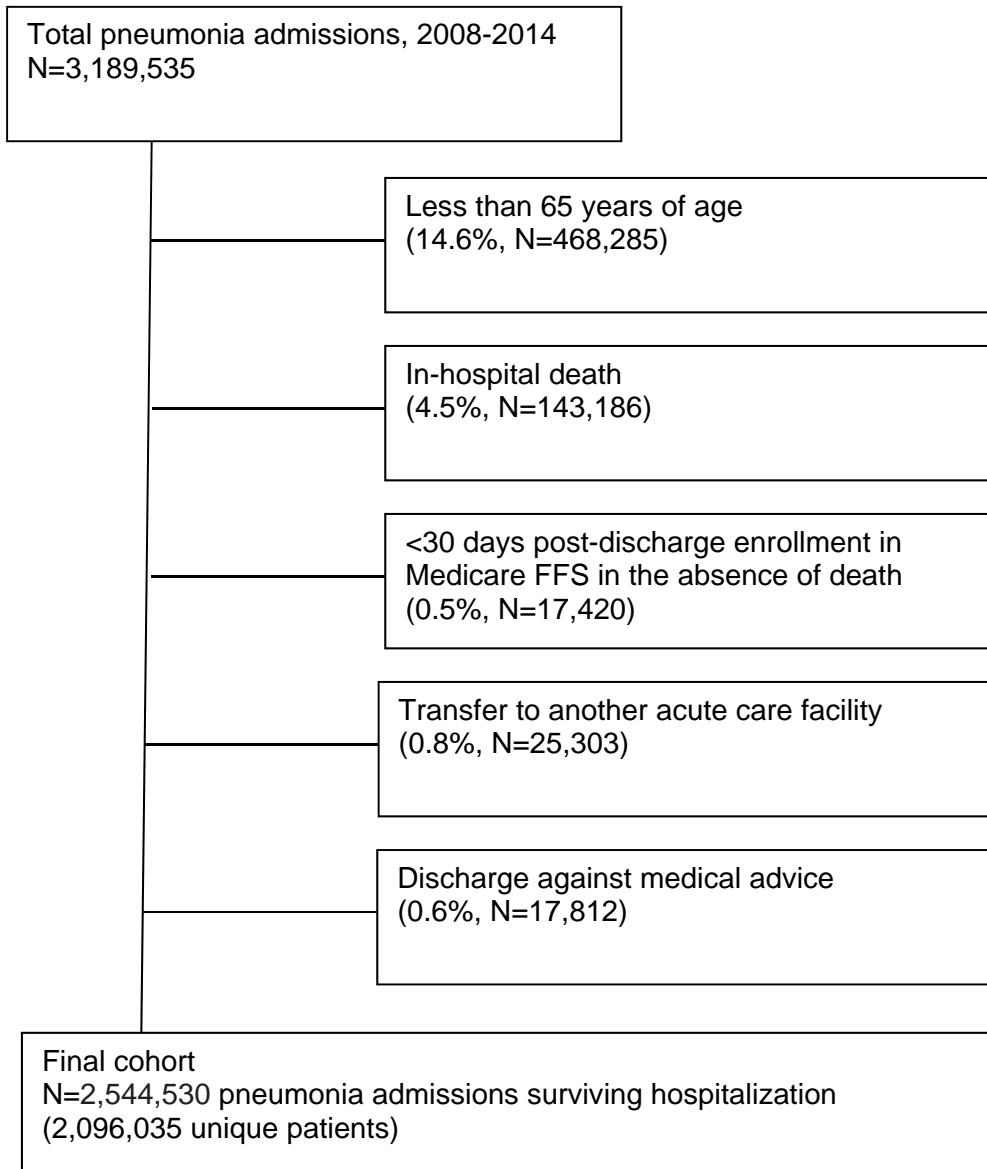
eFigure 1A. Heart Failure



eFigure 1B. Acute Myocardial Infarction



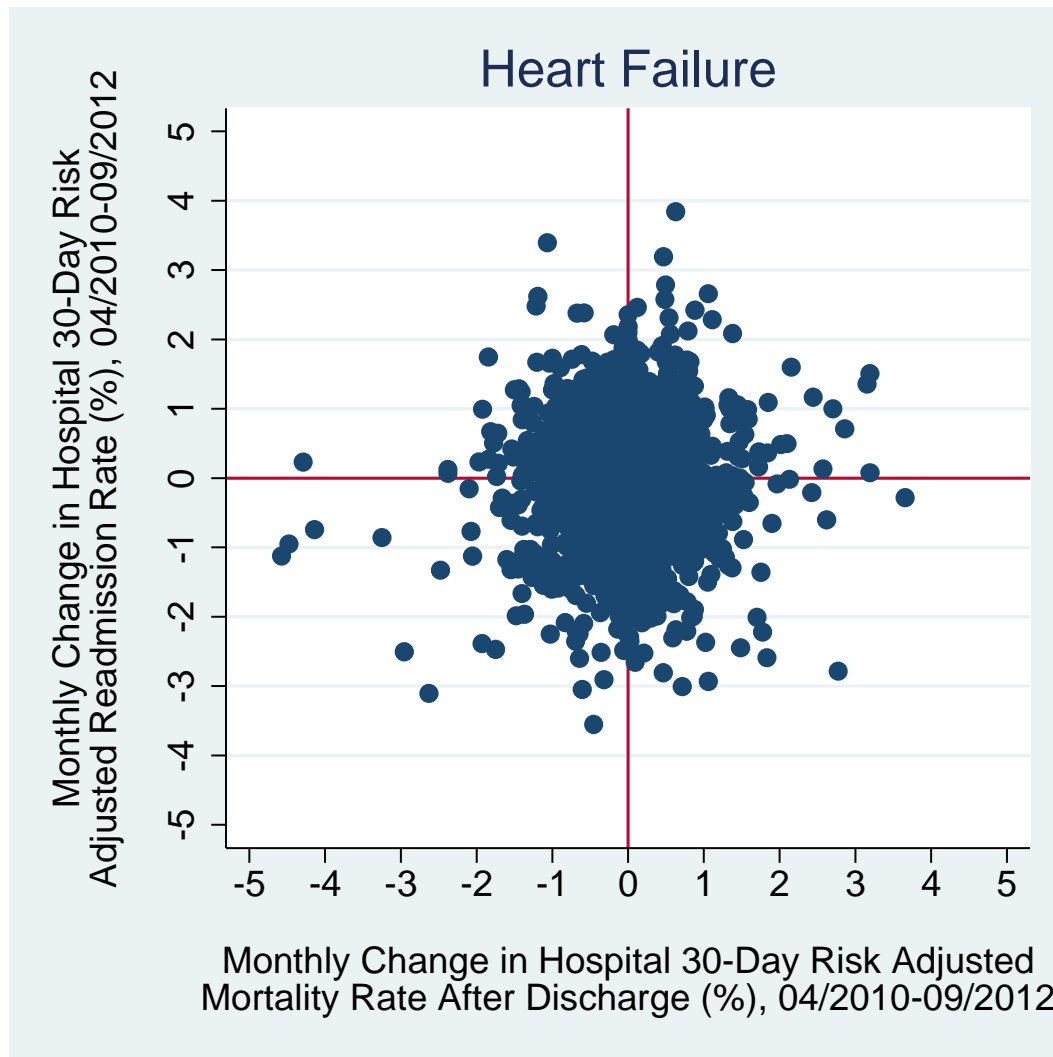
eFigure 1C. Pneumonia



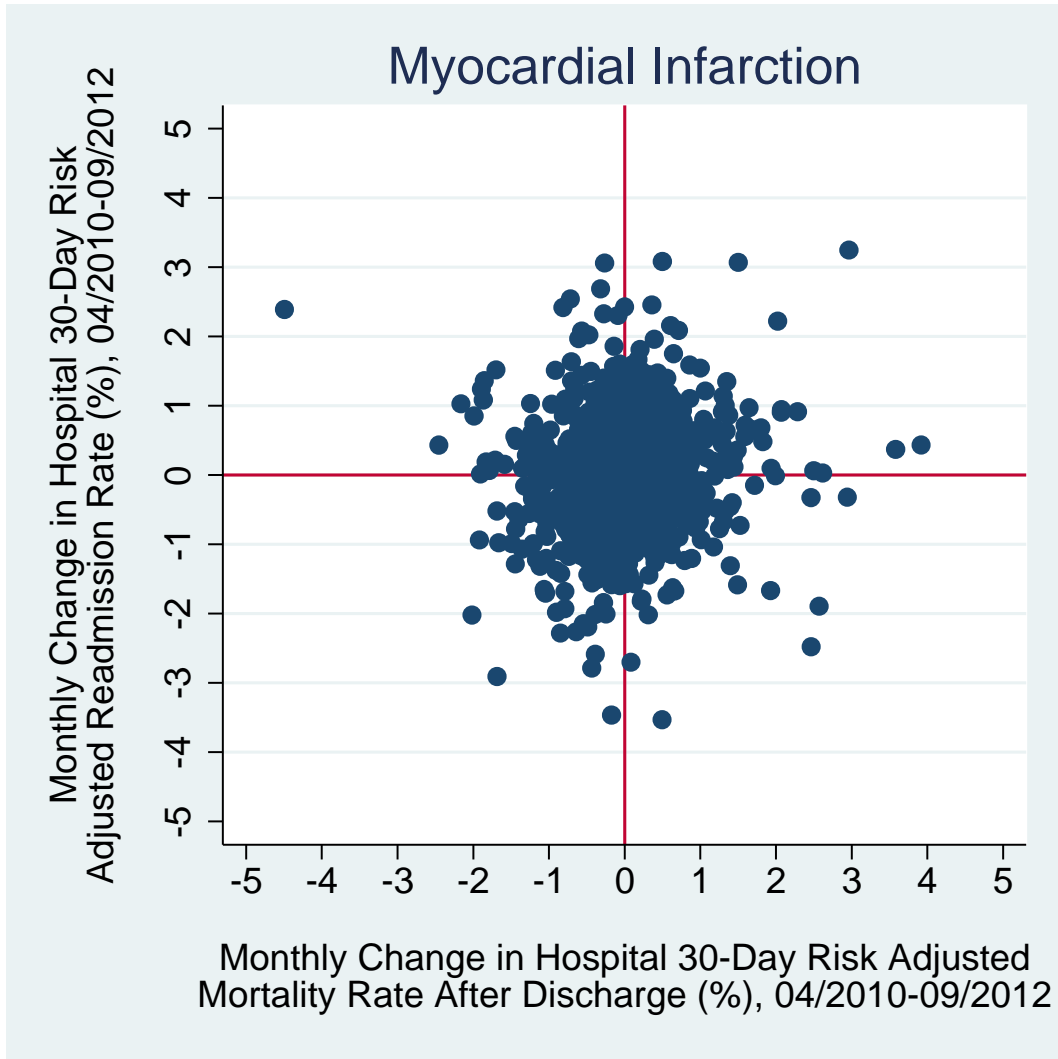
eFigure 2. Correlation of Paired Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 30-Day Risk-Adjusted Mortality Rates After Discharge, April 2010–September 2012

Risk adjustment was made for patient age, sex, comorbidities, season, and hospital length of stay. Data for heart failure (4,231 hospitals), acute myocardial infarction (2,523 hospitals), and pneumonia (4,475 hospitals) are presented in panels A, B, and C, respectively. Data on hospital number and volume by month are presented in eTable 5.

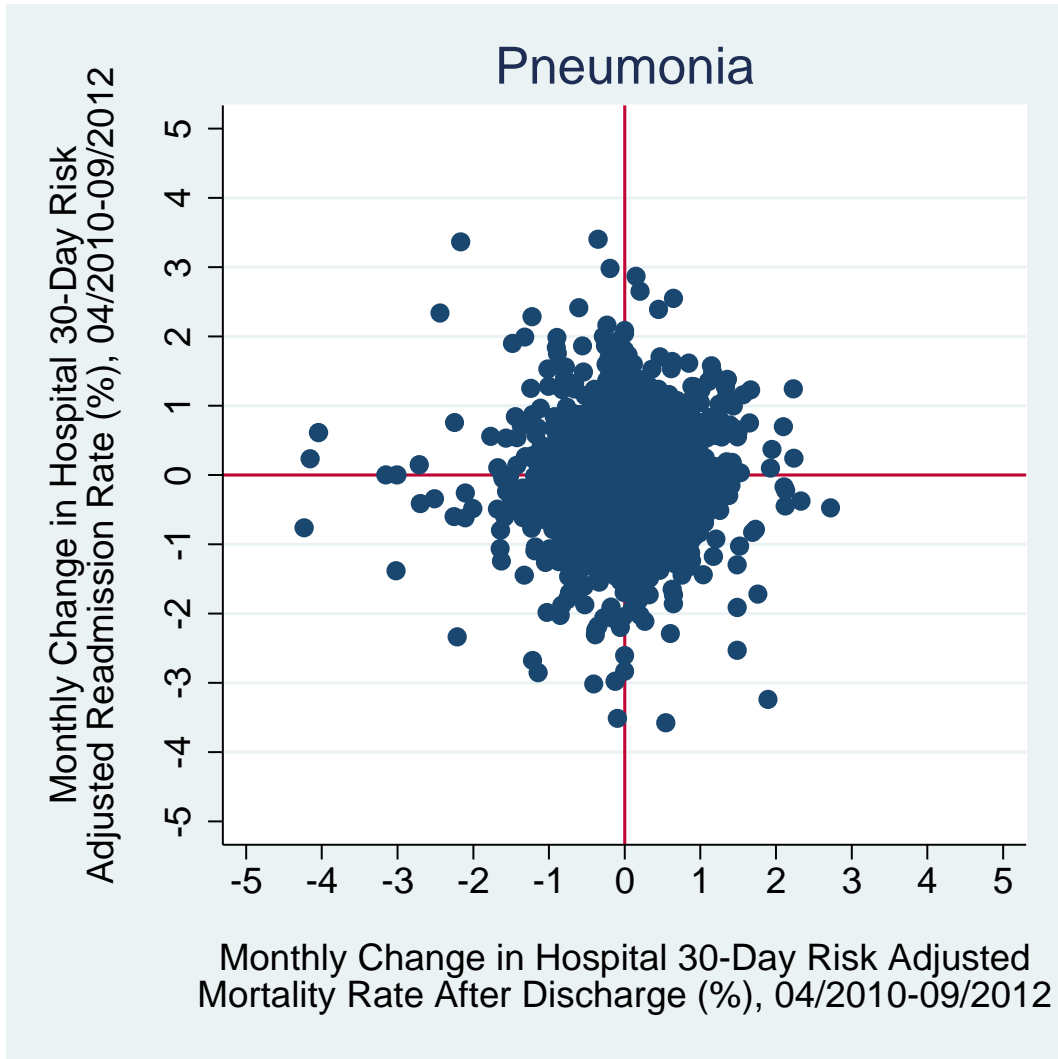
eFigure 2A. Heart Failure



eFigure 2B. Acute Myocardial Infarction



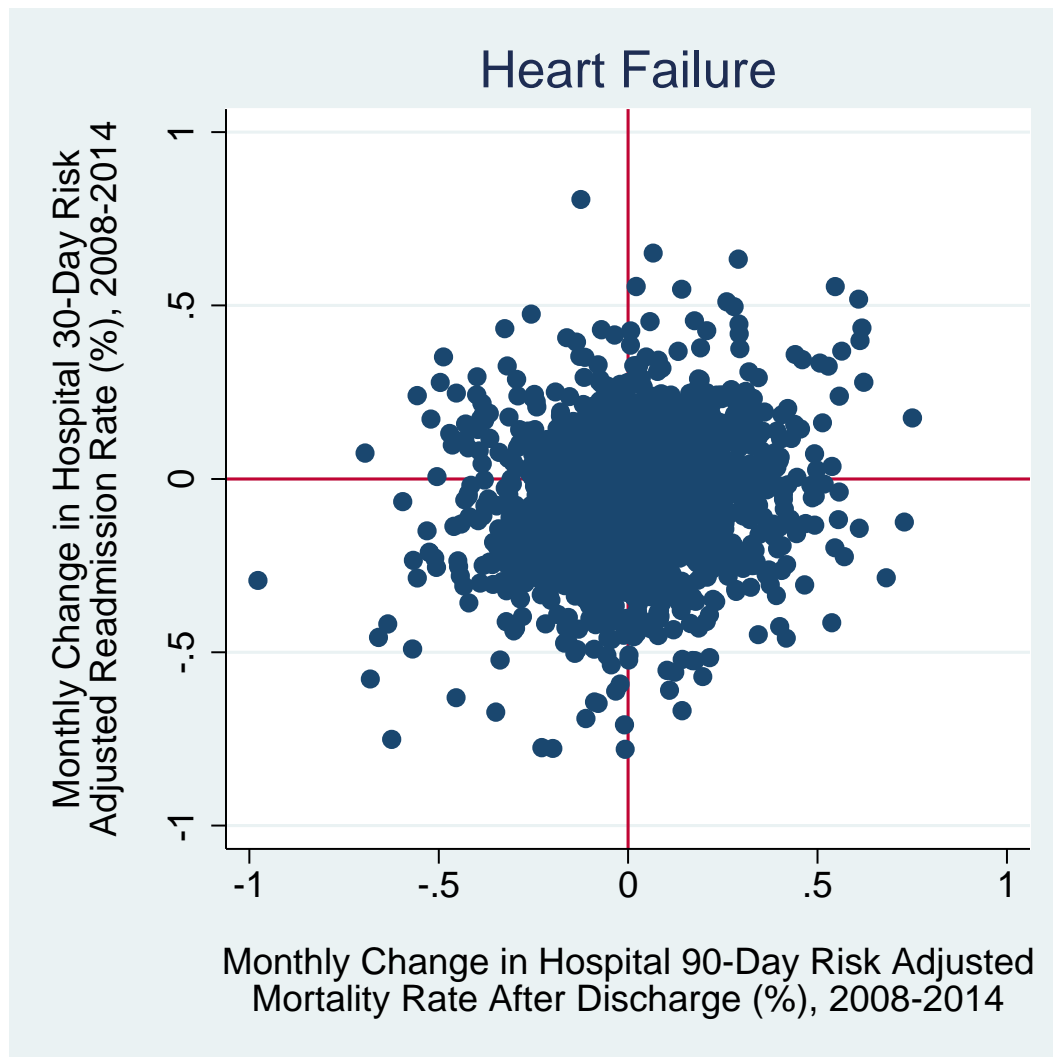
eFigure 2C. Pneumonia



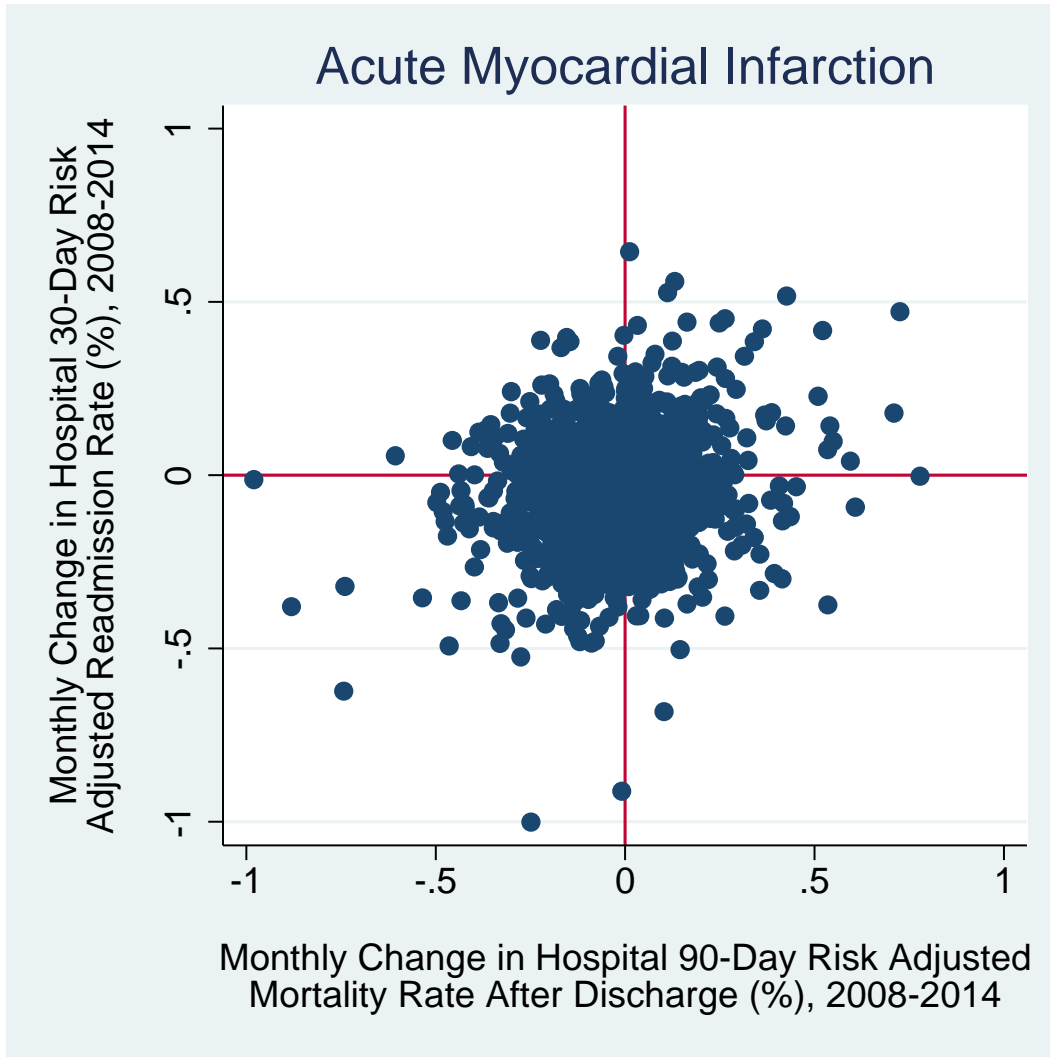
eFigure 3. Correlation of Paired Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After Discharge, 2008-2014

Risk adjustment was made for patient age, sex, comorbidities, season, and hospital length of stay. Data for heart failure (4,221 hospitals), acute myocardial infarction (2,469 hospitals), and pneumonia (4,483 hospitals) are presented in panels A, B, and C, respectively. Data on hospital number and volume by month are presented in eTable 4.

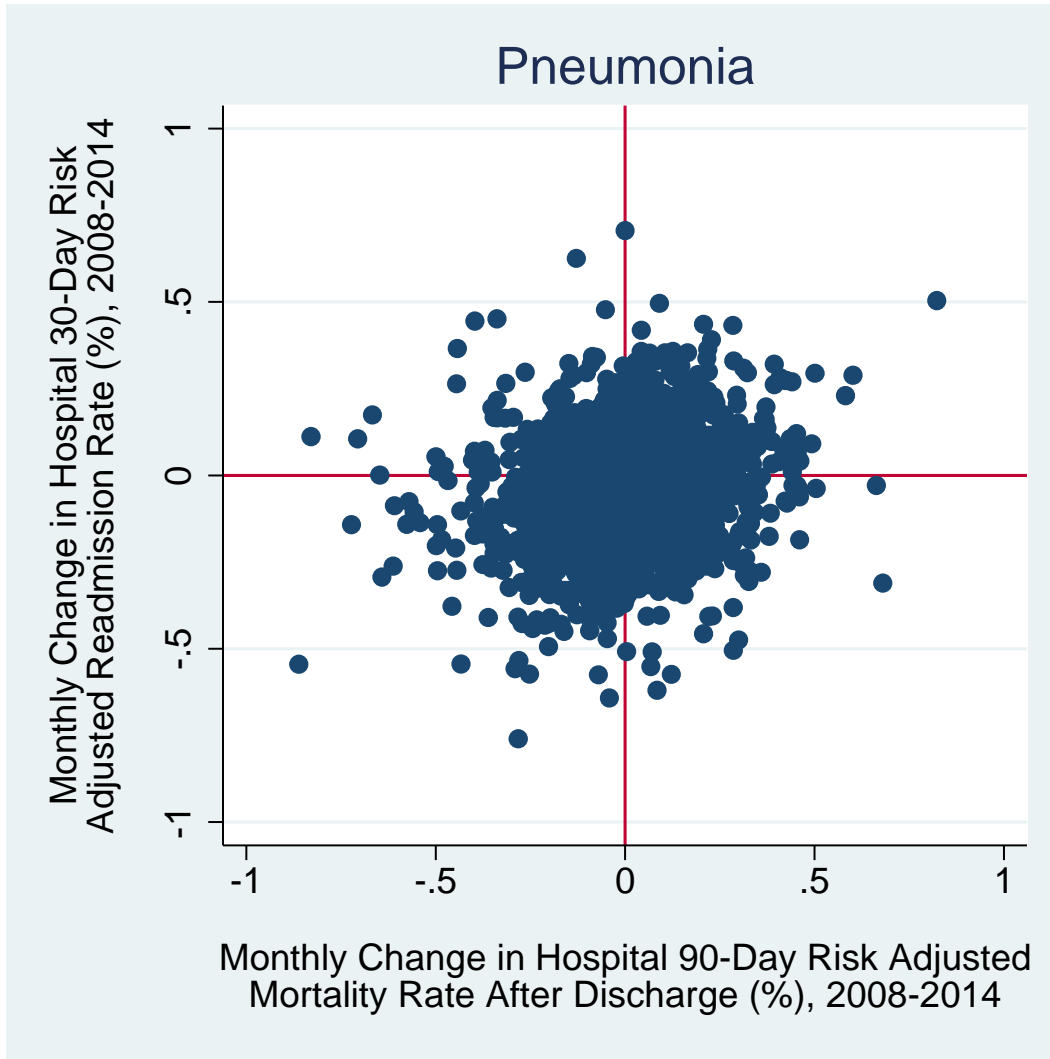
eFigure 3A. Heart Failure



eFigure 3B. Acute Myocardial Infarction



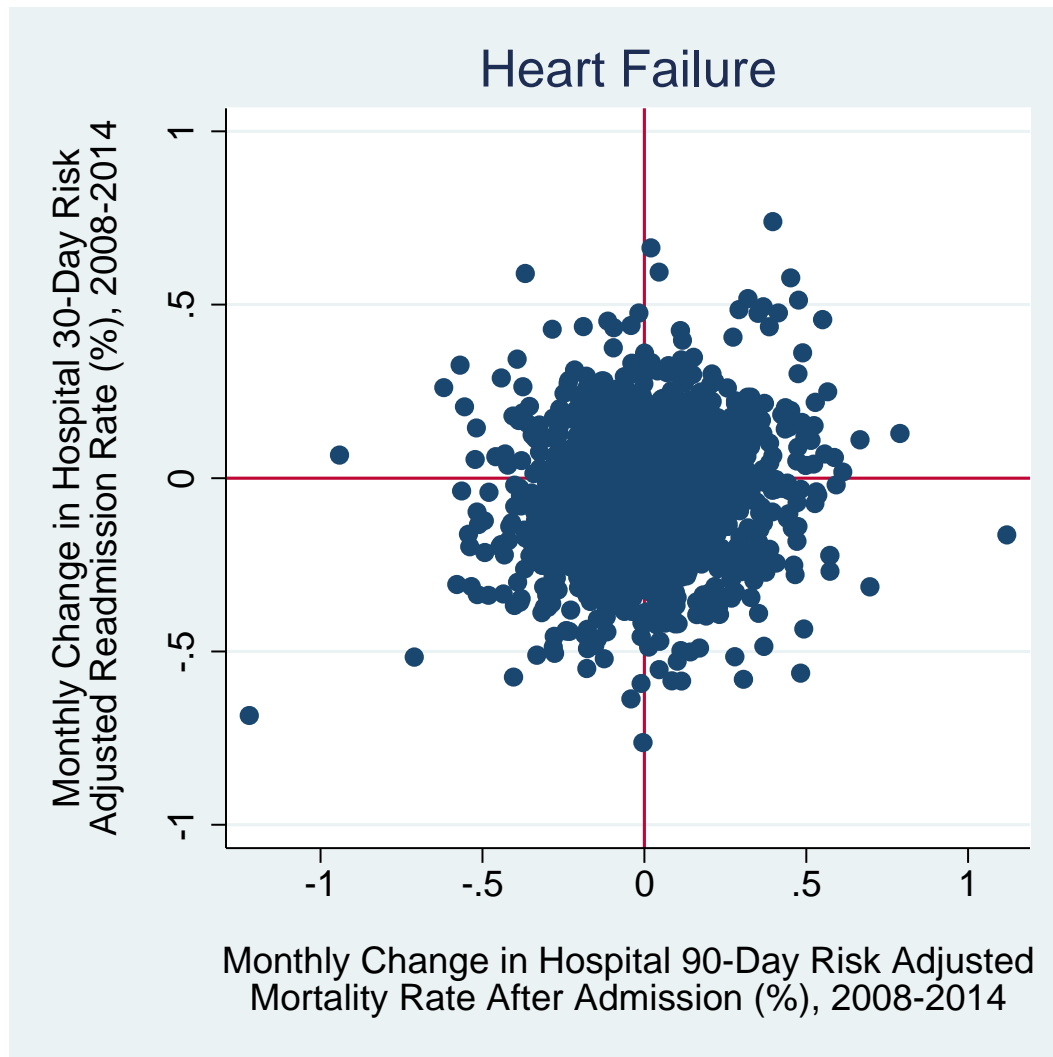
eFigure 3C. Pneumonia



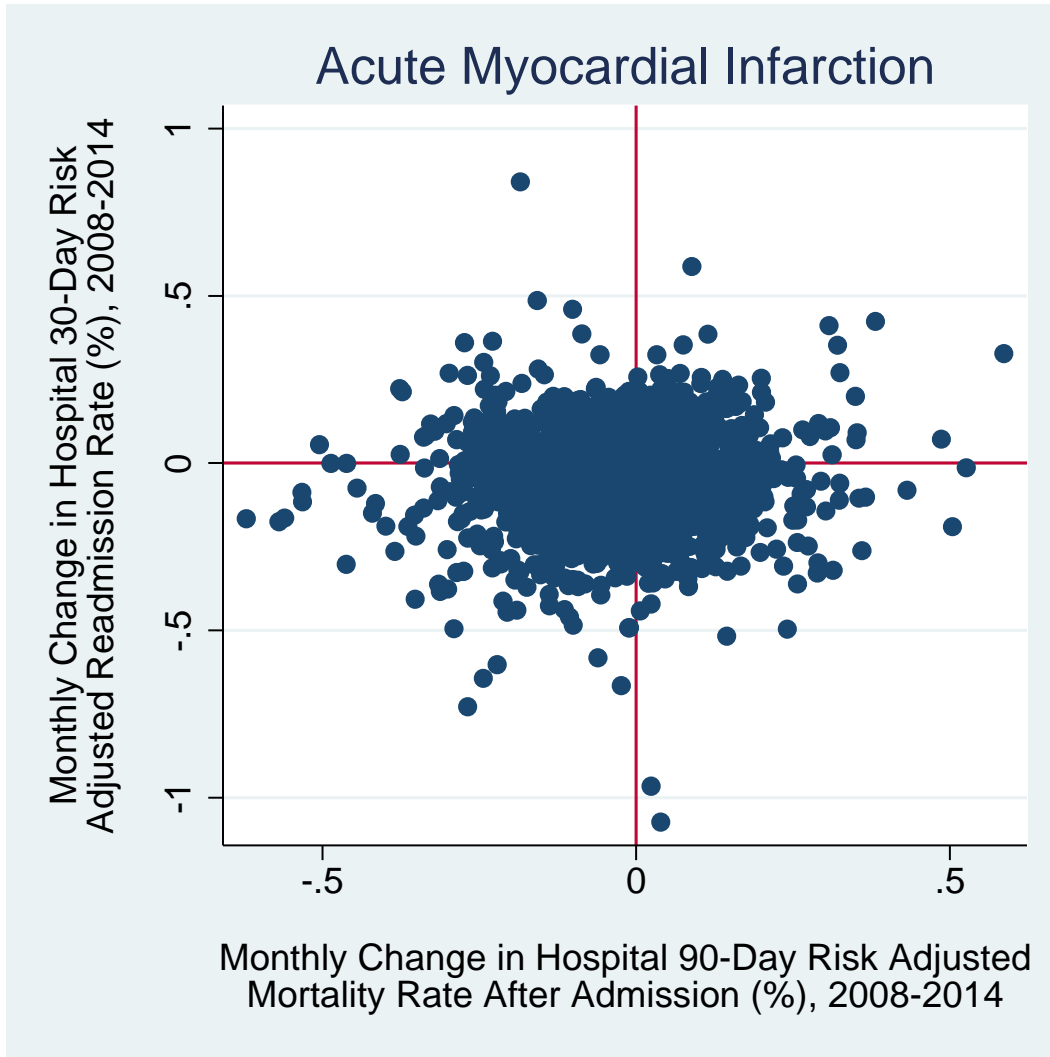
eFigure 4. Correlation of Paired Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date, 2008-2014

Risk adjustment was made for patient age, sex, comorbidities, season, and hospital length of stay. Data for heart failure (4,038 hospitals), acute myocardial infarction (2,385 hospitals), and pneumonia (4,419 hospitals) are presented in panels A, B, and C, respectively. Data on hospital number and volume by month for this analysis are presented in eTable 6.

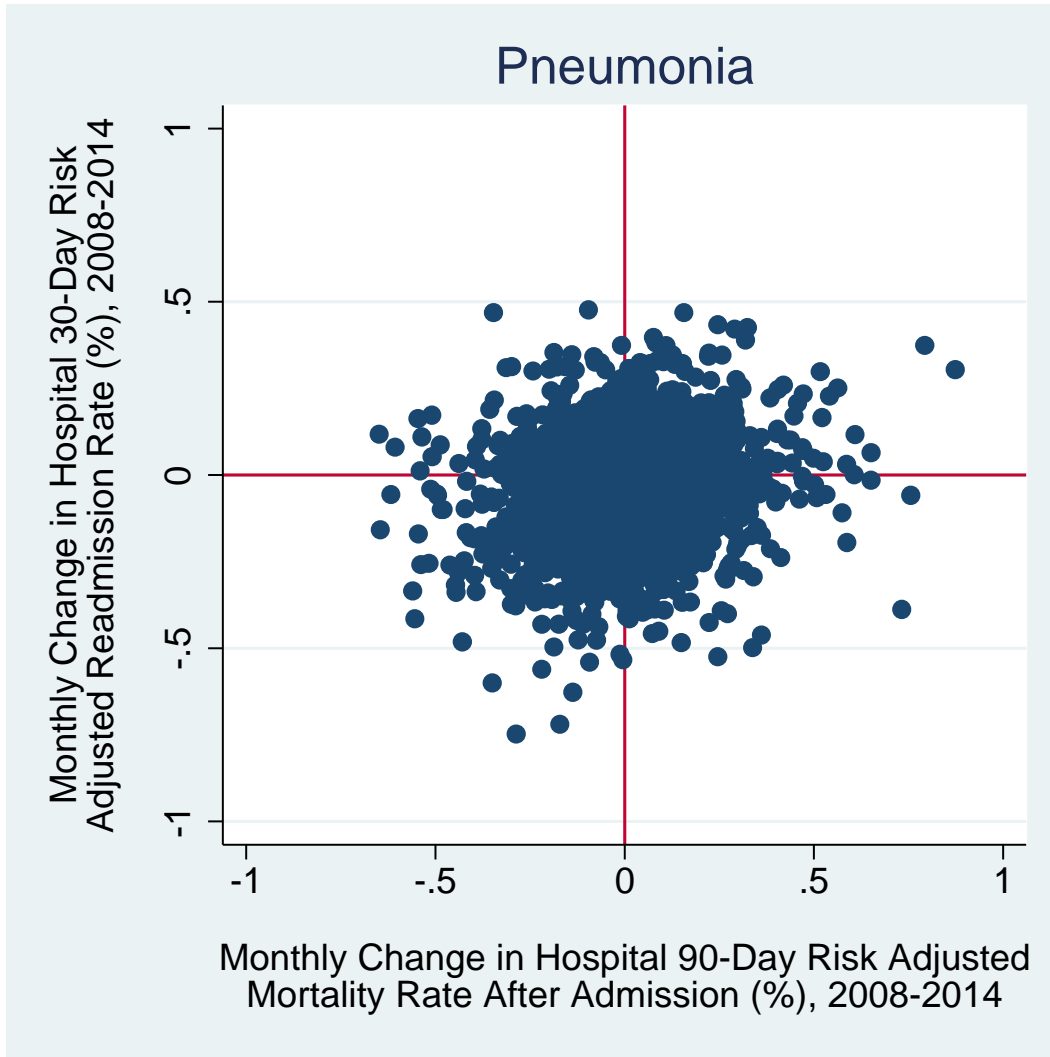
eFigure 4A. Heart Failure



eFigure 4B. Acute Myocardial Infarction



eFigure 4C. Pneumonia



eFigure 5. Trends in Hospital 30-Day Risk-Adjusted Readmission Rates and Hospital 90-Day Risk-Adjusted Mortality Rates After the Admission Date for Heart Failure, 2008-2014

Linear trends in mean monthly 30-day risk-adjusted readmission rates and 90-day risk-adjusted mortality rates after the admission date are shown for time periods: (1) January 2008 through March 2010, (2) April 2010 through September 2012, and (3) October 2012 through December 2014. The vertical lines correspond to dates proximate to when the Affordable Care Act was passed (April 2010) and the Hospital Readmissions Reduction Program began (October 2012). Risk adjustment was made for patient age, sex, comorbidities, season, and hospital length of stay. Data on hospital number and volume by month for this analysis are presented in eTable 7.

