## Evaluation of Risk-Adjusted 30-day Home-Time after Transcatheter Aortic Valve Replacement as a Hospital-level Quality Metric

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**Supplemental Figure 4:** Correlation between 30-day home time and admissions over one year. Correlation between hospital risk adjusted 30-day home time and rate of admissions per patient-month time for 1 year.

**Supplemental Table 1:** Candidate variables considered and tested for each risk adjustment model for the outcomes of 30-day home time, 30-day mortality and 30-day readmission. These variables included patient age, sex, race, chronic conditions (CC) defined by mapping international classification of diseases (ICD) codes 9 and 10 using published CMS risk models <sup>1</sup>, or ICD codes for conditions deemed important by clinical expertise or prior literature.

by clinical expertise or prior literature.	
Condition	Definition
Tuberculosis	cc1
Septicemia	cc2
Bacterial infection; unspecified site	cc3
Mycoses	cc4
HIV infection	cc5
Hepatitis	ссб
Viral infection	cc7
Other infections; including parasitic	cc8
Sexually transmitted infections	cc9
Immunizations and screening for infectious disease	cc10
Cancer of head and neck	cc11
Cancer of esophagus	cc12
Cancer of stomach	cc13
Cancer of colon	cc14
Cancer of rectum and anus	cc15
Cancer of liver and intrahepatic bile duct	cc16
Cancer of pancreas	cc17
Cancer of other GI organs; peritoneum	cc18
Cancer of bronchus; lung	cc19
Cancer; other respiratory and intrathoracic	cc20
Cancer of bone and connective tissue	cc21
Melanomas of skin	cc22
Other non-epithelial cancer of skin	cc23
Cancer of breast	cc24
Cancer of uterus	cc25
Cancer of cervix	cc26
Cancer of ovary	cc27
Cancer of other female genital organs	cc28
Cancer of prostate	cc29
Cancer of testis	cc30
Cancer of other male genital organs	cc31
Cancer of bladder	cc32
Cancer of kidney and renal pelvis	cc33
Cancer of other urinary organs	cc34
Cancer of brain and nervous system	cc35
Cancer of thyroid	cc36
Hodgkin's disease	cc37
Non-Hodgkin`s lymphoma	cc38
Leukemia	cc39
Multiple myeloma	cc40
Cancer; other and unspecified primary	cc40
Secondary malignancies	cc42
Malignant neoplasm without specification of site	cc43

Neoplasms of unspecified nature or uncertain behavior	cc44
Maintenance chemotherapy; radiotherapy	cc45
Benign neoplasm of uterus	cc46
Other and unspecified benign neoplasm	cc47
Thyroid disorders	cc48
Diabetes mellitus without complication	cc49
Diabetes mellitus with complications	cc50
Other endocrine disorders	cc51
Nutritional deficiencies	cc52
Disorders of lipid metabolism	cc53
Gout and other crystal arthropathies	cc54
Fluid and electrolyte disorders	cc55
Cystic fibrosis	cc56
Immunity disorders	cc57
Other nutritional; endocrine; and metabolic disorders	cc58
Deficiency and other anemia	cc59
Acute post-hemorrhagic anemia	cc60
Sickle cell anemia	cc61
Coagulation and hemorrhagic disorders	cc62
Diseases of white blood cells	cc63
Other hematologic conditions	cc64
Meningitis (except that caused by tuberculosis or sexually	cc76
transmitted disease)	
Encephalitis (except that caused by tuberculosis or sexually	cc77
transmitted disease)	
Other CNS infection and poliomyelitis	cc78
Parkinson`s disease	cc79
Multiple sclerosis	cc80
Other hereditary and degenerative nervous system conditions	cc81
Paralysis	cc82
Epilepsy; convulsions	cc83
Headache; including migraine	cc84
Coma; stupor; and brain damage	cc85
Cataract	cc86
Retinal detachments; defects; vascular occlusion; and retinopathy	cc87
Glaucoma	cc88
Blindness and vision defects	cc89
Inflammation; infection of eye (except that caused by	cc90
tuberculosis or sexually transmitted disease)	
Other eye disorders	cc91
Otitis media and related conditions	cc92
Conditions associated with dizziness or vertigo	cc93
Other ear and sense organ disorders	cc94
Other nervous system disorders	cc95
Heart valve disorders	cc96
Peri-; endo-; and myocarditis; cardiomyopathy	cc97
Essential hypertension	cc98
Hypertension with complications and secondary hypertension	cc99
Acute myocardial infarction	cc100

Coronary atherosclerosis and other heart disease	cc101
Nonspecific chest pain	cc102
Pulmonary heart disease	cc103
Other and ill-defined heart disease	cc104
Conduction disorders	cc105
Cardiac dysrhythmias	cc106
Cardiac arrest and ventricular fibrillation	cc107
Congestive heart failure; non-hypertensive	cc108
Acute cerebrovascular disease	cc109
Occlusion or stenosis of pre-cerebral arteries	cc110
Other and ill-defined cerebrovascular disease	cc111
Transient cerebral ischemia	cc112
Late effects of cerebrovascular disease	cc113
Peripheral and visceral atherosclerosis	cc114
Aortic; peripheral; and visceral artery aneurysms	cc115
Aortic and peripheral arterial embolism or thrombosis	cc116
Other circulatory disease	cc117
Phlebitis; thrombophlebitis and thromboembolism	cc118
Varicose veins of lower extremity	cc119
Hemorrhoids	cc120
Other diseases of veins and lymphatics	cc121
Pneumonia (except that caused by tuberculosis or sexually	cc122
transmitted disease)	
Influenza	cc123
Acute and chronic tonsillitis	cc124
Acute bronchitis	cc125
Other upper respiratory infections	cc126
Chronic obstructive pulmonary disease and bronchiectasis	cc127
Asthma	cc128
Aspiration pneumonitis; food/vomitus	cc129
Pleurisy; pneumothorax; pulmonary collapse	cc130
Respiratory failure; insufficiency; arrest (adult)	cc131
Lung disease due to external agents	cc132
Other lower respiratory disease	cc133
Other upper respiratory disease	cc134
Intestinal infection	cc135
Disorders of teeth and jaw	cc136
Diseases of mouth; excluding dental	cc137
Esophageal disorders	cc138
Gastroduodenal ulcer (except hemorrhage)	cc139
Gastritis and duodenitis	cc140
Other disorders of stomach and duodenum	cc141
Appendicitis and other appendiceal conditions	cc142
Abdominal hernia	cc143
Regional enteritis and ulcerative colitis	cc144
Intestinal obstruction without hernia	cc145
Diverticulosis and diverticulitis	cc146
Anal and rectal conditions	cc147
Peritonitis and intestinal abscess	cc148
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Liver disease; alcohol-related cc150 Other liver diseases cc151 Pancreatic disorders (not diabetes) cc152 Gastrointestinal hemorrhage cc153 Nominfectious gastroenteritis cc154 Other gastrointestinal disorders cc155 Nephritis; nephrosis; renal sclerosis cc156 Nephritis; nephrosis; renal failure cc157 Chronic kidney disease cc158 Urinary tract infections cc159 Calculus of urinary tract cc160 Other diseases of kidney and ureters cc160 Other diseases of kidney and ureters cc161 Other diseases of biadder and urettra cc162 Genitourinary symptoms and ill-defined conditions cc163 Hyperplasia of prostate cc164 Inflammatory conditions of male genital organs cc165 Other male genital disorders cc166 Nonmalignant breast conditions cc163 Inflammatory diseases of female pelvic organs cc166 Nonmalignant breast conditions cc163 Inflammatory diseases of female pelvic organs cc166 Rodometriosis cc169 Prolapse of female genital organs cc169 Endometriosis cc169 Inflammatory diseases of female pelvic organs cc169 Endometriosis cc169 Prolapse of female genital organs cc170 Menstrual disorders cc171 Ovarian cyst cc171 Ovarian cyst cc172 Menopausal disorders cc173 Skin and subcutaneous tissue infections cc173 Skin and subcutaneous dissue infections cc199 Other inflammatory condition of skin cc199 Other skin disorders cc200 Inflective arthritis and osteomyelitis cc200 Inflective arthritis and related disease cc202 Osteoarthritis cc200 Steoarthritis and related disease cc202 Osteoarthritis and related disease cc203 Other non-traumatic joint disorders cc204 Spondylosis; intervertebral dise disorders; other back problems cc206 Other connective tissue disease and musculoskeletal deformities cc201 Other connective tissue disease and connective tissue disorders cc211 Other bone disease and miscuelloskeletal deformities cc216 Other connective tissue disease cc217 Dient disorders and dislocations; trauma-related cc225 Fyendord injury cc227	Biliary tract disease	cc149
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Menstrual disorders  Ovarian cyst  Cc172  Menopausal disorders  Skin and subcutaneous tissue infections  Ct197  Other inflammatory condition of skin  Cc198  Chronic ulcer of skin  Other skin disorders  Infective arthritis and osteomyelitis  Rheumatoid arthritis and related disease  Cc202  Osteoarthritis  Coteoarthritis  Coteoarthrit		cc169
Menstrual disorders  Ovarian cyst  Cc172  Menopausal disorders  Skin and subcutaneous tissue infections  Ct197  Other inflammatory condition of skin  Cc198  Chronic ulcer of skin  Other skin disorders  Infective arthritis and osteomyelitis  Rheumatoid arthritis and related disease  Cc202  Osteoarthritis  Coteoarthritis  Coteoarthrit	Prolapse of female genital organs	cc170
Menopausal disorders  Skin and subcutaneous tissue infections  Other inflammatory condition of skin  Cc198  Chronic ulcer of skin  Other skin disorders  Infective arthritis and osteomyelitis  Rheumatoid arthritis and related disease  Osteoarthritis  Other non-traumatic joint disorders  Spondylosis; intervertebral disc disorders; other back problems  Osteoporosis  Pathological fracture  Acquired foot deformities  Other acquired deformities  Other acquired deformities  Other connective tissue disease  Cc210  Other bone disease and musculoskeletal deformities  Cc212  Cardiac and circulatory congenital anomalies  Digestive congenital anomalies  Other congenital anomalies  Cc216  Other congenital anomalies  Cc217  Joint disorders and dislocations; trauma-related  Cc225  Fracture of neck of femur (hip)		cc171
Menopausal disorders  Skin and subcutaneous tissue infections  Other inflammatory condition of skin  Cc198  Chronic ulcer of skin  Other skin disorders  Infective arthritis and osteomyelitis  Rheumatoid arthritis and related disease  Osteoarthritis  Other non-traumatic joint disorders  Spondylosis; intervertebral disc disorders; other back problems  Osteoporosis  Pathological fracture  Acquired foot deformities  Other acquired deformities  Other acquired deformities  Other connective tissue disease  Cc210  Other bone disease and musculoskeletal deformities  Cc212  Cardiac and circulatory congenital anomalies  Digestive congenital anomalies  Other congenital anomalies  Cc216  Other congenital anomalies  Cc217  Joint disorders and dislocations; trauma-related  Cc225  Fracture of neck of femur (hip)	Ovarian cyst	cc172
Skin and subcutaneous tissue infections Other inflammatory condition of skin Chronic ulcer of skin Other skin disorders Chronic ulcer of skin Other skin disorders  Infective arthritis and osteomyelitis Cc200 Rheumatoid arthritis and related disease Osteoarthritis Other non-traumatic joint disorders Spondylosis; intervertebral disc disorders; other back problems Cc204 Spondylosis; intervertebral disc disorders; other back problems Cc205 Osteoprosis Cc206 Pathological fracture Cc207 Acquired foot deformities Cc208 Other acquired deformities Cc209 Systemic lupus erythematosus and connective tissue disorders Cc211 Other connective tissue disease Cc211 Other bone disease and musculoskeletal deformities Cc212 Cardiac and circulatory congenital anomalies Cc214 Genitourinary congenital anomalies Cc215 Nervous system congenital anomalies Cc217 Joint disorders and dislocations; trauma-related Cc225 Fracture of neck of femur (hip) Cc226	Menopausal disorders	cc173
Chronic ulcer of skin		cc197
Other skin disorders  Infective arthritis and osteomyelitis  Rheumatoid arthritis and related disease  Osteoarthritis  Other non-traumatic joint disorders  Spondylosis; intervertebral disc disorders; other back problems  Osteoporosis  Pathological fracture  Acquired foot deformities  Other acquired deformities  Cc208  Other connective tissue disease  Other connective tissue disease  Cc211  Other bone disease and musculoskeletal deformities  Cc212  Cardiac and circulatory congenital anomalies  Digestive congenital anomalies  Cc215  Nervous system congenital anomalies  Other congenital anomalies  Cc216  Other congenital anomalies  Cc217  Joint disorders and dislocations; trauma-related  Cc226  Fracture of neck of femur (hip)	Other inflammatory condition of skin	cc198
Infective arthritis and osteomyelitis Rheumatoid arthritis and related disease Cc202 Osteoarthritis Cc203 Other non-traumatic joint disorders Spondylosis; intervertebral disc disorders; other back problems Cc205 Osteoporosis Cc206 Pathological fracture Cc207 Acquired foot deformities Cc208 Other acquired deformities Cc209 Systemic lupus erythematosus and connective tissue disorders Cc210 Other connective tissue disease Cc211 Other bone disease and musculoskeletal deformities Cc212 Cardiac and circulatory congenital anomalies Cc214 Genitourinary congenital anomalies Cc215 Nervous system congenital anomalies Cc216 Other congenital anomalies Cc217 Joint disorders and dislocations; trauma-related Cc225 Fracture of neck of femur (hip) Cc206	Chronic ulcer of skin	cc199
Rheumatoid arthritis and related disease cc202 Osteoarthritis cc203 Other non-traumatic joint disorders cc204 Spondylosis; intervertebral disc disorders; other back problems cc205 Osteoporosis cc206 Pathological fracture cc207 Acquired foot deformities cc208 Other acquired deformities cc209 Systemic lupus erythematosus and connective tissue disorders cc210 Other connective tissue disease cc211 Other bone disease and musculoskeletal deformities cc212 Cardiac and circulatory congenital anomalies cc213 Digestive congenital anomalies cc214 Genitourinary congenital anomalies cc215 Nervous system congenital anomalies cc216 Other congenital anomalies cc216 Other congenital anomalies cc217 Joint disorders and dislocations; trauma-related cc225 Fracture of neck of femur (hip)	Other skin disorders	cc200
Osteoarthritis cc203 Other non-traumatic joint disorders cc204 Spondylosis; intervertebral disc disorders; other back problems cc205 Osteoporosis cc206 Pathological fracture cc207 Acquired foot deformities cc208 Other acquired deformities cc209 Systemic lupus erythematosus and connective tissue disorders cc210 Other connective tissue disease cc211 Other bone disease and musculoskeletal deformities cc212 Cardiac and circulatory congenital anomalies cc213 Digestive congenital anomalies cc214 Genitourinary congenital anomalies cc215 Nervous system congenital anomalies cc216 Other congenital anomalies cc217 Joint disorders and dislocations; trauma-related cc225 Fracture of neck of femur (hip)	Infective arthritis and osteomyelitis	cc201
Other non-traumatic joint disorders  Spondylosis; intervertebral disc disorders; other back problems  Osteoporosis  Cc206  Pathological fracture  Acquired foot deformities  Other acquired deformities  Cc209  Systemic lupus erythematosus and connective tissue disorders  Other connective tissue disease  Cc211  Other bone disease and musculoskeletal deformities  Cardiac and circulatory congenital anomalies  Cc214  Genitourinary congenital anomalies  Cc215  Nervous system congenital anomalies  Other congenital anomalies  Cc216  Other congenital anomalies  Cc217  Joint disorders and dislocations; trauma-related  Cc226  Fracture of neck of femur (hip)		cc202
Spondylosis; intervertebral disc disorders; other back problems cc205  Osteoporosis cc206  Pathological fracture cc207  Acquired foot deformities cc208  Other acquired deformities cc209  Systemic lupus erythematosus and connective tissue disorders cc210  Other connective tissue disease cc211  Other bone disease and musculoskeletal deformities cc212  Cardiac and circulatory congenital anomalies cc213  Digestive congenital anomalies cc214  Genitourinary congenital anomalies cc215  Nervous system congenital anomalies cc216  Other congenital anomalies cc216  Other congenital anomalies cc217  Joint disorders and dislocations; trauma-related cc225  Fracture of neck of femur (hip) cc226	Osteoarthritis	cc203
Osteoporosis cc206 Pathological fracture cc207 Acquired foot deformities cc208 Other acquired deformities cc209 Systemic lupus erythematosus and connective tissue disorders cc210 Other connective tissue disease cc211 Other bone disease and musculoskeletal deformities cc212 Cardiac and circulatory congenital anomalies cc213 Digestive congenital anomalies cc214 Genitourinary congenital anomalies cc215 Nervous system congenital anomalies cc216 Other congenital anomalies cc216 Other congenital anomalies cc217 Joint disorders and dislocations; trauma-related cc225 Fracture of neck of femur (hip)	Other non-traumatic joint disorders	cc204
Pathological fracture cc207 Acquired foot deformities cc208 Other acquired deformities cc209 Systemic lupus erythematosus and connective tissue disorders cc210 Other connective tissue disease cc211 Other bone disease and musculoskeletal deformities cc212 Cardiac and circulatory congenital anomalies cc213 Digestive congenital anomalies cc214 Genitourinary congenital anomalies cc215 Nervous system congenital anomalies cc216 Other congenital anomalies cc217 Joint disorders and dislocations; trauma-related cc225 Fracture of neck of femur (hip)	Spondylosis; intervertebral disc disorders; other back problems	cc205
Acquired foot deformities  Other acquired deformities  Systemic lupus erythematosus and connective tissue disorders  Other connective tissue disease  Other bone disease and musculoskeletal deformities  Cardiac and circulatory congenital anomalies  Cardiac congenital anomalies  Cicclia  Digestive congenital anomalies  Cicclia  Other congenital anomalies  Cicclia	Osteoporosis	cc206
Other acquired deformities cc219 Systemic lupus erythematosus and connective tissue disorders cc210 Other connective tissue disease cc211 Other bone disease and musculoskeletal deformities cc212 Cardiac and circulatory congenital anomalies cc213 Digestive congenital anomalies cc214 Genitourinary congenital anomalies cc215 Nervous system congenital anomalies cc216 Other congenital anomalies cc217 Joint disorders and dislocations; trauma-related cc225 Fracture of neck of femur (hip)	Pathological fracture	cc207
Systemic lupus erythematosus and connective tissue disorders  Other connective tissue disease  Other bone disease and musculoskeletal deformities  Cardiac and circulatory congenital anomalies  Circulatory conge	Acquired foot deformities	cc208
Other connective tissue disease cc211 Other bone disease and musculoskeletal deformities cc212 Cardiac and circulatory congenital anomalies cc213 Digestive congenital anomalies cc214 Genitourinary congenital anomalies cc215 Nervous system congenital anomalies cc216 Other congenital anomalies cc217 Joint disorders and dislocations; trauma-related cc225 Fracture of neck of femur (hip) cc226	Other acquired deformities	cc209
Other bone disease and musculoskeletal deformities cc212 Cardiac and circulatory congenital anomalies cc213 Digestive congenital anomalies cc214 Genitourinary congenital anomalies cc215 Nervous system congenital anomalies cc216 Other congenital anomalies cc217 Joint disorders and dislocations; trauma-related cc225 Fracture of neck of femur (hip) cc226	Systemic lupus erythematosus and connective tissue disorders	cc210
Cardiac and circulatory congenital anomaliescc213Digestive congenital anomaliescc214Genitourinary congenital anomaliescc215Nervous system congenital anomaliescc216Other congenital anomaliescc217Joint disorders and dislocations; trauma-relatedcc225Fracture of neck of femur (hip)cc226		cc211
Digestive congenital anomalies cc214 Genitourinary congenital anomalies cc215 Nervous system congenital anomalies cc216 Other congenital anomalies cc217 Joint disorders and dislocations; trauma-related cc225 Fracture of neck of femur (hip) cc226	Other bone disease and musculoskeletal deformities	cc212
Genitourinary congenital anomalies cc215  Nervous system congenital anomalies cc216  Other congenital anomalies cc217  Joint disorders and dislocations; trauma-related cc225  Fracture of neck of femur (hip) cc226	Cardiac and circulatory congenital anomalies	cc213
Nervous system congenital anomalies cc216  Other congenital anomalies cc217  Joint disorders and dislocations; trauma-related cc225  Fracture of neck of femur (hip) cc226	Digestive congenital anomalies	cc214
Other congenital anomalies cc217  Joint disorders and dislocations; trauma-related cc225  Fracture of neck of femur (hip) cc226		cc215
Other congenital anomalies cc217  Joint disorders and dislocations; trauma-related cc225  Fracture of neck of femur (hip) cc226	Nervous system congenital anomalies	cc216
Fracture of neck of femur (hip) cc226		cc217
	Joint disorders and dislocations; trauma-related	cc225
Spinal cord injury cc227	Fracture of neck of femur (hip)	cc22 <del>6</del>
	Spinal cord injury	cc227

Skull and face fractures	cc228
Fracture of upper limb	cc229
Fracture of lower limb	cc230
Other fractures	cc231
Sprains and strains	cc232
Intracranial injury	cc233
Crushing injury or internal injury	cc234
Open wounds of head; neck; and trunk	cc235
Open wounds of extremities	cc236
Superficial injury; contusion	cc239
Burns	cc240
Poisoning by psychotropic agents	cc241
Poisoning by other medications and drugs	cc242
Poisoning by nonmedicinal substances	cc243
Other injuries and conditions due to external causes	cc244
Syncope	cc245
Fever of unknown origin	cc246
Lymphadenitis	cc247
Gangrene	cc248
Shock	cc249
Nausea and vomiting	cc250
Abdominal pain	cc251
Malaise and fatigue	cc252
Allergic reactions	cc253
Prior pacemaker	V4501, Z950, Z4501, 0JH606Z,
	02H63JZ, 02HK3JZ, 3783, 3772
Prior intra-cardiac defibrillator	0JH608Z, 02H63KZ, 02HK3KZ,
	3794, V4502, Z95810, Z4502
Prior percutaneous coronary intervention	0066, 1755, 3601, 3602, 3603,
	3605, 3603, 3607, 3609, 0250047,
	027004Z, 02700D6, 02700DZ,
	02700T6, 02500TZ, 02700Z6,
	02700ZZ, 0270346, 027034Z,
	02703D6, 02703DZ, 02703T6,
	02703TZ, 02703Z6, 02703TZ,
	02703Z6, 02703ZZ, 0270446,
	027044Z, 02704D6, 02704DZ,
	02407TZ, 02404Z6, 02404ZZ,
	0271046, 027104Z, 02710D6,
	02710DZ, 02710T6, 02710Z6,
	02710ZZ, 0271346, 027134Z,
	02713D6, 02713DZ, 02713T6,
	02713TZ, 02713Z6, 02713ZZ,
	0271446, 027144Z, 02714D6,
	02714DZ, 02714T6, 02714TZ,
	02714Z6, 02714ZZ, 0272046,
	027204Z, 02720D6, 02020DZ,
	02720T6, 02720TZ, 02720Z6,
	02720ZZ, 0272346, 027234Z,
	72723D6', 02723DZ, 02723T6,

	02723TZ, 02723Z6, 02723ZZ,
	0272446, 027244Z, 02724D6,
	02724DZ, 02724T6, 02724TZ,
	02724Z6, 02724ZZ, 0273046,
	027304Z, 02730D6, 02730DZ,
	02730T6, 02730TZ, 02730Z6,
	02730ZZ, 0273346, 027334Z,
	02433D6, 02733DZ, 02733T6,
	02733TZ, 02733Z6, 02733ZZ,
	0273446, 027344Z, 02734D6,
	02734DZ, 02734T6, 02734TZ,
	02734Z6, 02734ZZ
Prior coronary artery bypass grafting surgery	02100*, 02110*, 02120*, 02130*,
	3611, 3612, 3613, 3614, 3615,
	3616
Decubitus ulcer	L89*, 70700, 70701, 70702,
	70703, 70704, 70705, 70706,
	70707, 70709, 70720, 70721,
	70722, 70723, 70724, 70725
Delirium	F05*, 2930, 2931
Dysphagia	R13*, 78720, 78721, 78722,
	78723, 78724, 78729
Hypotension	195*, 4580, 4581, 45821, 45829,
	4588, 4589
Urinary incontinence	R32*, 78830
Urinary retention	R33*, 78820, 78829
Alzheimer's disease	G81*, 34200, 34201, 34202,
	34210, 34211, 34212, 34280,
	34281, 34282, 34290, 34291,
	34292
Falls	W19*, W06*, W10*, W01*,
	W18*, E8889, E9293, E8844,
	E9293, E8800, E8801, E8809,
	E9293, E8859, E8880, E8881,
	E9293, E8846, E8859, E8880,
	E8881, E8888, E9178, E9293
Abnormal gait	R26*, 7197, 7812
Pneumonitis due to solid and liquids	J69*, 5070, 5071, 5078
Unspecified Dementia	F03*, 2900, 29010, 29011, 29013,
	29021, 2908, 2909, 29420, 29421
Vascular dementia	F01*, 29040, 29041
1: https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtoSped	Doto State / Digle Adjustors html

<sup>1:</sup> https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors.html

**Supplemental Table 2:** Final variables included in the risk adjustment model for 30-day home time in the whole study cohort. These are variables that were significant at a level of P<0.01 in at least 80% of the 100 models done on bootstrapped samples in the training/derivation data set. Models were performed as generalized linear mixed models with a random intercept for the TAVR hospital. All chronic conditions (CC) are defined by mapping international classification of diseases (ICD) codes 9 and 10 to each chronic condition using published CMS risk models.<sup>1</sup>

Definition used to define the variable	Variable	Parameter Estimate	Standard error	P value
	Age	-0.0048	7.1E-05	< 0.001
	Male sex	0.03848	0.00108	< 0.001
cc103	Pulmonary heart disease	-0.0092	0.00117	< 0.001
cc104	Other and ill-defined heart disease	-0.0248	0.00306	< 0.001
cc105	Conduction disorders	-0.0208	0.00101	< 0.001
cc106	Cardiac dysrhythmias	-0.033	0.00099	< 0.001
cc107	Cardiac arrest and ventricular fibrillation	-0.3293	0.00429	< 0.001
cc108	Congestive heart failure; non-hypertensive	-0.0183	0.00121	< 0.001
cc109	Acute cerebrovascular disease	-0.2833	0.00303	< 0.001
cc114	Peripheral and visceral atherosclerosis	-0.023	0.00119	< 0.001
cc115	Aortic; peripheral; and visceral artery aneurysms	-0.0487	0.00182	< 0.001
cc116	Aortic and peripheral arterial embolism or thrombosis	-0.1576	0.00507	<0.001
cc117	Other circulatory disease	0.00757	0.00122	< 0.001
cc118	Phlebitis; thrombophlebitis and thromboembolism	-0.0233	0.00198	<0.001
cc121	Other diseases of veins and lymphatics	-0.0182	0.00267	< 0.001
cc122	Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	-0.0153	0.00197	< 0.001
cc127	Chronic obstructive pulmonary disease and bronchiectasis	-0.0122	0.00115	<0.001
cc129	Aspiration pneumonitis; food/vomitus	-0.122	0.00474	< 0.001
cc130	Pleurisy; pneumothorax; pulmonary collapse	-0.1058	0.00182	< 0.001
cc131	Respiratory failure; insufficiency; arrest (adult)	-0.0727	0.0015	< 0.001
cc135	Intestinal infection	-0.0558	0.00529	< 0.001
cc139	Gastroduodenal ulcer (except hemorrhage)	0.02024	0.00273	< 0.001
cc145	Intestinal obstruction without hernia	-0.0555	0.00454	< 0.001
cc146	Diverticulosis and diverticulitis	0.0298	0.00226	< 0.001
cc151	Other liver diseases	-0.0186	0.00214	< 0.001
cc153	Gastrointestinal hemorrhage	-0.0182	0.00255	< 0.001
cc155	Other gastrointestinal disorders	-0.0302	0.0015	< 0.001
cc156	Nephritis; nephrosis; renal sclerosis	-0.0582	0.00481	< 0.001
cc157	Acute and unspecified renal failure	-0.1016	0.00151	< 0.001
cc158	Chronic kidney disease	-0.0087	0.00109	< 0.001
cc159	Urinary tract infections	-0.0601	0.00177	< 0.001
cc160	Calculus of urinary tract	0.03062	0.00294	< 0.001
cc163	Genitourinary symptoms and ill-defined conditions	-0.0217	0.00192	< 0.001

cc164	Hyperplasia of prostate	0.01314	0.00143	< 0.001
cc165	Inflammatory conditions of male genital organs	0.06011	0.01102	< 0.001
cc173	Menopausal disorders	0.05863	0.00416	< 0.001
cc197	Skin and subcutaneous tissue infections	-0.0435	0.00325	< 0.001
cc199	Chronic ulcer of skin	-0.0747	0.00341	< 0.001
cc201	Infective arthritis and osteomyelitis	0.07004	0.00702	< 0.001
cc204	Other non-traumatic joint disorders	-0.0441	0.00265	< 0.001
cc209	Other acquired deformities	-0.0279	0.00393	< 0.001
cc23	Other non-epithelial cancer of skin	0.01958	0.00197	< 0.001
cc233	Intracranial injury	0.03494	0.00579	< 0.001
cc234	Crushing injury or internal injury	-0.0985	0.00658	< 0.001
cc239	Superficial injury; contusion	-0.024	0.00356	< 0.001
cc244	Other injuries and conditions due to external	-0.0475	0.00225	< 0.001
	causes			
cc248	Gangrene	-0.0814	0.01319	< 0.001
cc249	Shock	-0.23	0.00305	< 0.001
cc253	Allergic reactions	0.02253	0.0012	< 0.001
ICD codes	Prior ICD	0.05637	0.00384	< 0.001
ICD codes	Prior pacemaker	0.06475	0.0021	< 0.001
ICD codes	Dementia	-0.0476	0.00227	< 0.001
ICD codes	Delirium	-0.0516	0.00134	< 0.001
ICD codes	Abnormal gait	-0.0141	0.0009	< 0.001
ICD codes	Dysphagia	-0.0979	0.00408	< 0.001
ICD codes	Hypotension	-0.0298	0.00106	< 0.001
ICD codes	Prior PCI	0.01612	0.00107	< 0.001
ICD codes	Urinary retention	-0.0225	0.00202	< 0.001
ICD codes	Volume depletion	0.01751	0.00094	< 0.001

<sup>1:</sup> https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors.html

**Supplemental Table 3:** Final variables included in the risk adjustment model for 30-day mortality in the whole study cohort. These are variables that were significant at a level of P<0.01 in at least 80% of the 100 models done on bootstrapped samples in the training/derivation data set. Models were performed as mixed effect hierarchical logistic regression with a random intercept for the TAVR hospital. All chronic conditions (CC) are defined by mapping international classification of diseases (ICD) codes 9 and 10 to each chronic condition using published CMS risk models.<sup>1</sup>

Definition used to define the variable	Parameter	Estimate	Standard error	P value
	Age	0.04693	0.00244	< 0.001
cc10	Immunizations and screening for infectious disease	-0.2736	0.07641	<0.001
cc105	Conduction disorders	-0.2603	0.03328	< 0.001
cc106	Cardiac dysrhythmias	0.1716	0.03604	< 0.001
cc107	Cardiac arrest and ventricular fibrillation	1.9853	0.04837	< 0.001
cc109	Acute cerebrovascular disease	0.9818	0.05621	< 0.001
cc113	Late effects of cerebrovascular disease	-0.438	0.08854	< 0.001
cc114	Peripheral and visceral atherosclerosis	0.1928	0.03587	< 0.001
cc115	Aortic; peripheral; and visceral artery aneurysms	0.5108	0.04636	<0.001
cc116	Aortic and peripheral arterial embolism or thrombosis	0.5351	0.09271	< 0.001
cc130	Pleurisy; pneumothorax; pulmonary collapse	0.2629	0.04097	<0.001
cc131	Respiratory failure; insufficiency; arrest (adult)	0.7582	0.03673	<0.001
cc151	Other liver diseases	0.4011	0.04912	< 0.001
cc157	Acute and unspecified renal failure	0.6106	0.03654	< 0.001
cc249	Shock	1.2915	0.04302	< 0.001
ICD codes	Hypotension	0.1876	0.02388	< 0.001

<sup>1:</sup> https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors.html

**Supplemental Table 4:** Final variables included in the risk adjustment model for 30-day readmission in the whole study cohort. These are variables that were significant at a level of P<0.01 in at least 80% of the 100 models done on bootstrapped samples in the training/derivation data set. Models were performed as mixed effect hierarchical logistic regression with a random intercept for the TAVR hospital. All chronic conditions (CC) are defined by mapping international classification of diseases (ICD) codes 9 and 10 to each chronic condition using published CMS risk models.<sup>1</sup>

Definition	Parameter	Parameter	Standard	P value
used to		Estimate	error	
define the				
variable				
	Age	0.01823	0.00104	<.0001
	Male sex	-0.0699	0.01417	<.0001
cc102	Nonspecific chest pain	0.1504	0.0372	<.0001
cc103	Pulmonary heart disease	0.09747	0.01552	<.0001
cc106	Cardiac dysrhythmias	0.2532	0.01449	<.0001
cc108	Congestive heart failure	0.1374	0.01855	<.0001
cc109	Acute cerebrovascular disease	0.6482	0.0293	<.0001
cc114	Peripheral and visceral atherosclerosis	0.123	0.01585	<.0001
cc115	Aortic; peripheral; and visceral artery aneurysms	0.1506	0.02328	<.0001
cc116	Aortic and peripheral arterial embolism	0.3515	0.05307	<.0001
	or thrombosis			
cc118	Phlebitis; thrombophlebitis and thromboembolism	0.1053	0.02465	<.0001
cc127	Chronic obstructive pulmonary disease	0.1946	0.01542	<.0001
	and bronchiectasis			
cc130	Pleurisy; pneumothorax; pulmonary	0.2493	0.02037	<.0001
	collapse			
cc131	Respiratory failure; insufficiency;	0.2218	0.0176	<.0001
	arrest (adult)			
cc153	Gastrointestinal hemorrhage	0.1908	0.02772	<.0001
cc155	Other gastrointestinal disorders	0.1611	0.0171	<.0001
cc157	Acute and unspecified renal failure	0.342	0.01774	<.0001
cc158	Chronic kidney disease	0.1457	0.01542	<.0001
cc159	Urinary tract infections	0.144	0.02012	<.0001
cc199	Chronic ulcer of skin	0.207	0.03341	<.0001
ICD codes	Delirium	0.09228	0.01349	<.0001
ICD codes	Prior Pacemaker	-0.1001	0.02582	0.0001
ICD codes	Sleep apnea	0.1213	0.01788	<.0001
ICD codes	Urinary Retention	0.1741	0.01849	<.0001

<sup>1:</sup> https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors.html

**Supplemental Table 5:** Performance of the risk adjustment models for different hospital-level performance metrics for Transcatheter aortic valve replacement hospitalization in the development and validation cohort

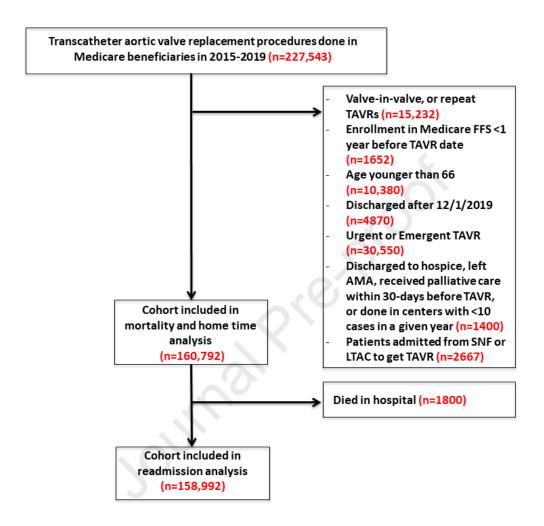
	Parameter	Derivation cohort	Validation cohort
30-day home time	$\mathbb{R}^2$	0.216	0.214
30-day mortality	C-statistics	0.82	0.82
30-day readmission	C-statistics	0.66	0.65

## **Supplemental Table 6:** Hospital-level outcomes across hospital groups stratified unadjusted 30-day home time among patients undergoing TAVR

Variable	Low Performing → High Performing				P Value
	Quartile 1	Quartile 2	Quartile 3	Quartile 4	
	(N=163)	(N=163)	(N=163)	(N=163)	
Length of hospital stay	2.60	2.16	1.83	1.50	< 0.001
day after TAVR procedure	(2.3-3.0)	(1.9-2.4)	(1.7-2.0)	(1.3-1.7)	
Median (IQR), days					
30-day home time	24.2	25.5	26.4	27.6	< 0.001
Median (IQR), days	(23.4-24.6)	(25.2-25.7)	(26.2-26.7)	(27.0-28.1)	
30-RSRR	14.8	13.6	12.8	9.3	< 0.001
Median (IQR) (%)	(11.4-20.1)	(10.6-17.7)	(9.2-15.8)	(6.8-12.4)	
30-RSMR	2.6	2.1	1.7	0.7	< 0.001
Median (IQR) (%)	(1.6-4.0)	(1.1-3.1)	(1.0-2.7)	(0.0-1.7)	
Annual TAVR Volume	57	66	65	38	0.05
median (IQR)	(35-102)	(38-98)	(42-107)	(24-62)	

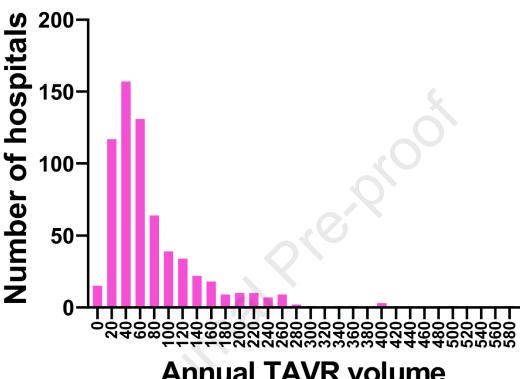
IQR: Inter quartile range; TAVR: Transcatheter aortic valve replacement; RSRR: Risk-adjusted readmission rate; RSMR: Risk-adjusted mortality rate

**Supplemental Figure 1:** Flow chart of the study cohort selection.



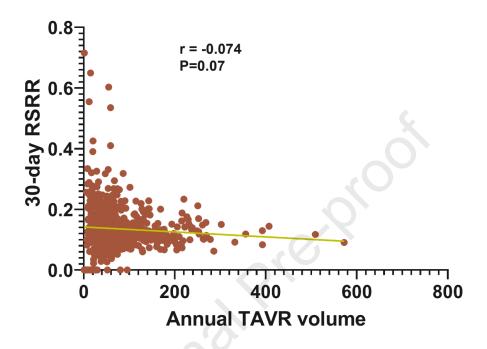
Supplemental Figure 2: Histogram of TAVR annual volume: Frequency distribution of average annual TAVR procedure volume for TAVR centers included in the study

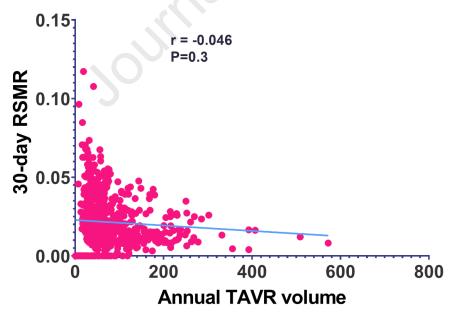
## Distribution of annual hospital TAVR volume



**Annual TAVR volume** 

**Supplemental Figure 3:** Correlation between hospital TAVR volume and other hospital quality metrics. Correlation between TAVR center annual volume and a) 30-day RSMR, b) 30-day RSRR





**Supplemental Figure 4:** Correlation between 30-day home time and admissions over one year. Correlation between hospital risk adjusted 30-day home time and rate of admissions per patient-month time for 1 year. Cohort of patients who were discharged from TAVR hospitalization before 1/1/2019 (N=113,978 patients in 599 centers)

