

Supplemental Material

Table S1. The Hospital Frailty Risk Score.

Codes used and points awarded. Patients were categorized as low (0–4 points), intermediate (5–15 points), and high (>15 points) frailty risk

Diagnosis description	Diagnosis code	Points awarded
Dementia in Alzheimer disease	F00	7.1
Hemiplegia	G81	4.4
Alzheimer's disease	G30	4.0
Sequelae of cerebrovascular disease	I69	3.7
Other symptoms and signs involving the nervous and musculoskeletal systems (R29.6 Tendency to fall)	R29	3.6
Other disorders of urinary system (includes urinary tract infection and urinary incontinence)	N39	3.2
Delirium, not induced by alcohol and other psychoactive substances	F05	3.2
Unspecified fall	W19	3.2
Superficial injury of head	S00	3.2
Unspecified hematuria	R31	3.0
Other bacterial agents as the cause of diseases classified to other chapters (secondary code)	B96	2.9
Other symptoms and signs involving cognitive functions and awareness	R41	2.7
Abnormalities of gait and mobility	R26	2.6
Other cerebrovascular diseases	I67	2.6
Convulsions, not elsewhere classified	R56	2.6
Somnolence, stupor and coma	R40	2.5
Complications of genitourinary prosthetic devices, implants, and grafts	T83	2.4
Intracranial injury	S06	2.4
Fracture of shoulder and upper arm	S42	2.3
Other disorders of fluid, electrolyte, and acid-base balance	E87	2.3

Other joint disorders, not elsewhere classified	M25	2.3
Volume depletion	E86	2.3
Senility	R54	2.2
Care involving use of rehabilitation procedures	Z50	2.1
Unspecified dementia	F03	2.1
Other fall on same level	W18	2.1
Problems related to medical facilities and other health care	Z75	2.0
Vascular dementia	F01	2.0
Superficial injury of lower leg	S80	2.0
Cellulitis	L03	2.0
Blindness and low vision	H54	1.9
Deficiency of other B group vitamins	E53	1.9
Problems related to social environment	Z60	1.8
Parkinson's disease	G20	1.8
Syncope and collapse	R55	1.8
Fracture of rib(s), sternum and thoracic spine	S22	1.8
Other functional intestinal disorders	K59	1.8
Acute renal failure	N17	1.8
Decubitus ulcer	L89	1.7
Carrier of infectious disease	Z22	1.7
Streptococcus and staphylococcus as the cause of diseases classified to other chapters	B95	1.7
Ulcer of lower limb, not elsewhere classified	L97	1.6
Other symptoms and signs involving general sensations and perceptions	R44	1.6
Duodenal ulcer	K26	1.6
Hypotension	I95	1.6
Unspecified renal failure	N19	1.6
Other septicemia	A41	1.6

Personal history of other diseases and conditions	Z87	1.5
Respiratory failure, not elsewhere classified	J96	1.5
Exposure to unspecified factor	X59	1.5
Other arthrosis	M19	1.5
Epilepsy	G40	1.5
Osteoporosis without pathological fracture	M81	1.4
Fracture of femur	S72	1.4
Fracture of lumbar spine and pelvis	S32	1.4
Other disorders of pancreatic internal secretion	E16	1.4
Abnormal results of function studies	R94	1.4
Chronic renal failure	N18	1.4
Retention of urine	R33	1.3
Unknown and unspecified causes of morbidity	R69	1.3
Other disorders of kidney and ureter, not elsewhere classified	N28	1.3
Unspecified urinary incontinence	R32	1.2
Other degenerative diseases of nervous system, not elsewhere classified	G31	1.2
Nosocomial condition	Y95	1.2
Other and unspecified injuries of head	S09	1.2
Symptoms and signs involving emotional state	R45	1.2
Transient cerebral ischemic attacks and related syndromes	G45	1.2
Problems related to care-provider dependency	Z74	1.1
Other soft tissue disorders, not elsewhere classified	M79	1.1
Fall involving bed	W06	1.1
Open wound of head	S01	1.1
Other bacterial intestinal infections	A04	1.1
Diarrhea and gastroenteritis of presumed infectious origin	A09	1.1

Pneumonia, organism unspecified	J18	1.1
Pneumonitis due to solids and liquids	J69	1.0
Speech disturbances, not elsewhere classified	R47	1.0
Vitamin D deficiency	E55	1.0
Artificial opening status	Z93	1.0
Gangrene, not elsewhere classified	R02	1.0
Symptoms and signs concerning food and fluid intake	R63	0.9
Other hearing loss	H91	0.9
Fall on and from stairs and steps	W10	0.9
Fall on same level from slipping, tripping, and stumbling	W01	0.9
Thyrotoxicosis [hyperthyroidism]	E05	0.9
Scoliosis	M41	0.9
Dysphagia	R13	0.8
Dependence on enabling machines and devices	Z99	0.8
Agent resistant to penicillin and related antibiotics	U80	0.8
Osteoporosis with pathological fracture	M80	0.8
Other diseases of digestive system	K92	0.8
Cerebral Infarction	I63	0.8
Calculus of kidney and ureter	N20	0.7
Mental and behavioral disorders due to use of alcohol	F10	0.7
Other medical procedures as the cause of abnormal reaction of the patient	Y84	0.7
Abnormalities of heartbeat	R00	0.7
Unspecified acute lower respiratory infection	J22	0.7
Problems related to life-management difficulty	Z73	0.6
Other abnormal findings of blood chemistry	R79	0.6
Personal history of risk-factors, not elsewhere classified	Z91	0.5
Open wound of forearm	S51	0.5
Depressive episode	F32	0.5

Spinal stenosis	M48	0.5
Disorders of mineral metabolism	E83	0.4
Polyarthrosis	M15	0.4
Other anemias	D64	0.4
Other local infections of skin and subcutaneous tissue	L08	0.4
Nausea and vomiting	R11	0.3
Other noninfective gastroenteritis and colitis	K52	0.3
Fever of unknown origin	R50	0.1

Table S2. List of ICD10-, ATC-, NCSP-, and NPU-codes.

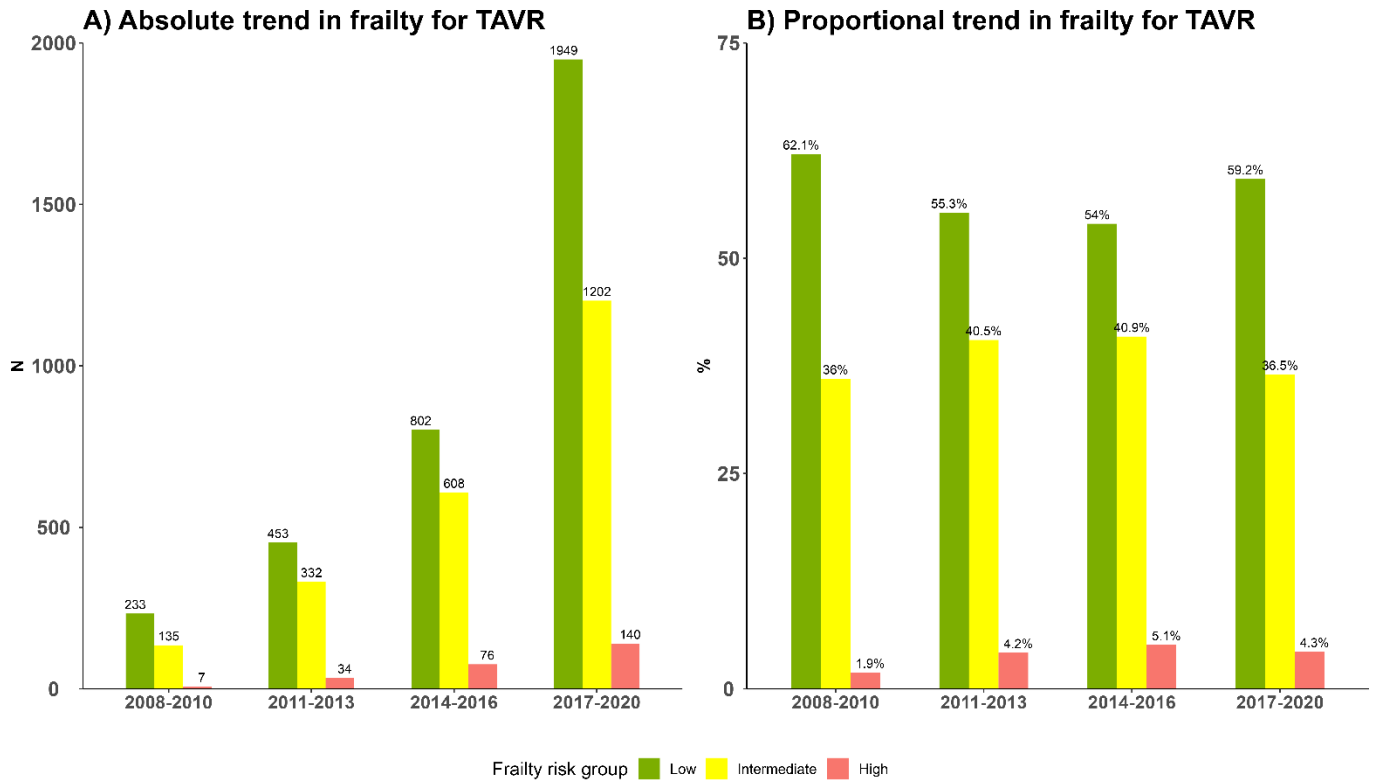
Population		
Transcatheter Aortic Valve Replacement	Defined from surgical procedures	NCSP: KFMD11, KFMD12, KFMD14
Exposure		
Frailty groups: Low (reference), intermediate, and high	Defined with the Hospital Frailty Risk Score	
Comorbidities		
Percutaneous coronary intervention	Defined from surgical procedures	NCSP: KFNG00, KFNG02, KFNG05, KFNG10, KFNG12, KFNG96
Coronary artery bypass grafting	Defined from surgical procedures	NCSP: KNFA, KFNB, KFNC, KFND, KFNE
Stroke/systemic embolism	Defined from diagnoses codes	ICD10: I63, I64, I74, G458, G459
Myocardial infarction	Defined from diagnoses codes	ICD10: I21-I22
Ischemic heart disease	Defined from diagnoses codes	ICD10: I20-I25
Heart failure	Defined from diagnoses codes	ICD10: I110, I130, I132, I420, I426, I427, I428, I429, I50
Atrial fibrillation	Defined from diagnoses codes	ICD10: I48
Peripheral artery disease	Defined from diagnoses codes or surgical procedures	ICD10: I70, I74, I739 NCSP: KPDE, KPDE, KPDEG, KPDEH, KPDEI, KPDEJ, KPDEK, KPDEL, KPDEM, KPDEN, KPDEO, KPDEP, KPDEQ, KPDER, KPDES, KPDET, KPDEU, KPDEV, KPDEW, KPDEX, KPDEY, KPDEZ, KPDEAA, KPDEAB, KPDEAC, KPDEAD, KPDEAE, KPDEAF, KPDEAG, KPDEAH, KPDEAI, KPDEAJ, KPDEAK, KPDEAL, KPDEAM, KPDEAN, KPDEAO, KPDEAP, KPDEAQ, KPDEAR, KPDEAS, KPDEAT, KPDEAU, KPDEAV, KPDEAW, KPDEAX, KPDEAY, KPDEAZ, KPDEBA, KPDEBB, KPDEBC, KPDEBD, KPDEBE, KPDEBF, KPDEBG, KPDEBH, KPDEBI, KPDEBJ, KPDEBK, KPDEBL, KPDEBM, KPDEBN, KPDEBO, KPDEBP, KPDEBQ, KPDEBR, KPDEBS, KPDEBT, KPDEBU, KPDEBV, KPDEBW, KPDEBX, KPDEBY, KPDEBZ, KPDECA, KPDECB, KPDECC, KPDECD, KPDECE, KPDECF, KPDECG, KPDECH, KPDECI, KPDECJ, KPDECK, KPDECL, KPDECM, KPDECN, KPDECO, KPDECP, KPDECQ, KPDECR, KPDECS, KPDECT, KPDECU, KPDECV, KPDECW, KPDECX, KPDECY, KPDE CZ, KPDEDA, KPDEDB, KPDEDC, KPDEDD, KPDEDE, KPDEDF, KPDEDG, KPDEDH, KPDEDI, KPDEDJ, KPDEDK, KPDEDL, KPDEDM, KPDEDN, 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Hypertension	Defined from diagnoses codes or treatment with 2 or more antihypertensive drugs: adrenergic α -antagonists, non-loop diuretics, vasodilators, β -blockers, calcium channel	ICD10: I10-15 ATC: C02A, C02B, C02C, C02L, C03A, C03B, C03D, C03E, C03X, C07B, C07C, C07D, C08G, C02DA, C09BA, C09DA, C02DB, C02DD, C02DG, C07A,

blockers, renin-angiotensin system inhibitors.

C07B, C07C, C07D, C07F, C08, C09BB, C09DB, C09AA, C09BA, C09BB, C09CA, C09DA, C09DB, C09XA02, C09XA52, C03C, C03EB

Diabetes mellitus	Defined from glucose-lowering medication	ATC: A10
Chronic kidney disease	Defined from diagnoses codes	ICD10: E102, E112, E122, E132, E142, I120, N02-N08, N11, N12, N14, N18, N19, N26, Q61, N158, N159, N160, N162, N163, N164, N168, N391, Q612, Q613, Q615, Q619, Z940, Z992
Chronic obstructive pulmonary disease	Defined from diagnoses codes	ICD10: J44
Pharmacotherapy		
Adenosine-phosphate receptor antagonists	Defined from ATC codes	ATC: B01AC04, B01AC22, B01AC24
Aspirin	Defined from ATC codes	ATC: B01AC06 N02BA01
Non-steroidal-anti-inflammatory-drugs	Defined from ATC codes	ATC: M01A, except M01AX05
Beta-blockers	Defined from ATC codes	ATC: C07A, C07B, C07C, C07D, C07F
Calcium channel blockers	Defined from ATC codes	ATC: C07F, C08, C09BB, C09DB
Renin-angiotensin system inhibitors	Defined from ATC codes	ATC: C09AA, C09BA, C09BB, C09CA, C09DA, C09DB, C09XA02, C09XA52
Loop diuretics	Defined from ATC codes	ATC: C03C C03EB

Figure S1. Trends in frailty over time.



Panel A shows the absolute trend in frailty for TAVR over time with the x-axis illustrating year groups and the y-axis number of patients (also illustrated in the numbers above bars). Panel B shows the proportional trend in frailty for TAVR over time. The x-axis represents calendar year groups. The y-axis shows the proportion of patients in each frailty group for a given calendar year group. As such, the numbers above bars sum to 100%.

TAVR: Transcatheter aortic valve replacement.