

Supplemental Online Content

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

eTable 1. Baseline, Echocardiographic, and Procedural Characteristics

| No. (%) | Unadjusted cohort | | | Propensity score matched cohort | | |
|----------------------------------|------------------------|--------------------------|--|---------------------------------|-------------------------|---|
| | Age < 65 (N=13,849) | Age 65-80 (N=125,846) | Absolute standardized difference | Age < 65 (N=13,803) | Age 65-80 (N=13,803) | Absolute standardize d difference |
| Age (year) | 59.7 (4.8) | 74.1 (4.2) | 3.194 | 59.8 (4.8) | 72.7 (4.4) | 2.824 |
| Male | 9068/13849 (65.5) | 77817/125843 (61.8) | 0.076 | 9030/13803 (65.4) | 9055/13803 (65.6) | 0.004 |
| Race | | | | | | |
| Black/African American | 1037/13849 (7.5) | 5135/125846 (4.1) | 0.146 | 1030/13803 (7.5) | 1038/13803 (7.5) | 0.002 |
| Asian | 121/13849 (0.9) | 970/125846 (0.8) | 0.011 | 120/13803 (0.9) | 147/13803 (1.1) | 0.02 |
| American Indian/Alaskan Native | 97/13849 (0.7) | 392/125846 (0.3) | 0.055 | 96/13803 (0.7) | 76/13803 (0.6) | 0.018 |
| Hispanic or Latino ethnicity | 1166/13649 (8.5) | 6278/123939 (5.1) | 0.138 | 1158/13604 (8.5) | 881/13563 (6.5) | 0.077 |
| Native Hawaiian/Pacific Islander | 21/13849 (0.2) | 116/125846 (0.1) | 0.017 | 18/13803 (0.1) | 21/13803 (0.2) | 0.006 |
| White | 11935/13849 (86.2) | 115209/125846 (91.5) | 0.171 | 11905/13803 (86.2) | 11881/13803 (86.1) | 0.005 |
| Multiple | 140/13849 (1) | 1000/125846 (0.8) | 0.023 | 138/13803 (1) | 145/13803 (1.1) | 0.005 |
| Unknown | 498/13849 (3.6) | 3024/125846 (2.4) | 0.07 | 496/13803 (3.6) | 495/13803 (3.6) | 0 |
| STS Risk Score (%) | 3.1 (3.5) | 3.3 (3.2) | 0.048 | 3.1 (3.5) | 3.1 (3.0) | 0.015 |
| STS Risk Score – Median(IQR) | 2.0 [1.2, 3.6] | 2.3 [1.5, 3.9] | . | 2.0 [1.2, 3.6] | 2.2 [1.4, 3.7] | . |
| STS Score < 4 | 10463/13461 (77.7) | 93686/122922 (76.2) | 0.036 | 10429/13417 (77.7) | 10432/13422 (77.7) | 0 |
| STS Score 4-8 | 2107/13461 (15.7) | 22102/122922 (18) | 0.062 | 2099/13417 (15.6) | 2077/13422 (15.5) | 0.005 |
| STS Score > 8 | 891/13461 (6.6) | 7134/122922 (5.8) | 0.034 | 889/13417 (6.6) | 913/13422 (6.8) | 0.007 |
| BMI (kg/m ²) | 33.6 (15.9) | 31.2 (10.7) | 0.176 | 33.4 (12.4) | 32.6 (19.3) | 0.05 |
| Hypertension | 11619/13847 (83.9) | 113076/125833 (89.9) | 0.177 | 11590/13801 (84) | 11594/13802 (84) | 0.001 |

| No. (%) | Unadjusted cohort | | | Propensity score matched cohort | | |
|-----------------------------------|------------------------|--------------------------|--|---------------------------------|-------------------------|---|
| | Age < 65 (N=13,849) | Age 65-80 (N=125,846) | Absolute standardized difference | Age < 65 (N=13,803) | Age 65-80 (N=13,803) | Absolute standardize d difference |
| Diabetes Mellitus | 6551/13842 (47.3) | 55223/125817 (43.9) | 0.069 | 6530/13796 (47.3) | 6665/13800 (48.3) | 0.019 |
| Currently on Dialysis | 1613/13830 (11.7) | 5041/125700 (4) | 0.288 | 1598/13784 (11.6) | 1596/13786 (11.6) | 0.001 |
| Chronic Lung Disease | 4479/13822 (32.4) | 34067/125671 (27.1) | 0.116 | 4464/13776 (32.4) | 4583/13789 (33.2) | 0.018 |
| Hostile Chest | 680/13846 (4.9) | 3354/125816 (2.7) | 0.118 | 676/13800 (4.9) | 696/13799 (5) | 0.007 |
| Immunocompromise Present | 1248/12648 (9.9) | 7517/113819 (6.6) | 0.119 | 1244/12606 (9.9) | 1268/12531 (10.1) | 0.008 |
| Endocarditis | 119/13845 (0.9) | 414/125819 (0.3) | 0.069 | 118/13799 (0.9) | 114/13802 (0.8) | 0.003 |
| Permanent Pacemaker | 581/13845 (4.2) | 8847/125818 (7) | 0.123 | 580/13799 (4.2) | 570/13800 (4.1) | 0.004 |
| Previous ICD | 391/13840 (2.8) | 2939/125831 (2.3) | 0.031 | 389/13794 (2.8) | 397/13803 (2.9) | 0.003 |
| Prior PCI | 3395/13842 (24.5) | 37257/125814 (29.6) | 0.115 | 3388/13796 (24.6) | 3403/13799 (24.7) | 0.002 |
| Prior CABG | 1405/13843 (10.1) | 15960/125817 (12.7) | 0.08 | 1402/13797 (10.2) | 1420/13802 (10.3) | 0.004 |
| Prior Stroke | 1258/13847 (9.1) | 12155/125821 (9.7) | 0.02 | 1253/13801 (9.1) | 1264/13800 (9.2) | 0.003 |
| Prior TIA | 562/13845 (4.1) | 7181/125778 (5.7) | 0.077 | 561/13799 (4.1) | 535/13798 (3.9) | 0.01 |
| Previous Cardiac Surgeries | 1713/13791 (12.4) | 17168/125377 (13.7) | 0.038 | 1711/13745 (12.4) | 1563/13755 (11.4) | 0.034 |
| Prior Aortic Valve Procedure | 402/13843 (2.9) | 2389/125825 (1.9) | 0.066 | 399/13797 (2.9) | 409/13802 (3) | 0.004 |
| Carotid Stenosis | 1279/12670 (10.1) | 18035/116890 (15.4) | 0.16 | 1277/12627 (10.1) | 1282/12758 (10) | 0.002 |
| Peripheral Arterial Disease (PAD) | 2375/13844 (17.2) | 23838/125824 (18.9) | 0.047 | 2370/13798 (17.2) | 2344/13802 (17) | 0.005 |
| Prior MI | 2568/13840 (18.6) | 21225/125779 (16.9) | 0.044 | 2560/13794 (18.6) | 2625/13799 (19) | 0.012 |
| Heart Failure within 2 Weeks | 8715/12651 (68.9) | 74481/113982 (65.3) | 0.075 | 8679/12607 (68.8) | 8678/12548 (69.2) | 0.007 |

| No. (%) | Unadjusted cohort | | | Propensity score matched cohort | | |
|--|------------------------|--------------------------|--|---------------------------------|-------------------------|---|
| | Age < 65 (N=13,849) | Age 65-80 (N=125,846) | Absolute standardized difference | Age < 65 (N=13,803) | Age 65-80 (N=13,803) | Absolute standardize d difference |
| Cardiogenic Shock within 24 Hours | 312/13845 (2.3) | 964/125742 (0.8) | 0.122 | 305/13799 (2.2) | 266/13789 (1.9) | 0.02 |
| Cardiac Arrest within 24 Hours | 60/13835 (0.4) | 260/125739 (0.2) | 0.04 | 58/13789 (0.4) | 62/13793 (0.4) | 0.004 |
| Porcelain Aorta | 202/13844 (1.5) | 1077/125792 (0.9) | 0.056 | 201/13798 (1.5) | 218/13798 (1.6) | 0.01 |
| Atrial Fibrillation/Flutter | 2795/13843 (20.2) | 37054/125801 (29.5) | 0.216 | 2792/13797 (20.2) | 2761/13798 (20) | 0.006 |
| Home Oxygen | 1133/13834 (8.2) | 7937/125728 (6.3) | 0.072 | 1128/13788 (8.2) | 1177/13790 (8.5) | 0.013 |
| NYHA III/IV | 8848/13684 (64.7) | 76256/124698 (61.2) | 0.073 | 8811/13638 (64.6) | 8821/13684 (64.5) | 0.003 |
| KCCQ Overall Summary Score | 47.7 (26.3) | 52.9 (25.8) | 0.202 | 47.7 (26.3) | 48.0 (26.0) | 0.01 |
| Current/Recent Smoker (<1 year) | 2904/10158 (28.6) | 10759/80913 (13.3) | 0.383 | 2883/10125 (28.5) | 2637/9089 (29) | 0.012 |
| Five Meter Walk Test (second) | 6.6 (5.8) | 7.0 (4.9) | 0.064 | 6.6 (4.7) | 6.8 (3.1) | 0.059 |
| Hemoglobin | 12.8 (2.3) | 12.7 (2.1) | 0.024 | 12.8 (2.3) | 12.8 (2.3) | 0 |
| Albumin | 3.9 (0.6) | 3.9 (0.5) | 0.112 | 3.9 (0.6) | 3.9 (0.5) | 0.007 |
| MDRD GFR | 68.9 (33.1) | 65.9 (25.7) | 0.103 | 68.9 (33.0) | 68.8 (33.7) | 0.003 |
| Left Main Stenosis ≥50% | 521/13095 (4) | 5928/119230 (5) | 0.048 | 519/13050 (4) | 499/13053 (3.8) | 0.008 |
| Proximal LAD ≥70% | 1204/13045 (9.2) | 13186/119021 (11.1) | 0.061 | 1201/13001 (9.2) | 1191/13030 (9.1) | 0.003 |
| Echocardiographic characteristics | | | | | | |
| AV Area (cm ²) | 0.8 (0.3) | 0.8 (0.2) | 0.019 | 0.8 (0.3) | 0.8 (0.3) | 0.007 |
| AV Mean Gradient (mmHg) | 44.0 (14.8) | 42.2 (13.5) | 0.127 | 44.0 (14.8) | 43.9 (14.9) | 0.011 |
| AV Mean Gradient ≥ 20(mmHg) | 13253/13690 (96.8) | 120934/124847 (96.9) | 0.003 | 13209/13644 (96.8) | 13241/13703 (96.6) | 0.01 |

| No. (%) | Unadjusted cohort | | | Propensity score matched cohort | | |
|-----------------------------------|------------------------|--------------------------|--|---------------------------------|-------------------------|---|
| | Age < 65 (N=13,849) | Age 65-80 (N=125,846) | Absolute standardized difference | Age < 65 (N=13,803) | Age 65-80 (N=13,803) | Absolute standardize d difference |
| AV Annular Size (mm) | 25.3 (2.8) | 24.8 (2.6) | 0.195 | 25.3 (2.8) | 25.2 (2.7) | 0.036 |
| AV Morphology - Bicuspid | 3472/13755 (25.2) | 9552/125001 (7.6) | 0.489 | 3437/13710 (25.1) | 3469/13713 (25.3) | 0.005 |
| AV Morphology - Tricuspid | 9838/13755 (71.5) | 111703/125001 (89.4) | 0.462 | 9828/13710 (71.7) | 9810/13713 (71.5) | 0.003 |
| LVEF (%) | 53.6 (14.4) | 56.9 (11.8) | 0.255 | 53.6 (14.4) | 53.7 (13.9) | 0.002 |
| ≥Moderate Aortic Regurgitation | 2705/13661 (19.8) | 18756/124545 (15.1) | 0.125 | 2685/13615 (19.7) | 2712/13618 (19.9) | 0.005 |
| ≥Moderate Mitral Regurgitation | 1734/9751 (17.8) | 17729/93227 (19) | 0.032 | 1727/9714 (17.8) | 1912/10134 (18.9) | 0.028 |
| ≥Moderate Tricuspid Regurgitation | 1572/13713 (11.5) | 13551/124537 (10.9) | 0.018 | 1563/13668 (11.4) | 1529/13648 (11.2) | 0.007 |
| Procedural characteristics | | | | | | |
| Transfemoral Approach | 13239/13844 (95.6) | 119908/125830 (95.3) | 0.016 | 13193/13798 (95.6) | 13186/13801 (95.5) | 0.003 |
| Procedure status | | | | | | |
| Elective | 11747/13848 (84.8) | 114919/125823 (91.3) | 0.202 | 11722/13802 (84.9) | 11766/13799 (85.3) | 0.009 |
| Urgent/Emergency/Salvage | 11747/13848 (84.8) | 114919/125823 (91.3) | | 2080/13802 (15.1) | 2033/13799 (14.7) | |
| THV size | | | | | | |
| 20 mm | 177/13844 (1.3) | 2330/125799 (1.9) | 0.046 | 177/13798 (1.3) | 176/13799 (1.3) | 0.001 |
| 23 mm | 3340/13844 (24.1) | 37492/125799 (29.8) | 0.128 | 3331/13798 (24.1) | 3294/13799 (23.9) | 0.006 |
| 26 mm | 6252/13844 (45.2) | 56283/125799 (44.7) | 0.008 | 6237/13798 (45.2) | 6270/13799 (45.4) | 0.005 |
| 29 mm | 4075/13844 (29.4) | 29694/125799 (23.6) | 0.132 | 4053/13798 (29.4) | 4059/13799 (29.4) | 0.001 |

Note: For continuous variables, values are presented as Mean (Standard Deviation). For binary variables, if the denominator is the same as the total cohort, values are presented as numerator (percentage). Otherwise, values are presented as numerator/denominator (percentage). *STS: The Society of Thoracic Surgeons, NYHA: New York Heart Association, BMI: body mass index, CABG: coronary artery bypass graft surgery, PCI: percutaneous coronary intervention*

eTable 2. Procedural Characteristics and In-hospital Outcomes for Matched Population

| No. (%) | Age < 65 (N=13,803) | Age 65-80 (N=13,803) | P-value |
|--|------------------------|-------------------------|---------|
| Procedure Details | | | |
| Type of Anesthesia - Moderate Sedation | 7490/13794 (54.3) | 7822/13786 (56.7) | <0.001 |
| Total Procedure Time (min) | 71.5 (41.4) | 69.7 (40.3) | <0.001 |
| Fluoroscopy Time (min) | 14.5 (10.9) | 14.6 (11.0) | 0.389 |
| Contrast Volume | 91.1 (57.6) | 88.1 (52.2) | <0.001 |
| Implant Success | 13705/13799 (99.3) | 13702/13801 (99.3) | 0.719 |
| Conversion to Open Heart Surgery | 30/13782 (0.2) | 31/13791 (0.2) | 0.900 |
| Operator reason for procedure | | | |
| Inoperable/Extreme Risk | 760/13717 (5.5) | 577/13693 (4.2) | <0.001 |
| High Risk | 3887/13717 (28.3) | 3471/13693 (25.3) | <0.001 |
| Intermediate Risk | 3623/13717 (26.4) | 4181/13693 (30.5) | <0.001 |
| Low Risk | 5447/13717 (39.7) | 5464/13693 (39.9) | 0.743 |
| Procedure complication | | | |
| Annular Dissection | 14/13803 (0.1) | 19/13803 (0.1) | 0.384 |
| Aortic Dissection | 13/13803 (0.1) | 15/13803 (0.1) | 0.705 |
| Coronary Compression or Obstruction | 16/13803 (0.1) | 15/13803 (0.1) | 0.857 |
| Device Embolization | 3/13803 (0) | 8/13803 (0.1) | 0.132 |
| Perforation with or w/o Tamponade | 33/13803 (0.2) | 55/13803 (0.4) | 0.019 |
| In-hospital Outcomes | | | |
| Index Hospitalization Length of Stay (Days) – Median (IQR) | 1.0 [1.0, 2.0] | 1.0 [1.0, 2.0] | 0.806 |
| ICU Length of Stay (Hours) | 20.5 (53.8) | 19.8 (46.3) | 0.528 |
| Discharge to Home | 13051/13802 (94.6) | 12955/13802 (93.9) | 0.013 |
| All-cause Mortality | 132/13803 (1) | 133/13803 (1) | 0.951 |
| Cardiac Death | 92/13803 (0.7) | 92/13803 (0.7) | 1.000 |
| Stroke | 117/13803 (0.8) | 154/13803 (1.1) | 0.024 |
| Aortic Valve Re-intervention | 8/13803 (0.1) | 16/13803 (0.1) | 0.102 |
| Life-threatening Bleeding - Derived | 133/13803 (1) | 119/13803 (0.9) | 0.376 |
| Major Vascular Complication | 110/13803 (0.8) | 120/13803 (0.9) | 0.508 |
| New Requirement for Dialysis | 40/13803 (0.3) | 33/13803 (0.2) | 0.412 |
| New Pacemaker w/o Baseline Pacemaker | 564/13223 (4.3) | 729/13233 (5.5) | <0.001 |

| No. (%) | Age < 65 (N=13,803) | Age 65-80 (N=13,803) | P-value |
|----------------------------------|-----------------------------------|---------------------------------|----------------|
| Any Readmissions | 29/13803 (0.2) | 31/13803 (0.2) | 0.796 |
| New Onset of Atrial Fibrillation | 145/11893 (1.2) | 204/11790 (1.7) | 0.001 |

Note: For continuous variables, values are presented as Mean (Standard Deviation). For binary variables, if the denominator is the same as the total cohort, values are presented as numerator (percentage). Otherwise, values are presented as numerator/denominator (percentage).

eTable 3. 30-day, and 1-year Clinical Outcomes for Matched Population

| No. (%) / KM rate (No.) | Age < 65 (N=13,803) | Age 65-80 (N=13,803) | P-value |
|--------------------------------------|------------------------|-------------------------|---------|
| 30 days | | | |
| All-cause Mortality | 208 (1.6) | 229 (1.7) | 0.327 |
| Cardiac Death | 119 (0.9) | 131 (1) | 0.458 |
| Stroke | 155 (1.1) | 201 (1.5) | 0.015 |
| Aortic Valve Re-intervention | 15 (0.1) | 19 (0.1) | 0.495 |
| Life-threatening Bleeding - Derived | 137 (1) | 128 (1) | 0.565 |
| Major Vascular Complication | 129 (1) | 134 (1) | 0.761 |
| New Requirement for Dialysis | 48 (0.4) | 43 (0.3) | 0.591 |
| New Pacemaker w/o Baseline Pacemaker | 739 (5.8) | 985 (7.6) | <0.001 |
| Any Readmissions | 1013 (7.8) | 998 (7.7) | 0.687 |
| New Onset of Atrial Fibrillation | 201 (1.7) | 280 (2.4) | <0.001 |
| 1 year | | | |
| All-cause Mortality | 905 (9.9) | 927 (10.1) | 0.551 |
| Cardiac Death | 288 (3) | 271 (2.7) | 0.489 |
| Stroke | 241 (2.2) | 326 (3.1) | <0.001 |
| Aortic Valve Re-intervention | 51 (0.5) | 38 (0.4) | 0.172 |
| Life-threatening Bleeding - Derived | 204 (1.8) | 179 (1.6) | 0.199 |
| Major Vascular Complication | 151 (1.2) | 144 (1.1) | 0.684 |
| New Requirement for Dialysis | 89 (0.9) | 58 (0.5) | 0.011 |
| New Pacemaker w/o Baseline Pacemaker | 841 (7) | 1080 (8.8) | <0.001 |
| Any Readmissions | 2732 (28.2) | 2589 (26.8) | 0.031 |
| New Onset of Atrial Fibrillation | 285 (2.9) | 385 (3.9) | <0.001 |

Note: 30-day and 1-year numbers in the table represent Kaplan-Meier event for outcome (No. Patients with Event).

eTable 4. Baseline Characteristics – Subgroup analysis of low-risk patients only

| No. (%) | Age < 65 (N=5,461) | Age 65-80 (N=49,857) | P-value |
|----------------------------------|-----------------------|-------------------------|---------|
| Age (year) | 60.1 (4.5) | 73.6 (4.2) | <0.001 |
| Male | 3791/5461 (69.4) | 33564/49857 (67.3) | 0.002 |
| Race | | | |
| White | 4852/5461 (88.8) | 46256/49857 (92.8) | <0.001 |
| Black/African American | 276/5461 (5.1) | 1496/49857 (3) | <0.001 |
| Asian | 52/5461 (1) | 371/49857 (0.7) | 0.094 |
| American Indian/Alaskan Native | 37/5461 (0.7) | 142/49857 (0.3) | <0.001 |
| Hispanic or Latino ethnicity | 447/5371 (8.3) | 2411/49038 (4.9) | <0.001 |
| Native Hawaiian/Pacific Islander | 6/5461 (0.1) | 41/49857 (0.1) | 0.462 |
| Multiple | 55/5461 (1) | 381/49857 (0.8) | 0.054 |
| Unknown | 183/5461 (3.4) | 1170/49857 (2.3) | <0.001 |
| STS Risk Score (%) | 1.5 (1.2) | 1.8 (1.1) | <0.001 |
| STS Risk Score – Median(IQR) | 1.3 [0.9, 2.0] | 1.7 [1.2, 2.2] | <0.001 |
| STS Score < 4 | 5342/5400 (98.9) | 48793/49301 (99) | 0.763 |
| STS Score 4-8 | 50/5400 (0.9) | 448/49301 (0.9) | 0.899 |
| STS Score > 8 | 8/5400 (0.1) | 60/49301 (0.1) | 0.601 |
| BMI (kg/m ²) | 33.0 (11.7) | 30.7 (9.7) | <0.001 |
| Hypertension | 4422/5460 (81) | 43763/49852 (87.8) | <0.001 |
| Diabetes Mellitus | 2195/5460 (40.2) | 18112/49841 (36.3) | <0.001 |
| Currently on Dialysis | 130/5456 (2.4) | 332/49796 (0.7) | <0.001 |
| Chronic Lung Disease | 1346/5454 (24.7) | 9148/49798 (18.4) | <0.001 |
| Hostile Chest | 149/5460 (2.7) | 683/49844 (1.4) | <0.001 |
| Immunocompromise Present | 316/4943 (6.4) | 1861/44978 (4.1) | <0.001 |
| Endocarditis | 24/5461 (0.4) | 106/49844 (0.2) | 0.001 |
| Permanent Pacemaker | 151/5460 (2.8) | 2314/49844 (4.6) | <0.001 |
| Previous ICD | 96/5460 (1.8) | 601/49850 (1.2) | <0.001 |
| Prior PCI | 1050/5459 (19.2) | 11642/49848 (23.4) | <0.001 |
| Prior CABG | 307/5459 (5.6) | 3140/49847 (6.3) | 0.050 |
| Prior Stroke | 321/5461 (5.9) | 3311/49851 (6.6) | 0.031 |
| Prior TIA | 192/5460 (3.5) | 2444/49833 (4.9) | <0.001 |
| Previous Cardiac Surgeries | 391/5436 (7.2) | 3467/49661 (7) | 0.562 |
| Prior Aortic Valve Procedure | 92/5461 (1.7) | 355/49850 (0.7) | <0.001 |
| Carotid Stenosis | 379/5032 (7.5) | 5311/46515 (11.4) | <0.001 |

| No. (%) | Age < 65 (N=5,461) | Age 65-80 (N=49,857) | P-value |
|--|-----------------------|-------------------------|---------|
| Peripheral Arterial Disease (PAD) | 580/5461 (10.6) | 6148/49850 (12.3) | <0.001 |
| Prior MI | 671/5459 (12.3) | 5401/49836 (10.8) | 0.001 |
| Heart Failure within 2 Weeks | 3046/4959 (61.4) | 26689/45163 (59.1) | 0.002 |
| Cardiogenic Shock within 24 Hours | 39/5460 (0.7) | 148/49828 (0.3) | <0.001 |
| Cardiac Arrest within 24 Hours | 13/5455 (0.2) | 79/49824 (0.2) | 0.170 |
| Porcelain Aorta | 40/5460 (0.7) | 181/49843 (0.4) | <0.001 |
| Atrial Fibrillation/Flutter | 748/5459 (13.7) | 10542/49842 (21.2) | <0.001 |
| Home Oxygen | 175/5455 (3.2) | 1104/49799 (2.2) | <0.001 |
| NYHA III/IV | 2886/5407 (53.4) | 25074/49368 (50.8) | <0.001 |
| KCCQ Overall Summary Score | 55.7 (25.4) | 60.3 (24.5) | <0.001 |
| Current/Recent Smoker (<1 year) | 1133/4090 (27.7) | 3867/32256 (12) | <0.001 |
| Five Meter Walk Test (second) | 6.0 (5.3) | 6.3 (4.9) | <0.001 |
| Hemoglobin | 13.6 (2.1) | 13.3 (1.8) | <0.001 |
| Albumin | 4.0 (0.5) | 4.0 (0.4) | 0.294 |
| MDRD GFR | 78.4 (25.9) | 72.2 (22.4) | <0.001 |
| Left Main Stenosis \geq 50% | 113/5216 (2.2) | 1145/47412 (2.4) | 0.265 |
| Proximal LAD \geq 70% | 311/5191 (6) | 3547/47380 (7.5) | <0.001 |
| Echocardiographic characteristics | | | |
| AV Area (cm ²) | 0.8 (0.3) | 0.8 (0.2) | 0.756 |
| AV Mean Gradient (mmHg) | 46.0 (14.5) | 43.8 (13.1) | <0.001 |
| AV Mean Gradient \geq 20(mmHg) | 5296/5406 (98) | 48575/49476 (98.2) | 0.267 |
| AV Annular Size (mm) | 25.4 (2.7) | 24.9 (2.6) | <0.001 |
| AV Morphology - Bicuspid | 1705/5423 (31.4) | 4826/49509 (9.7) | <0.001 |
| AV Morphology - Tricuspid | 3535/5423 (65.2) | 43163/49509 (87.2) | <0.001 |
| LVEF (%) | 56.8 (11.9) | 59.3 (9.6) | <0.001 |
| \geq Moderate Aortic Regurgitation | 1014/5390 (18.8) | 7059/49359 (14.3) | <0.001 |
| \geq Moderate Mitral Regurgitation | 408/3641 (11.2) | 4889/35471 (13.8) | <0.001 |
| \geq Moderate Tricuspid Regurgitation | 296/5414 (5.5) | 3125/49317 (6.3) | 0.012 |

Note: For continuous variables, values are presented as Mean (Standard Deviation). For binary variables, if the denominator is the same as the total cohort, values are presented as numerator (percentage). Otherwise, values are presented as numerator/denominator (percentage). *STS: The Society of Thoracic Surgeons, NYHA: New York Heart Association, BMI: body mass index, CABG: coronary artery bypass graft surgery, PCI: percutaneous coronary intervention*

eTable 5. Procedural Characteristics and In-hospital Outcomes – Subgroup analysis of low-risk patients only

| No. (%) | Age < 65 (N=5,461) | Age 65-80 (N=49,857) | P-value |
|---|-----------------------|-------------------------|---------|
| Procedure Details | | | |
| Transfemoral Approach | 5320/5459 (97.5) | 48614/49852 (97.5) | 0.777 |
| Type of Anesthesia - Moderate Sedation | 3021/5457 (55.4) | 29579/49810 (59.4) | <0.001 |
| Total Procedure Time (min) | 66.0 (35.4) | 64.1 (35.2) | <0.001 |
| Fluoroscopy Time (min) | 13.9 (9.2) | 13.6 (9.2) | 0.027 |
| Contrast Volume | 92.1 (57.7) | 86.5 (51.5) | <0.001 |
| Implant Success | 5433/5460 (99.5) | 49485/49845 (99.3) | 0.055 |
| Conversion to Open Heart Surgery | 8/5452 (0.1) | 97/49809 (0.2) | 0.440 |
| Procedure status | | | |
| Elective | 5028/5460 (92.1) | 47811/49851 (95.9) | <0.001 |
| Urgent/Emergency/Salvage | 432/5460 (7.9) | 2040/49851 (4.1) | |
| Operator reason for procedure | | | |
| Low Risk | 5461/5461 (100) | 49857/49857 (100) | - |
| Procedure complication | | | |
| Annular Dissection | 5/5461 (0.1) | 43/49857 (0.1) | 0.809 |
| Aortic Dissection | 2/5461 (0) | 36/49857 (0.1) | 0.582 |
| Coronary Compression or Obstruction | 5/5461 (0.1) | 36/49857 (0.1) | 0.597 |
| Device Embolization | 0/5461 (0) | 68/49857 (0.1) | 0.006 |
| Perforation with or w/o Tamponade | 10/5461 (0.2) | 184/49857 (0.4) | 0.027 |
| THV size | | | |
| 20 mm | 52/5459 (1) | 736/49834 (1.5) | 0.002 |
| 23 mm | 1178/5459 (21.6) | 13240/49834 (26.6) | <0.001 |
| 26 mm | 2586/5459 (47.4) | 23344/49834 (46.8) | 0.458 |
| 29 mm | 1643/5459 (30.1) | 12514/49834 (25.1) | <0.001 |
| In hospital Outcomes | | | |
| Index Hospitalization Length of Stay (Days) – Median(IQR) | 1.0 [1.0, 1.0] | 1.0 [1.0, 1.0] | 0.783 |
| ICU Length of Stay (Hours) | 13.2 (26.3) | 13.5 (26.7) | 0.626 |
| Discharge to Home | 5341/5461 (97.8) | 48814/49852 (97.9) | 0.572 |
| All-cause Mortality | 15/5461 (0.3) | 138/49857 (0.3) | 0.977 |

| No. (%) | Age < 65 (N=5,461) | Age 65-80 (N=49,857) | P-value |
|--------------------------------------|----------------------------------|---------------------------------|----------------|
| Cardiac Death | 13/5461 (0.2) | 92/49857 (0.2) | 0.388 |
| Stroke | 38/5461 (0.7) | 376/49857 (0.8) | 0.635 |
| Aortic Valve Re-intervention | 3/5461 (0.1) | 49/49857 (0.1) | 0.321 |
| Life-threatening Bleeding - Derived | 30/5461 (0.5) | 279/49857 (0.6) | 0.923 |
| Major Vascular Complication | 30/5461 (0.5) | 379/49857 (0.8) | 0.084 |
| New Requirement for Dialysis | 4/5461 (0.1) | 41/49857 (0.1) | 1.000 |
| New Pacemaker w/o Baseline Pacemaker | 180/5310 (3.4) | 2118/47543 (4.5) | <0.001 |
| Any Readmissions | 6/5461 (0.1) | 83/49857 (0.2) | 0.322 |
| New Onset of Atrial Fibrillation | 52/4927 (1.1) | 646/41971 (1.5) | 0.008 |

Note: For continuous variables, values are presented as Mean (Standard Deviation). For binary variables, if the denominator is the same as the total cohort, values are presented as numerator (percentage). Otherwise, values are presented as numerator/denominator (percentage).

eTable 6. 30-day, and 1-year Clinical Outcomes – Subgroup analysis of low-risk patients only

| No. (%) / KM rate (No.) | Age < 65 (N=5,461) | Age 65-80 (N=49,857) | P-value |
|--------------------------------------|-----------------------|-------------------------|---------|
| 30 days | | | |
| All-cause Mortality | 34 (0.6) | 271 (0.6) | 0.432 |
| Cardiac Death | 19 (0.4) | 150 (0.3) | 0.534 |
| Stroke | 47 (0.9) | 559 (1.1) | 0.084 |
| Aortic Valve Re-intervention | 5 (0.1) | 63 (0.1) | 0.491 |
| Life-threatening Bleeding - Derived | 29 (0.6) | 310 (0.6) | 0.437 |
| Major Vascular Complication | 36 (0.7) | 425 (0.9) | 0.138 |
| New Requirement for Dialysis | 6 (0.1) | 48 (0.1) | 0.747 |
| New Pacemaker w/o Baseline Pacemaker | 253 (4.9) | 3168 (6.8) | <0.001 |
| Any Readmissions | 245 (4.7) | 2414 (5.1) | 0.291 |
| New Onset of Atrial Fibrillation | 71 (1.5) | 890 (2.2) | 0.002 |
| 1 year | | | |
| All-cause Mortality | 148 (4.1) | 1214 (3.7) | 0.224 |
| Cardiac Death | 48 (1.2) | 319 (0.9) | 0.039 |
| Stroke | 67 (1.5) | 826 (2) | 0.018 |
| Aortic Valve Re-intervention | 16 (0.4) | 154 (0.4) | 0.839 |
| Life-threatening Bleeding - Derived | 41 (0.9) | 404 (0.9) | 0.659 |
| Major Vascular Complication | 38 (0.7) | 445 (0.9) | 0.140 |
| New Requirement for Dialysis | 9 (0.2) | 86 (0.2) | 0.904 |
| New Pacemaker w/o Baseline Pacemaker | 287 (5.9) | 3493 (7.9) | <0.001 |
| Any Readmissions | 699 (18) | 6617 (18.8) | 0.324 |
| New Onset of Atrial Fibrillation | 99 (2.4) | 1192 (3.3) | <0.001 |

Note: 30-day and 1-year numbers in the table represent Kaplan-Meier event for outcome (No. Patients with Event).

eTable 7. Baseline Characteristics – Subgroup analysis of Age<65 patients only

| No. (%) | Early Era (Aug2019-Aug2020) (N=2,873) | Later Era (Aug2022-Aug2023) (N=3,651) | P-value |
|----------------------------------|--|---|---------|
| Age (year) | 59.5 (5.0) | 59.8 (4.8) | 0.010 |
| Male | 1881/2873 (65.5) | 2408/3651 (66) | 0.683 |
| Race | | | |
| Black/African American | 208/2873 (7.2) | 262/3651 (7.2) | 0.921 |
| Asian | 30/2873 (1) | 47/3651 (1.3) | 0.367 |
| American Indian/Alaskan Native | 17/2873 (0.6) | 24/3651 (0.7) | 0.739 |
| Hispanic or Latino ethnicity | 225/2837 (7.9) | 319/3586 (8.9) | 0.17 |
| Native Hawaiian/Pacific Islander | 7/2873 (0.2) | 5/3651 (0.1) | 0.318 |
| Multiple | 7/2873 (0.2) | 24/3651 (0.7) | 0.016 |
| White | 2524/2873 (87.9) | 3108/3651 (85.1) | 0.001 |
| Unknown | 80/2873 (2.8) | 181/3651 (5) | <0.001 |
| STS Risk Score (%) | 3.3 (3.7) | 3.0 (3.5) | <0.001 |
| STS Risk Score – Median(IQR) | 2.1 [1.2, 4.0] | 2.0 [1.1, 3.4] | <0.001 |
| STS Score < 4 | 2054/2739 (75) | 2845/3580 (79.5) | <0.001 |
| STS Score 4-8 | 473/2739 (17.3) | 501/3580 (14) | <0.001 |
| STS Score > 8 | 212/2739 (7.7) | 234/3580 (6.5) | 0.064 |
| BMI (kg/m ²) | 34.0 (19.7) | 33.2 (11.3) | 0.048 |
| Hypertension | 2430/2872 (84.6) | 3057/3651 (83.7) | 0.335 |
| Diabetes Mellitus | 1335/2868 (46.5) | 1828/3651 (50.1) | 0.005 |
| Currently on Dialysis | 358/2872 (12.5) | 415/3643 (11.4) | 0.183 |
| Chronic Lung Disease | 1101/2856 (38.6) | 1098/3651 (30.1) | <0.001 |
| Hostile Chest | 181/2871 (6.3) | 162/3651 (4.4) | <0.001 |
| Immunocompromise Present | 258/2871 (9) | 303/3099 (9.8) | 0.295 |
| Endocarditis | 32/2871 (1.1) | 25/3651 (0.7) | 0.064 |
| Permanent Pacemaker | 131/2871 (4.6) | 139/3651 (3.8) | 0.128 |
| Previous ICD | 99/2867 (3.5) | 88/3651 (2.4) | 0.012 |
| Prior PCI | 737/2870 (25.7) | 841/3651 (23) | 0.013 |
| Prior CABG | 322/2869 (11.2) | 358/3651 (9.8) | 0.063 |
| Prior Stroke | 237/2872 (8.3) | 364/3651 (10) | 0.017 |
| Prior TIA | 130/2870 (4.5) | 157/3651 (4.3) | 0.654 |
| Previous Cardiac Surgeries | 409/2854 (14.3) | 412/3639 (11.3) | <0.001 |
| Prior Aortic Valve Procedure | 81/2869 (2.8) | 114 (3.1) | 0.481 |

| No. (%) | Early Era (Aug2019-Aug2020) (N=2,873) | Later Era (Aug2022-Aug2023) (N=3,651) | P-value |
|--|--|---|---------|
| Carotid Stenosis | 328/2042 (16.1) | 290/3650 (7.9) | <0.001 |
| Peripheral Arterial Disease (PAD) | 590/2870 (20.6) | 586/3651 (16.1) | <0.001 |
| Prior MI | 551/2866 (19.2) | 642/3651 (17.6) | 0.089 |
| Heart Failure within 2 Weeks | 1994/2867 (69.6) | 2090/3101 (67.4) | 0.074 |
| Cardiogenic Shock within 24 Hours | 47/2873 (1.6) | 107/3650 (2.9) | <0.001 |
| Cardiac Arrest within 24 Hours | 18/2872 (0.6) | 15/3647 (0.4) | 0.224 |
| Porcelain Aorta | 63/2869 (2.2) | 49/3651 (1.3) | 0.008 |
| Atrial Fibrillation/Flutter | 577/2872 (20.1) | 740/3651 (20.3) | 0.859 |
| Home Oxygen | 208/2871 (7.2) | 309/3644 (8.5) | 0.067 |
| NYHA III/IV | 1845/2840 (65) | 2332/3597 (64.8) | 0.912 |
| KCCQ Overall Summary Score | 47.0 (26.2) | 47.8 (26.3) | 0.230 |
| Current/Recent Smoker (<1 year) | 637/2870 (22.2) | 735/2233 (32.9) | <0.001 |
| Five Meter Walk Test (second) | 6.9 (10.9) | 6.5 (3.4) | 0.107 |
| Hemoglobin | 12.7 (2.3) | 12.8 (2.3) | 0.673 |
| Albumin | 3.8 (0.6) | 3.9 (0.6) | <0.001 |
| MDRD GFR | 67.7 (33.0) | 69.5 (33.4) | 0.031 |
| Left Main Stenosis \geq 50% | 119/2853 (4.2) | 128/3363 (3.8) | 0.463 |
| Proximal LAD \geq 70% | 290/2850 (10.2) | 295/3344 (8.8) | 0.069 |
| Echocardiographic characteristics | | | |
| AV Area (cm ²) | 0.8 (0.3) | 0.8 (0.3) | <0.001 |
| AV Mean Gradient (mmHg) | 44.9 (15.0) | 43.3 (14.6) | <0.001 |
| AV Mean Gradient \geq 20(mmHg) | 2754/2824 (97.5) | 3484/3611 (96.5) | 0.016 |
| AV Annular Size (mm) | 25.4 (3.1) | 25.3 (2.6) | 0.287 |
| AV Morphology - Bicuspid | 678/2856 (23.7) | 899/3627 (24.8) | 0.329 |
| AV Morphology - Tricuspid | 1966/2856 (68.8) | 2677/3627 (73.8) | <0.001 |
| LVEF (%) | 53.7 (14.3) | 53.6 (14.4) | 0.947 |
| \geq Moderate Aortic Regurgitation | 557/2841 (19.6) | 768/3592 (21.4) | 0.080 |
| \geq Moderate Mitral Regurgitation | 361/2105 (17.1) | 485/2524 (19.2) | 0.070 |
| \geq Moderate Tricuspid Regurgitation | 288/2841 (10.1) | 409/3612 (11.3) | 0.128 |

Note: For continuous variables, values are presented as Mean (Standard Deviation). For binary variables, if the denominator is the same as the total cohort, values are presented as numerator (percentage). Otherwise, values are presented as numerator/denominator (percentage). *STS*: The Society of Thoracic Surgeons, *NYHA*: New York Heart Association, *BMI*: body mass index, *CABG*: coronary artery bypass graft surgery, *PCI*: percutaneous coronary intervention