



Expanding Use of TAVR in Underserved Populations

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Association of Black Cardiologists (ABC) Board Member

MEDCAC Meeting
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Disclosure

I, Dr. Aaron Horne Jr., have no conflict to report.

Assessing The Unintended Barriers To Access Created By Volume Requirements Is A MEDCAC Discussion Topic

Do hospital volume requirements create unintended barriers to TAVR based on any of the following: ~~Geographic location (both rural and urban)~~

- Gender
- Ethnicity
- Race
- Socioeconomic status
- Provider preference
time/trusted physician
instead of transferring
- Hospital setting (community center)

The simple answer
to this question is:
YES

with their long
the requirements
physician team)
al center/tertiary referral

Do Hospital Volume Requirements Create Unintended Barriers To TAVR?

There is limited evidence supporting specific volume requirements

Volume requirements create barriers to access for undertreated populations and communities, especially minorities

Focus should be on broadening appropriate access

Topics For Today



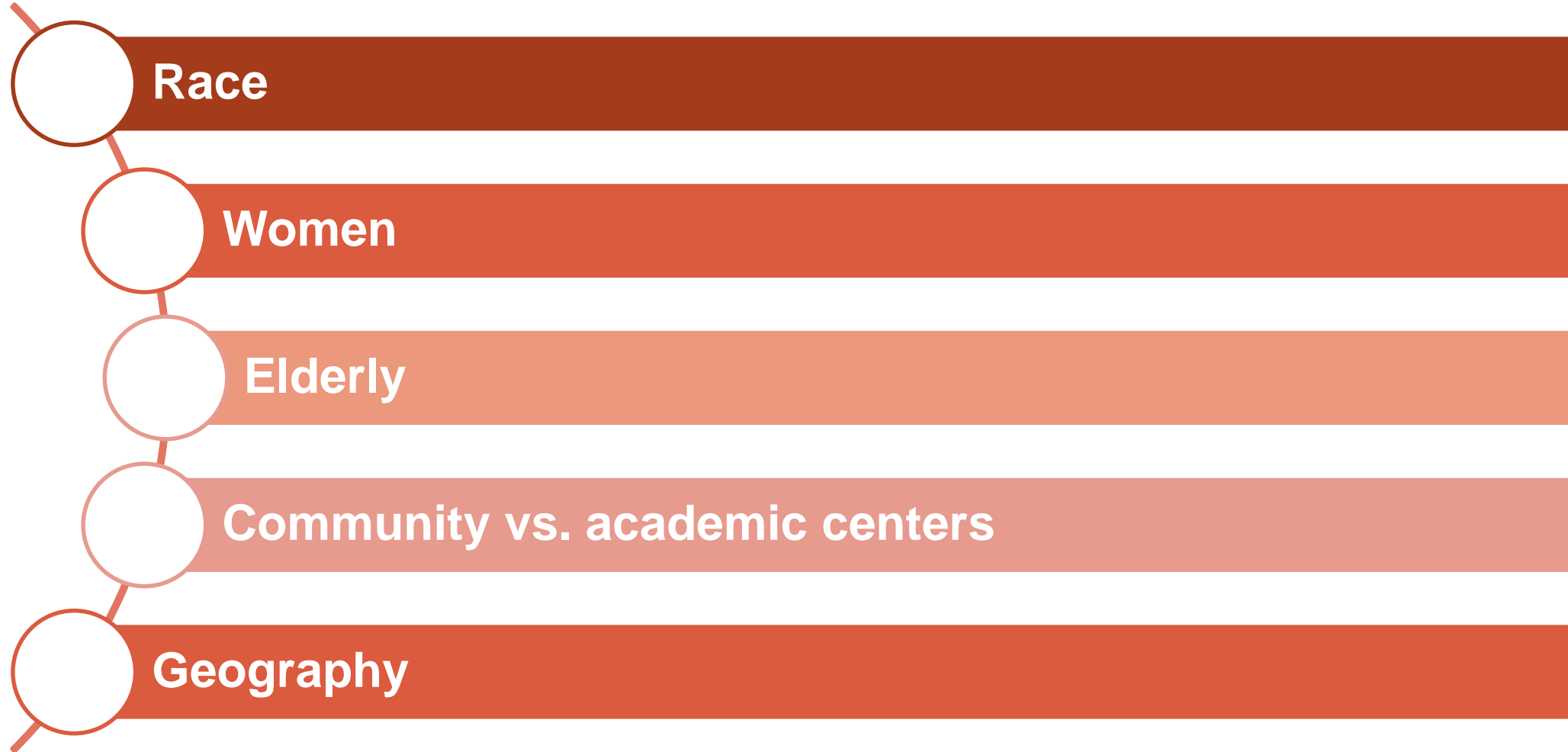
Understanding Access to VHD Treatment: Existing Disparities

Impact of Volume Requirements

Solutions to Providing TAVR Access to Underserved Populations

Understanding Access to VHD Treatment: Existing Disparities

Disparities Exist In A Range Of Different Areas



One Study Reporting Lower Severe AS Prevalence in AA with Significant Limitations

ORIGINAL RESEARCH

Racial Differences in the Prevalence of Severe Aortic Stenosis

Devin K. Patel, MD; Kelly D. Green, MD; Marat Fudim, MD; Frank E. Harrell, Jr, PhD; Thomas J. Wang, MD; Mark A. Robbins, MD

Background—In an era of expanded treatment options for severe aortic stenosis, it is important to understand risk factors for the condition. It has been suggested that severe aortic stenosis is less common in African Americans, but there are limited data from large studies.

Methods and Results—The Synthetic Derivative at Vanderbilt University Medical Center, a database of over 2.1 million de-identified patient records, was used to identify individuals who had undergone echocardiography. The association of race with severe aortic stenosis was examined using multivariable logistic regression analyses adjusting for conventional risk factors. Of the 272 429 eligible patients (mean age 45 years, 44% male) with echocardiography, 14% were African American and 82% were Caucasian. Severe aortic stenosis was identified in 106 (0.29%) African-American patients and 2030 (0.91%) Caucasian patients (crude OR 0.32, 95% CI [0.26, 0.38]). This difference persisted in multivariable-adjusted analyses (OR 0.41 [0.33, 0.50], $P < 0.0001$). African-American individuals were also less likely to have severe aortic stenosis due to degenerative calcific disease (adjusted OR 0.47 [0.36, 0.61]) or congenitally bicuspid valve (crude OR 0.13 [0.02, 0.80], adjusted OR dependent on age). Referral bias against those with severe valvular disease was assessed by comparing the prevalence of severe mitral regurgitation in Caucasians and African Americans and no difference was found.

Conclusions—These findings suggest that African Americans are at significantly lower risk of developing severe aortic stenosis than Caucasians. (*J Am Heart Assoc.* 2014;3:e000879 doi: 10.1161/JAHA.114.000879)

Key Words: aortic valve stenosis • database • epidemiology • race and ethnicity • risk factor

Valvular heart disease is responsible for more than 22 000 deaths each year in the United States.¹ In particular, aortic stenosis is a progressive condition known to carry a high short-term mortality once patients become symptomatic. Risk factors have been described previously and include male sex, smoking, hypertension, elevated low-density lipoprotein cholesterol (LDL), coronary atherosclerosis, congenital bicuspid valve, and advanced age.² Until recently, surgical replacement of the aortic valve was the only treatment proven to alter prognosis. This left a large number of elderly patients with multiple comorbidities without a viable treatment option due to excessive surgical risk; however, the recent introduction of transcatheter aortic valve replacement (TAVR) has offered an effective alternative for these patients.^{3,4}

As the population of treatment candidates expands, attention will be directed appropriately to assure equity in delivery of therapy. In several surgical series of aortic valve stenosis, it has been noted that African Americans were underrepresented.^{5–7} It is unknown, however, whether this underrepresentation reflects racial differences in the prevalence of severe aortic valve stenosis by race or difference in intervention rate of those diagnosed with severe aortic valve stenosis. Therefore, we compared the prevalence of severe aortic stenosis in African Americans and Caucasians at a large, tertiary care medical center.

Methods

Study Population

The Synthetic Derivative is a database of 2.1 million de-identified records from all patients in the electronic medical record at Vanderbilt University Medical Center, a large tertiary care center in Nashville, Tennessee. All documented patient encounters at the medical center are stripped of identifying information and uploaded via a one-way hash to the Synthetic Derivative where they can be searched based on

From the Division of Cardiovascular Medicine (K.D.G., T.J.W., M.A.R.), Departments of Medicine (D.K.P., M.F.) and Biostatistics (F.E.H.), Vanderbilt University Medical Center, Nashville, TN.

This article was handled by Hari Inaki, MD, as a guest editor. The Editors had no role in the evaluation of this manuscript or in the decision about its acceptance.

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DOI: 10.1161/JAHA.114.000879

Journal of the American Heart Association 1

Patel et al. 2014, reporting a lower SAS prevalence in AA, with several limitations

- **Not a true prevalence study**- based on clinically indicated echos
- **Single center**- not representative of full US disease burden
- **No independent assessment of the echos**- AS evaluated per report with no adjustment for potential biases in evaluation
- **Echo gradings pressure tested by reviewing a single parameter (i.e. AVA)**- potential to miss up to 30% of AS by looking at only one grading parameter (Minners 2008)
- **No adjustment for EF/HF**- potential for low flow aortic stenosis to confound prevalence results
- **Genetic studies show similar risk between white and AA**- Thanassoulis et al. 2013 comments no racial bias in the rate of SNP risk factors

Furthermore, this article does not address the broader question of why AA are treated less even when diagnosed¹

Existing Disparities To TAVR Access Are Well Documented

- Rodriguez, et.al. demonstrated that black patients are less likely to be referred for evaluation for treatment of aortic valve disease.¹
- Waksman, et. al. showed that despite increased referrals for TAVR due to broadened indications and a more informed medical community, the disparity in race for TAVR referrals has not changed.²
- Bob-Manuel, et al. found that racial disparities in TAVR implantation result from multiple complex factors, including³:
 - Socioeconomic disparities
 - Higher rates of uninsured or underinsured patients
 - Inherent biases in healthcare provision
 - Fewer referrals to specialists
 - Poor cultural competency, language barriers, and physician distrust in some minority populations.

Lower Rate Of Referrals For AVD In African Americans

DESIGN:

- Retrospective, cohort design; 4 community based hospitals
- Patients >40 years with AVD from January 2011 to June 2016 (N=952)



The American Journal of Cardiology

Volume 120, Issue 3, 1 August 2017, Pages 450-455



Valvular Heart Disease

Comparison of Frequency of Referral to Cardiothoracic Surgery for Aortic Valve Disease in Blacks, Hispanics, and Whites

Benjamin Cruz Rodriguez MD ^a✉, Priyanka Acharya MPH, MSc ^b, Christopher Salazar-Fields MD ^c, Aaron Horne Jr. MD ^d

KEY POINTS

- After adjusting for clinical and echocardiographic variables, **black patients were less likely to be referred to CTS for treatment of aortic valve disease than white patients**
- Adjusted odds ratio for CTS referral was 0.48 for blacks ($p < 0.001$) compared with whites

Despite An Overall Increase In Referrals For TAVR, Blacks Are Still Less Likely To Be Referred For Treatment

DESIGN:

- Single center, retrospective cohort study
- 1,814 patients referred between 2010 to 2016 and stratified by referral year

Journal of the American College of Cardiology

Volume 69, Issue 11 Supplement, March 2017

DOI: 10.1016/S0735-1097(17)34600-4

 PDF Article

RACIAL DISPARITIES AND TEMPORAL TRENDS IN DEMOGRAPHICS AND CLINICAL CHARACTERISTICS OF PATIENTS SCREENED FOR TRANSCATHETER AORTIC VALVE REPLACEMENT

Ron Waksman, Kyle Buchanan, M. Chadi Alraies, Toby Rogers, Arie Steinvil, Edward Koifman, Joelle Salmon, Jiaxiang Gai, Rebecca Torguson, Petros Okubagzi, Itsik Ben-Dor, Augusto Pichard and Lowell Satler

 [Author + information](#)

Background: The broadening indications following the U.S. Food and Drug Administration approval of transcatheter aortic valve replacement (TAVR) have increased the treatment options for patients with severe aortic stenosis. It remains uncertain how these changes have influenced the demographics and characteristics of TAVR referrals.

KEY POINTS

- Of the patients referred for TAVR, 83.0% were caucasian and 13.0% were black. Over a similar time period, 36.0% of patients referred for percutaneous coronary intervention were black ($p < 0.0001$)
- Despite broadening indications and more informed medical community, **the disparity in race of TAVR referrals has not changed.**

Racial Disparities In TAVR Implantation Result From Multiple Complex Factors

DESIGN:

- Literature review and commentary
- Evaluated existing literature on racial disparities including access, referrals and treatment rates

Review Article

Page 1 of 7

A review of racial disparities in transcatheter aortic valve replacement (TAVR): accessibility, referrals and implantation

Tamunoinemi Bob-Manuel¹, Arindam Sharma¹, Amit Nanda¹, Devarshi Ardeshta², William Paul Skelton IV³, Rami N. Khouzani^{1,4}

¹Department of Internal Medicine, ²College of Medicine, University of Tennessee Health Science Center, Memphis, TN, USA; ³Department of Internal Medicine, University of Florida, Gainesville, Florida, USA; ⁴Department of Internal Medicine, Division of Cardiology, University of Tennessee Health Science Center, Memphis, TN, USA

Contributions: (I) Conception and design: T Bob-Manuel, A Nanda, RN Khouzani; (II) Administrative support: WP Skelton 4th; (III) Provision of study materials or patients: A Sharma, D Ardeshta; (IV) Collection and assembly of data: None; (V) Data analysis and interpretation: None; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Tamunoinemi Bob-Manuel, MD. Internal Medicine Resident Physician, PGY-3, Department of Internal Medicine, University of

KEY POINTS

- Racial disparities in TAVR implantation result from multiple complex factors, including:
 - Socioeconomic disparities
 - Higher rates of uninsured or underinsured patients
 - Inherent biases in healthcare provision
 - Fewer referrals to specialists
 - Poor cultural competency, language barriers, and physician distrust in some minority populations.

Aortic Stenosis (AS) Impacts All Races

Based on limited data, prevalence of AS does not vary by ethnicity¹

However, **African Americans are at increased risk** for earlier onset of AS, hence become symptomatic more quickly²

~78,000
African
Americans at
risk of Severe
Aortic
Stenosis in
the U.S.³

¹Aronow et al, Comparison of Echocardiographic Abnormalities

²Tamunoinemi et al, A review of racial disparities in TAVR

³12% of 650k SAS patients

Aortic Stenosis Impacts All Races, with little variance

Comparison of Echocardiographic Abnormalities in African-American, Hispanic, and White Men and Women Aged >60 Years

Wilbert S. Aronow, MD, Chul Ahn, PhD, and Itzhak Kronzon, MD

The prevalence of echocardiographic findings increases with age in men and women and has been previously reported for older men and women.¹ However, the prevalence of echocardiographic findings in older African-American, Hispanic, and white men and women in a long-term health care facility has not been previously reported. We are reporting on data from a prospective study investigating the prevalence of echocardiographic findings in African-American, Hispanic, and white men and women aged >60 years in a long-term health care facility.

...

can-Americans, and 188 Hispanics. The 924 men included 553 whites, 236 African-Americans, and 135 Hispanics. Patients were studied because of their enrollment in the study. A selected number of echocardiographic diagnoses (listed in Tables 1 and 2) were analyzed.

Hypertrophic cardiomyopathy was diagnosed if idiopathic hypertrophic subaortic stenosis with LV outflow tract obstruction at rest was present or if the ratio of the interventricular septum to posterior wall thickness was >1.3 and the septal thickness was >15 mm in the absence of other acquired or congenital heart

DESIGN:

Echocardiographic findings in African-American, Hispanic, and white men and women aged >60 years in a long term health facility.

KEY POINTS

Based on limited data, **prevalence of AS does not vary by ethnicity**

However, African Americans are at an increased risk

ATM

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doi: [10.21037/atm.2017.10.17](#)

PMCID: PMC5787726
PMID: [29404356](#)

A review of racial disparities in transcatheter aortic valve replacement (TAVR): accessibility, referrals and implantation

[Tamunoinemi Bob-Manuel](#),¹ [Arindam Sharma](#),¹ [Amit Nanda](#),¹ [Devarshi Ardeshta](#),²
[William Paul Skelton, IV](#),³ and [Rami N. Khouzam](#)^{1,4}

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Abstract

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Racial disparities in transcatheter aortic valve replacement (TAVR) implantation results from several factors, including socioeconomic disparities, inherent biases in healthcare provision, fewer referrals to specialists and language barriers in some minority populations. In this review article, we discuss the current data on the racial disparities in TAVR, explore the prevalence of aortic stenosis in different demographics in the United States and we proffer practical solutions to these problems.

Keywords: Transcatheter aortic valve replacement (TAVR), racial disparities, advocacy, aortic stenosis (AS)

KEY POINTS:

African Americans are at an increased risk for earlier onset of Aortic Stenosis, and become symptomatic more quickly

African Americans Underdiagnosed For Aortic Valve Disease

Sex, Race, and Socioeconomic Disparities in Patients With Aortic Stenosis (from a Nationwide Inpatient Sample)

Hind A. Beydoun, PhD^{a,b,*}, May A. Beydoun, PhD^c, Hailun Liang, PhD^d, Greg A. Dore, PhD^c
Danielle Shaked, PhD^e, Alan B. Zonderman, PhD^c, and Shaker M. Eid, MD^b

Aortic stenosis (AS) is the third most prevalent cardiovascular disease following hypertension and coronary artery disease. The primary objective of this cross-sectional study is to examine gender, racial, and socioeconomic disparities in patients aged ≥ 50 years using data from the Nationwide Inpatient Sample. AS was identified using the *International Classification of Diseases, Ninth Revision* codes. We calculated stratum-specific weighted totals, means, proportions, and trends and disparities for in-hospital AS prevalence and income over the 2002 to 2012 period. Predictors

DESIGN:

- Cross-sectional study; Healthcare Cost and Utilization Project (N=18,942,347)
- AS inpatient discharges ≥ 50 years, 2002-2012

KEY POINTS:

- Blacks have lower prevalence of AS compared with whites based on patient records; based on echocardiography, prevalence is parity
- Discrepancy may be under-diagnosis of AS in blacks

African Americans Historically Undertreated For VHD

African Americans were less likely to undergo mitral valvuloplasty

1,425 adult patients who underwent first time, isolated mitral valvuloplasty or mitral valve replacement in two institutions between 1993 and 2003.

Table 3. Prevalence of Mitral Valve Repair and Replacement for African Americans Compared With Whites

	African American	White	p Value
Mitral valve repair	51.2% (63)	66.4% (865)	< 0.001
Mitral valve replacement	48.8% (60)	33.6% (437)	

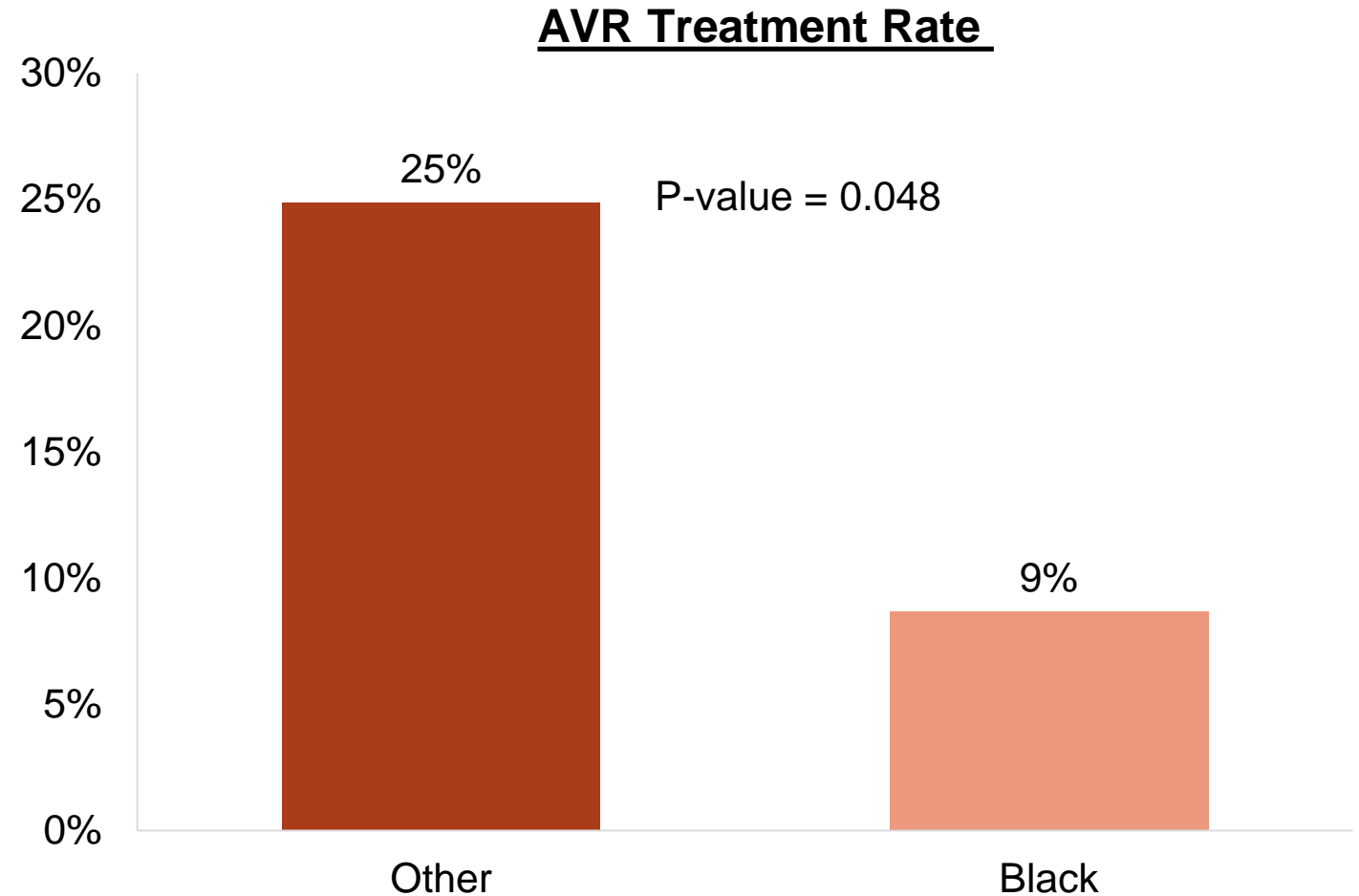
Lower Rate Of AVR In African Americans And Low Income Group

DESIGN:

- Single urban, tertiary care referral center), retrospective, case control study
- 67 TAVR patients with severe AS (AVA <1cm² or AVI<0.60cm²/m² or AV velocity >40mmHg) matched to controls without TAVR

KEY POINTS:

- Non-blacks were significantly more likely to receive TAVR than blacks
- Income disparity also significant; for every \$1,000 increase in income, a .9% increase in the odds of receiving TAVR



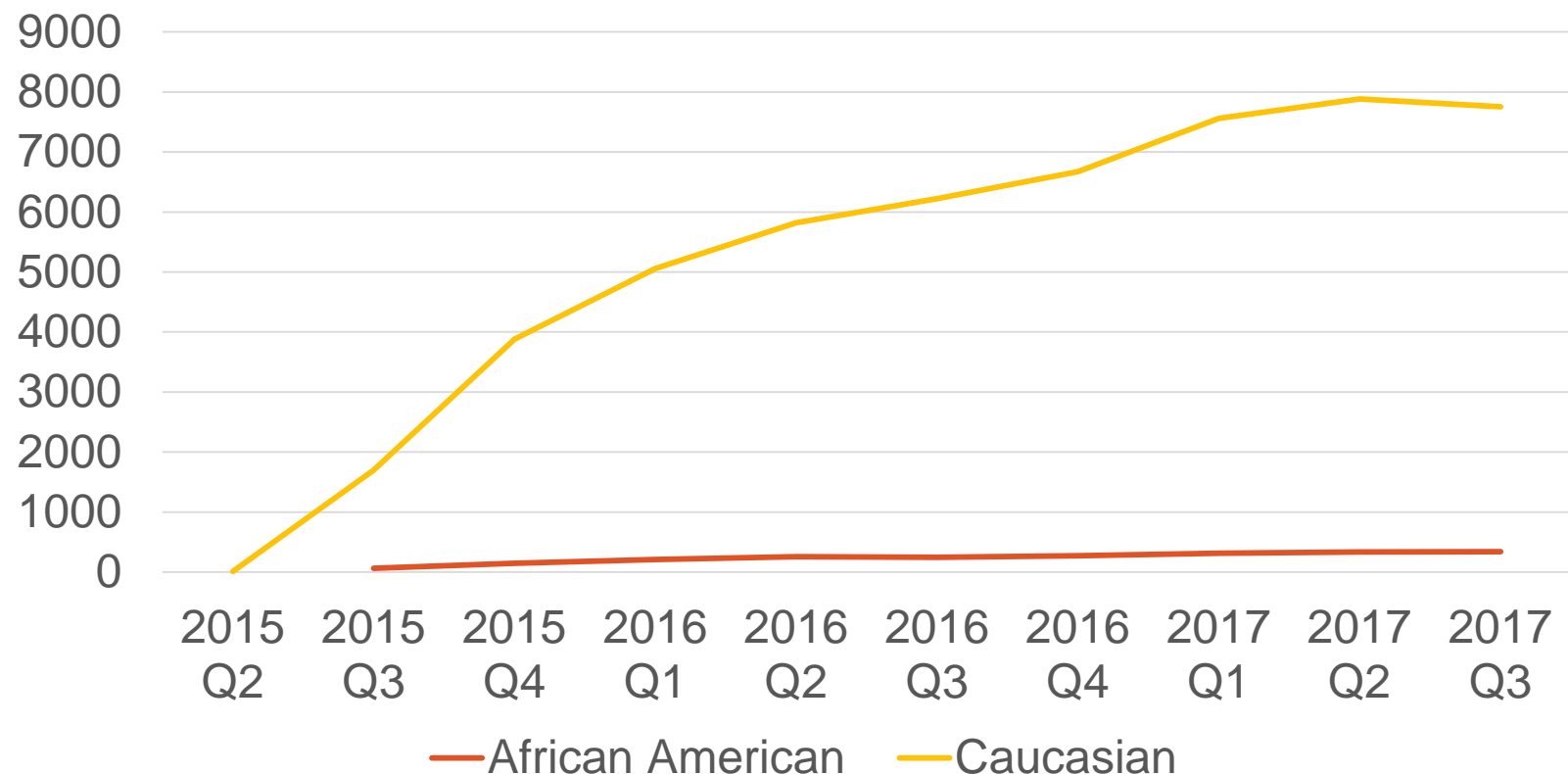
2016 Annual TVT Report

54,782 US TAVR patients; small proportion of minorities treated

Variable	Level	Overall (n=54,782)	2012 (n=4,627)	2013 (n=9,052)	2014 (n=16,295)	2015 (n=24,808)
Age (yrs)	Median	83.0	84.0	84.0	83.0	83.0
Gender (%)	Male	51.7	52.6	46.9	52.6	52.7
Race (%)	White	94.0	94.3	94.2	93.8	94.1
	Black/African American	3.8	3.8	3.5	3.9	3.8
	Asian	1.1	1.1	1.3	1.3	1.0
	Hispanic or Latino Ethnicity	3.8	3.5	3.5	3.9	4.0

Low TAVR Growth Among African Americans

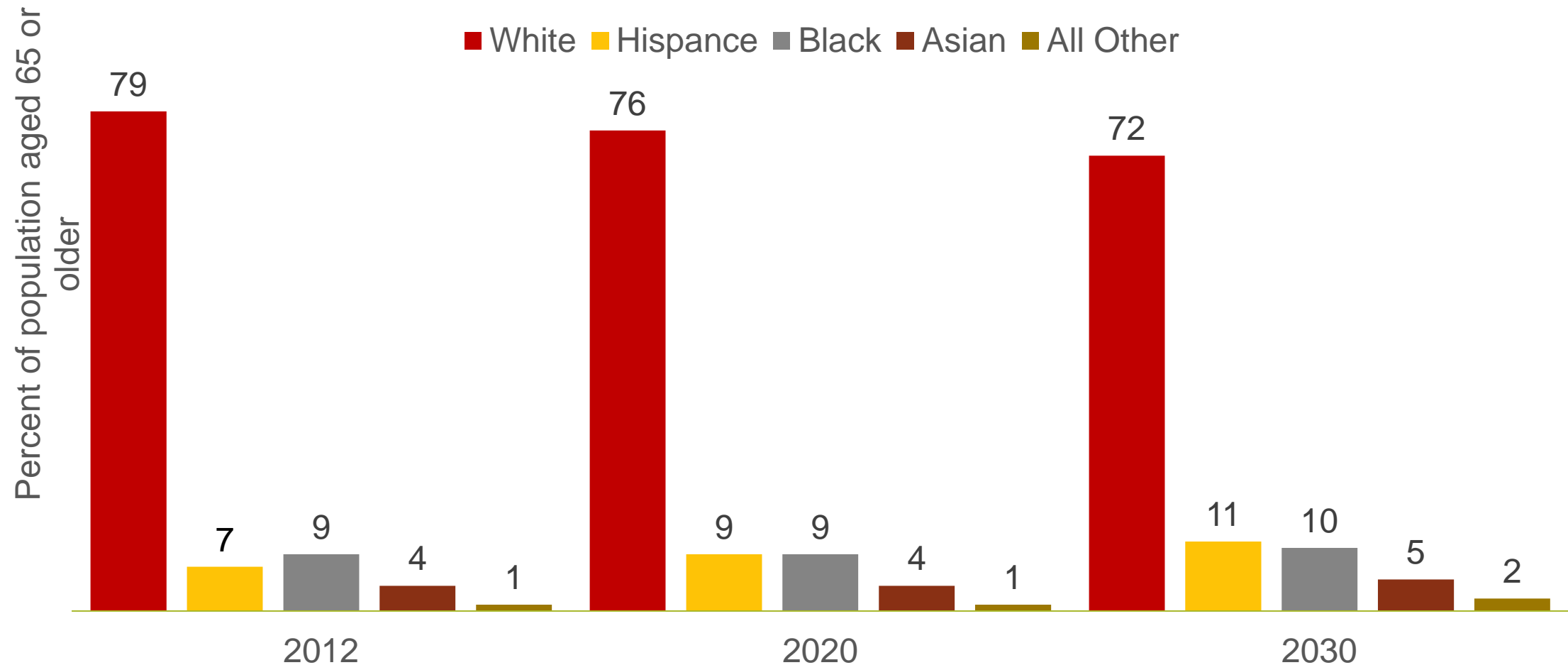
Growth of TAVR Cases by Ethnicity



TAVR penetration and growth in the African American patient population remains low

Medicare Beneficiaries Will Become More Diverse as Population Demographics Change

Percent of U.S. population, aged 65 and older, by race and ethnicity



African Americans Demonstrate Similar Outcomes After AVR

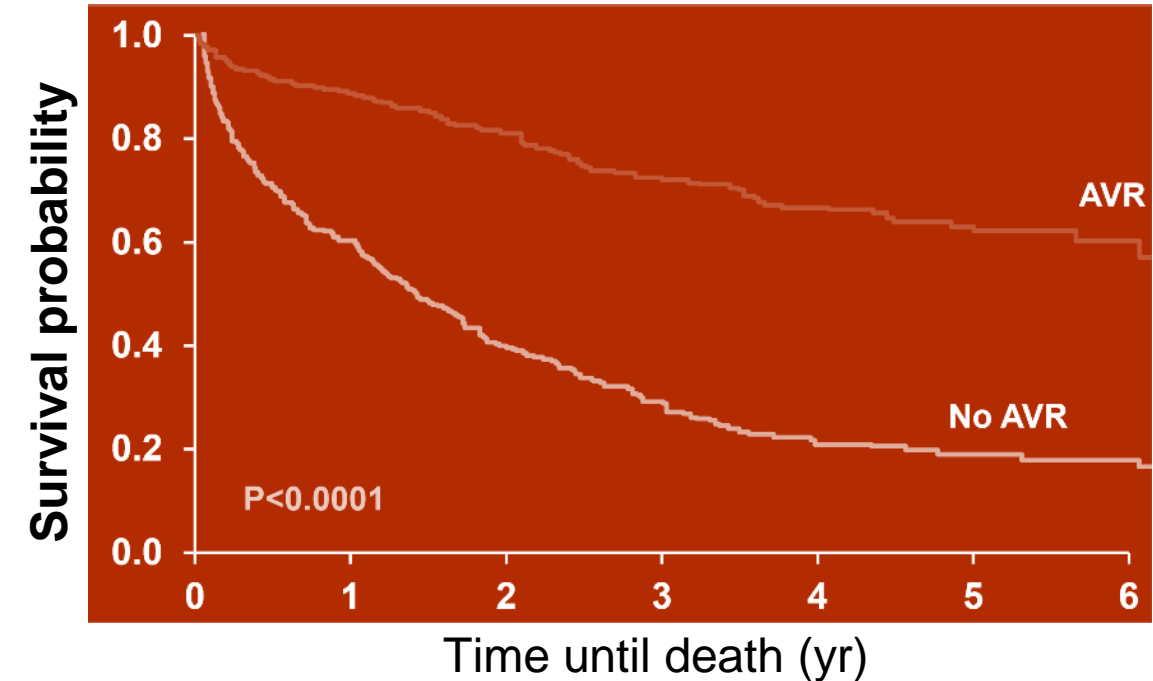
DESIGN:

- Single center, retrospective, observational study
- 36.7% AA patient population
- 880 patients with AVA <1cm²
- 10% AA; 90% EA

Key Points:

- AA patients had worse disease severity.
- AA patients had AVR less frequently (39%) than EA patients (53%) (p=0.019).
- **When treated with AVR, 3-year survival was similar (hazard ratio 1.15).**

Overall Mortality – AVR vs no AVR



AVR	427	213	109	59	35	21	12
No AVR	453	332	221	151	107	66	19

African Americans Demonstrate Similar Outcomes After TAVR

Catheterization and Cardiovascular Interventions 85:640–647 (2015)

VALVULAR AND STRUCTURAL HEART DISEASES

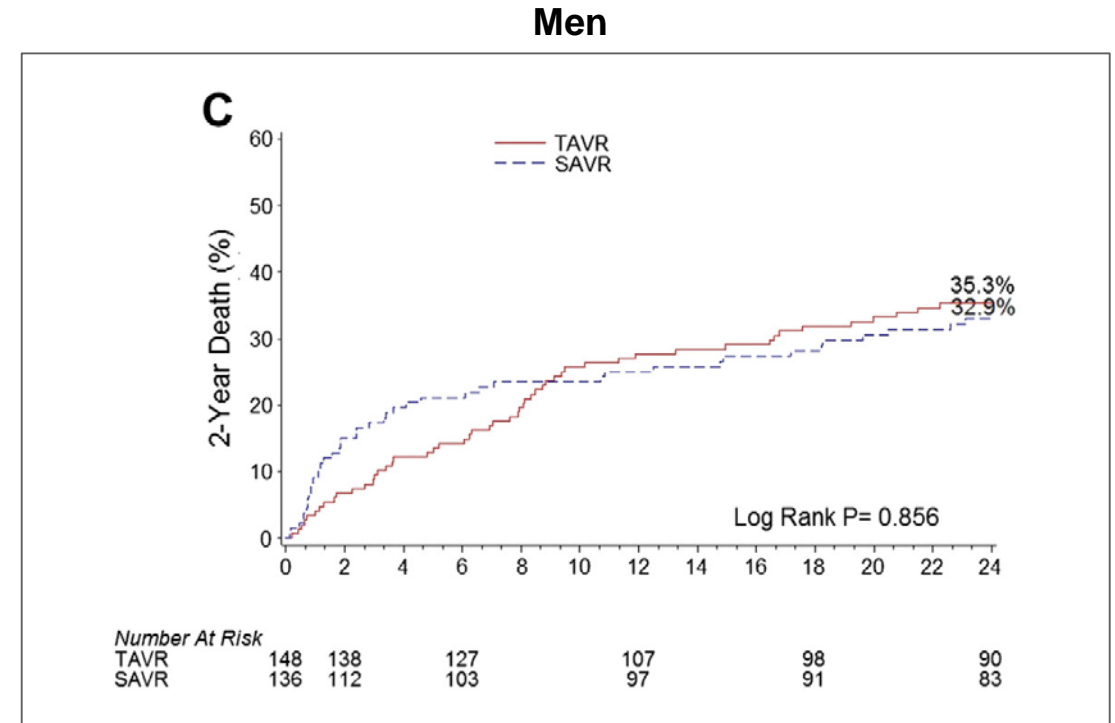
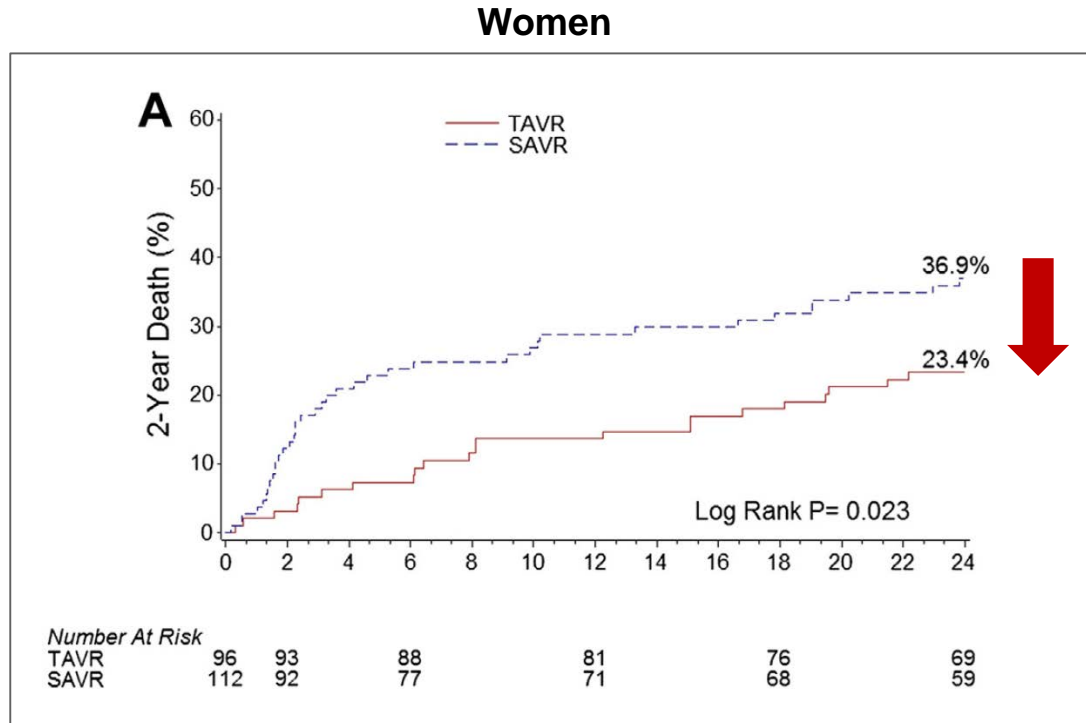
Original Studies

Outcome Comparison of African-American and Caucasian Patients with Severe Aortic Stenosis Subjected to Transcatheter Aortic Valve Replacement: A Single-Center Experience

Sa'ar Minha, MD, Israel M. Barbash, MD, Marco A. Magalhaes, MD, Itsik Ben-Dor, MD, Petros G. Okubagzi, MD, Lakshmana K. Pendyala, MD, Lowell F. Satler, MD, Augusto D. Pichard, MD, Rebecca Torguson, MPH, and Ron Waksman,* MD

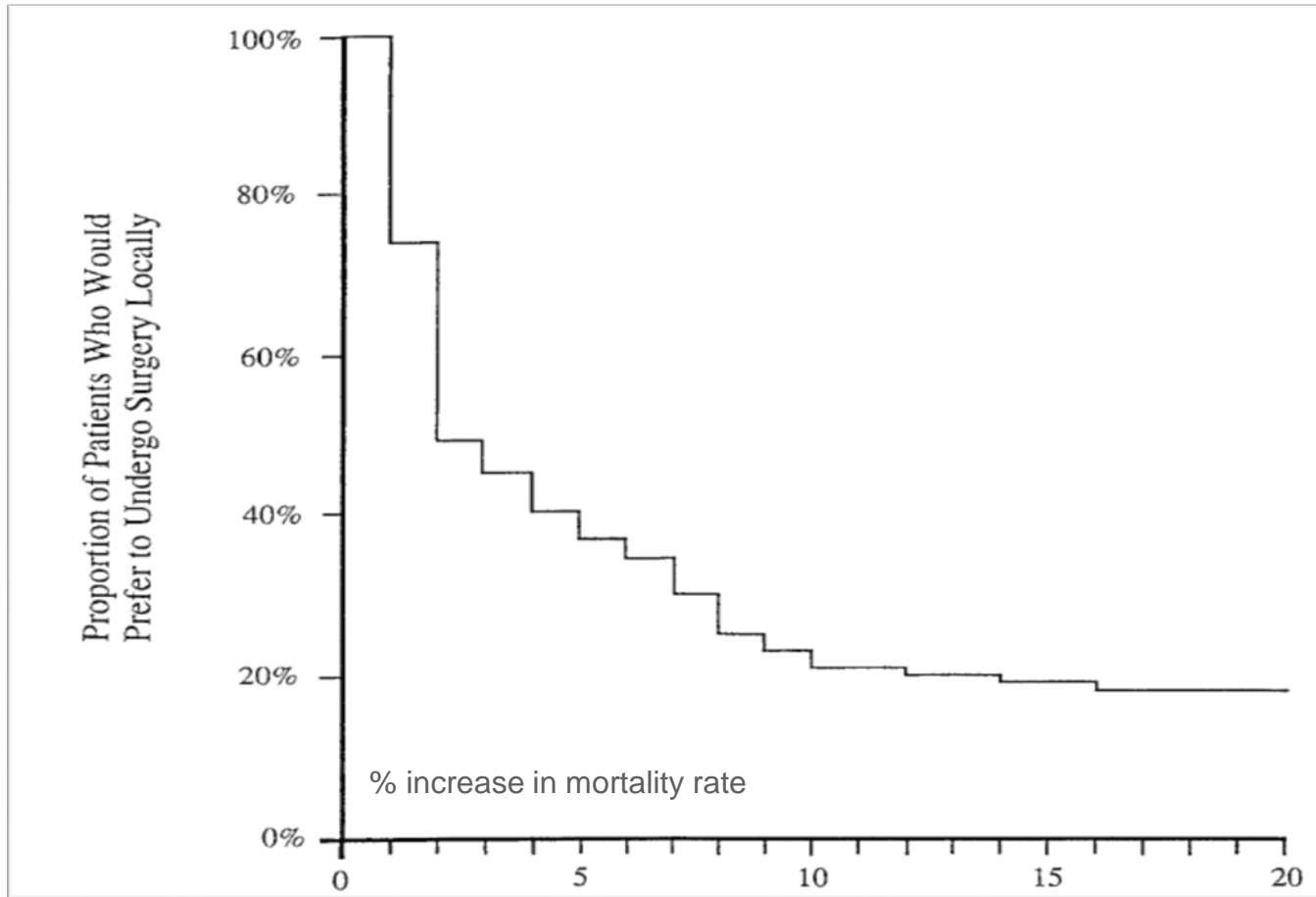
Conclusion: Unlike with other cardiovascular interventions, this study demonstrates that AA patients referred for TAVR shared similar risks and outcomes when compared to a Caucasian population.

Reducing Access To TAVR Has A Disproportionate Negative Impact On Women with Severe Aortic Stenosis



Women benefit more from TAVR than SAVR

Patients Over 65 Avoid Traveling For Care



When presented with a 1% increased risk of death, **75% of patients would still prefer their local hospital**

Sources: Finlayson, S. R., et al. (1999) Patient preferences for location of care: implications for regionalization." Med Care 37(2): 204-209., The Advisory Board

Patients Over 65+ Do Not Want To Travel For Care

How Consumers' Health Care Preferences Vary by Age



65+

Physician-Centric

Provider **continuity and credentials** were more important than a free visit.

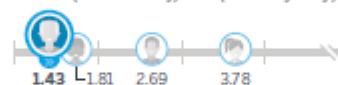
Access Preference



61% prefer **weekend** access over after-hours access

Most Loyal

Likelihood to Switch PCPs in Next Year
Scale: 0 (not at all likely) to 10 (extremely likely)



The 65+ cohort is the **most loyal**—they were the least likely to leave their PCPs and also the most likely to recommend their providers.

Affiliation Influences Choice

Likelihood to Break a Referral



Only 7% of these self-referrers reported breaking a referral to see a provider of their choosing. **Hospital affiliation was most important** in this cohort's specialist selection.

Travel Avoiders

20.3% of decision determined by travel time



This age group **doesn't want to travel** for care—travel time was more than twice as important as following a referral or hospital affiliation to this group.

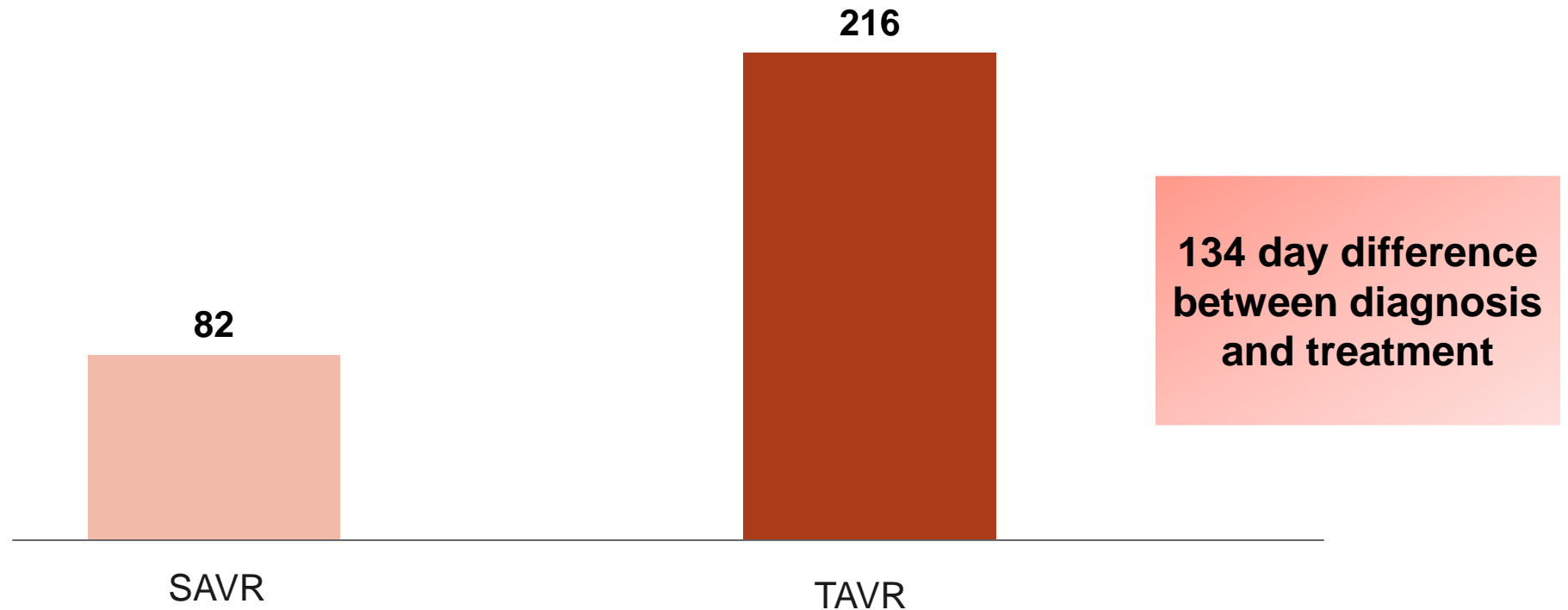
Millennials, Gen X, Baby Boomers, the Silent Generation—you know they all consume care differently, but what exactly do each of these groups want? And how can you become their provider of choice?

We surveyed thousands of consumers across the United States to better understand their care expectations and found that **some of the most significant variations fell across age groups**. Here, we've segmented each of our five consumer choice surveys by age to help you tailor your messages and target your investments to different generations across the care continuum.

20.3% of their decision to seek surgical care was determined by travel time

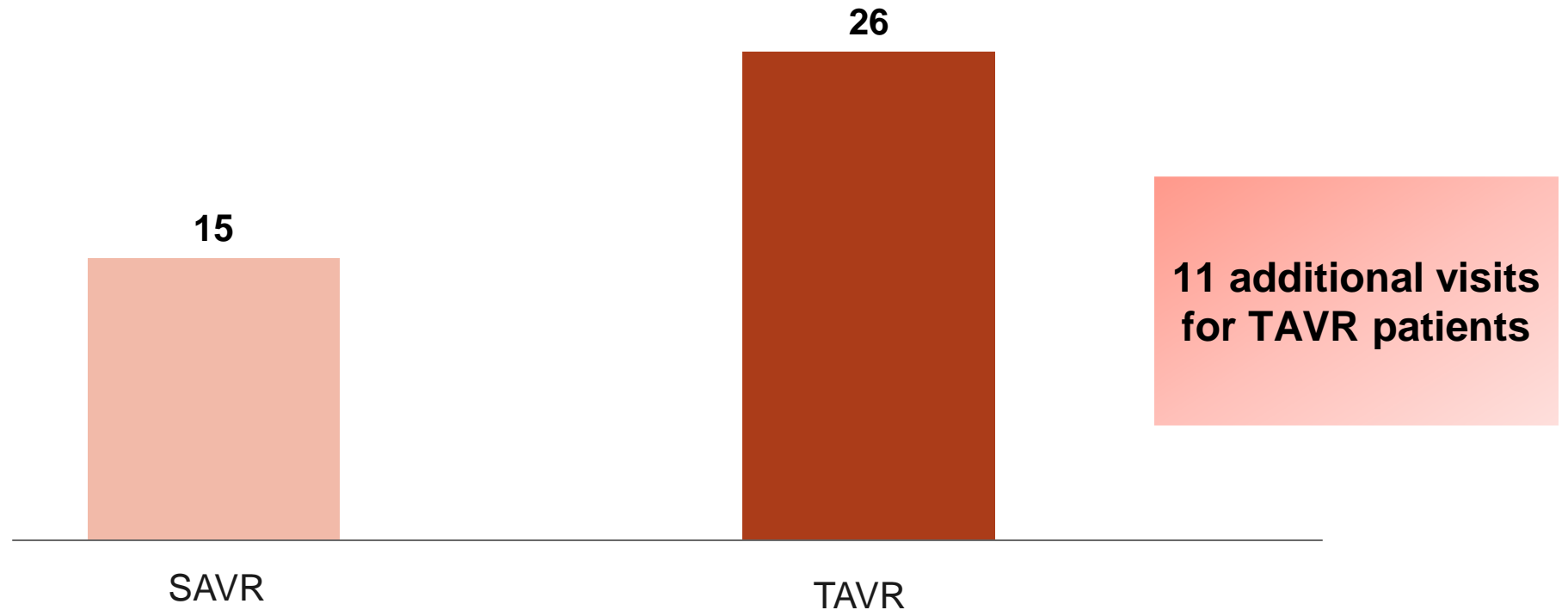
Time Between Diagnosis And Treatment Is Greater For TAVR Patients

2016: Days between AS diagnosis & treatment for SAVR vs. TAVR



Number Of Visits Between Diagnosis And Treatment Is Greater For TAVR Patients

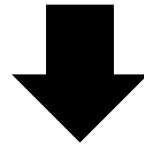
2016: Number of physician visits between initial AS diagnosis and treatment for SAVR vs. TAVR



Higher Volume Requirements Can Negatively Impact Select Rural Communities

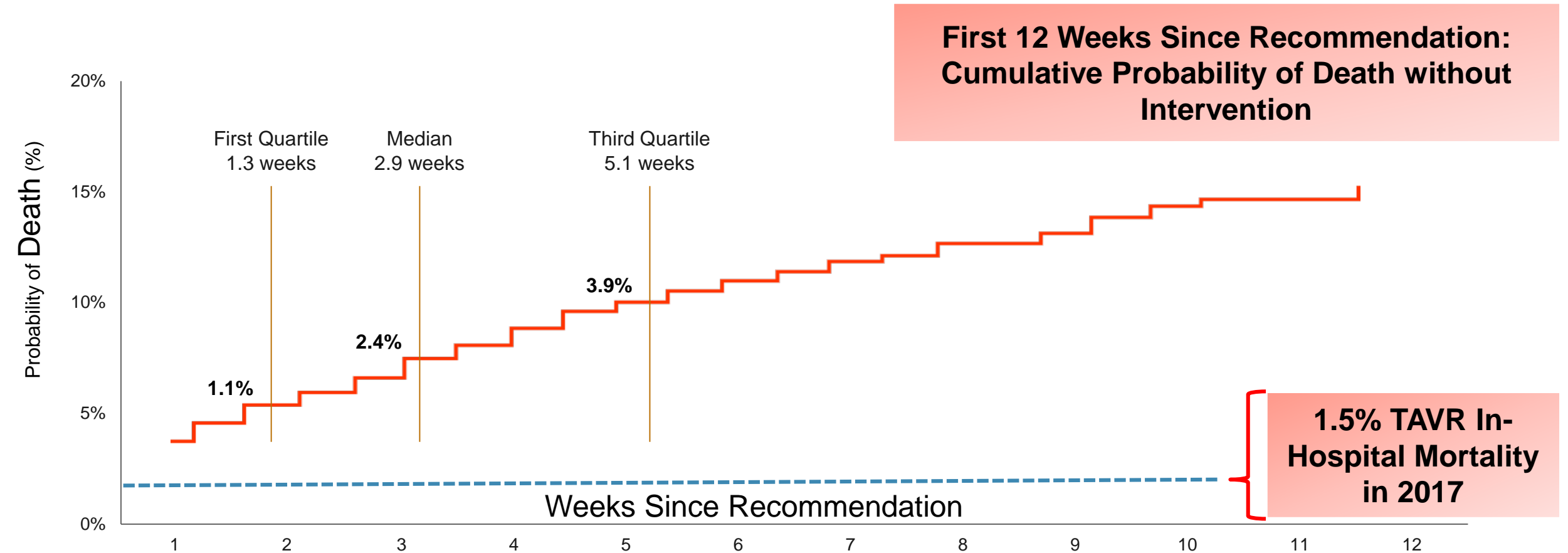
With a 50 TAVR/30 SAVR annual volume requirement scenario ...

10 sole community centers would be
under volume thresholds



Potential for 10 communities to be left without
access to appropriate therapies

AS Patients Don't Wait Well



Impact of Volume Requirements

Volume Requirements Would Heighten Socioeconomic And Racial Disparities

DESIGN:

- Single urban, tertiary care referral center), retrospective, case control study
- 67 TAVR patients with severe AS (AVA <1cm² or AVI<0.60cm²/m² or AV velocity >40mmHg) matched to controls without TAVR

KEY POINTS

- **For every \$10,000 increase in income, the odds of receiving TAVR increased by 10% (p = 0.05)**
- **Non-blacks were significantly more likely to receive TAVR than blacks (odds ratio [OR] 2.812, confidence interval [CI] 1.007-7.853; p = 0.048)**

J Racial Ethn Health Disparities. 2017 Dec;4(6):1189-1194. doi: 10.1007/s40615-016-0325-x. Epub 2016 Dec 30.

Socioeconomic and Racial Disparities: a Case-Control Study of Patients Receiving Transcatheter Aortic Valve Replacement for Severe Aortic Stenosis.

[Sleder A](#)^{1,2}, [Tackett S](#)³, [Cerasale M](#)³, [Mittal C](#)⁴, [Isseh J](#)³, [Radjef R](#)³, [Taylor A](#)⁵, [Farha R](#)³, [Lupak Q](#)³, [Larkin D](#)⁵, [Lamerato L](#)⁵, [Divine G](#)⁵, [Wisdom K](#)⁶, [Baker-Genaw K](#)³, [O'Neill W](#)⁷.

Author information

Abstract

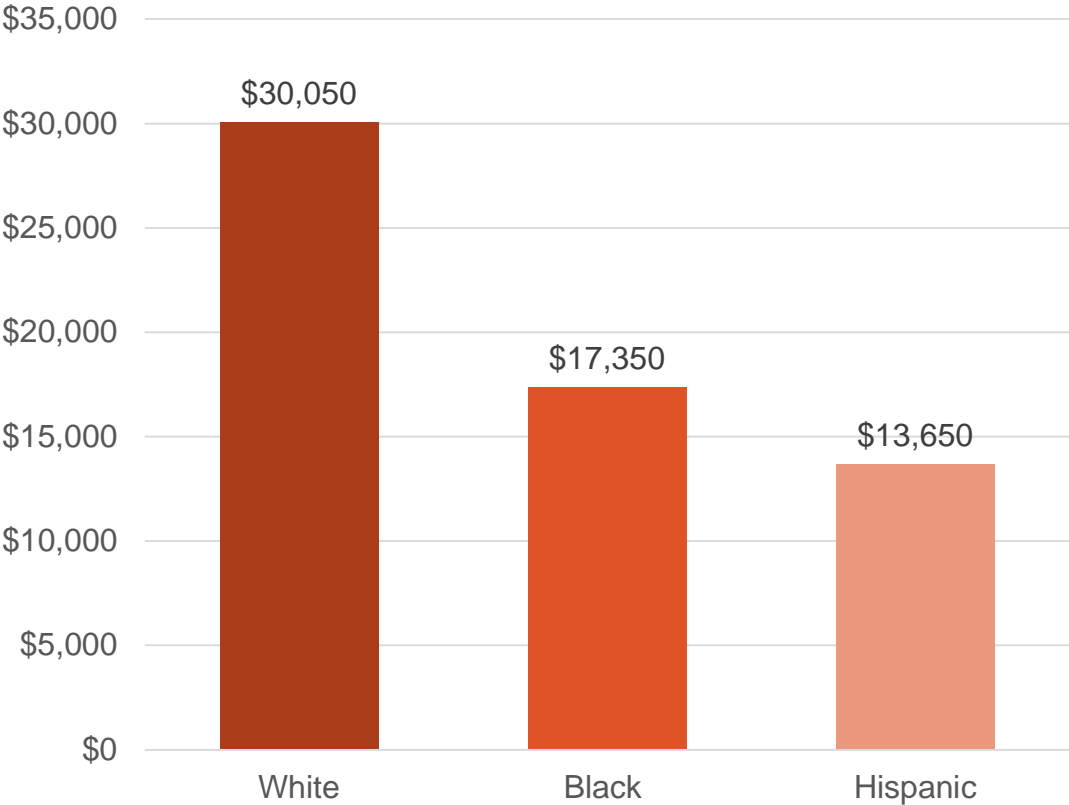
BACKGROUND: We sought to quantify socioeconomic disparities in patients with severe aortic stenosis (AS) undergoing transcatheter aortic valve replacement (TAVR) at an urban, tertiary referral center.

METHODS: This retrospective case-control study identified 67 patients with severe AS (aortic valve [AV] area ≤1 cm² or AV area index ≤0.60 cm²/m² or AV velocity ≥40 mmHg) who underwent TAVR from November 5, 2013 to June 10, 2014. Study subjects were matched to controls with severe AS without TAVR in a 4:1 age-frequency match. Demographic data were collected using electronic medical records. Area-based median household income was obtained by geocoding patients' addresses and linking with census data. Charlson comorbidity index for all subjects was calculated.

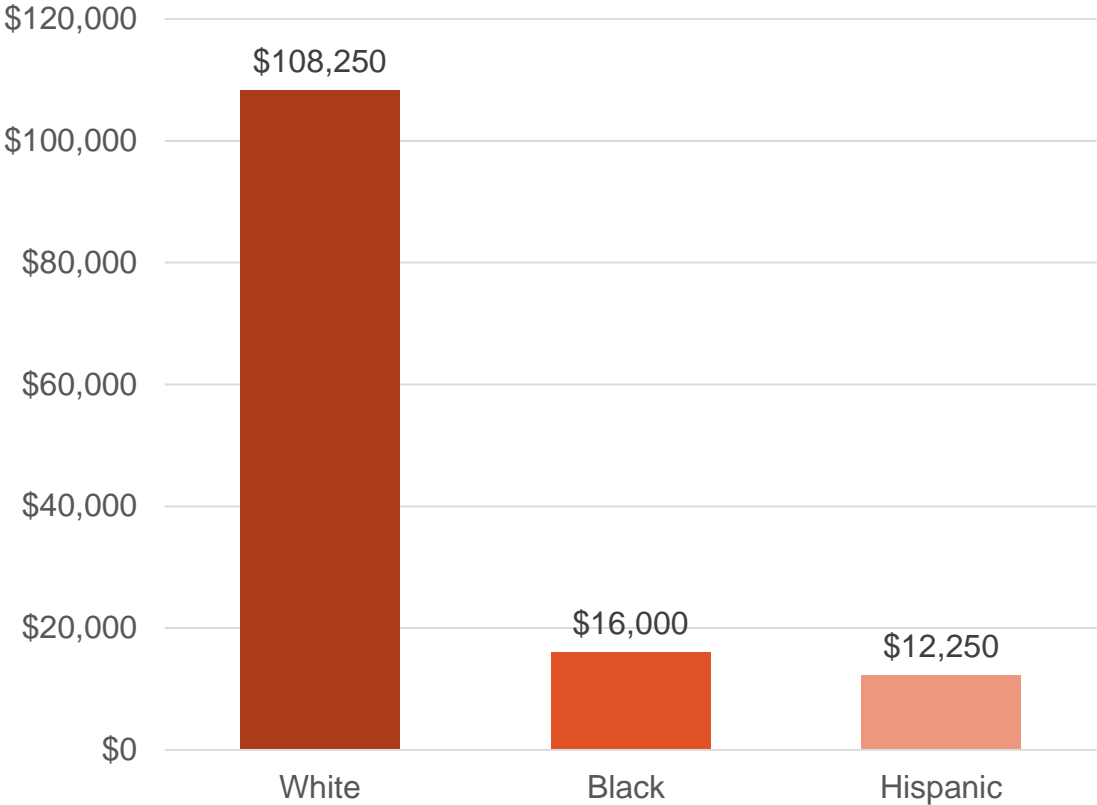
RESULTS: Income disparity was significant in that with every \$10,000 increase in income, the odds of receiving TAVR increased by 10% (p = 0.05). Non-blacks were significantly more likely to receive TAVR than blacks (odds ratio [OR] 2.812, confidence interval [CI] 1.007-7.853; p = 0.048).

Minority Medicare Beneficiaries Have Less Economic Stability To Overcome Additional Barriers To Access Healthcare Services

Median per capita income among Medicare beneficiaries by race/ethnicity in 2016



Median savings among Medicare beneficiaries by race/ethnicity in 2016

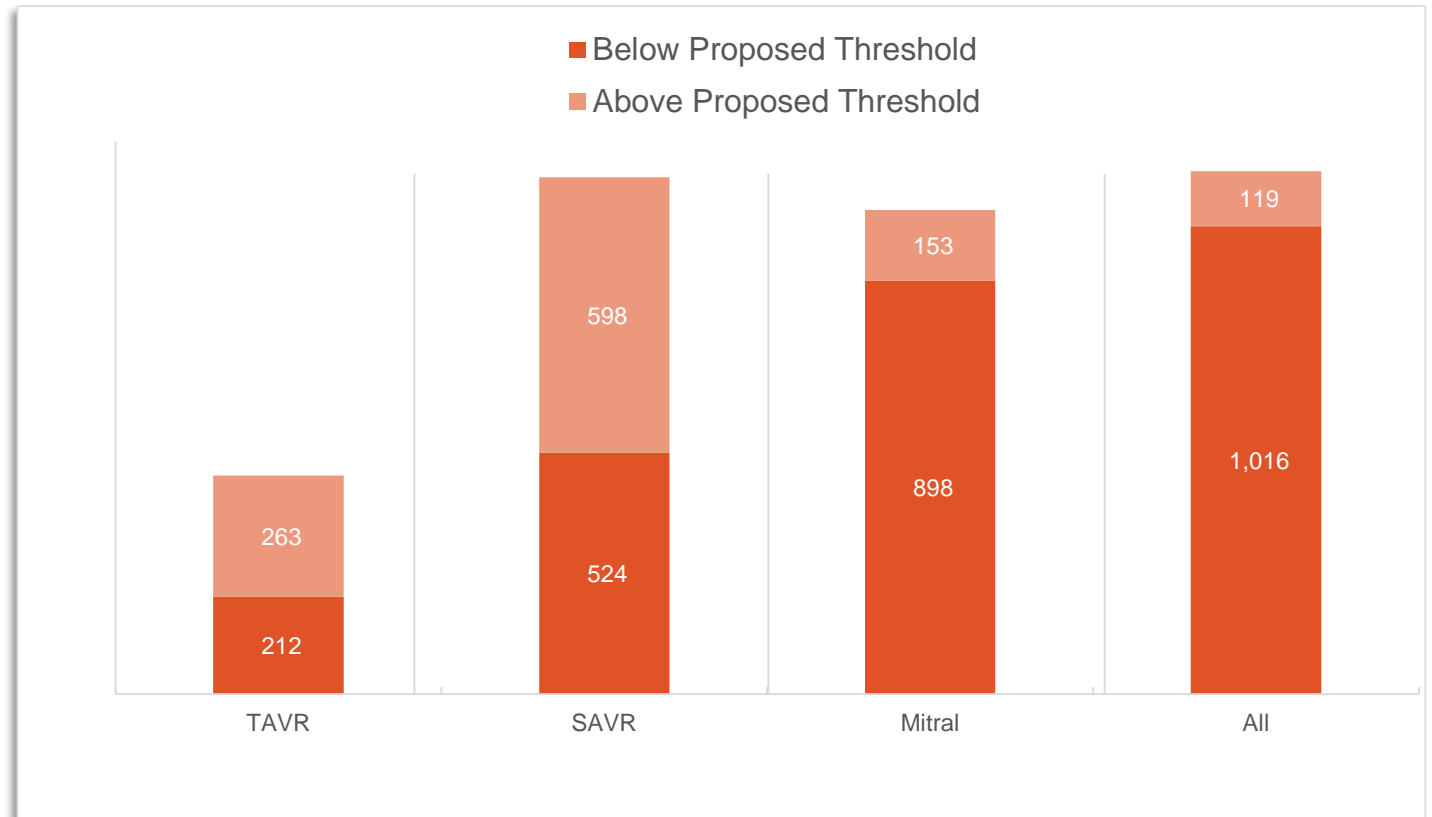


Few Hospital Programs Will Meet The Proposed Advanced Center Of Care Volume Thresholds

10% of centers meet all three volume requirements

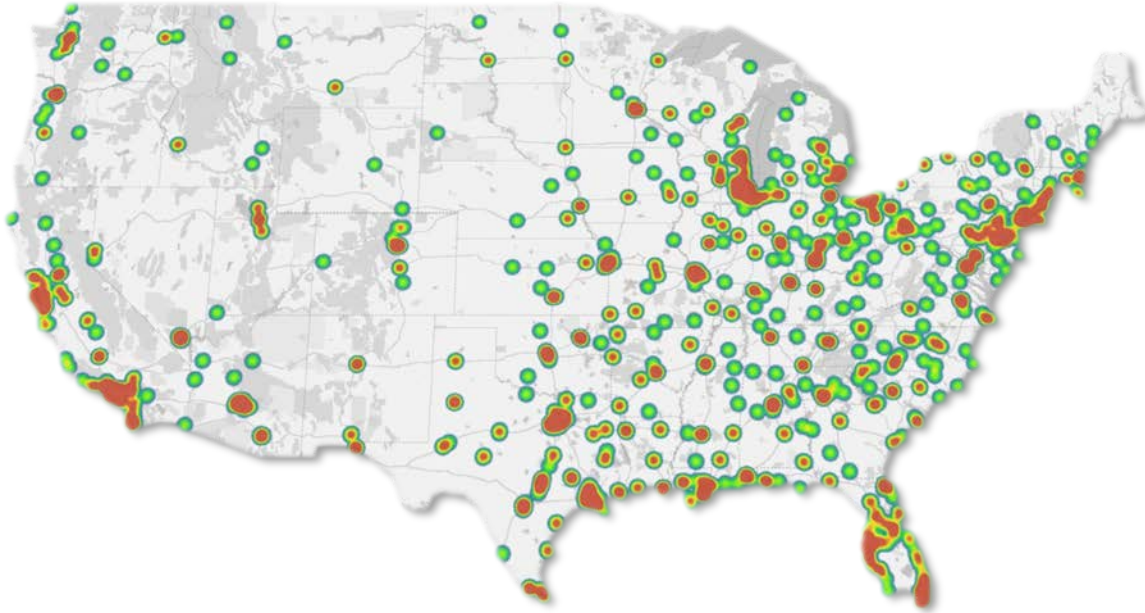
Institutional volume requirements for Level I and II valve centers are the same:

- TAVR: 50/year or 100/2 years
- SAVR: 40/year or 80/2 years
- SMVR: 50/year for institution (or 25/year for individual surgeon)

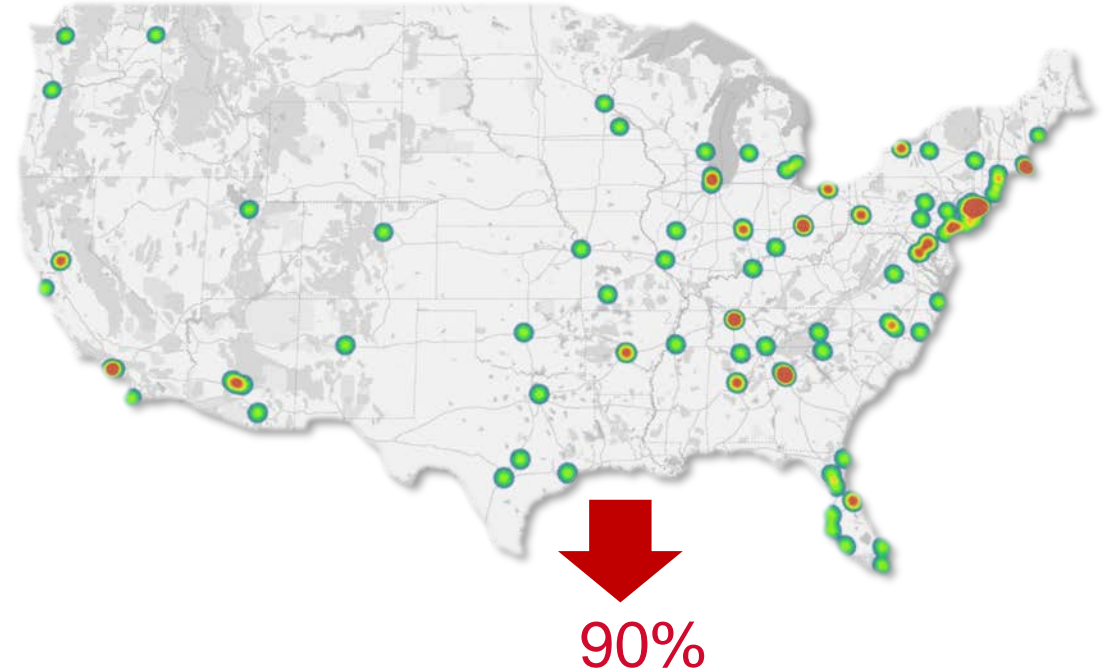


Volume Thresholds Could Significantly Reduce The Number Of Hospitals Providing Valve Services

2016 Hospitals



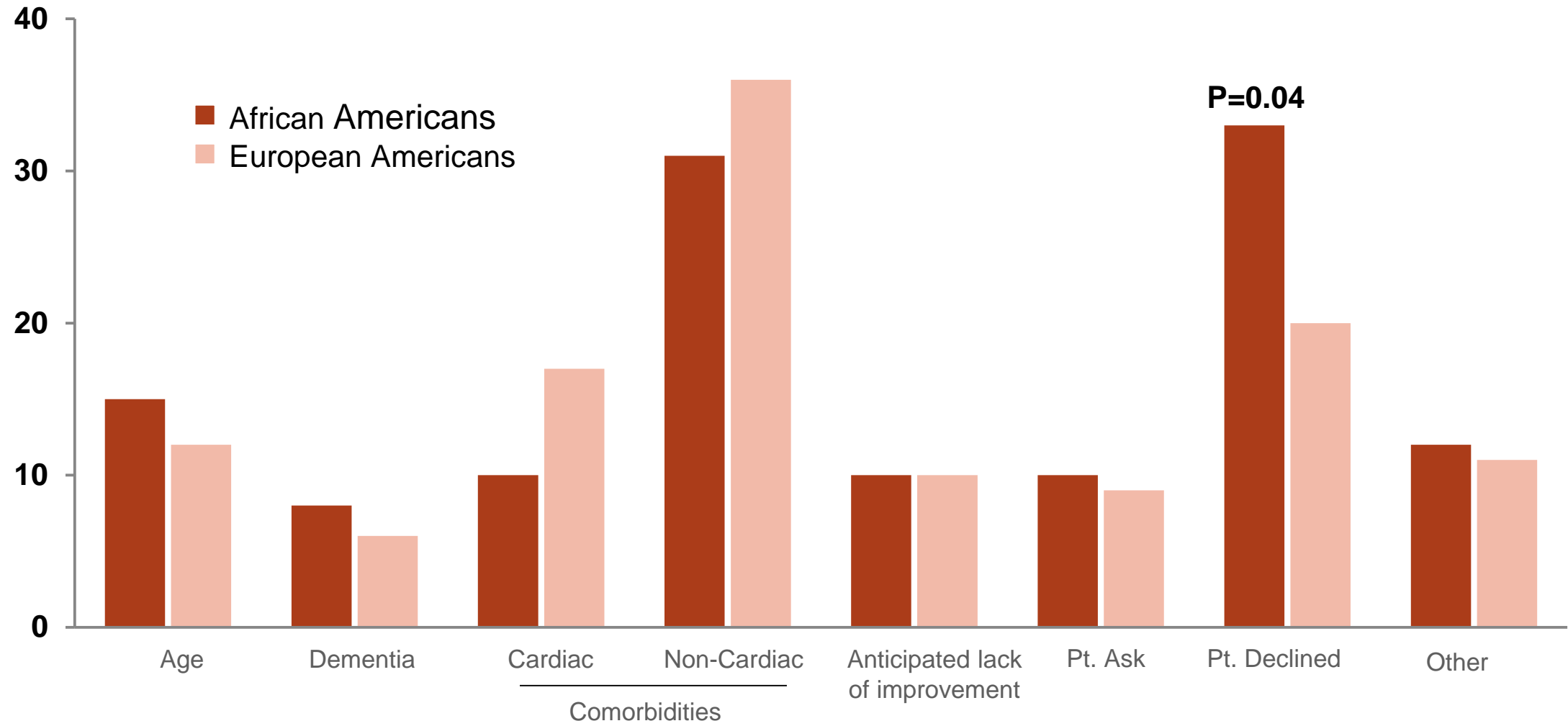
With Thresholds



Reduction in the number of hospitals providing valve services. From **1,135** in 2016, to **119** after the imposition of thresholds

Solutions to Providing TAVR Access to Underserved Populations

Understand Reasons For Not Undergoing AVR



Understand Reasons For Not Undergoing TAVR




[Journal of Racial and Ethnic Health Disparities](#)

pp 1–6 | [Cite as](#)

Socioeconomic and Racial Disparities: a Case-Control Study of Patients Receiving Transcatheter Aortic Valve Replacement for Severe Aortic Stenosis

Authors

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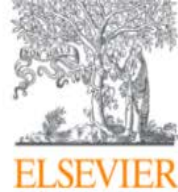
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After echo, blacks were more likely to decline AVR, be lost to follow-up, and not be referred to cardiology (OR 4.41, CI 1.43-13.64; p=0.010)

Lower Rate Of Referrals For AVD In African Americans

DESIGN:

- Retrospective, cohort design; 4 community based hospitals
- Patients >40 years with AVD from January 2011 to June 2016 (N=952)



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Valvular Heart Disease

Comparison of Frequency of Referral to Cardiothoracic Surgery for Aortic Valve Disease in Blacks, Hispanics, and Whites

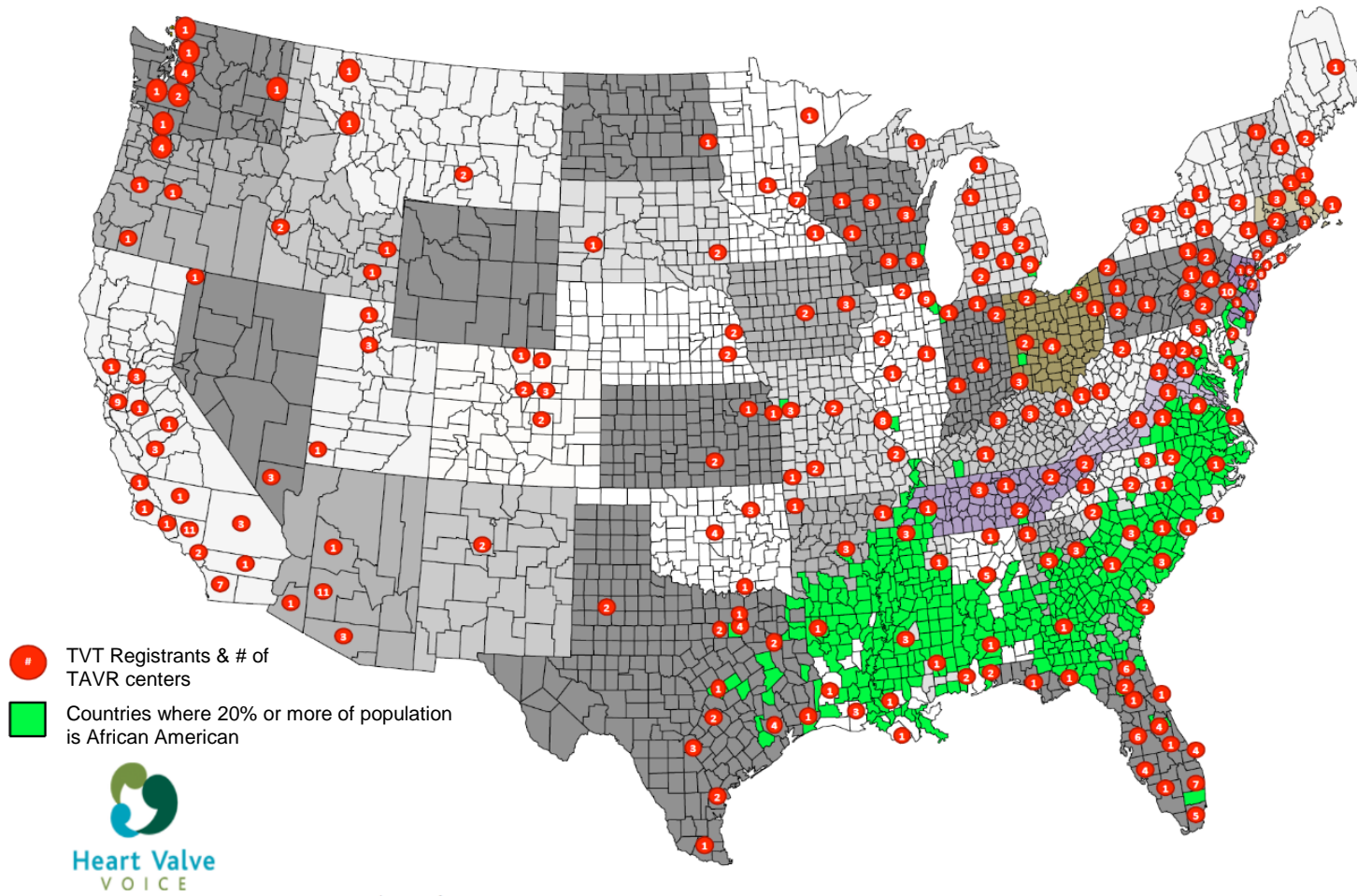
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KEY POINTS

- After adjusting for clinical and echocardiographic variables, **black patients were less likely to be referred to CTS for treatment of aortic valve disease than white patients**
- Adjusted odds ratio for CTS referral was 0.48 for blacks ($p < 0.001$) compared with whites

Potential Solution: Better Geographical Alignment

TVT Registry Locations Compared with African American Population by County



Sources: TVT Registry as of May 19, 2017; US Census Data 2010 Census

Existing geographical barriers: access to providers offering the full range of treatment options.

Building TAVR Expertise In The Community

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ABSTRACT

BACKGROUND Transcatheter aortic valve replacement (TAVR) has been introduced into U.S. clinical practice. Efforts to optimize outcomes and minimize the learning curve.

OBJECTIVES The goal of this study was to assess the degree to which increasing experience during this procedure, separated from other outcome determinants including patient and procedural characteristics, was associated with outcomes.

METHODS The authors evaluated the association of hospital TAVR volume and patient outcomes for 42,988 commercial procedures conducted at 395 hospitals submitting to the Transcatheter Valve Therapy Registry from 2011 through 2015. Outcomes assessed included adjusted and unadjusted in-hospital major adverse cardiac events.

RESULTS Increasing site volume was associated with lower in-hospital risk-adjusted outcomes, including mortality ($p < 0.02$), vascular complications ($p < 0.003$), and bleeding ($p < 0.001$) but was not associated with stroke. From the first case to the 400th case in the volume-outcome model, risk-adjusted adverse outcomes including mortality (3.57% to 2.15%), bleeding (9.56% to 5.08%), vascular complications (6.11% to 4.20%), and stroke (2.03% to 1.66%). Vascular and bleeding volume-outcome associations were nonlinear with a higher risk of adverse outcomes in the first 100 cases. An association of procedure volume with risk-adjusted outcomes was also seen in the subgroup having transfemoral access.

CONCLUSIONS The initial adoption of TAVR into practice in the United States showed that increasing experience was associated with better outcomes. This association, whether deemed a prolonged learning curve or a manifestation of a volume-outcome relationship, suggested that concentrating experience in higher volume heart valve centers might be a means of improving outcomes. (STS/ACC Transcatheter Valve Therapy Registry [TVT Registry]; [NCT01737528](#)) (J Am Coll Cardiol 2017;70:29-41) © 2017 by the American College of Cardiology Foundation.

Procedural Experience for Transcatheter Aortic Valve Replacement and Relation to Outcomes


The STS/ACC TVT Registry

John D. Carroll, MD,^a Sreekanth Vemulapalli, MD,^b Dadi Dai, PhD,^c Roland Matsouaka, PhD,^d Eugene Blackstone, MD,^e Fred Edwards, MD,^f Frederick A. Masoudi, MD, MSPH,^a Michael Mack, MD,^g Eric D. Peterson, MD, MPH,^b David Holmes, MD,^h John S. Rumsfeld, MD, PhD,^a E. Murat Tuzcu, MD,^e Frederick Grover, MDⁱ




Potential Solutions: Valvular Heart Disease Roundtable

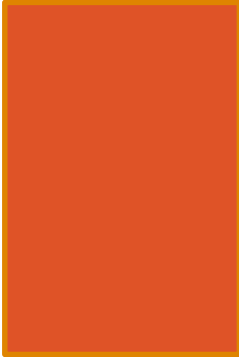
Solutions focused on immediately actionable items:



Conduct patient out-reach survey – Patients receiving TAVR and those who refuse treatment



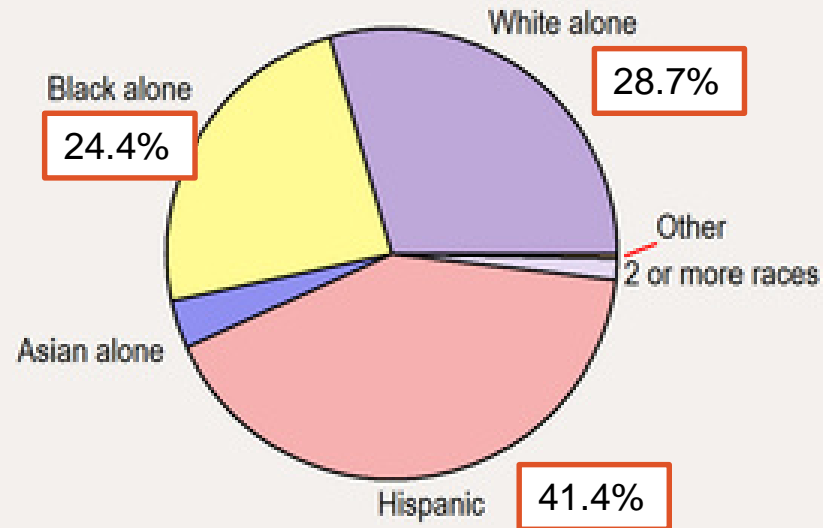
Develop a TAVR Advisory Board partnering with ABC to increase education and awareness



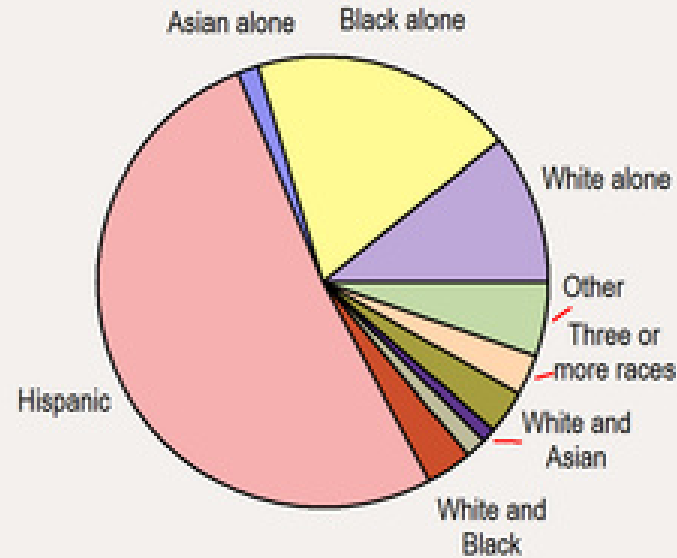
Develop national campaign to address disparities

Our Community – Oak Cliff In Dallas, TX

Races in Dallas, TX



Races in Oak Cliff in Dallas, TX



Median Income:
US: \$57,617
Dallas, TX: \$47,243
Oak Cliff, TX: \$41,991

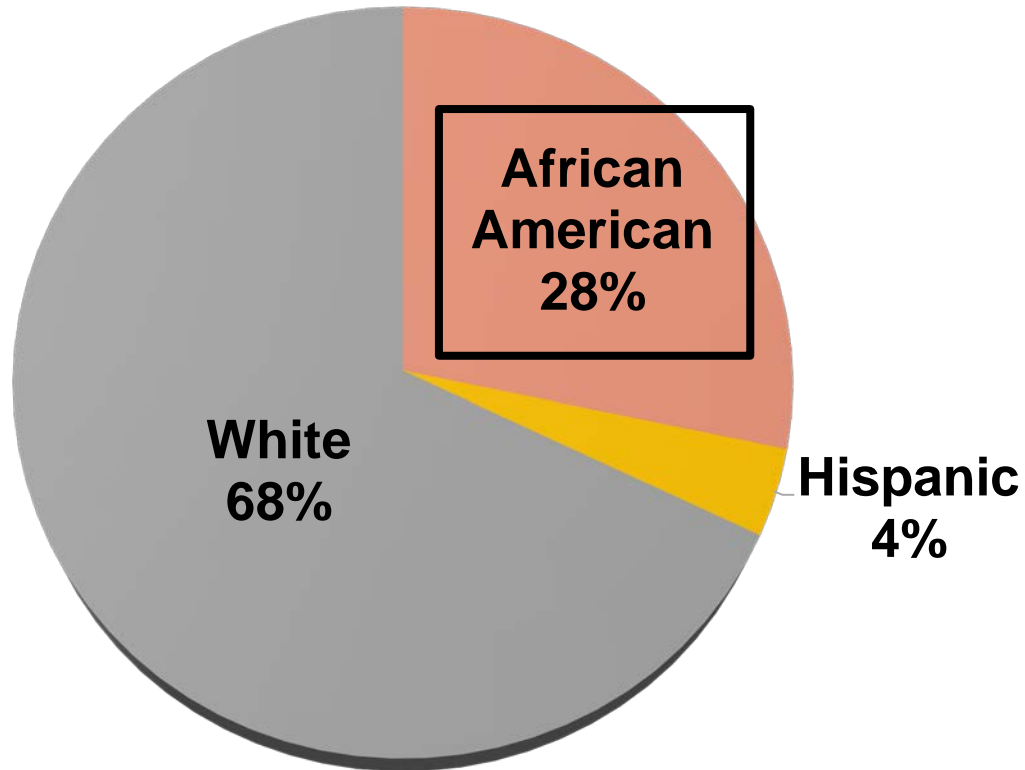
Our Pilot – Methodist Dallas Medical Center



54
TAVRs

(Apr 2016 – May 2018)

Our Demographics



28% (MDMC TAVR)

VS.

4% (US TAVR)

Our Outcomes

Outcome	2017 Q1-Q3 (n=24)	2017 Q4 (n=8)	2018 Q1 (n=8)	2018 Q2 (n=3)
In-hospital Mortality Rate				
MDMC	0.0%	0.0%	0.0%	0.0%
US Median	1.5%	1.5%	1.5%	1.5%
Vascular Complication (any)				
MDMC	4.2%	3.1%	6.5%	4.4%
US Median	3.0%	3.0%	3.0%	3.0%
Device complications (in-hosp)				
MDMC	0.0%	0.0%	0.0%	0.0%
US Median	0.0%	0.0%	0.0%	0.0%
Aortic Regurgitation (30-day)				
MDMC	0.0%	0.0%	0.0%	0.0%
US Median	0.0%	0.0%	0.0%	0.0%

Implications And Conclusions

Reconceptualize hospital metrics

- Shared Decision Making (SDM) is not optimal unless all valve centers offer both SAVR and TAVR
- Limiting patient access through arbitrary procedure-specific quotas will create unintended barriers to TAVR for patients
- Transparent quality metrics is how programs should be differentiated

Build greater understanding and awareness

- Develop greater understanding of patient barriers to TAVR
- Use that information to inform awareness campaigns directed toward patients and physicians

Plan for community TAVR centers and novel outreach

- Align TAVR centers in communities where need is greatest and the population is underserved

Thank you!