

# Can We Afford TAVR?

*Economic Insights from the PARTNER Trial*

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# Disclosures

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## Grant Support/Drugs

- Daiichi-Sankyo
- Janssen Pharmaceuticals
- Eli Lilly
- Astra-Zeneca

## Grant Support/Devices

- Edwards Lifesciences
- Medtronic
- Biomet
- Abbott Vascular
- Boston Scientific
- Covidien

## Consulting/Advisory Boards

- Medtronic
- Eli Lilly
- Boehringer-Ingelheim
- Astra-Zeneca



## ANALYSIS

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### Transcatheter aortic valve implantation (TAVI): risky and costly

Many of the 40 000 transcatheter procedures so far carried out cannot be justified on medical or cost effectiveness grounds. **Hans Van Brabandt**, **Mattias Neyt**, and **Frank Hulstaert** examine why practice has gone beyond the evidence

Hans Van Brabandt *researcher*<sup>1,2</sup>, Mattias Neyt *researcher*<sup>1</sup>, Frank Hulstaert *researcher*<sup>1</sup>

<sup>1</sup>KCE, Belgian Health Care Knowledge Centre, Administratief Centrum Kruidtuin, Kruidtuinlaan 55, 1000 Brussels, Belgium; <sup>2</sup>CEBAM, Belgian Centre for Evidence-Based Medicine and Branch of the Dutch Cochrane Centre, Leuven, Belgium

# TAVR Cost-Effectiveness: Specific Considerations

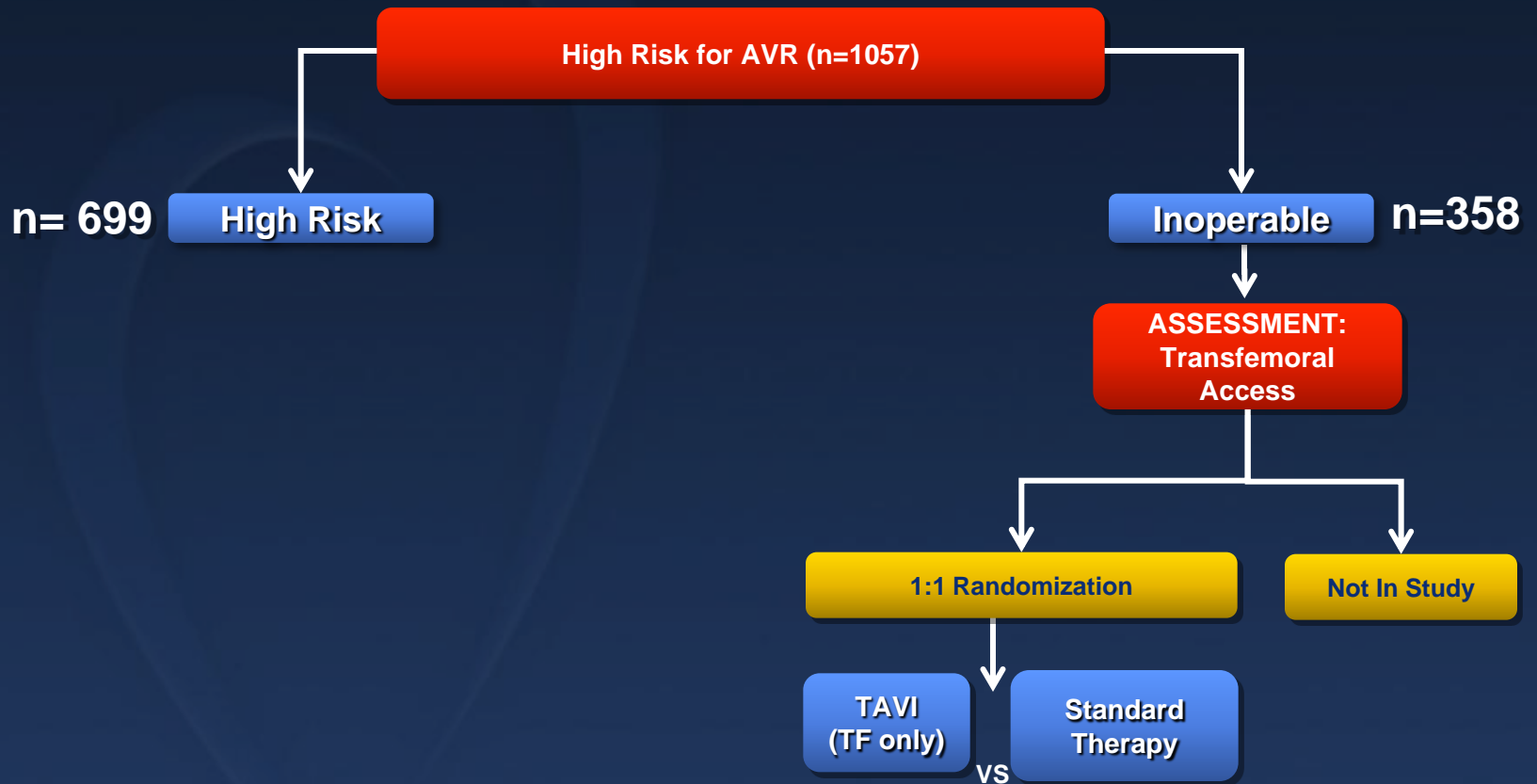
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- Patient population
  - *Surgical Risk (Inoperable, High Risk, Moderate Risk)*
  - *Access site*
- Comparison strategy?
  - *Medical therapy, Surgical AVR*
  - *Local outcomes vs. “Typical” outcomes*
- Time horizon— impact of valve durability, late complications, learning curve

# PARTNER Study Design

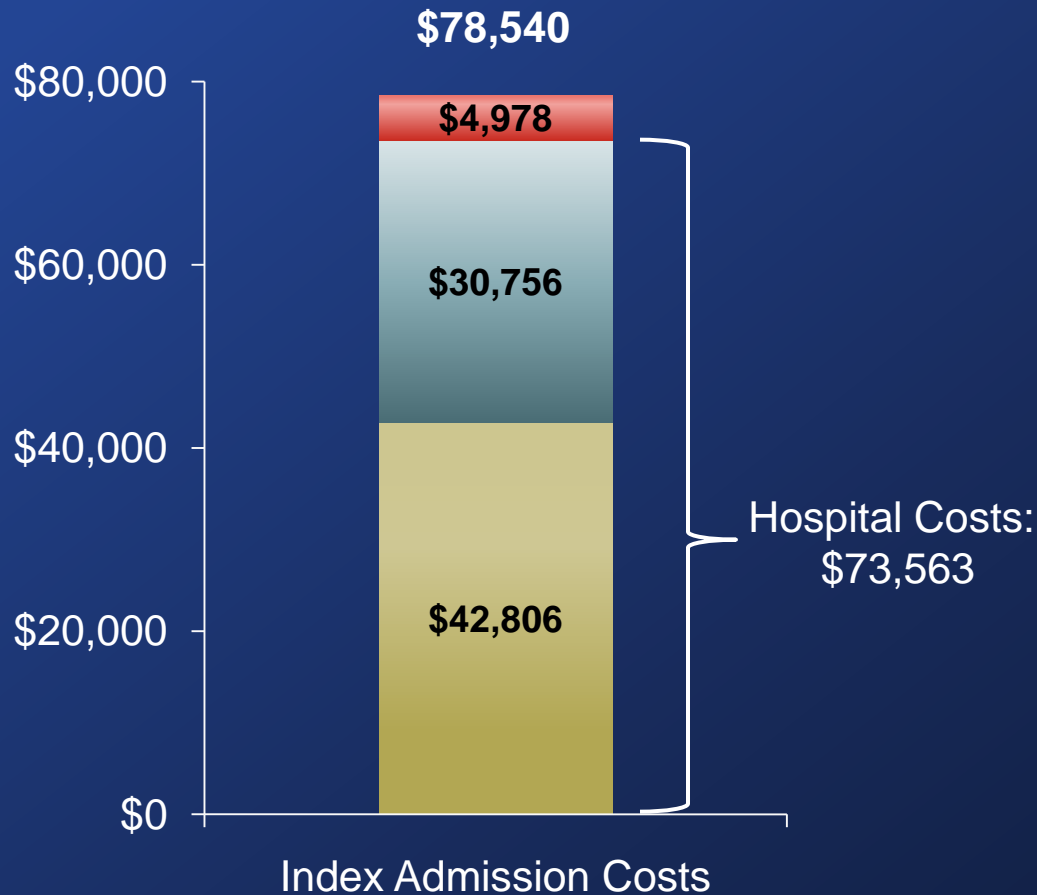


Symptomatic Severe Aortic Stenosis (3105 screened)



Primary Endpoint: All Cause Mortality over length of trial (Superiority)

# TAVR Admission Costs

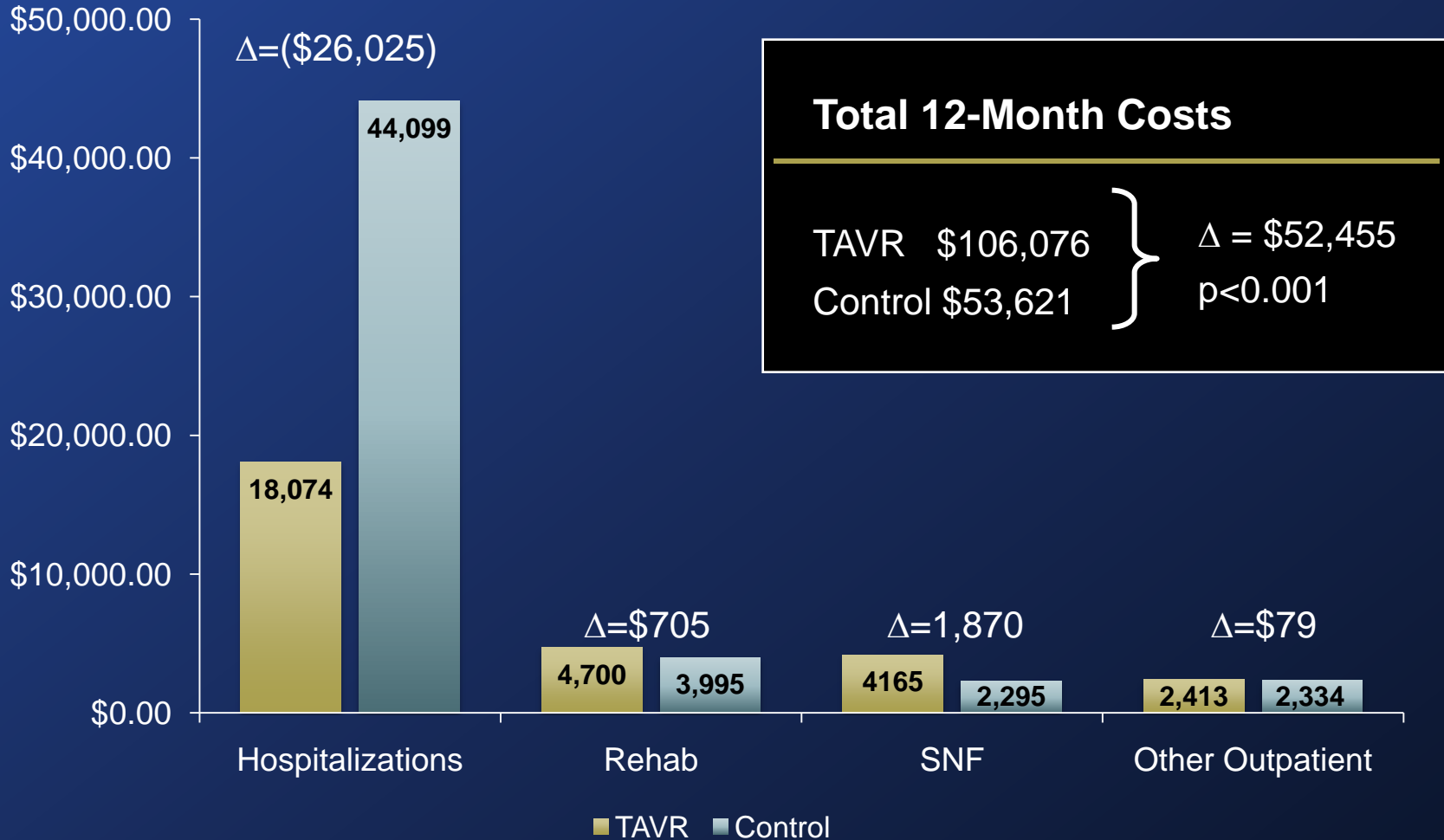


- Procedure
- Non-Procedure
- MD Fees

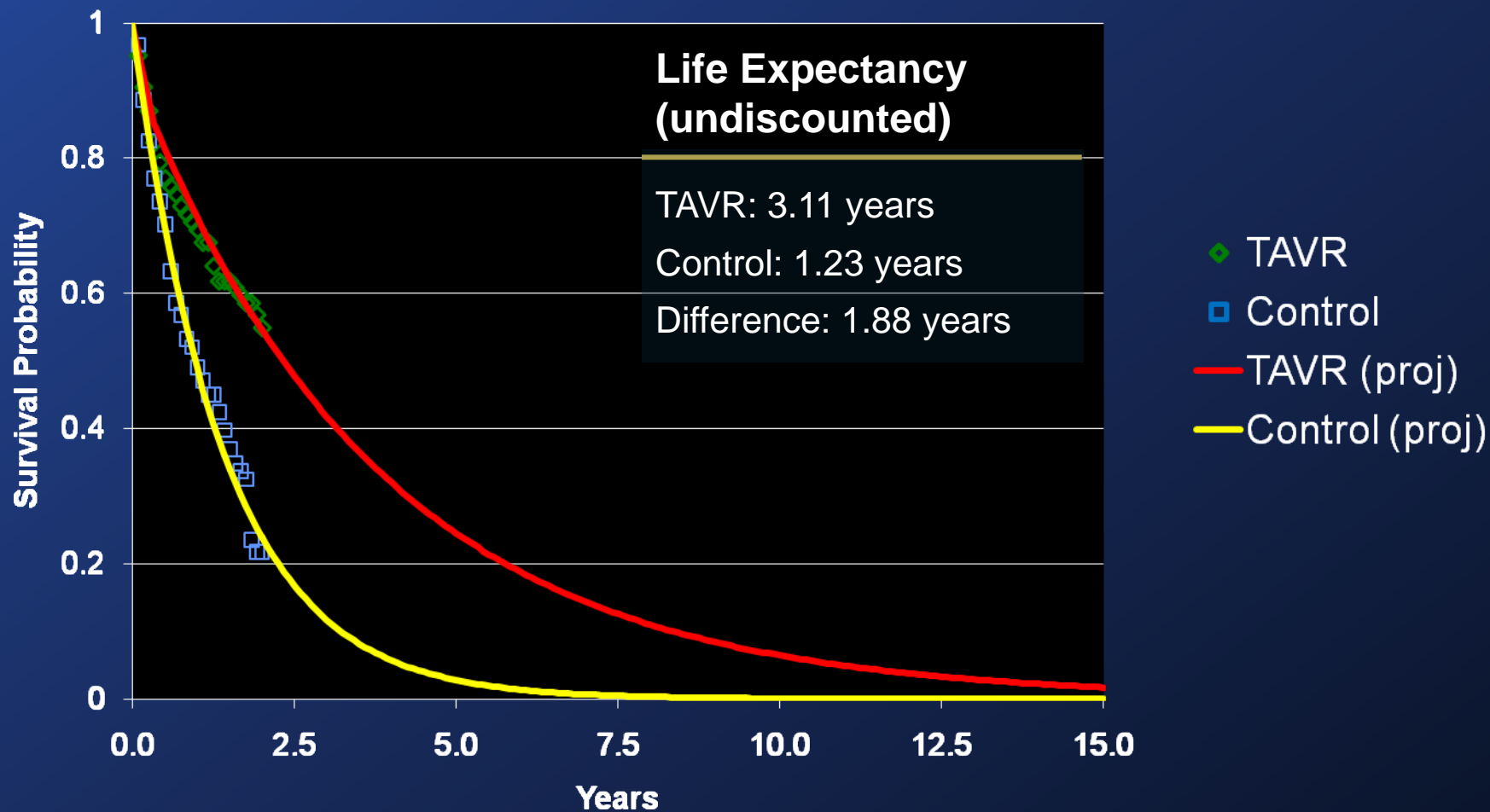
## Mean (median) LOS (days)

ICU	4.0 (2.0)
Non-ICU	6.1 (5.0)
Total	10.1 (7.0)
Post-Procedure	8.6 (6.0)
(N=175)	

# Results: 12-Month Follow-up Costs

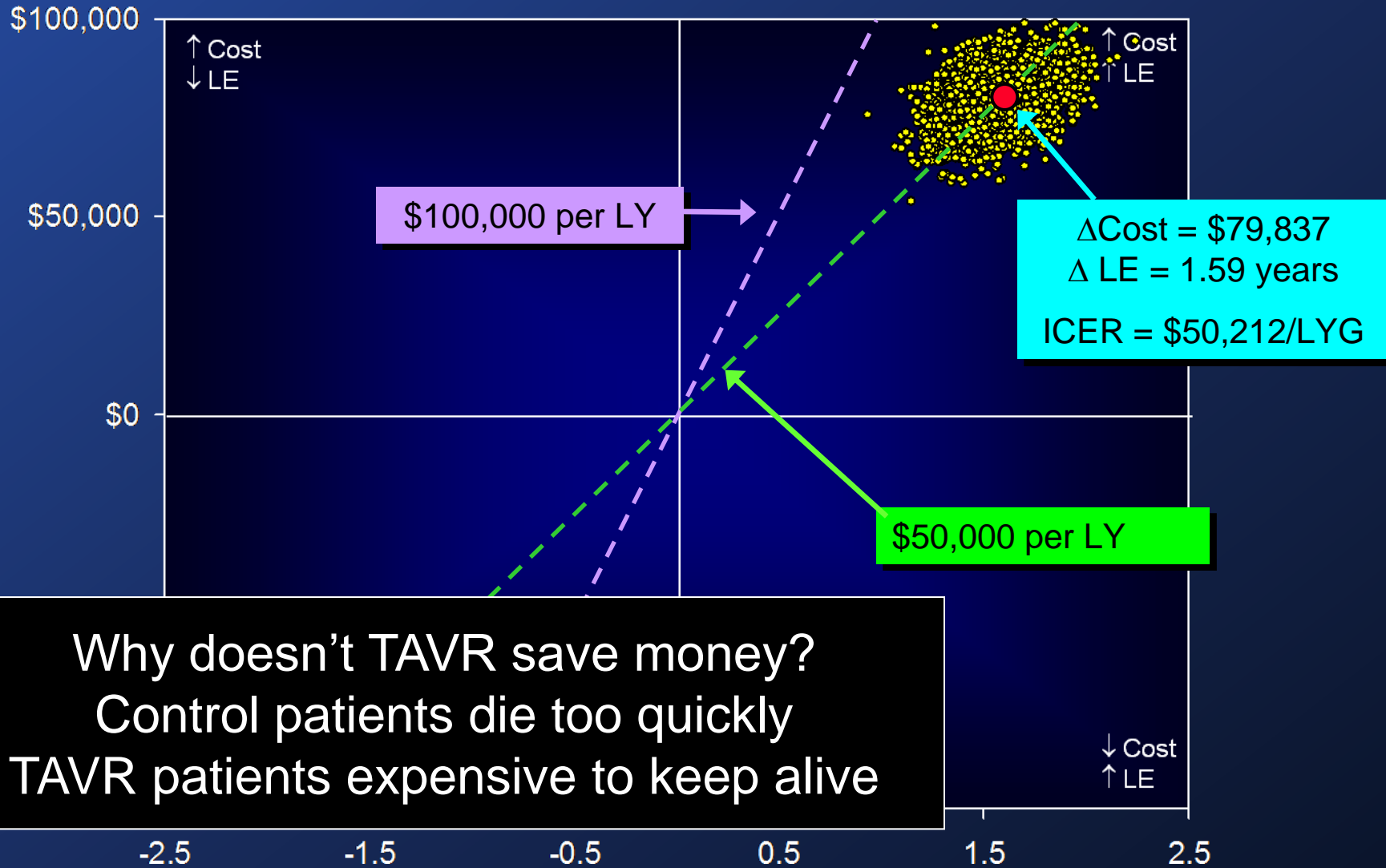


# Results: Projected Survival

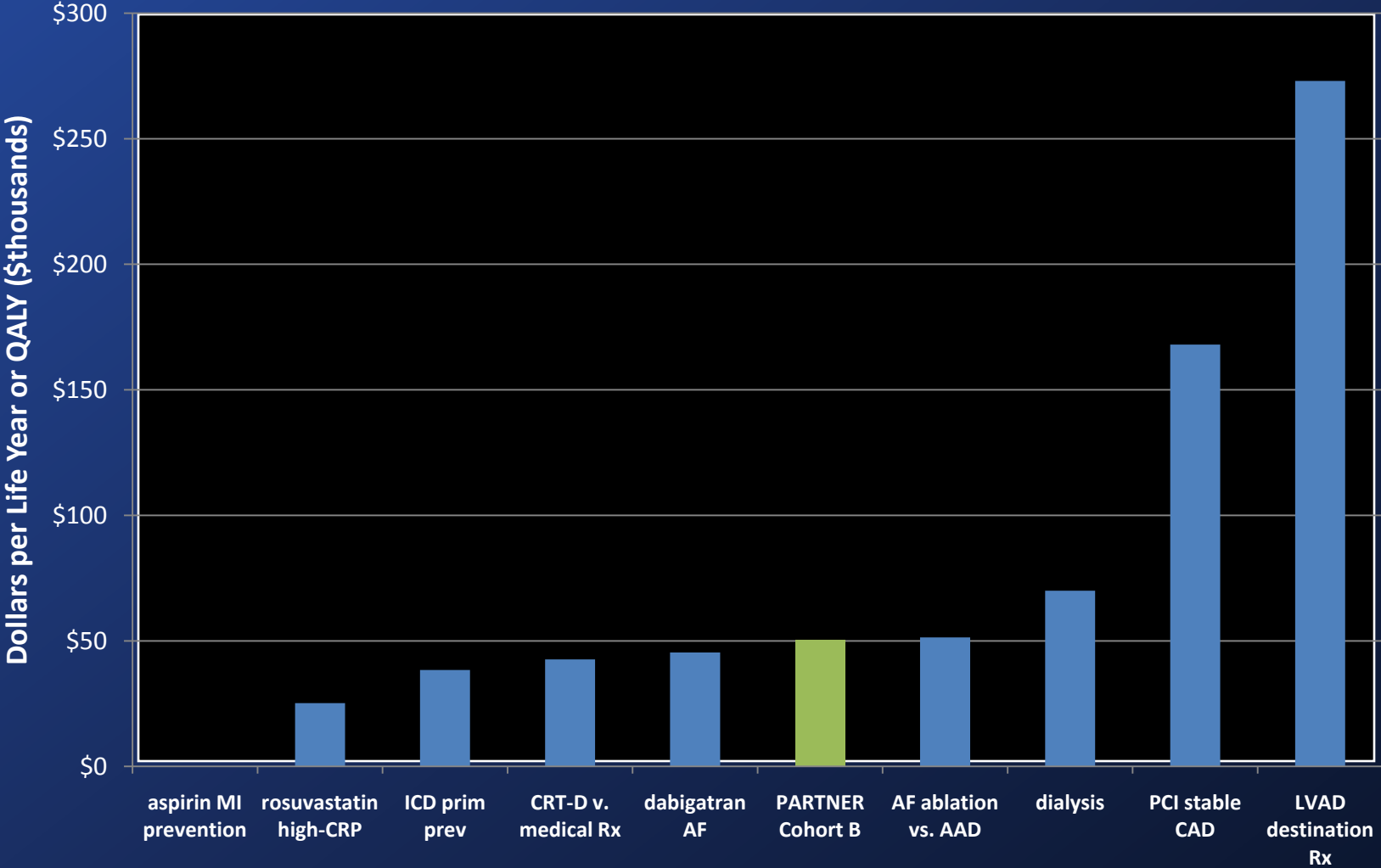




# Cost-Effectiveness of TAVR vs. Control Lifetime Results



# Published Cost Effectiveness Estimates



# PARTNER Study Design



Symptomatic Severe Aortic Stenosis (3105 screened)

High Risk for AVR (n=1057)

n= 699

High Risk

Inoperable

n=358

ASSESSMENT:  
Transfemoral  
Access

High Risk TF

High Risk TA

1:1 Randomization

1:1 Randomization

TAVI  
Trans  
femoral

vs

Surgical  
AVR

TAVI  
Trans  
apical

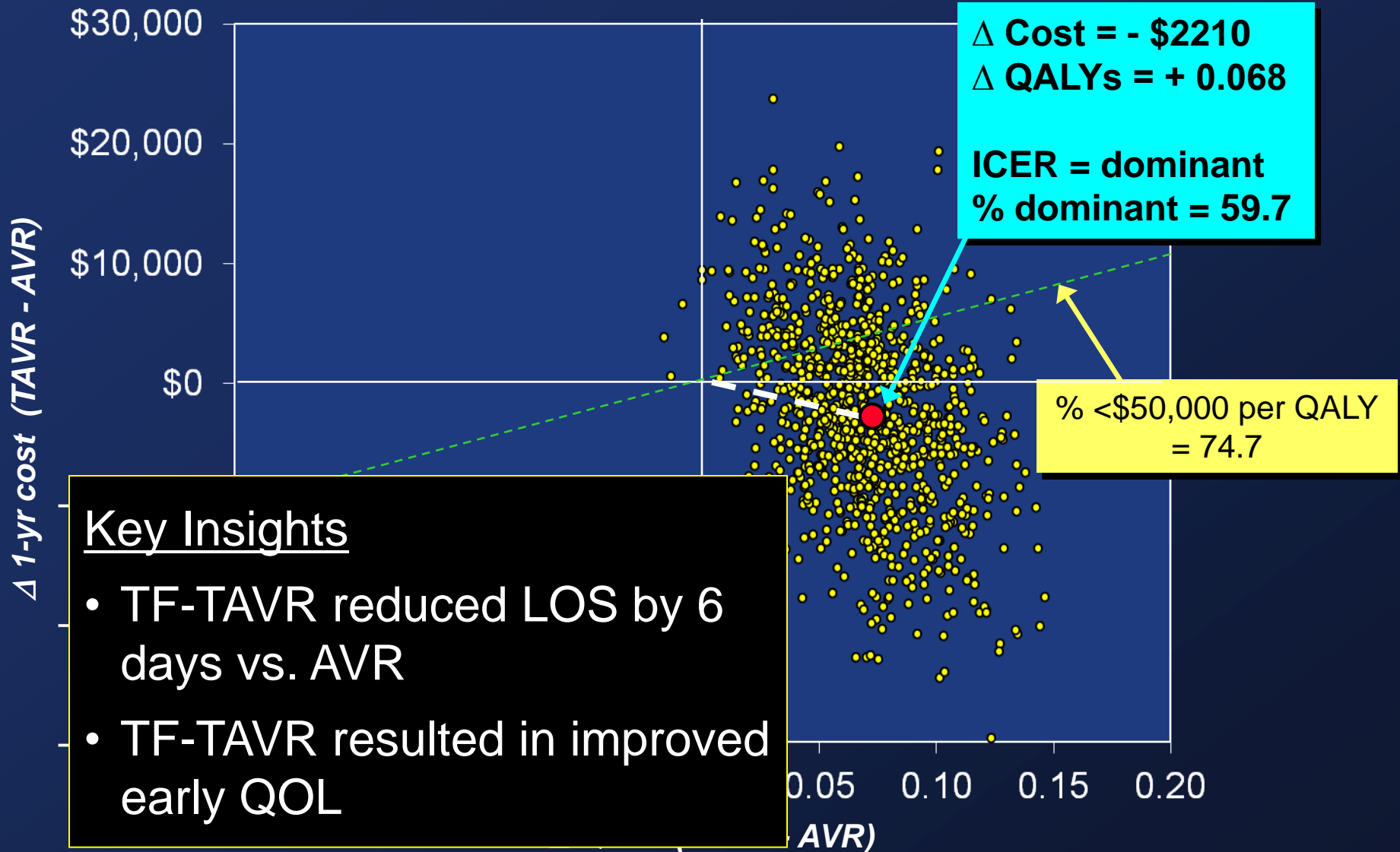
vs

Surgical  
AVR

Primary Endpoint: All Cause Mortality (1 yr)  
(Non-inferiority)

# TAVR vs. AVR: Transfemoral

## Cost per QALY gained



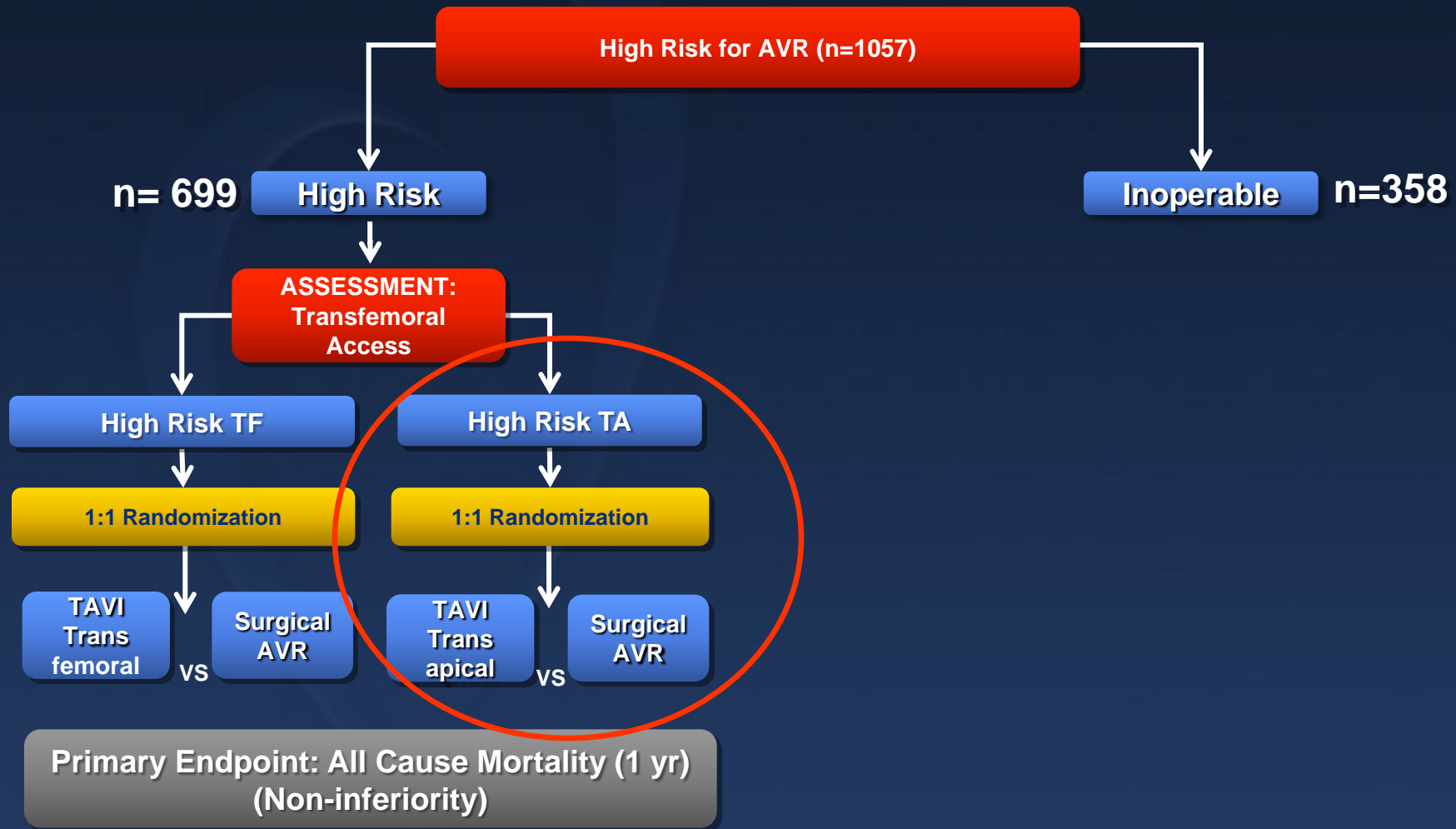
### Key Insights

- TF-TAVR reduced LOS by 6 days vs. AVR
- TF-TAVR resulted in improved early QOL

# PARTNER Study Design



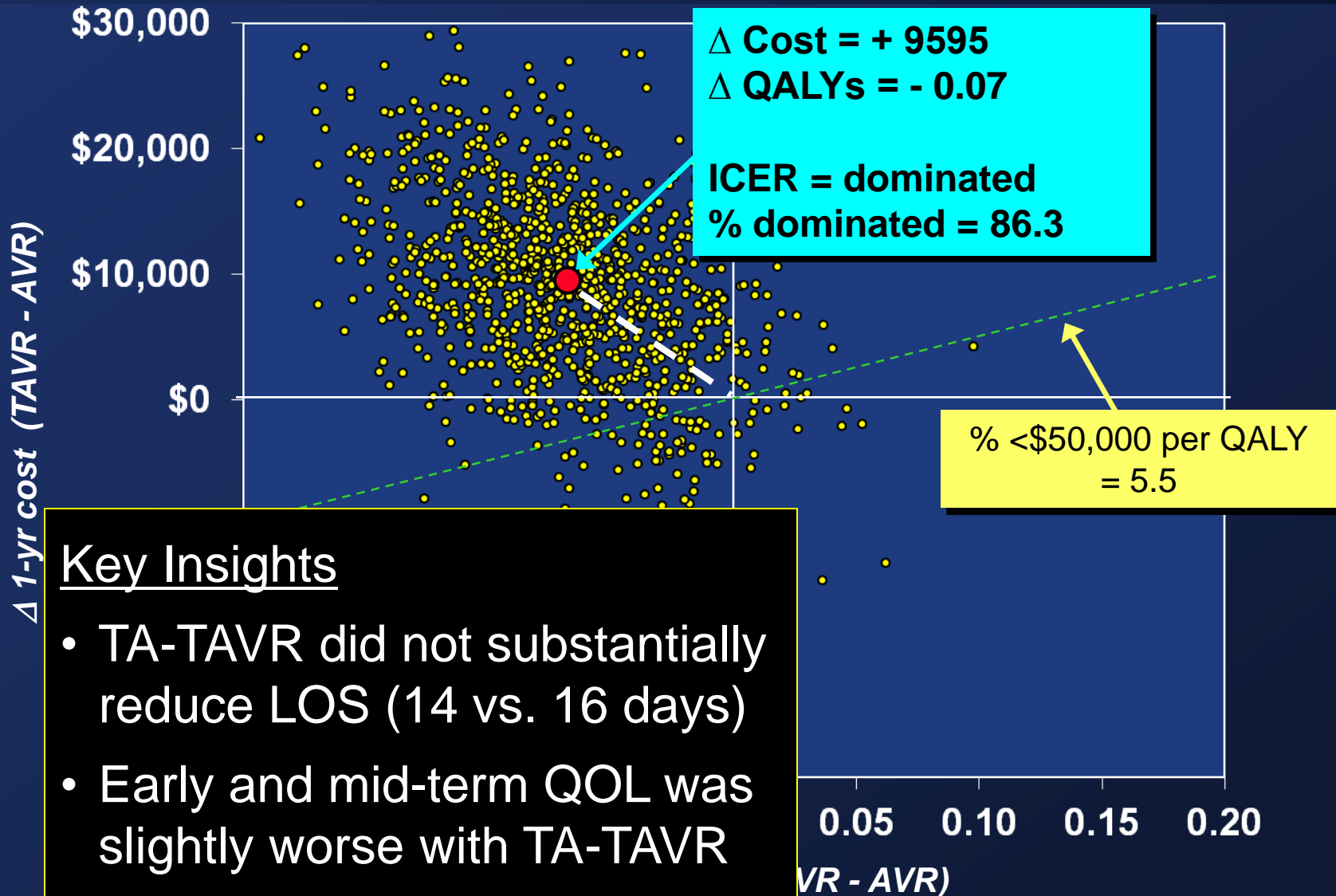
Symptomatic Severe Aortic Stenosis (3105 screened)



Primary Endpoint: All Cause Mortality (1 yr)  
(Non-inferiority)

# TAVR vs. AVR: Transapical

## Cost per QALY gained



### Key Insights

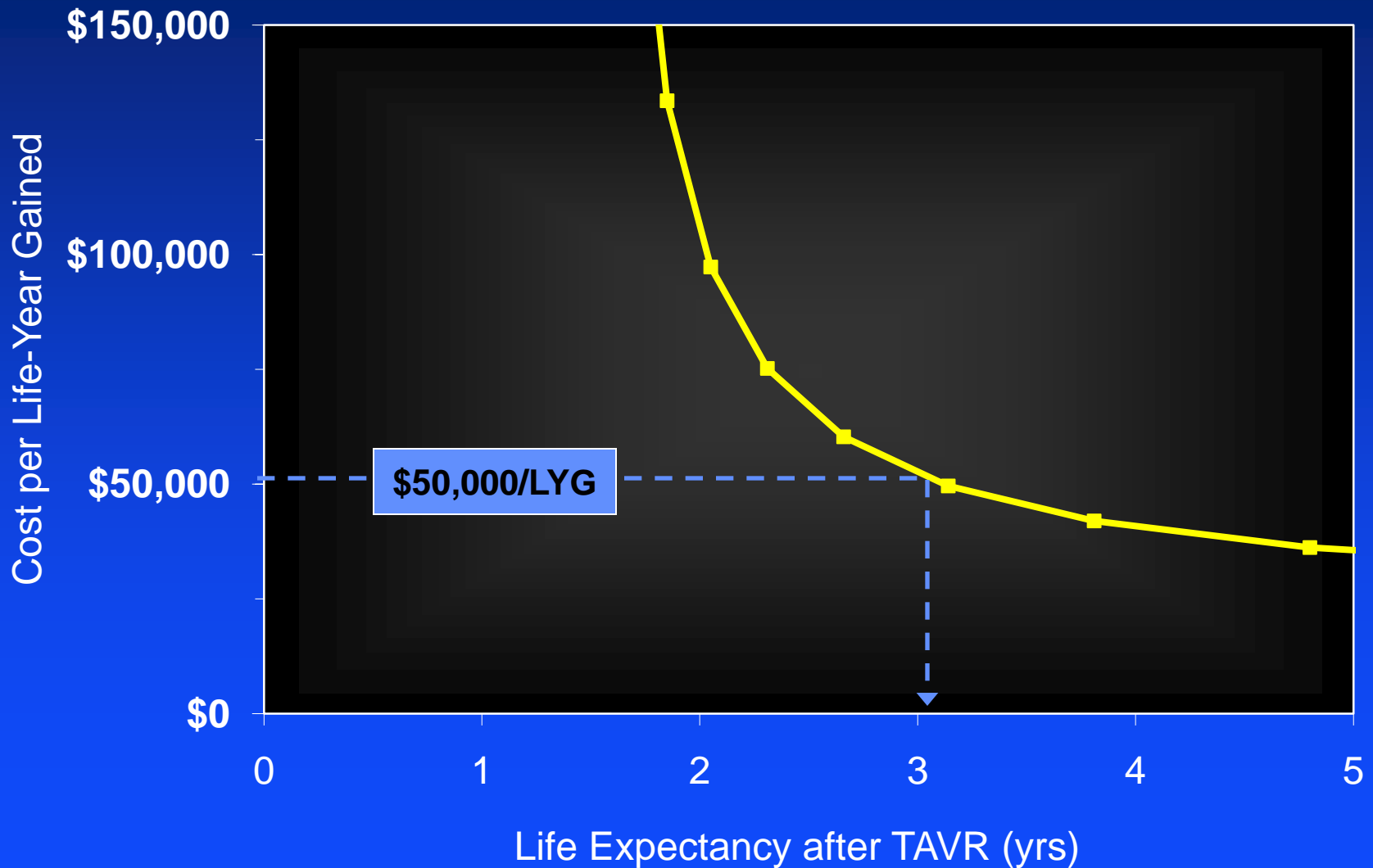
- TA-TAVR did not substantially reduce LOS (14 vs. 16 days)
- Early and mid-term QOL was slightly worse with TA-TAVR

# When is TAVI Not Cost-Effective?

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*When life expectancy after  
TAVI is less than ~3 years*

# Relationship between Cost-Effectiveness and Post-TAVR Life Expectancy





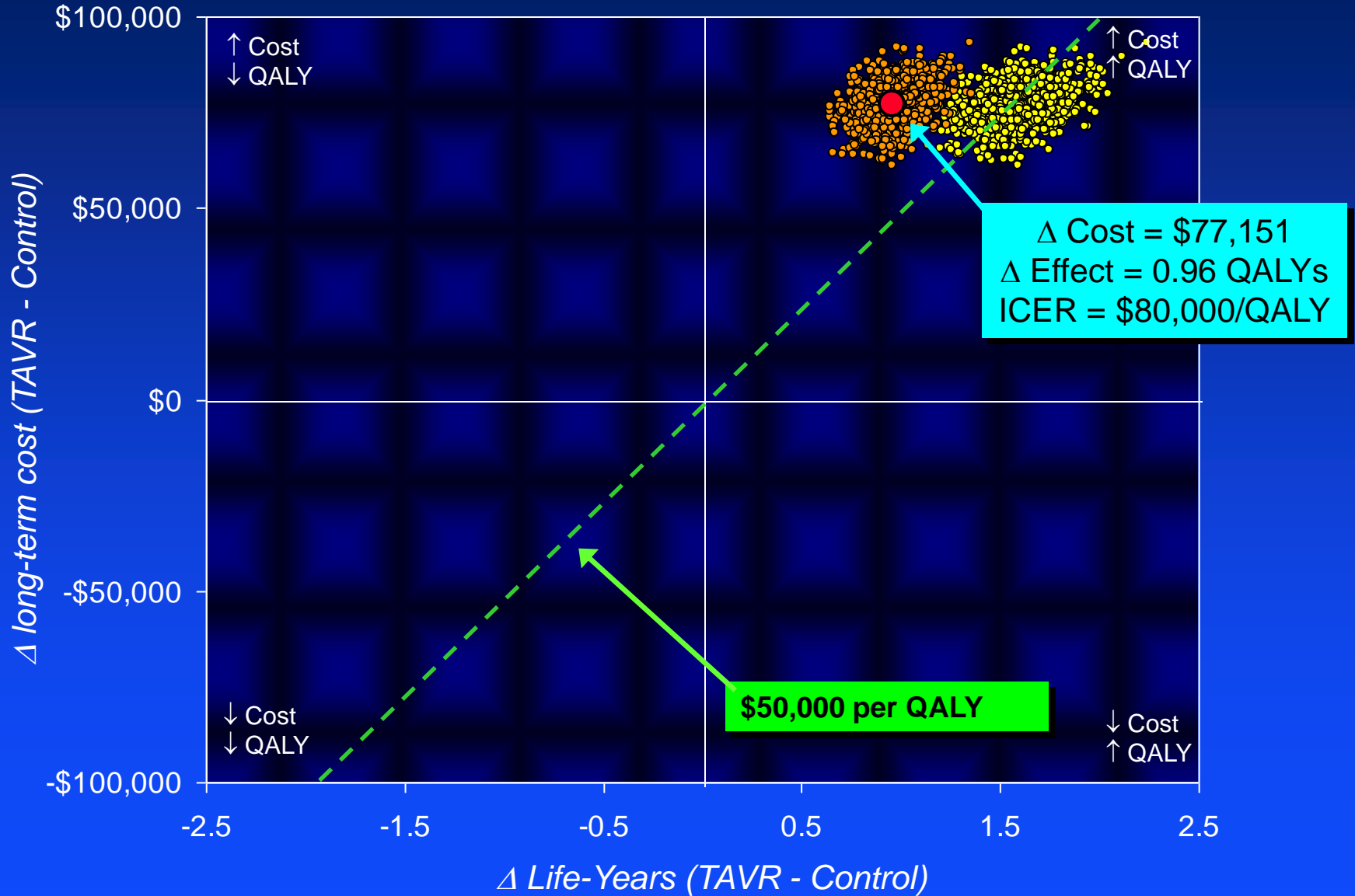
# When is TAVI Not Cost-Effective?

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*When quality of life does not  
improve after TAVI*

# Cost-Effectiveness of TAVR vs. Medical Rx

## Sensitivity Analysis: No QOL Improvement



# Summary

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- For both inoperable and high-risk patients, TAVR via the TF approach is economically attractive by generally accepted standards in the US healthcare system (and most Western societies)
  - *Identification of patients likely to survive for at least 2-3 years critical to achieve favorable ICER*
- For patients who are suitable for surgical AVR, given the much higher valve price, TAVR will be cost-effective only if can substantially reduce hospital length of stay (e.g., by 6-10 days)
  - *Unlikely to be achievable for low to moderate risk pts*

## Summary (2)

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- Based on the PARTNER A results, TA-TAVR does not appear to be cost-effective at the present time. Whether technical and technological improvements can overcome these issues is unknown
  - *Will require substantial reductions in LOS and improvements in short term QOL*
- As the cost of transcatheter valves decreases in the future, TAVR will become increasingly attractive for a broader spectrum of operable patients