

# ***Recruitment for Stated Preference Surveys. Do Respondents with Self-Reported Versus Physician-Confirmed Diagnoses Yield Similar Results?***

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**Duke** Clinical Research Institute

FROM THOUGHT LEADERSHIP  
TO CLINICAL PRACTICE

# Overview

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- 4 sets of comparisons
  - Participant characteristics
  - Effort
  - Understanding
  - Preferences
- Methodological considerations
- Summary and suggestions

# 4 Sets of Comparisons

|                  | Self-reported diagnosis | Physician-confirmed diagnosis |                |
|------------------|-------------------------|-------------------------------|----------------|
|                  | Panel                   | DUHS                          | Clinical Trial |
| Heart failure #1 | X                       | X                             |                |
| Heart failure #2 | X                       | X                             |                |
| Epilepsy         | X                       | X                             |                |
| Depression       | X                       |                               | X              |

DUHS: Duke University Health System

# 4 Sets of Comparisons

|                                       | Age,<br>mean    | Female, %      | African<br>American, % | ≤ HS<br>diploma | 4-yr degree +  |
|---------------------------------------|-----------------|----------------|------------------------|-----------------|----------------|
| Panel vs DUHS<br>(HF)                 | <b>64 vs 67</b> | 47 v 38        | <b>7 v 18</b>          | <b>41 v 22</b>  | <b>29 v 49</b> |
| Panel vs DUHS<br>(HF)                 | 64 v 66         | 48 v 53        | <b>8 v 32</b>          | 19 v 23         | 37 v 39        |
| Panel vs DUHS<br>(Epilepsy)           | <b>37 v 41</b>  | 58 v 66        | 13 v 17                | 21 v 24         | 41 v 40        |
| Panel vs <b>Trial</b><br>(Depression) | <b>36 v 53</b>  | <b>87 v 59</b> | 6 v 6                  | <b>48 v 26</b>  | <b>28 v 64</b> |

Bold text represents  $p < 0.05$

DUHS: Duke University Health System; HS: high school

# Differences in comorbidities?

| Comorbidities  | Heart failure study #1 |                 |                  | Heart failure study #2 |                 |                  |
|----------------|------------------------|-----------------|------------------|------------------------|-----------------|------------------|
|                | Panel<br>(n=244)       | DUHS<br>(n=179) | P-value          | Panel<br>(n=500)       | DUHS<br>(n=126) | P-value          |
| Anemia         | 18%                    | 19%             | 0.64             | <b>14%</b>             | <b>22%</b>      | <b>0.02</b>      |
| Arrhythmias    | <b>16%</b>             | <b>39%</b>      | <0.001           | <b>16%</b>             | <b>26%</b>      | <b>0.002</b>     |
| Arthritis      | 41%                    | 37%             | 0.32             | <b>36%</b>             | <b>53%</b>      | <b>&lt;0.001</b> |
| Cancer         | -                      | -               | -                | 14%                    | 18%             | 0.36             |
| COPD           | 14%                    | 17%             | 0.45             | 24%                    | 19%             | 0.26             |
| Diabetes       | 28%                    | 31%             | 0.43             | 37%                    | 33%             | 0.44             |
| Prior MI       | <b>21%</b>             | <b>41%</b>      | <b>&lt;0.001</b> | 40%                    | 31%             | 0.06             |
| Hypertension   | 55%                    | 56%             | 0.83             | <b>65%</b>             | <b>76%</b>      | <b>0.02</b>      |
| Kidney disease | <b>9%</b>              | <b>23%</b>      | <b>&lt;0.001</b> | 14%                    | 20%             | 0.08             |
| Migraines      | 12%                    | 7%              | 0.07             | 12%                    | 11%             | 0.83             |
| Obesity        | 29%                    | 31%             | 0.70             | <b>29%</b>             | <b>38%</b>      | <b>0.04</b>      |

# Differences in disease management?

| What have you done to help manage your heart problems? | Heart failure study #1 |              |         | Heart failure study #2 |              |         |
|--------------------------------------------------------|------------------------|--------------|---------|------------------------|--------------|---------|
|                                                        | Panel (n=244)          | DUHS (n=179) | P-value | Panel (n=500)          | DUHS (n=126) | P-value |
| Take prescription med                                  | 76%                    | 96%          | <.001   | 95%                    | 92%          | 0.13    |
| Changed diet                                           | 48%                    | 69%          | <.001   | 60%                    | 68%          | 0.05    |
| Changed lifestyle or exercise routines                 | 37%                    | 58%          | <.001   | 55%                    | 65%          | 0.04    |
| Bypass surgery or CABG                                 | 19%                    | 23%          | 0.38    | 19%                    | 18%          | 0.85    |
| Implantable cardiac defibrillator (ICD)                | 11%                    | 52%          | <.001   | 24%                    | 31%          | 0.13    |
| Pacemaker                                              | 18%                    | 35%          | <.001   | 20%                    | 23%          | 0.52    |
| Stents                                                 | 21%                    | 32%          | 0.01    | 29%                    | 27%          | 0.69    |
| None of these                                          | 11%                    | <1%          | <.001   | 1%                     | 1%           | 1.00    |

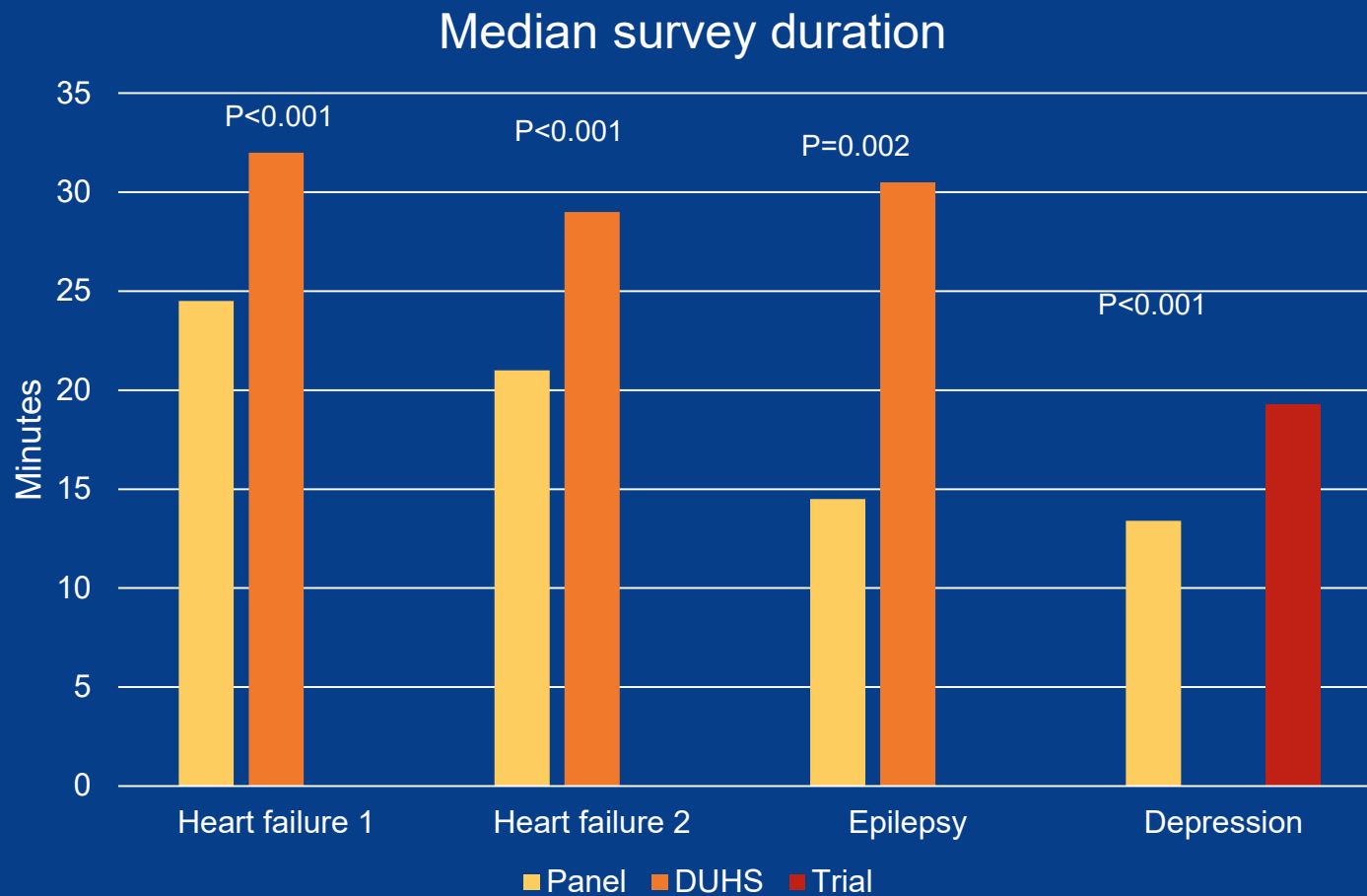


# Differences in treatment?

| Current number of anti-seizure medications | Epilepsy      |              |         |
|--------------------------------------------|---------------|--------------|---------|
|                                            | Panel (n=300) | DUHS (n=106) | P-value |
| One                                        | 28.0%         | 16.0%        | 0.021   |
| Two                                        | 45.0%         | 43.4%        |         |
| Three                                      | 17.7%         | 19.8%        |         |
| Four                                       | 5.7%          | 17.9%        |         |
| Five                                       | 1.3%          | 1.9%         |         |
| Six                                        | 1.0%          | 0.9%         |         |
| Seven                                      | 0.3%          | 0            |         |
| Eight or more                              | 1.0%          | 0            |         |

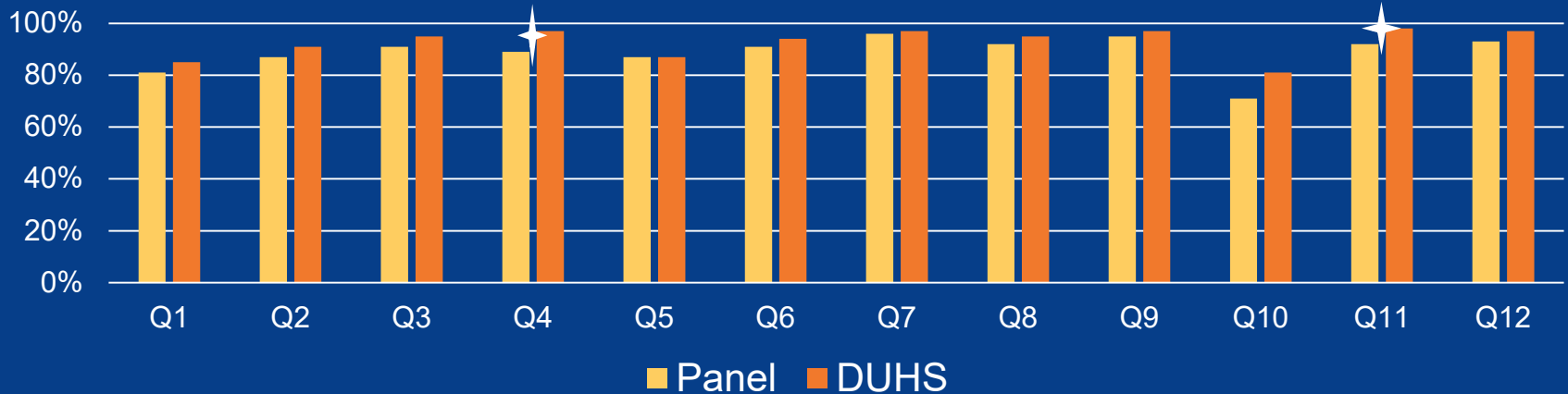
| Anti-seizure meds tried in the past (plus current) | Epilepsy      |              |         |
|----------------------------------------------------|---------------|--------------|---------|
|                                                    | Panel (n=300) | DUHS (n=106) | P-value |
| One                                                | 0%            | 0%           | <0.001  |
| Two                                                | 0%            | 0%           |         |
| Three                                              | 25.3%         | 12.3%        |         |
| Four                                               | 25.3%         | 13.2%        |         |
| Five                                               | 18.7%         | 4.7%         |         |
| Six                                                | 9.3%          | 14.2%        |         |
| Seven                                              | 5.3%          | 10.4%        |         |
| Eight or more                                      | 16.0%         | 45.3%        |         |

# Differences in effort?

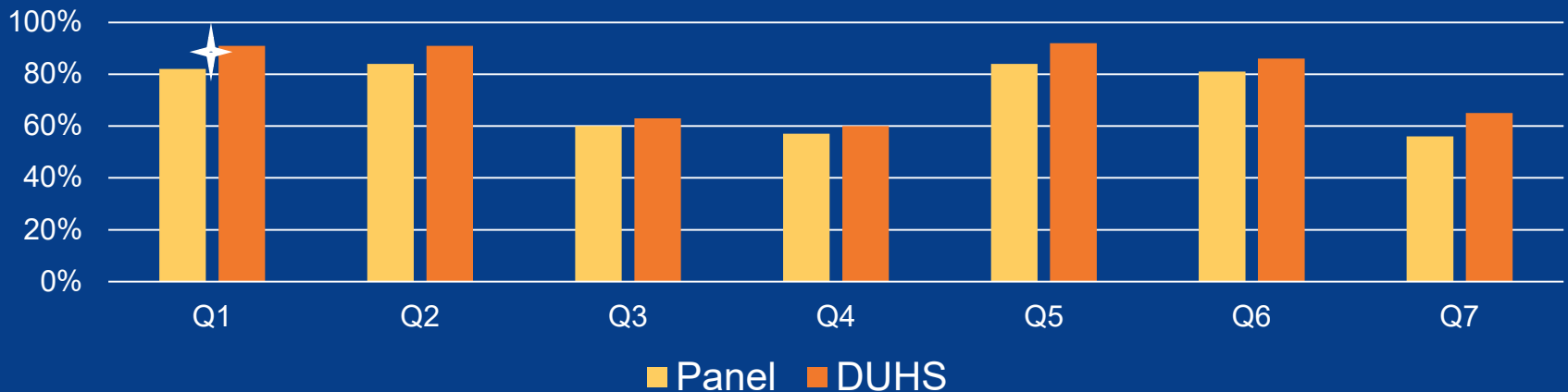


# Differences in understanding?

Comprehension Questions, % correct, HF#1

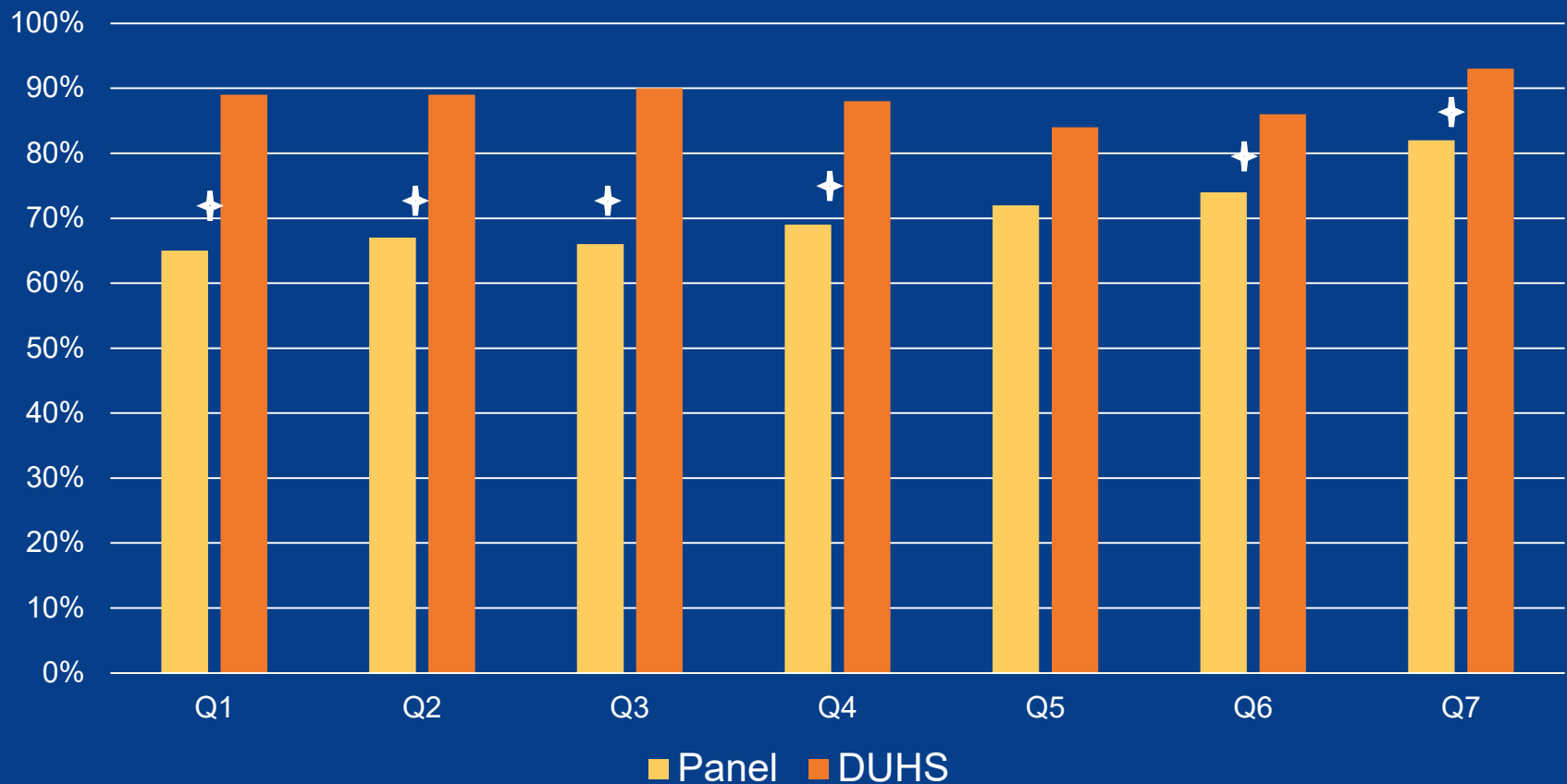


Comprehension Questions, % correct, HF#2

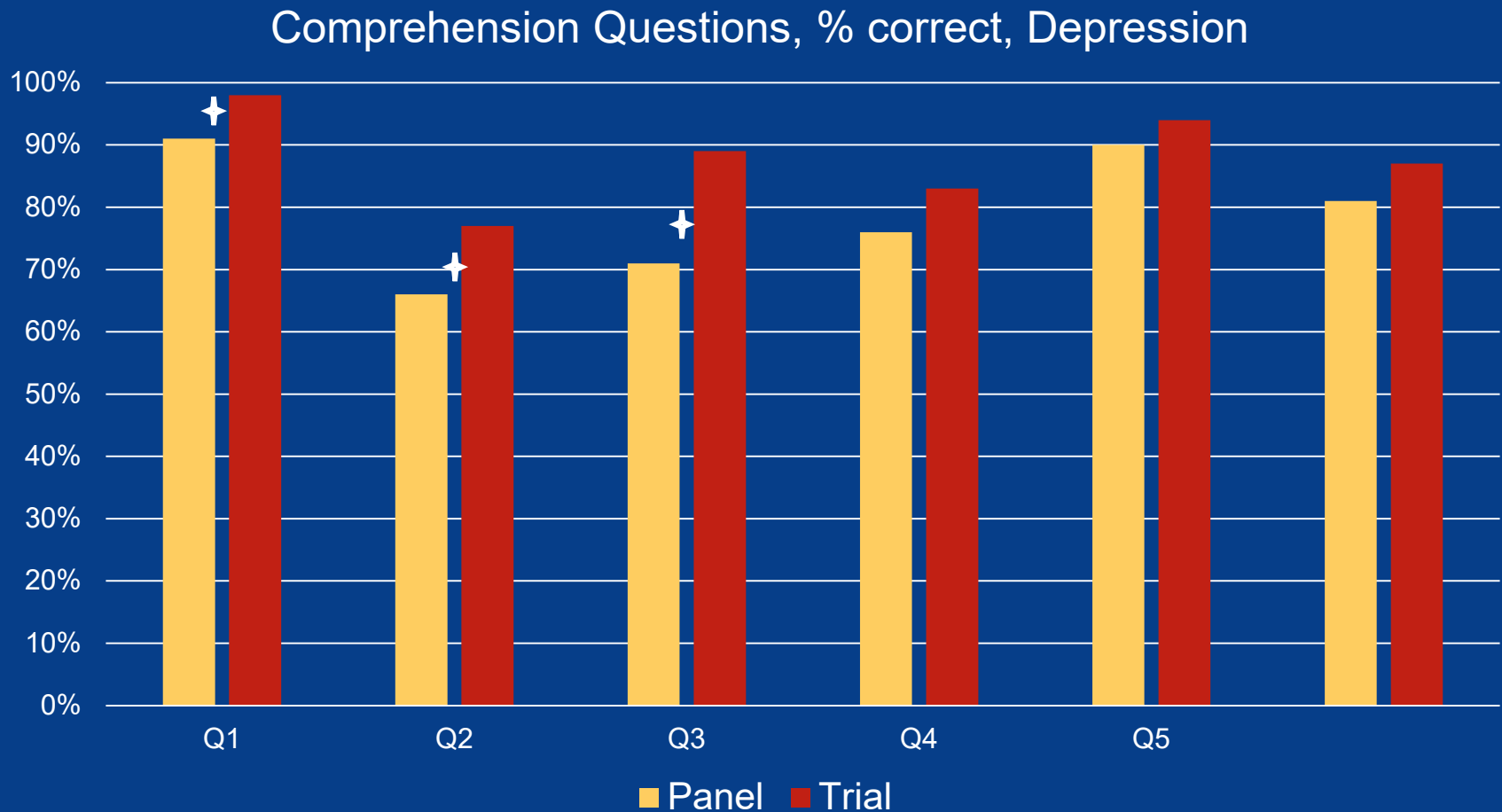


# Differences in understanding?

Comprehension Questions, % correct, Epilepsy



# Differences in understanding?



# Does it matter?

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- Comparing preference weights between samples requires:
  - Careful evaluation of attribute dominance patterns
  - Tests of heteroscedasticity
  - Scale adjustment

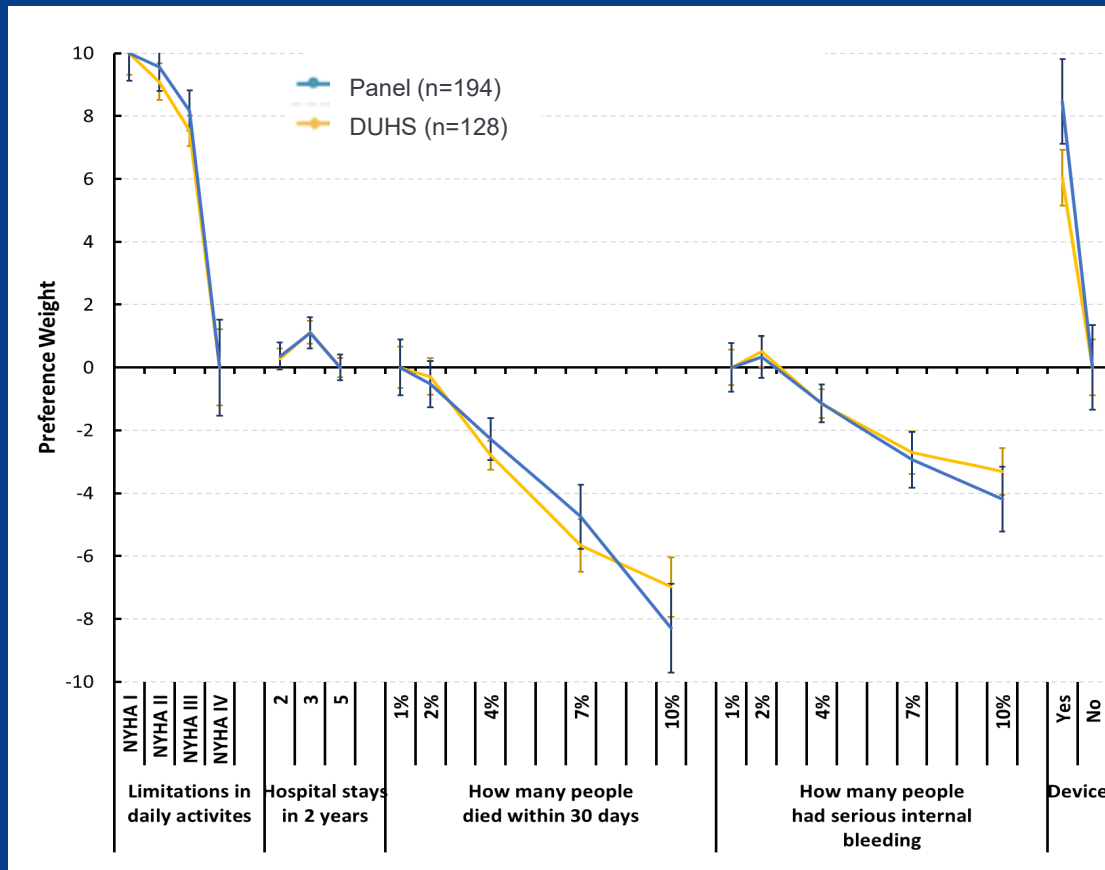
# Attribute Dominance: Heart Failure #1

| Dominated Attribute                           | Panel<br>(N=244) | DUHS<br>(N=175) |
|-----------------------------------------------|------------------|-----------------|
| Limitations in daily activities               | 50 (20.5%)       | 47 (26.9%)      |
| Hospital stays in 2 years                     | 0                | 0               |
| How many people died within 30 days           | 16 (6.6%)        | 10 (5.7%)       |
| How many people had serious internal bleeding | 9 (3.7%)         | 4 (2.3%)        |
| No dominant attribute                         | 169 (69.3%)      | 114 (65.1%)     |

- Respondents selecting the better level of their dominant attribute in all 8 choice questions
- Preference weights are reported for the sample that did not dominate on “Limitations in daily activities”

# Preferences in Heart Failure

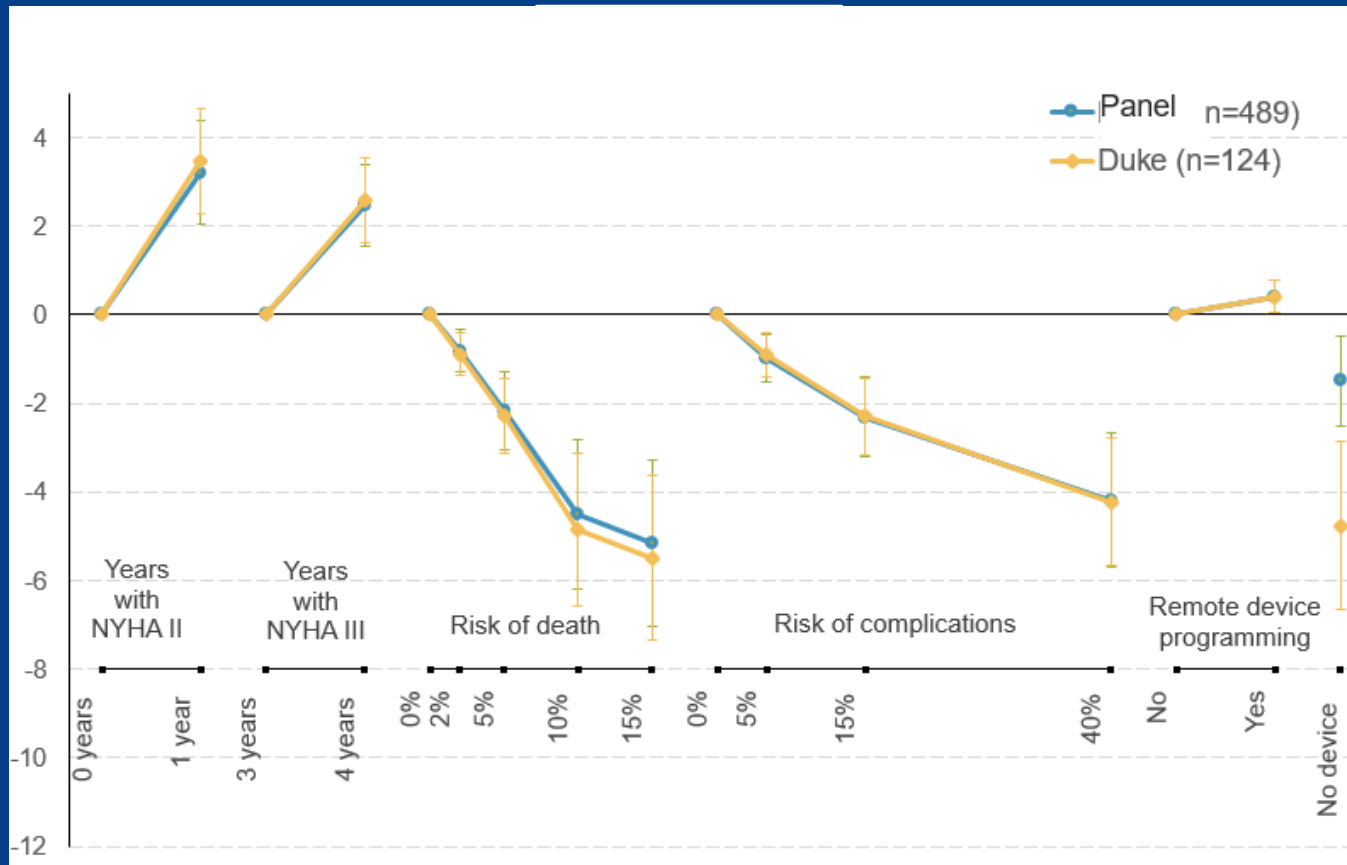
## Heart failure #1



Reed SD, Fairchild AO, Johnson FR, Gonzalez JM, Mentz RJ, Krucoff MW, Vemulapalli S. Patients' Willingness to Accept Mitral Valve Procedure-Associated Risks Varies Across Severity of Heart Failure Symptoms. *Circ Cardiovasc Interv.* 2019;12(12):e008051.

# Preferences in Heart Failure

## Heart failure #2



### No differences in scale or preferences

Test of heteroscedasticity\* (i.e. scale):  $p=0.17$

Difference in relative importance between benefits (NYHA II, III, II+III) versus\*\*:

Mortality risk:  $p=0.87$ ,  
 $p=0.89$ ,  $p=0.98$

Complication risk:  $p=0.32$ ,  
 $p=0.56$ ,  $p=0.39$

\*Hole AR. Econ Bull 2006;3:1-14.

\*\*Hensher et al. J Transp Geogr 2008;16:1233.

Source: <https://mdic.org/project/heart-failure-study/>

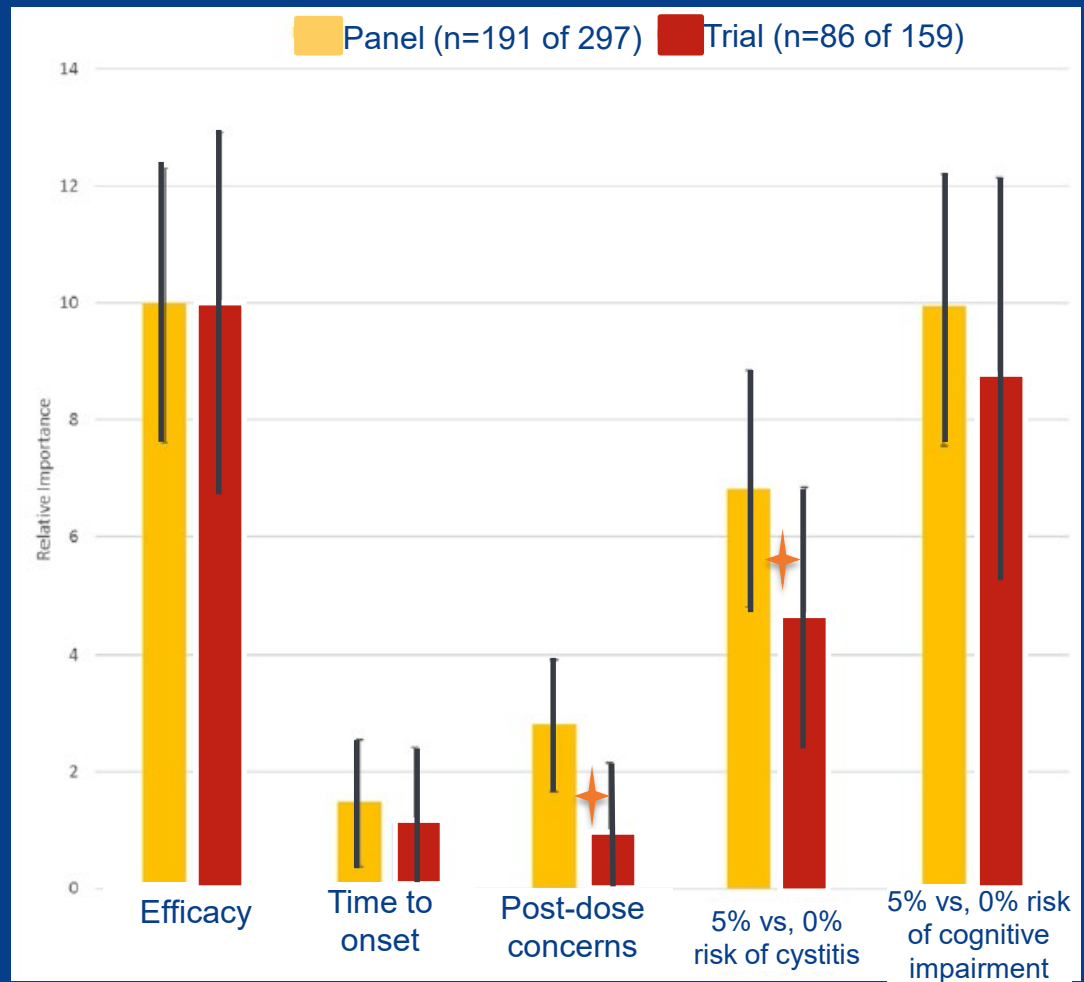
# Attribute Dominance: Depression

Respondents selecting the better level of their dominant attribute in all 8 choice questions:

| Dominated Attribute                                 | Panel Sample (N=297) | Trial sample (N=159) |
|-----------------------------------------------------|----------------------|----------------------|
| Improved Mood                                       | 41 (13.8%)           | 55 (34.6%)           |
| Unusual sensations, waiting time, help getting home | 7 (2.4%)             | 7 (4.4%)             |
| How quickly the medicine works                      | 16 (5.4%)            | 2 (1.3%)             |
| Chance of bladder problems                          | 7 (2.4%)             | 2 (1.3%)             |
| Chance of memory and thinking problems              | 35 (11.8%)           | 7 (4.4%)             |
| No dominant attribute <sup>1</sup>                  | 191 (64.3%)          | 86 (54.1%)           |

# Relative Importance among Traders

- Most important attribute assigned value of 10
- All others scaled in proportion to most important attribute

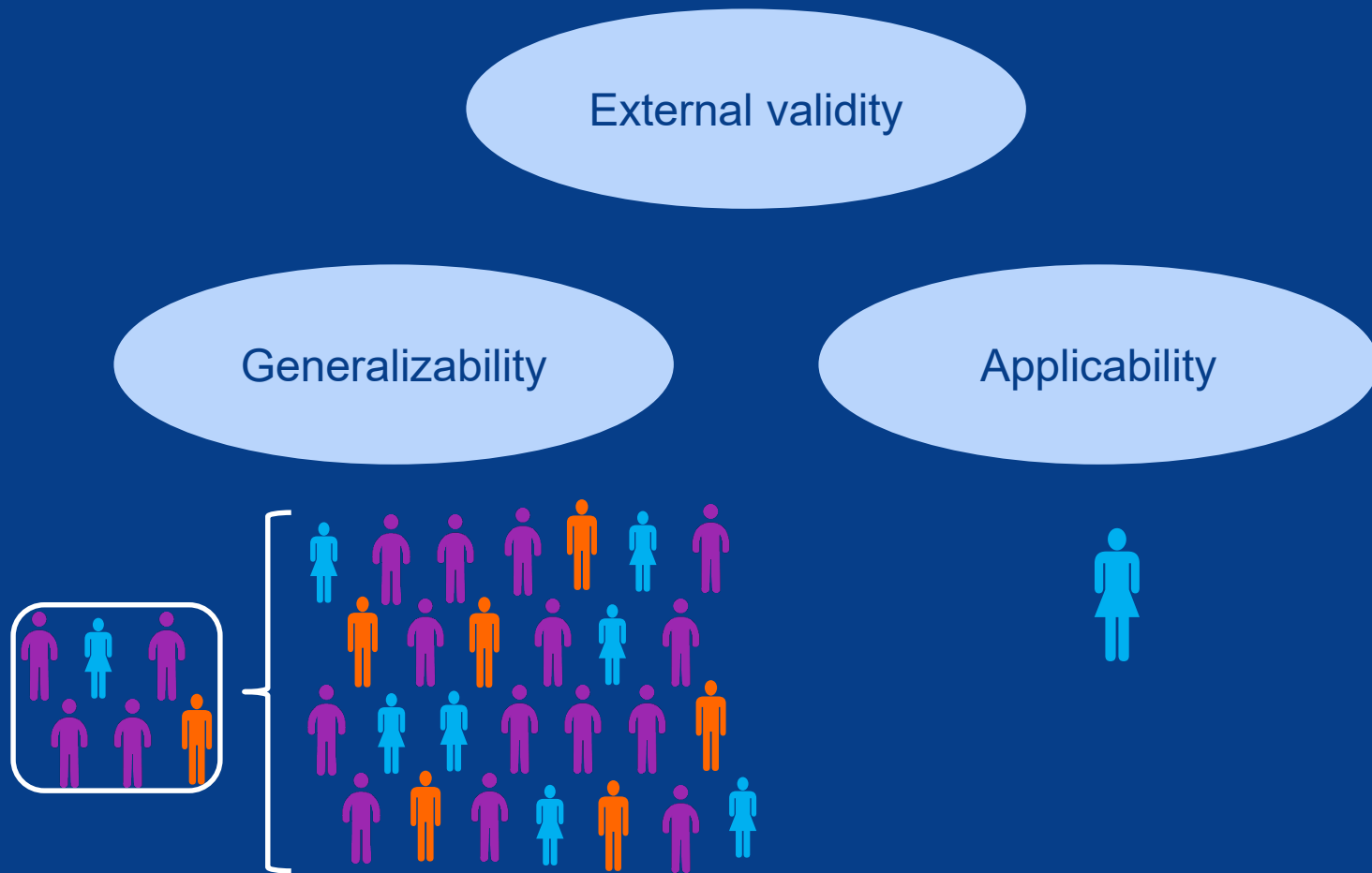


Source: Fairchild AO, et al. *Neurol Psychiatry Brain Res* 2020; 37: 67-78.

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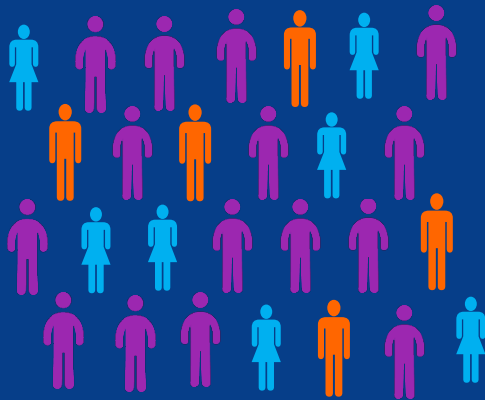
# Methodological considerations

# External validity

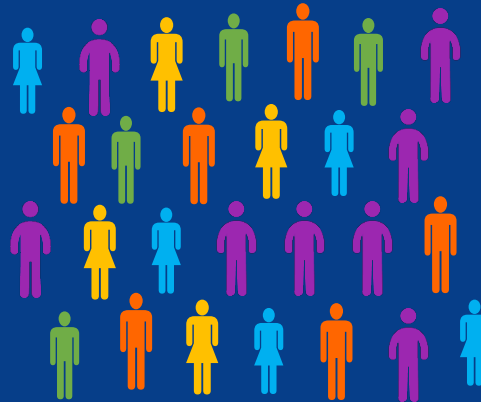


# Representativeness

Sampling frame 1



Target population

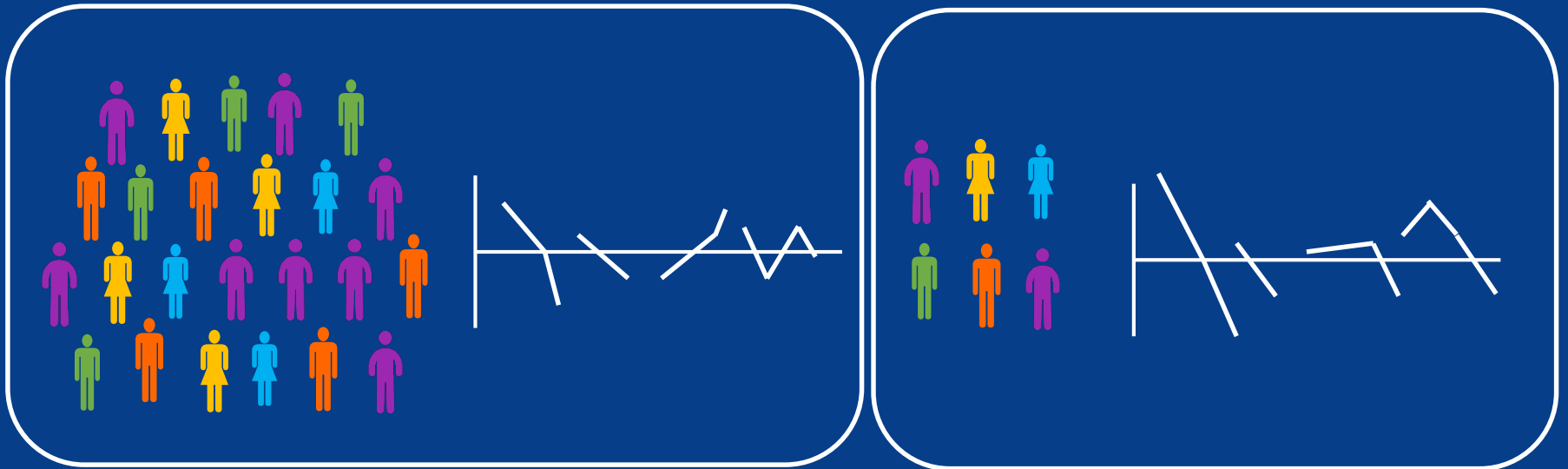


Sampling frame 2



# Representativeness

- Participant characteristics are often not associated with differences in preferences.
- So, even if a sample is perfectly matched on sociodemographic variables, or sampling weights are used, we may not obtain generalizable preferences.



# Sampling

Breast cancer

Men  
( $<1\%$ )

Do we want a random sample of the target population?

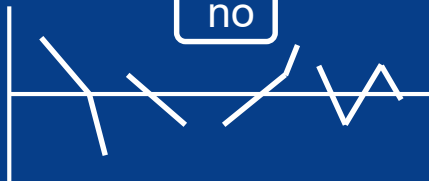
yes

no

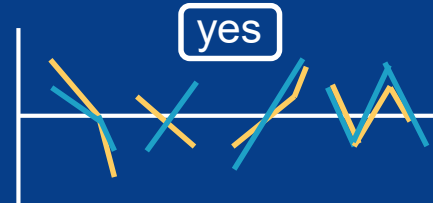
Over-  
sample  
men

Can one make inferences about preferences in subgroups of interest?

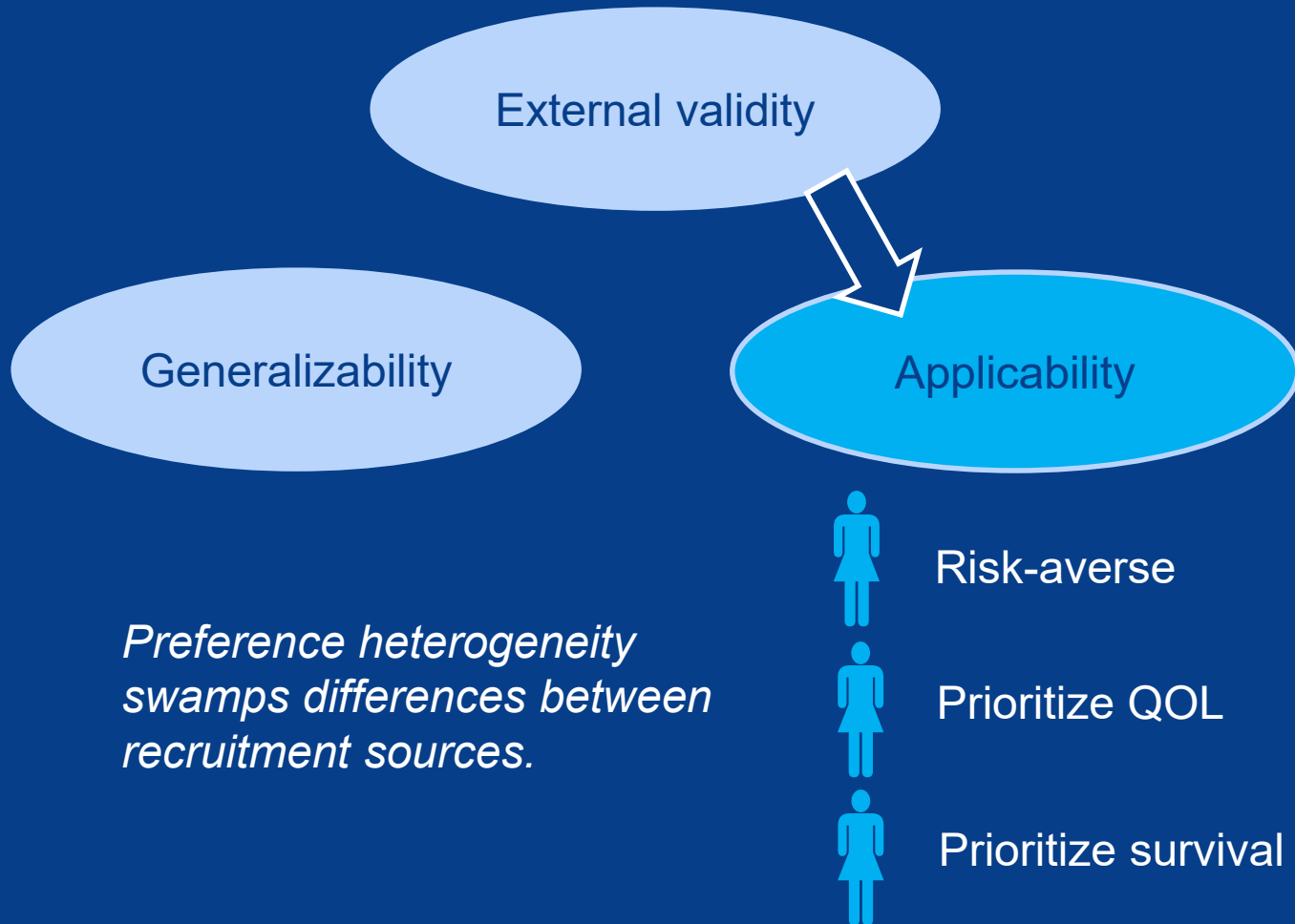
no



yes



# External validity



# Summary

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- General findings from a *small convenience sample*
  - Participants recruited through academic medical centers (or trials) vs. online panels:
    - Take more time
    - Perform better on comprehension questions
    - Have more advanced disease/higher treatment burden
    - Have similar preferences
- With any recruitment strategy:
  - Design questions and internal-validity tests to identify potentially troublesome participants
  - Carefully evaluate attribute-dominance patterns
  - Consider oversampling subgroups of interest
  - Formulate a priori hypotheses
  - Evaluate preference heterogeneity