# JHS PHYSICAL ACTIVITY SCORING

# PREVIOUS DERIVED TOTAL PHYSICAL ACTIVITY SCORE

- Total scores (PAT01) available for all participants
- PAT01 : Sum of four domains
  - **Active Living Index (ACL01)**:
    - Physical activity (PA) during leisure time *excluding sports*
  - **Home/yard Index (HYF01):**
    - Caregiving, routine and major cleaning, etc.
  - **Sports Index (SPT01):**
    - Recreational activity, sports, or formal exercise
  - **Work Index (WRK01a):**
    - Standing, walking, and heavy lifting on the job
      - Work for pay/volunteer in past year: 1-5
      - ***Retirees/non-volunteers: 0***
        - Maximum score is 15

# PROPOSED ALTERNATIVES

- Scenario #1: Exclude work index
  - Exclude work index
  - Maximum score: 15
  - Additional PA data via scoring of JPAC at visit 3
    - Classify unlisted activities
- Scenario #2: Exclude retirees/unemployed/non-volunteers
  - Exclude participants (N=1669)
    - Set indexes to missing
  - Maximum score: 20

# VALIDATION

- 4 Index TPA Score
  - Validated with accelerometer and pedometer data in Smitherman et al. (2009)[1]

- Alternative PA Scores
  - Validated with accelerometer data using prior methods

1. Smitherman TA, Dubbert PA, Grothe KB, Sung JH, Kendzor DE, Reis JP, Ainsworth, Newton RL, Lesniak KT, and Taylor HA. Validation of the Jackson Heart Study Physical Activity Survey in African Americans. Journal of Physical Activity and Health. 2009; 6(1): S124–S132

# DPASS SAMPLE SUMMARY

| | Smitherman et al. [a] | 2015 sample [b] | Revised TPAS-4 [c] | Proposed TPAS-3 |
|---|---|---|---|---|
| Sample size | 404 | 413 | 273 | 413 |
| Mean age (SD) | 57.07 (11.54) | 57.55 (11.48) | 54.05 (10.95) | 57.55 (11.48) |
| Gender | 68.81% female | 68.52% female | 68.13% female | 68.52% female |
| Mean education (SD) | 15.12 (3.78) | | | |
| %Married | 57.25% | 55.21% | 53.85% | 55.21% |
| Mean BMI (SD) | 30.83 (5.75) | 30.92 (5.84) | 30.86 (5.96) | 30.92 (5.84) |
| Mean weight (SD) | 87.26 kg (17.51) | 87.63 (18.01) | 88.00 (17.98) | 87.63 (18.01) |
| ***JPAC mean scores*** | | | | |
| Total score | 8.32 (2.56) | 8.20 (2.56) [d] | 9.20 (2.22) [e] | 6.48 (2.07) [f] |
| Active living score | 2.13 (0.83) | 2.13 (0.83) | 2.17 (0.80) | 2.12 (0.83) |
| Sports index score | 2.19 (1.23) | 2.19 (1.24) | 2.30 (1.24) | 2.19 (1.24) |
| Home/life score | 2.28 (0.63) | 2.29 (0.63) | 2.25 (0.63) | 2.30 (0.63) |
| Work score | 2.60 (0.66) | 2.61 (0.66) | 2.61 (0.66) | -- |

[a] Accelerometer sample from Smitherman et al (2009).

[b] Any participants with actigraphy data and JPAC form

[c] Participants with actigraphy data *and* all scores for all physical activity domains.

[d] Total score is the summation of the 4 index scores. Maximum total score is 20.

[e] Total score is the summation of the 4 index scores. No score is calculated for retired participants. Maximum total score is 20.

[f] Total score is the summation of the active living, sports, and home/life index scores. Maximum total score is 15.

# SENSITIVITY ANALYSIS

| Scoring Options | N | Employed or Volunteering | Retired or Non-volunteer | Overall | Relative Score Diff [e] | Correlation with accelerometer [f] |
|---|---|---|---|---|---|---|
| Original TPAS [a] | 5296 | 9.27 (2.14) | 5.85 (2.00) | 8.20 (2.64) [b] | 17.1% | < 0.001 |
| Revised TPAS-4 [c] | 3427 | 9.41 (2.09) | -- | -- | -- | 0.010 |
| Proposed TPAS-3 | 5296 | 6.64 (1.98) | 5.85 (2.01) | 6.39 (2.64) [d] | 5.3% | < 0.001 |

[a]   TPAS: total physical activity score
[b]   Total score is the summation of the 4 index scores. Maximum total score is 20.
[c]   Total score is the summation of the 4 index scores. No score is calculated for retired participants. Maximum total score is 20.
[d]   Total score is the summation of the active living, sports, and home/life index scores. Maximum total score is 15.
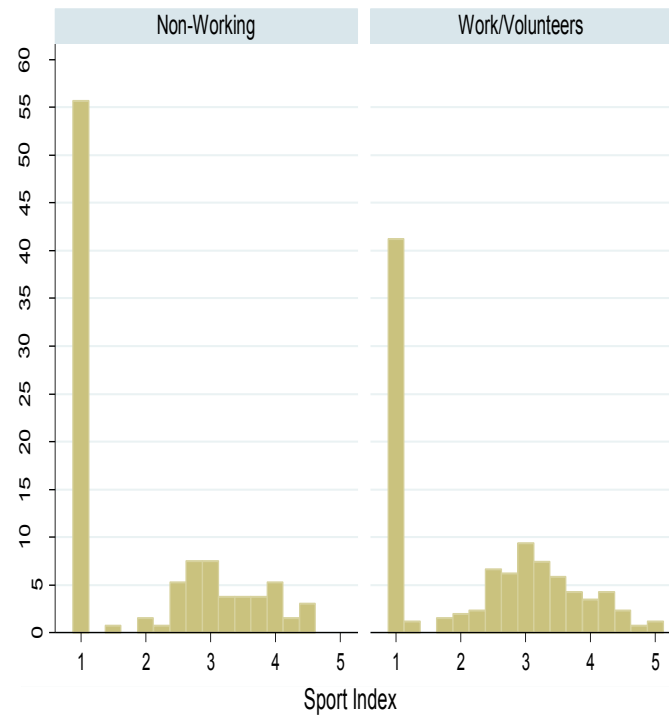[e]   Relative score difference between employed/volunteers and retired/non-volunteer participants
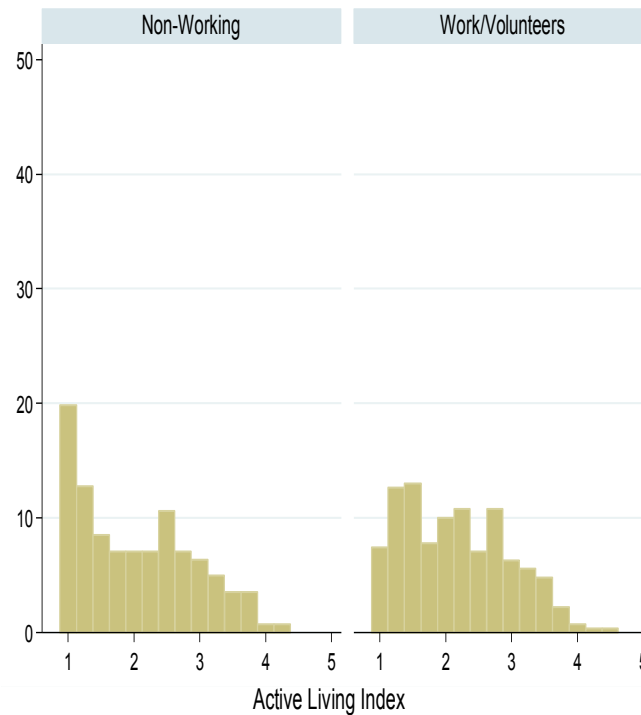[f]   Spearman correlation between total scores for validation sample and accelerometer data
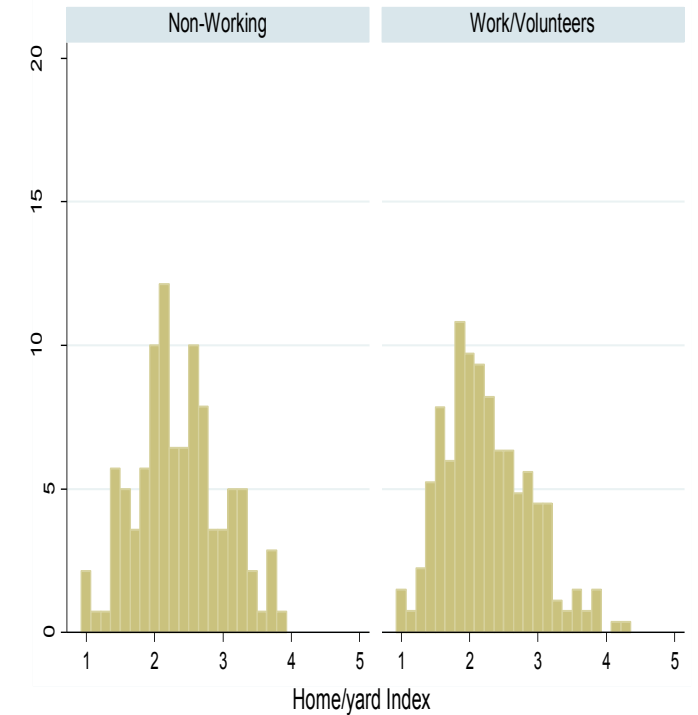
# COMPARING DOMAIN SCORE DISTRIBUTION

# IS THERE BIAS IN RESPONSE OPTIONS?

- Based on the format of the JPAC questions all participants were able to achieve the maximum amount of points for 3 of the 4 domains.
  - Responses: open ended, quantitative (e.g. "less than 5 minutes", "at least 45 minutes")
    - Recreational activity for 45 minutes is scored equally to recreational activity for 2 hours
    - Response options not limited by employment status→ no perceived bias toward employed/active volunteers
  - Zero score okay for non-workers
    - Retirees do not noticeably outperform "workers" in any of the PA domains

# PROS AND CONS FOR ALTERNATIVES

### *Alternative #1:*
### *Exclude retirees*

- Revised TPAS-4
- Lost data: sample size
- Retain **total** physical activity score
- Decrease in average participant age
- Continued consistency
  - Kaiser PA score
  - Published JHS manuscripts

### *Alternative #2:*
### *Exclude work index*

- Proposed TPAS-3
- Lost data: work domain score
- No longer **total** physical activity score

# OTHER ALTERNATIVES FOR ANALYSIS

- Replace with one or more index scores (ACL01, HFY01, SPT01)
  - Maintain participants
  - Effect of certain types of physical activity (e.g. sports/ formal exercise-SPT01 ) may be more directly related to research question
- Replace with Life Simple 7 Categorization (PA3CAT, IDEALHEALTHPA)
  - Based on Sport/Exercise Index
  - Available for visits 1 and 3
  - More information found here:  VanguardCenters\working groups\LSS\0-info

# CONTACT THE NUTRITION AND PHYSICAL ACTIVITY GROUP FOR MORE INFORMATION
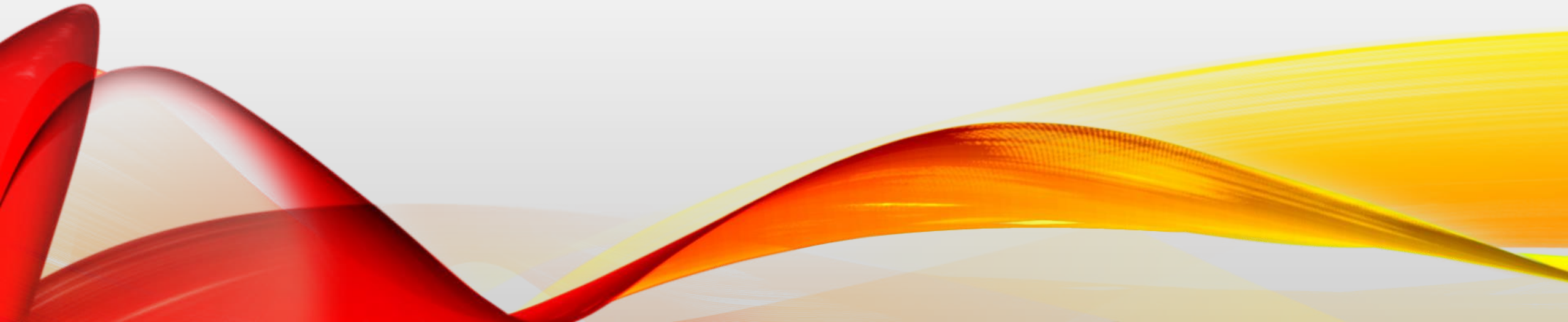
# REFERENCE

Smitherman TA, Dubbert PA, Grothe KB, Sung JH, Kendzor DE, Reis JP, Ainsworth, Newton RL, Lesniak KT, and Taylor HA. *Validation of the Jackson Heart Study Physical Activity Survey in African Americans*. Journal of Physical Activity and Health. 2009; 6(1): S124–S132