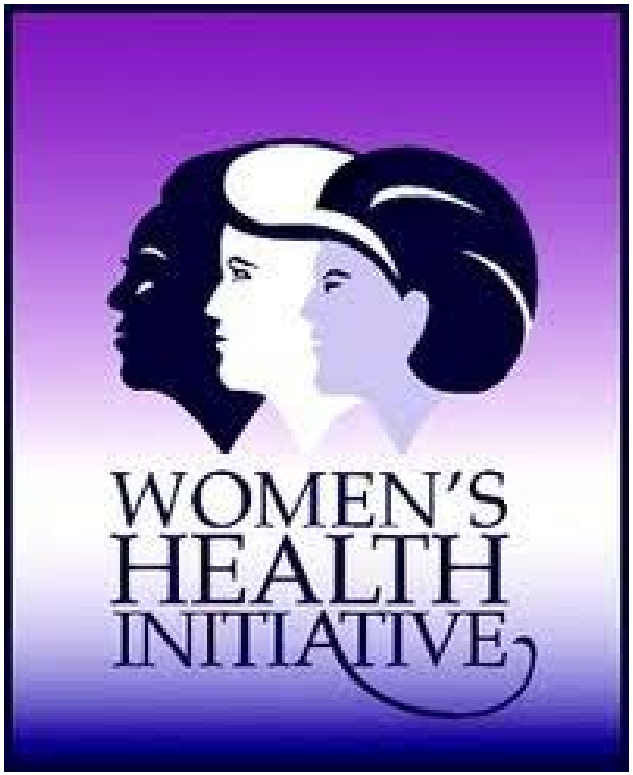


# *Environmental Correlates of Physical Activity in Older Women: Findings from the San Diego Cohort of the Women's Health Initiative*

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# Project Team

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*Supported by grant R21CA127777 From the National Institutes of Health*

# Background

- Well established relationships between physical, emotional, cognitive functioning and PA for older adults.
- Medical costs lower for older people who are active.
- Only 2.5% of older adults meet PA guidelines.
- Older adults may be more susceptible to environmental barriers.
- WHO age-friendly cities, EPA aging initiative, AARP endorse environment changes to support walking for older adults.
- “Age in Place”
- Population proportion age 60 and over increasing.

# Background

- Inconsistent findings from studies of older adult physical activity and built environment.
- 3 of 5 studies no association b/w PA and urban vs. rural neighborhoods.
- 3 of 6 studies of walkability and walking found associations.
- Important to understand environment factors specific to older adults.

# Current Study

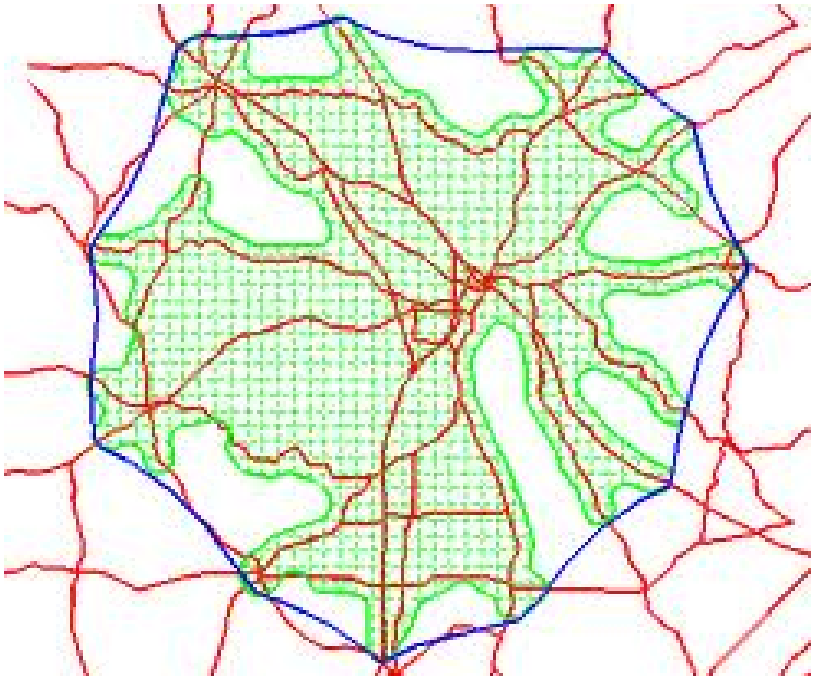
- Data from San Diego Cohort of WHI
- Baseline data (cross-sectional)
- Added GIS-based built environment data
- Linear regression models to assess association between physical activity and built environment.

Department of Health and Human Services
National Institutes of Health
National Heart, Lung, and Blood Institute

- Women's Health Initiative (WHI)
- NIH multi-center study of post-menopausal women
- Women followed an average of 7 years.
- Age 50 to 79 years
- Recruited between 1993 and 1998 from San Diego County.
- 5,626 women enrolled, 40% in CT, 60% OS

# Geocoding

- Geocoded residential addresses
- Created .5, 1, 3-mile network buffers
- Spatially link built environment data sources to buffers
- Used ArcGIS 9.3 ESRI
- 5,401 (96%) were geocoded
- 225 could not be geocoded
  - 125 P.O. box
  - 79 outside county
  - 14 outside CA
  - 7 incorrect or missing address



# Creating Environment Variables

- Spatial data on existing land use from SANDAG for year 2000.
  - Residential, Commercial, Office, Institutional
- Neighborhood Walkability Index
  - Land use mix (entropy)
  - Residential density
  - Street network connectivity (intersection density)
  - Sum (z-scores)

# Creating Environment Variables

- School Density (quartiles)
- Recreation Facilities Density (quartiles)
- Distance to the Coast (deciles)
- Distance to the Nearest Park (deciles)

# Physical Activity

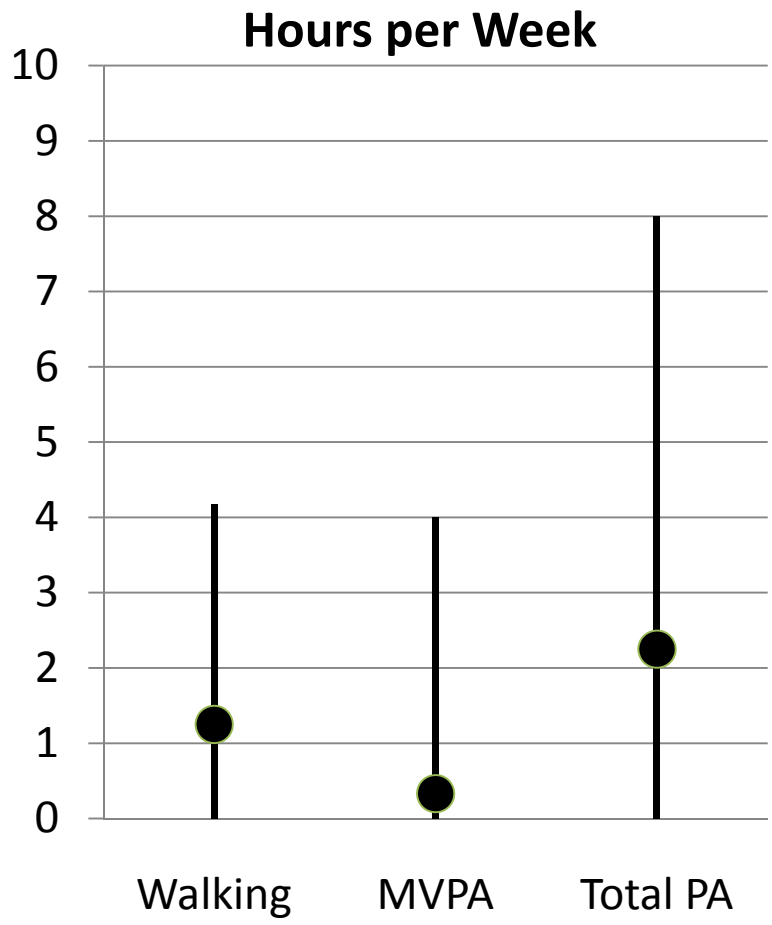
- Self-report of usual weekly PA (frequency, duration, intensity)
- Self-report of walking
- 3 estimates calculated MET/hours/week
  - Total walking (4 intensities)
  - MVPA (4.5 to 7 METs)
  - Total activity > 3 METs
- Log transformed for analyses

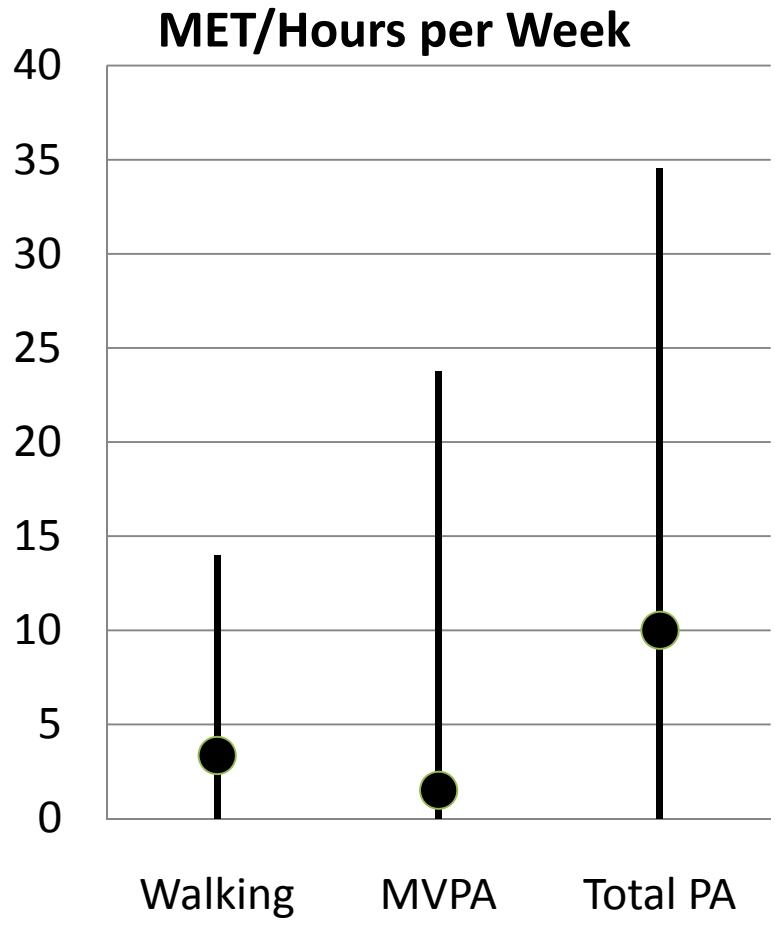
# Sample (N = 5,401)

| | Percent |
|---|---|
| **Age** | |
| 50-59 | 31% |
| 60-69 | 42% |
| 70-79 | 27% |
| **Race/ethnic** | |
| White non-Hispanic | 75% |
| Non-white | 25% |
| **Income** | |
| <35K to <50K | 63% |
| 50K to 99K | 29% |
| ≥100K | 8% |

| | Percent |
|---|---|
| **Education** | |
| < HS, HS, vocational training | 32% |
| Some college or AA | 33% |
| College or some grad school | 21% |
| Professional degree | 14% |
| **Health Status** | |
| Poor | 1% |
| Fair | 11% |
| Good | 31% |
| Very good | 40% |
| Excellent | 17% |

# Overall Physical Activity Levels (Median, 10th & 90th percentile)

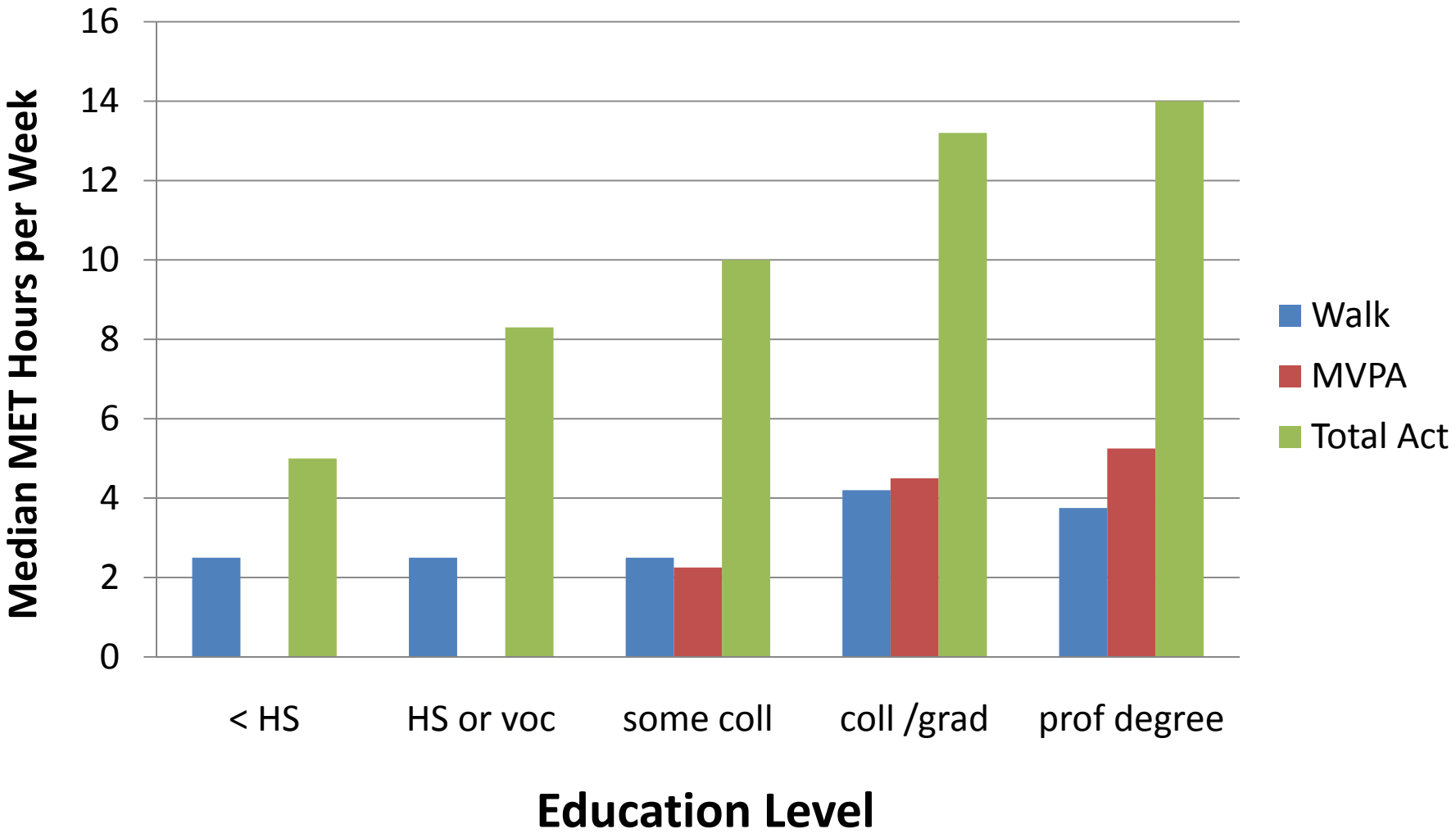


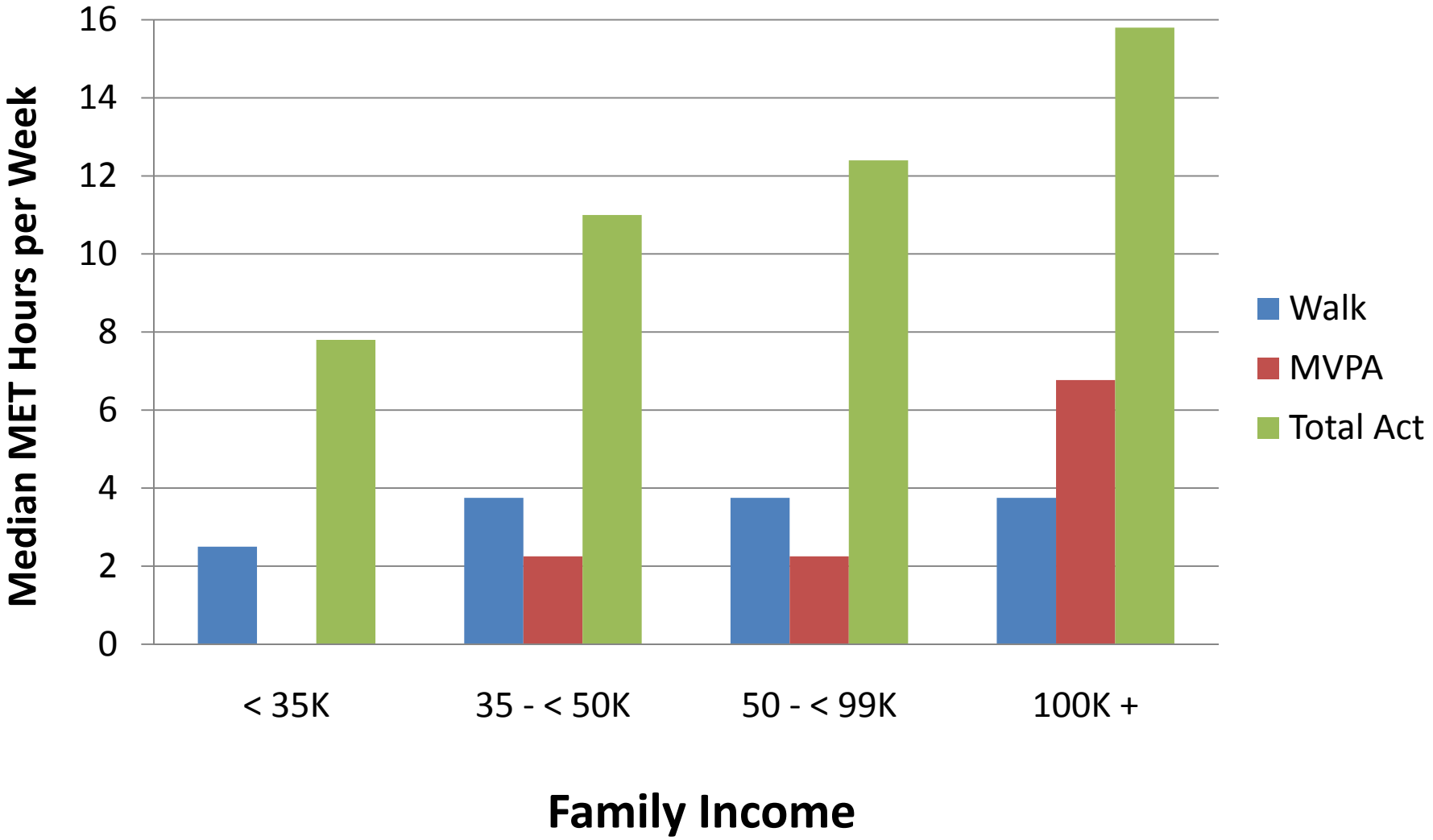
# Results From 9 Models

| | |
|---|---|
| • Education | • + all models |
| • Family income | • + all models |
| • General health | • + all models |
| • Age category | • + total activity |
| • Walkability | • + total walking |
| • School density | • - walk, MVPA (3), total PA (1,3) |
| • Recreation facilities density | • + walk (1), total PA (1) |
| • Distance to coast | • + total walking, total PA |
| • Distance to park | • No effects found |

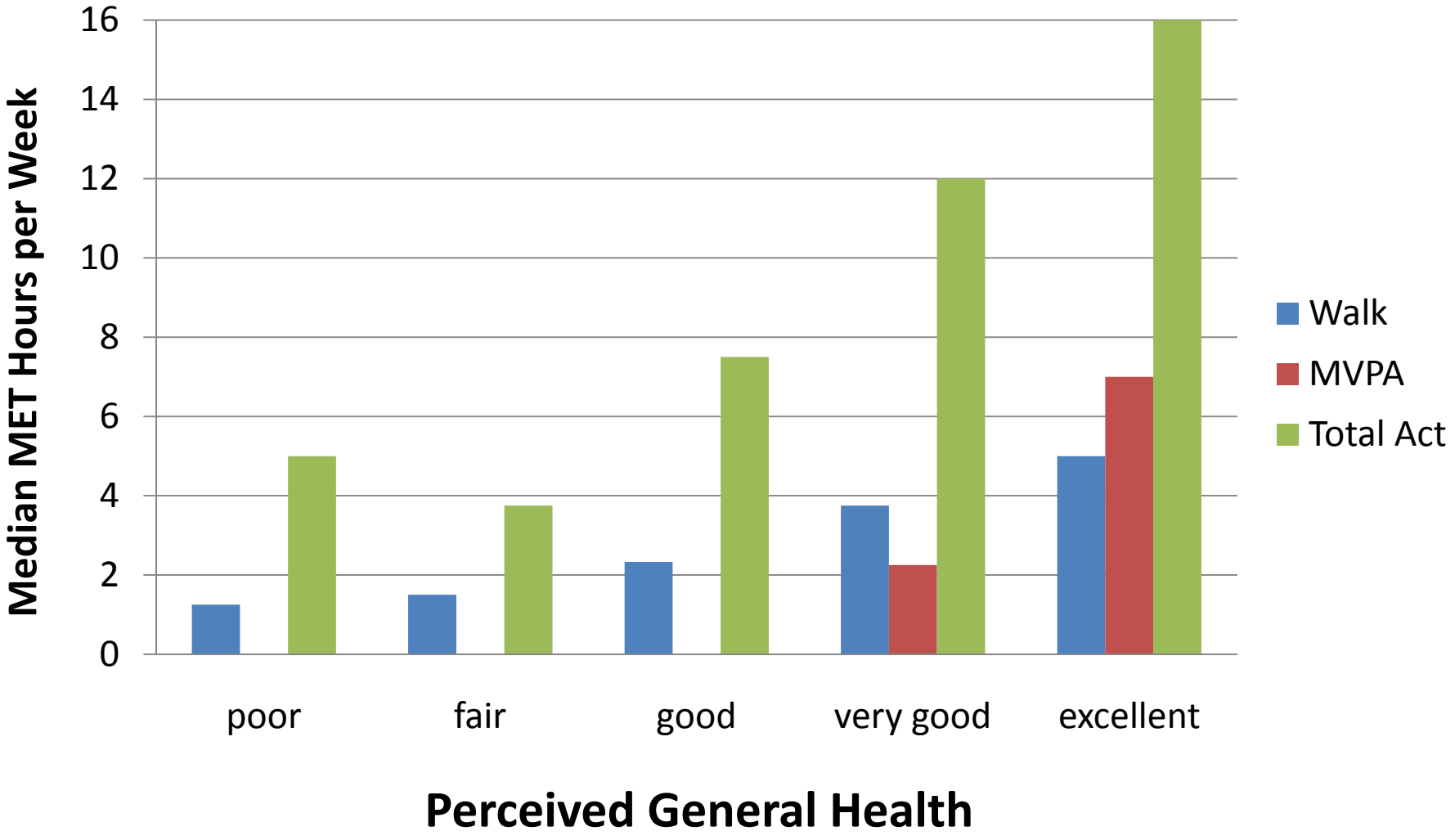
# Physical Activity & Education Level



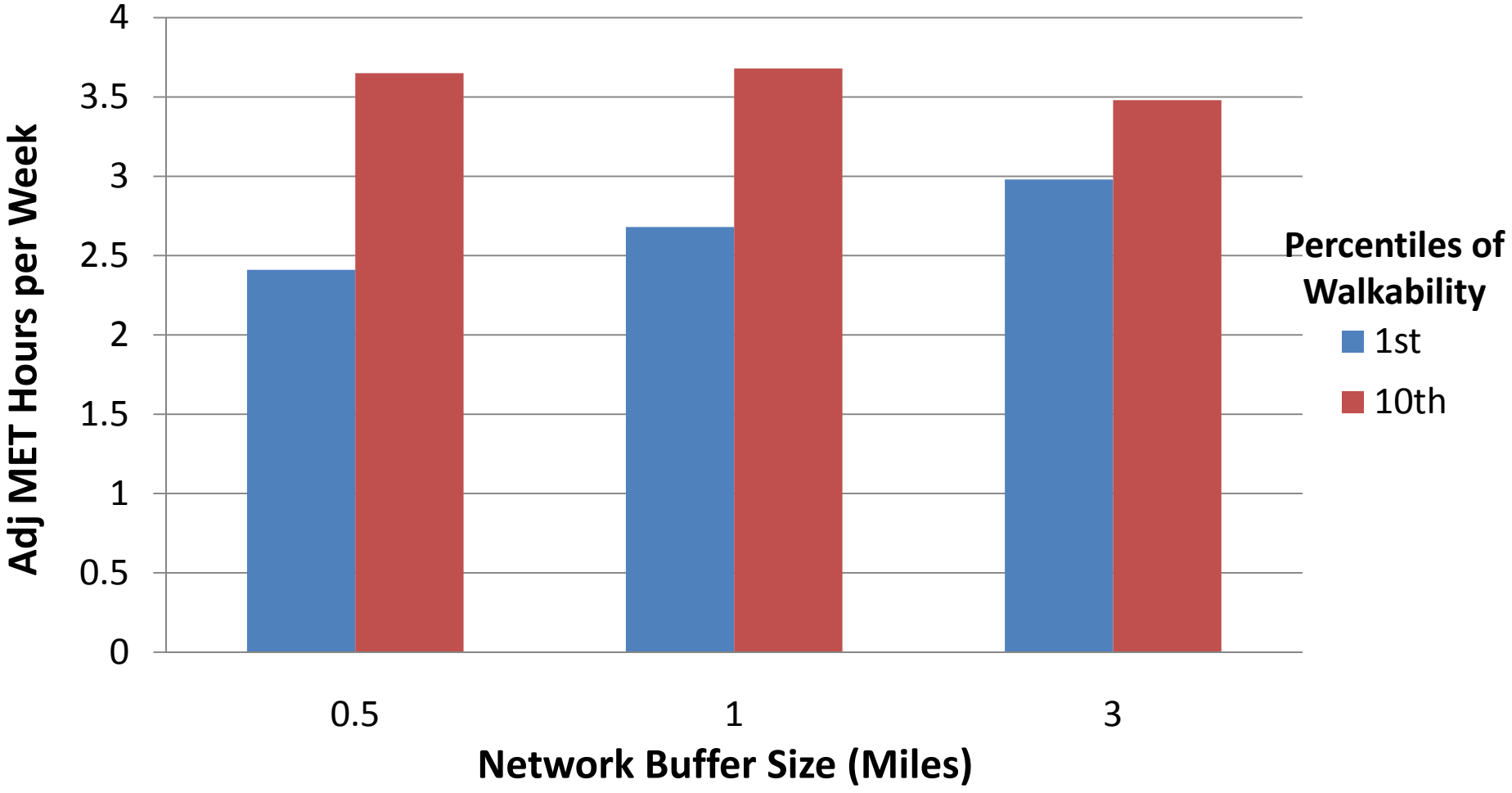
# Physical Activity & Family Income



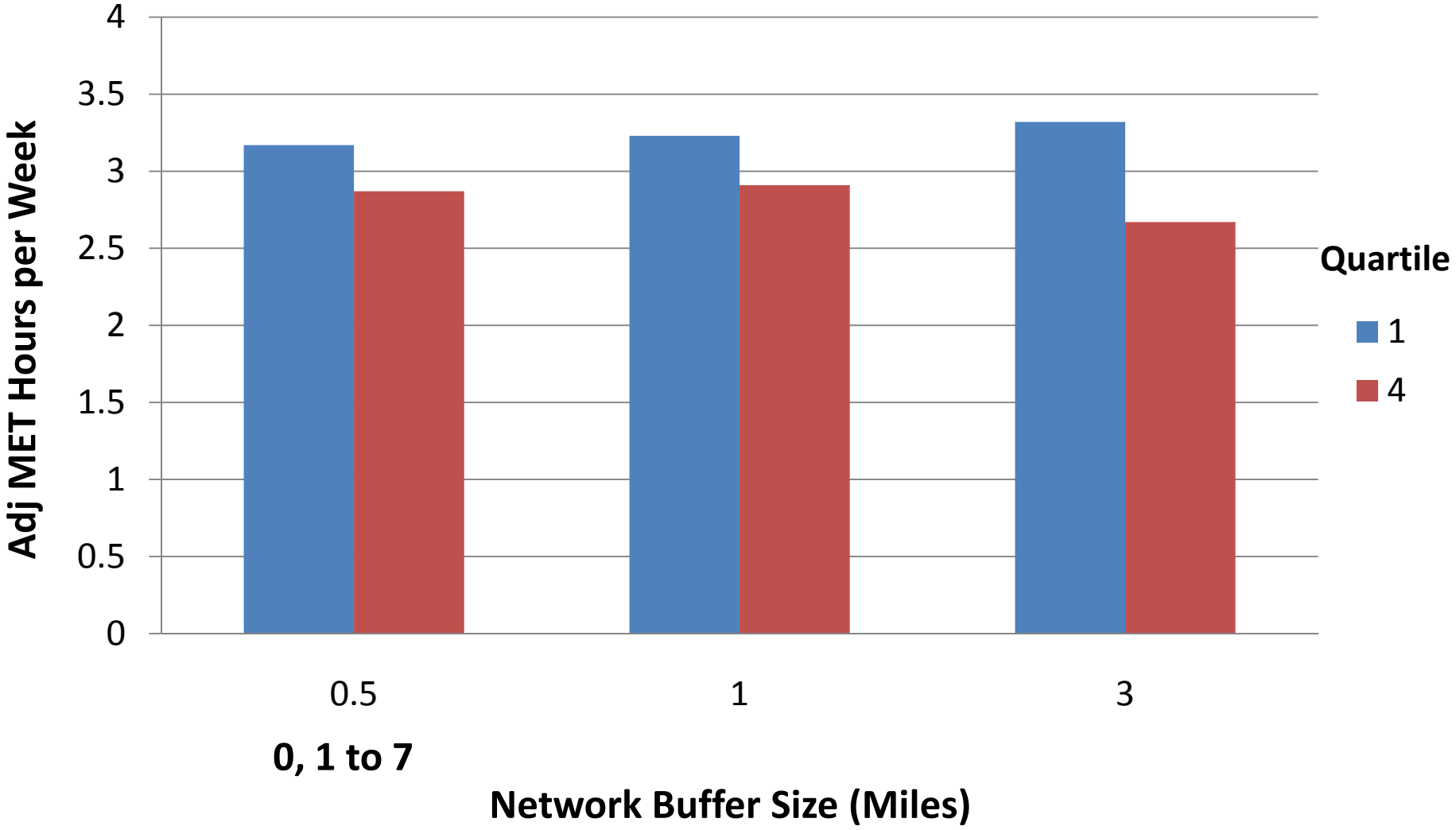
# Physical Activity & General Health



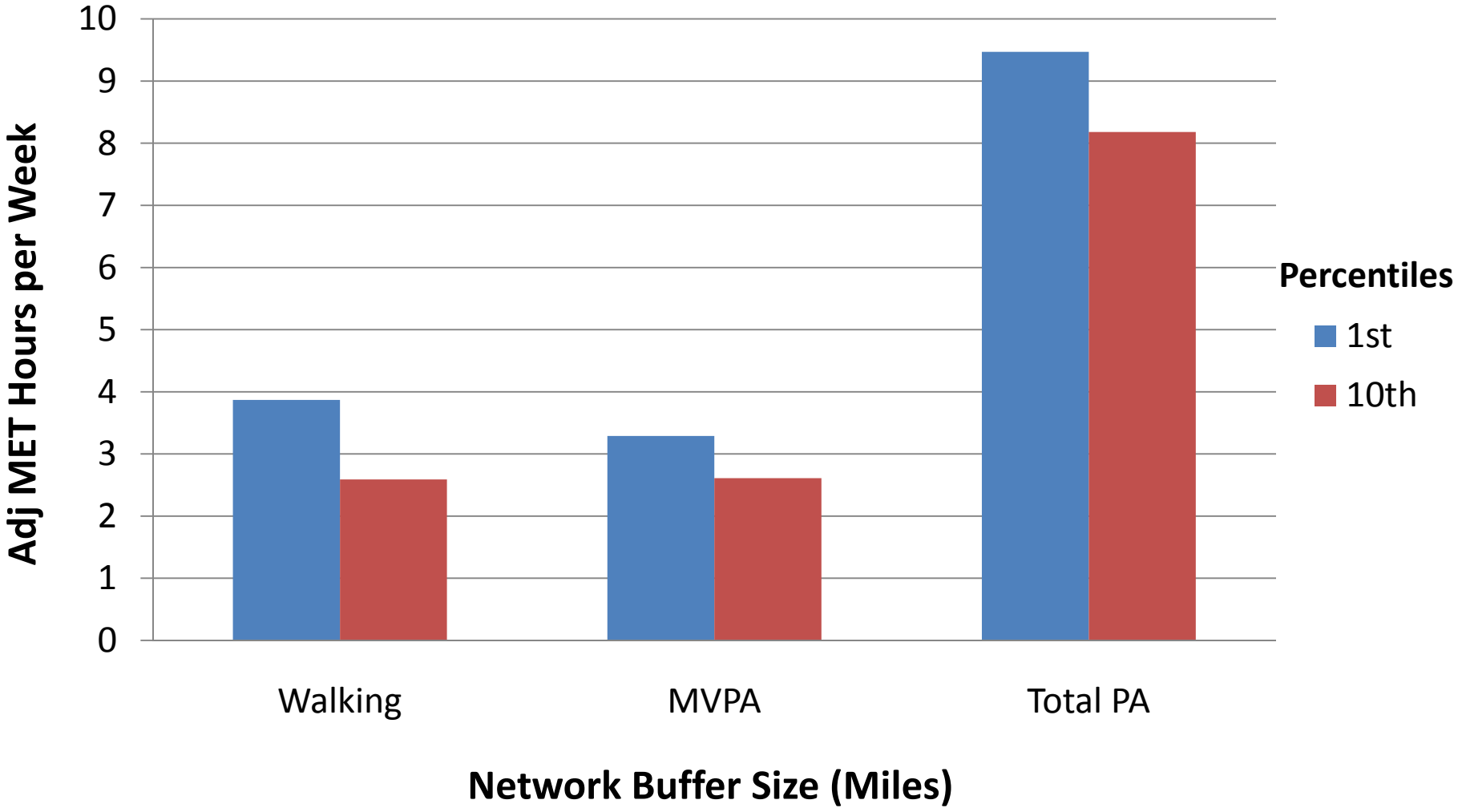
# Total Walking & Walkability



# Total Walking & School Density



# Physical Activity & Distance to Coast



# Summary of Results

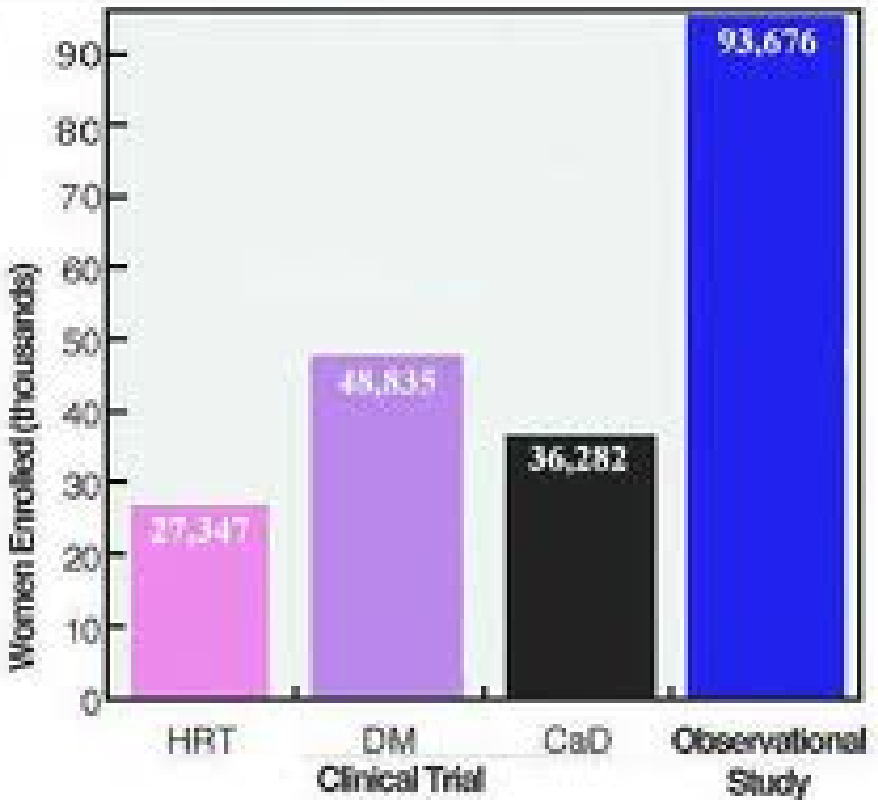
- Tested 5 GIS environment measures hypothesized to be related to physical activity.
- Tested 3 buffer sizes around residence.
- Walkability only related to walking.
- Consistent inverse finding for school density
- Recreation facilities only related to total activity in the 1 mile buffer.
- Distance to the coast related to walking and total activity but not MVPA.
- Distance to parks not related to activity.

# Caveats

- Small effects (model $R^2$ = .06 to .10) detected with large sample.
- Considerable “noise” in the system (self report measures of PA, linking GIS, sampling method).
- Many things not measured (sidewalks, perceptions of environment, reasons for walking).
- Capitalized on data not collect to address hypotheses.

# Conclusions

- Some relationships found between built environment and older adult physical activity.
- No clear pattern related to buffer size.
- Findings can inform further inquiry to substantiate associations.

**THANK YOU!**

## ENROLLMENT NUMBERS