



# Life Course Core

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# Overview

- Core Activities
- Results from Life Course Survey
- Research Highlights
- Next Steps



# Life Course Core Aims



Characterize exposures across the life course, including administration of a life course exposures questionnaire, updating existing ACT questionnaires, linkage to external data sources



The Core will curate variables from these sources to characterize social determinants over the life course



Collaborate with Projects and Cores in use of life course variables and to provide educational support through seminars

# Core Activities

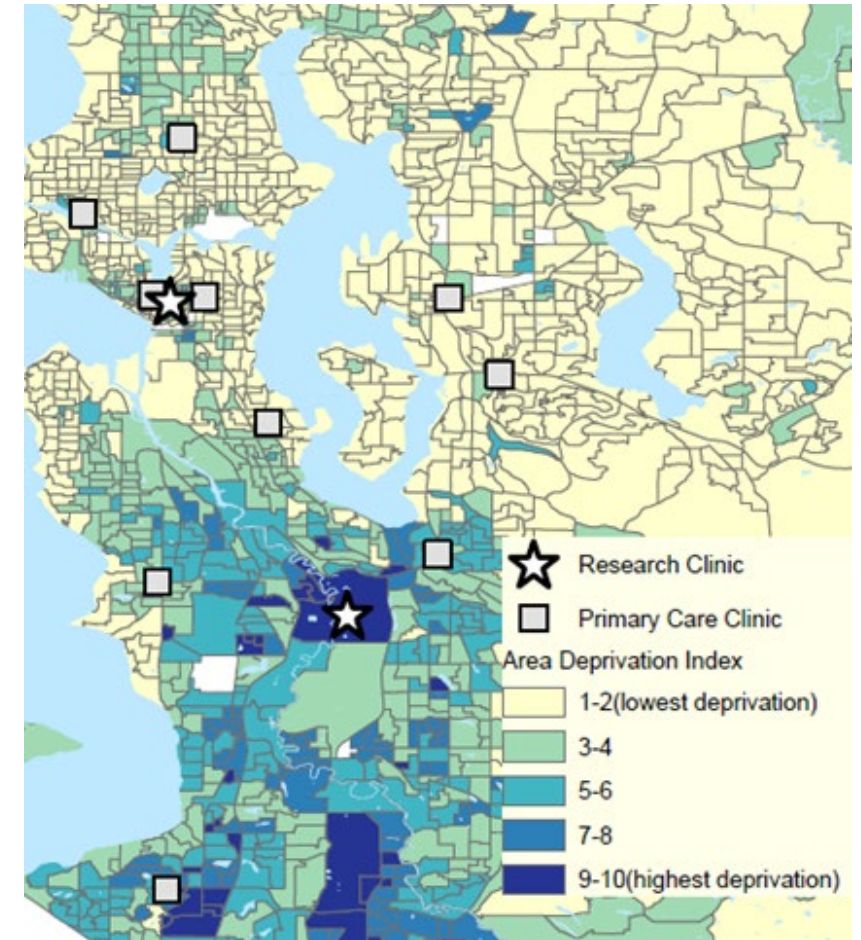


# Geocoding

- Geocoded 6993 addresses through 2023
- Linking to Area Deprivation Index based on zip code
  - a validated measure of the adverse social exposome that can evaluate and improve factors that impact health across populations
  - 2015, 2020, 2022
- Linking to King County Property Value based on address



Hongyuan Gao, MS, MA, Life Course programmer



Area Deprivation Index scores throughout ACT's participant catchment area

# Life Course Seminar Series



Dr. Monica Walters, University of Michigan

Social Determinants of Cognitive Aging Disparities



Dr. Raj Kumar, Icahn School of Medicine at Mt. Sinai

Exploring the Long-term Consequences of Traumatic Brain Injury using Epidemiological Data



Dr. Anjum Hajat, University of Washington

Creating Life Course Social Exposures: Individual and Area Level Social Determinants



Dr. Lilah Besser, University of Miami

Neighborhood environments and brain health outcomes in the Healthy Brain Initiative



Dr. Phillip Hwang, Boston University

Examination of physical activity and diet across the adult life course on risk and resilience in Alzheimer's disease and related dementias: findings from the Framingham Heart Study

# Preliminary Results from the Life Course Core Survey



Cynthia Cui, MS  
Columbia University



Mukta Patwari, MPH Candidate  
Columbia University



Malika Top, MS Candidate  
Columbia University

# Overview

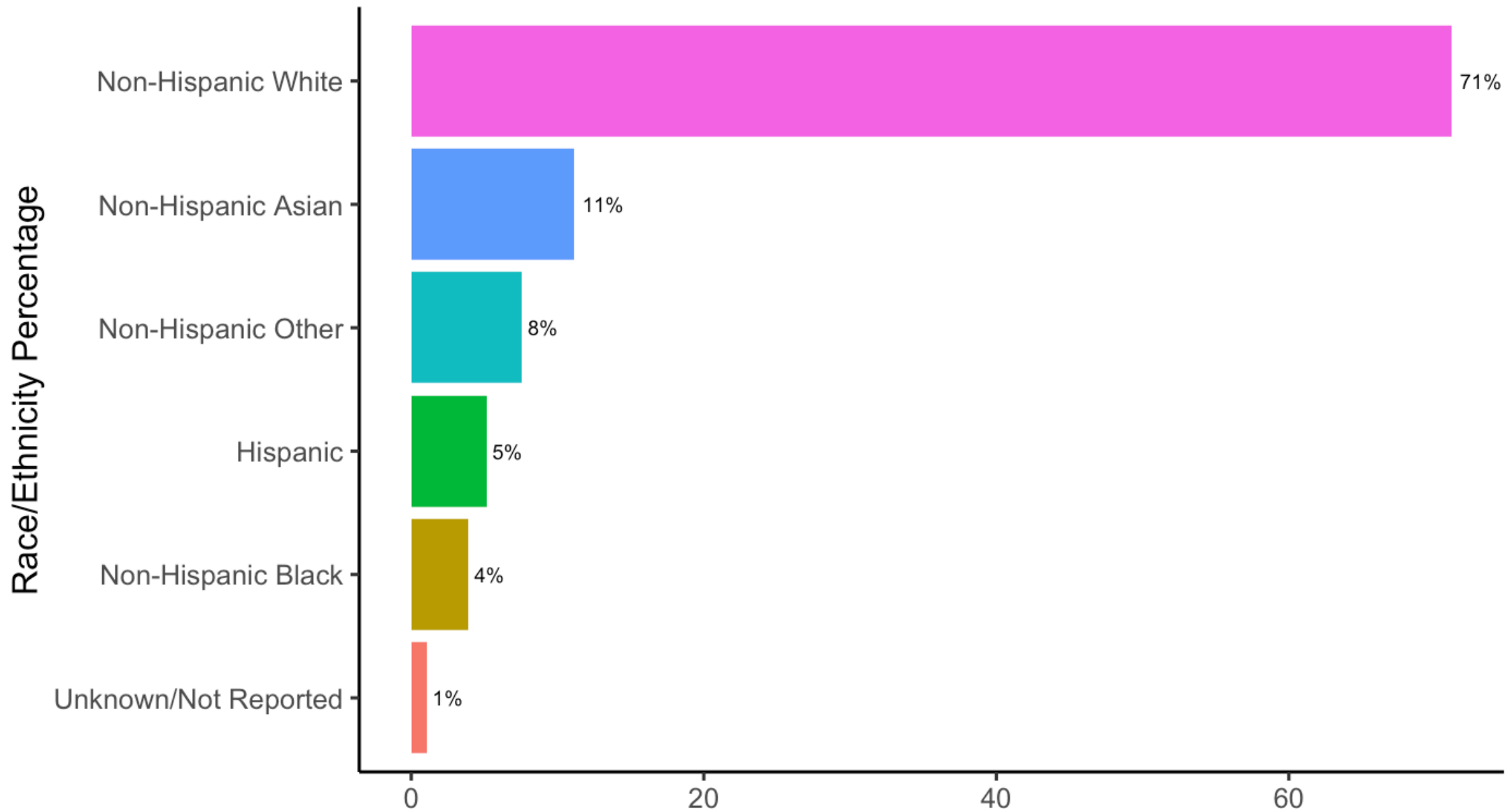
1874 participants completed as of April 16, 2026

- 75.4% completion rate

57% women

Median age 77 years (interquartile range: 73, 82)

# Distribution by Race and Ethnicity in the Life Course Survey Sample (n = 1785)



# Key Life Course Variables

## Unpaid raising children or taking care of home:

- Dedicated part of their lives to unpaid work taking care of children or the home

## Unpaid caregiving:

- Dedicated part of their lives to unpaid caregiving for a parent, spouse/partner, friend, child with special needs for 6 or more months

# Key Life Course Variables

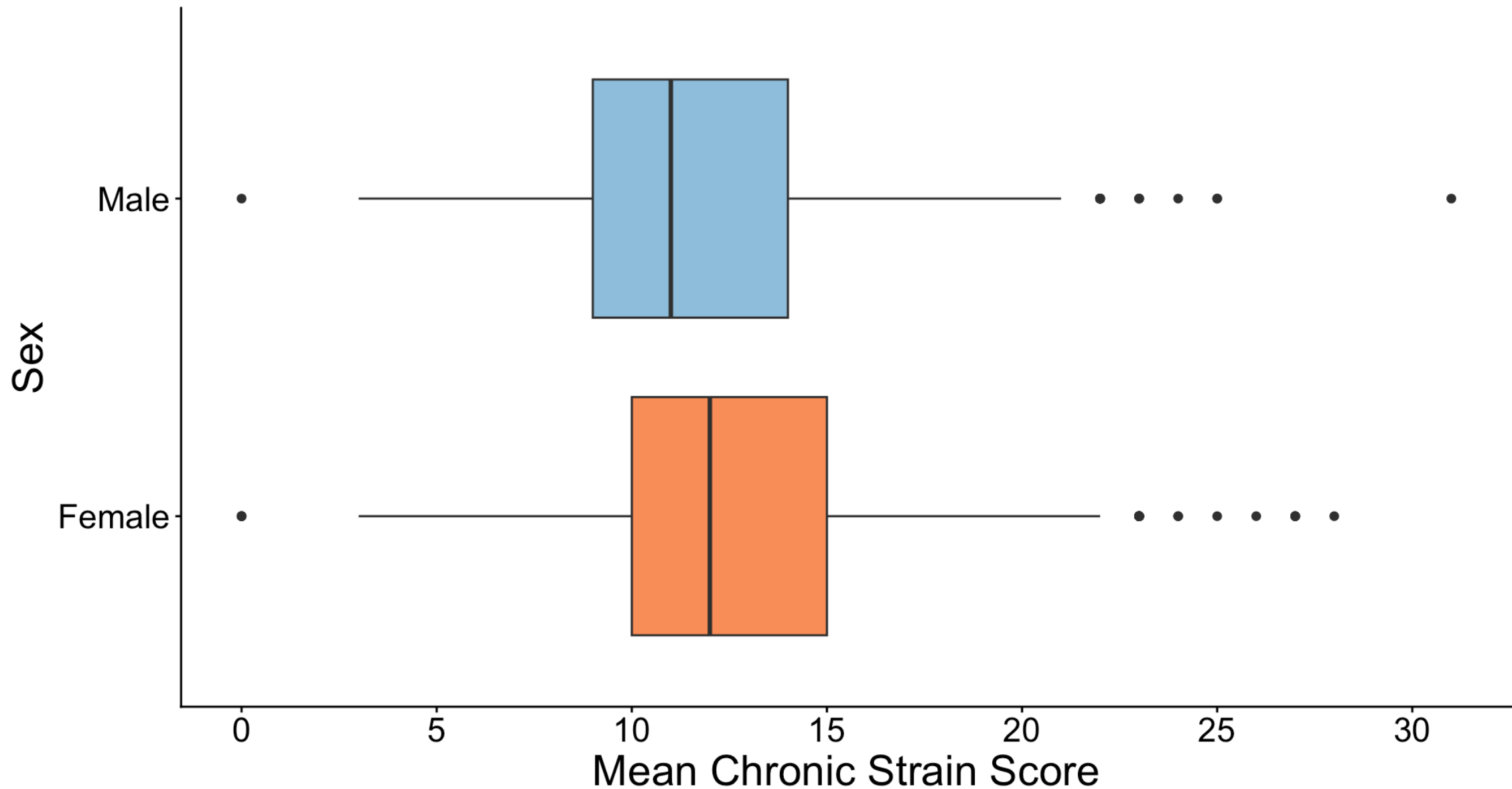
## **Chronic Strain** (Health and Retirement Study; Troxel, 2003)

- 8-items indicating any ongoing or current problems lasting twelve or more months. Examples include:
  - Ongoing physical or emotional problems (in spouse or child)
  - Ongoing difficulties at work
  - Ongoing financial strain
- Scoring range 0-32

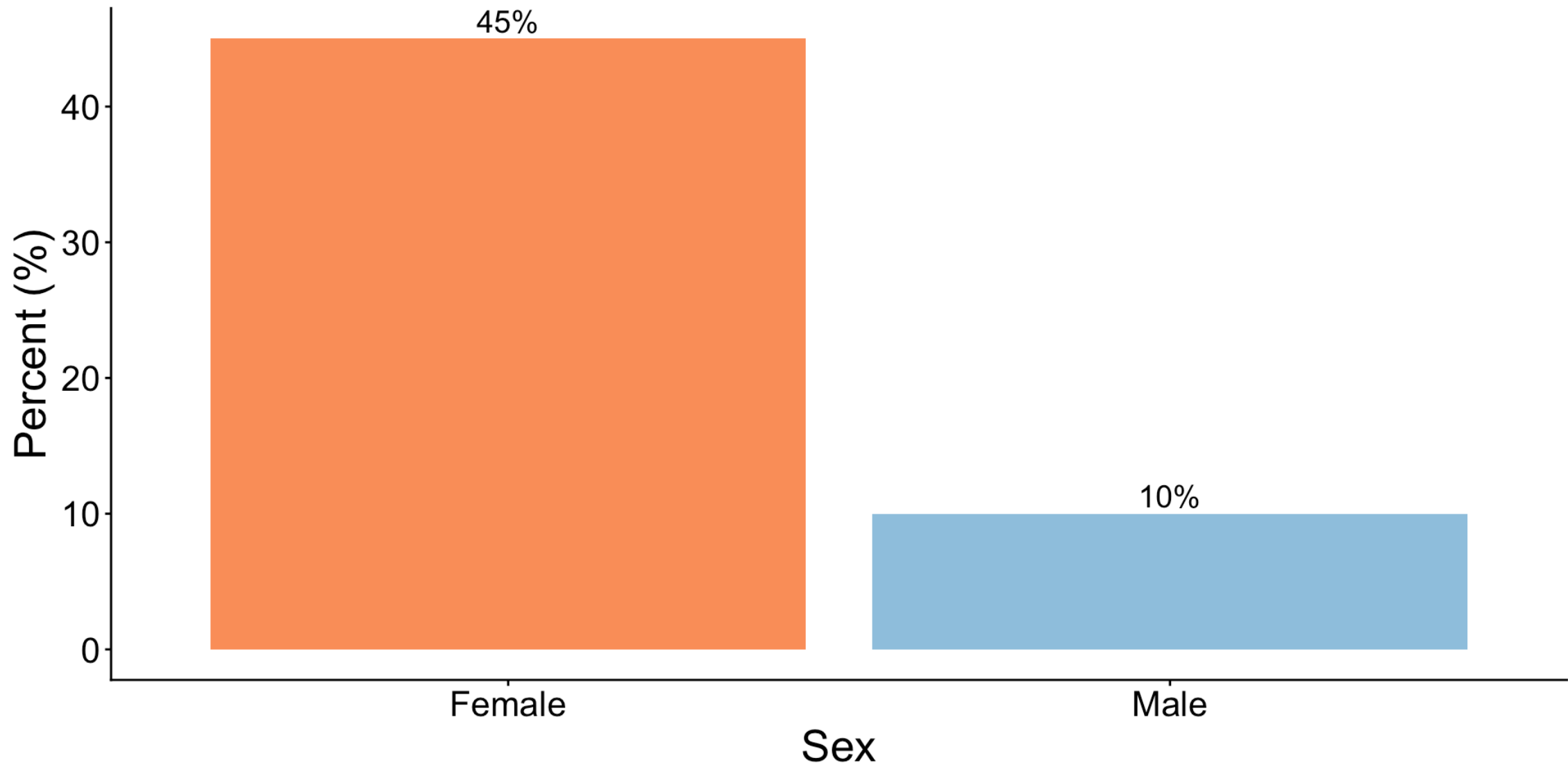
## **Adverse Childhood Experiences** (Feletti, 1998)

- 13 items with response options: Yes or No
- Looking back before you were 18 years of age...
- Example items:
  - Did you live with anyone who was depressed, mentally ill, or suicidal?
  - Did you live with anyone who has a problem drinker or alcoholic?
  - Were your parents separated or divorced?
- Any or total count

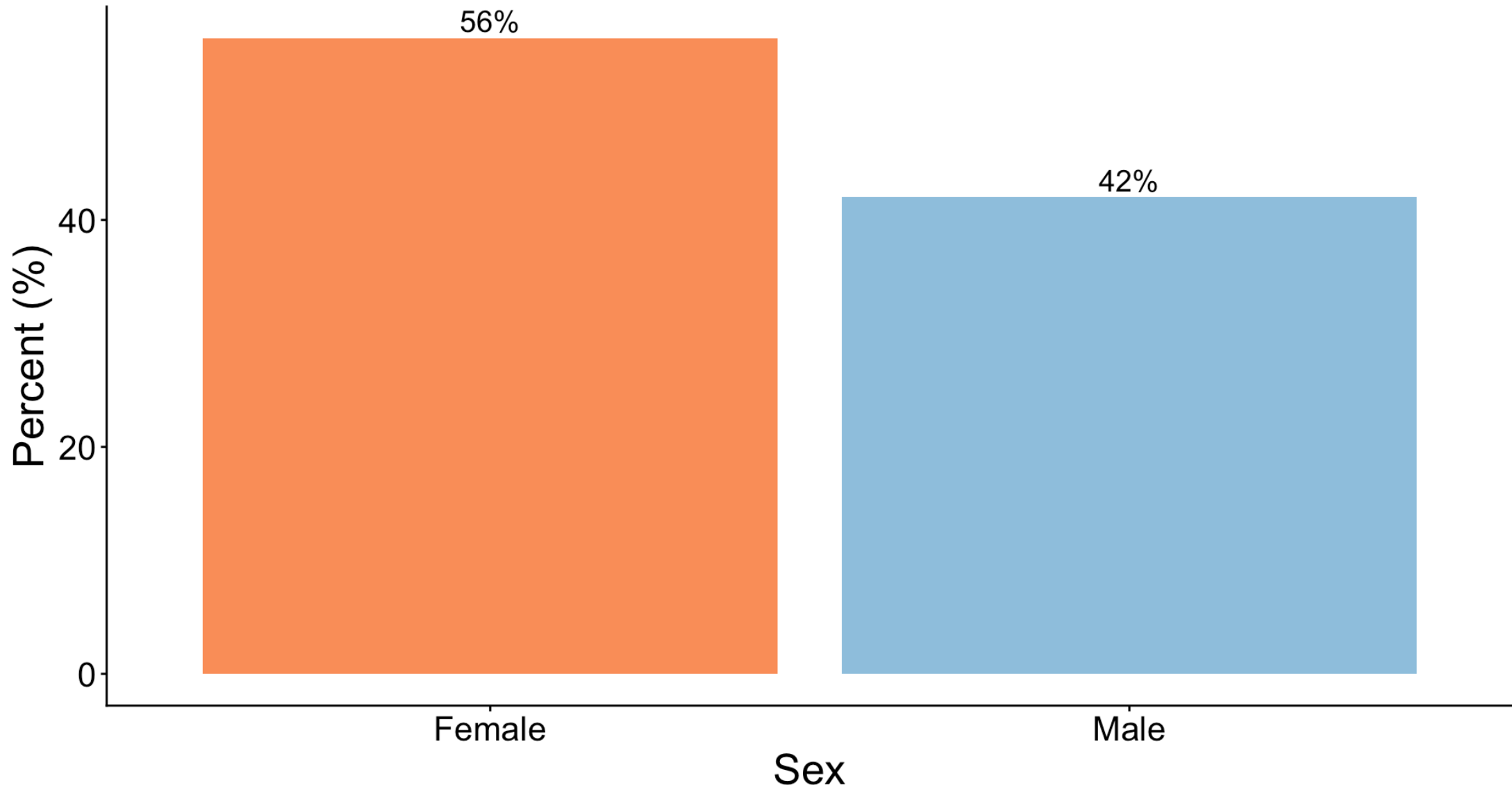
# Chronic Strain that has Lasted Twelve Months or Longer among Life Course Respondents (n = 1739)



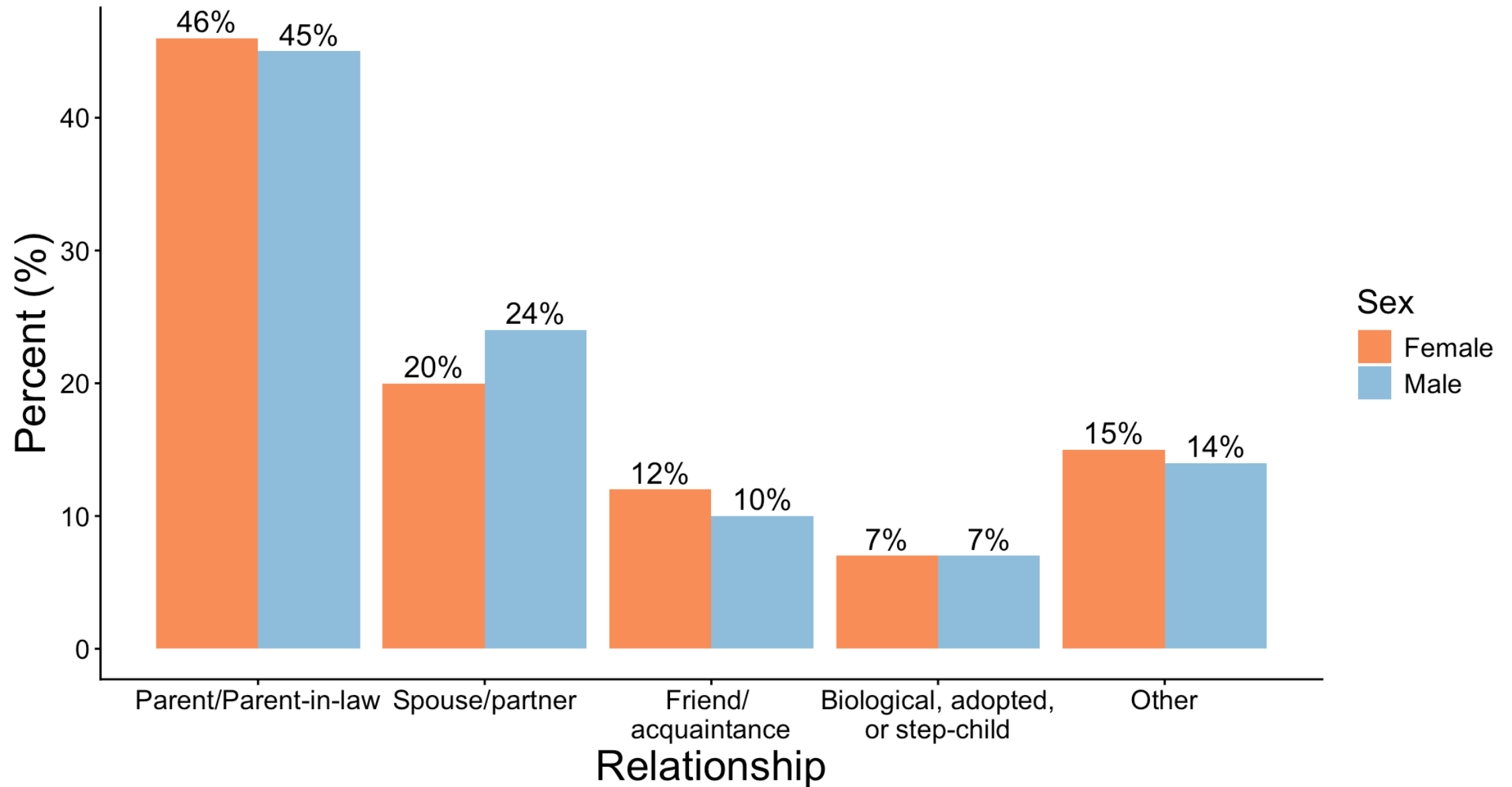
# Dedicated part of their life to unpaid work of raising children and/or caring for their home (N = 1712)



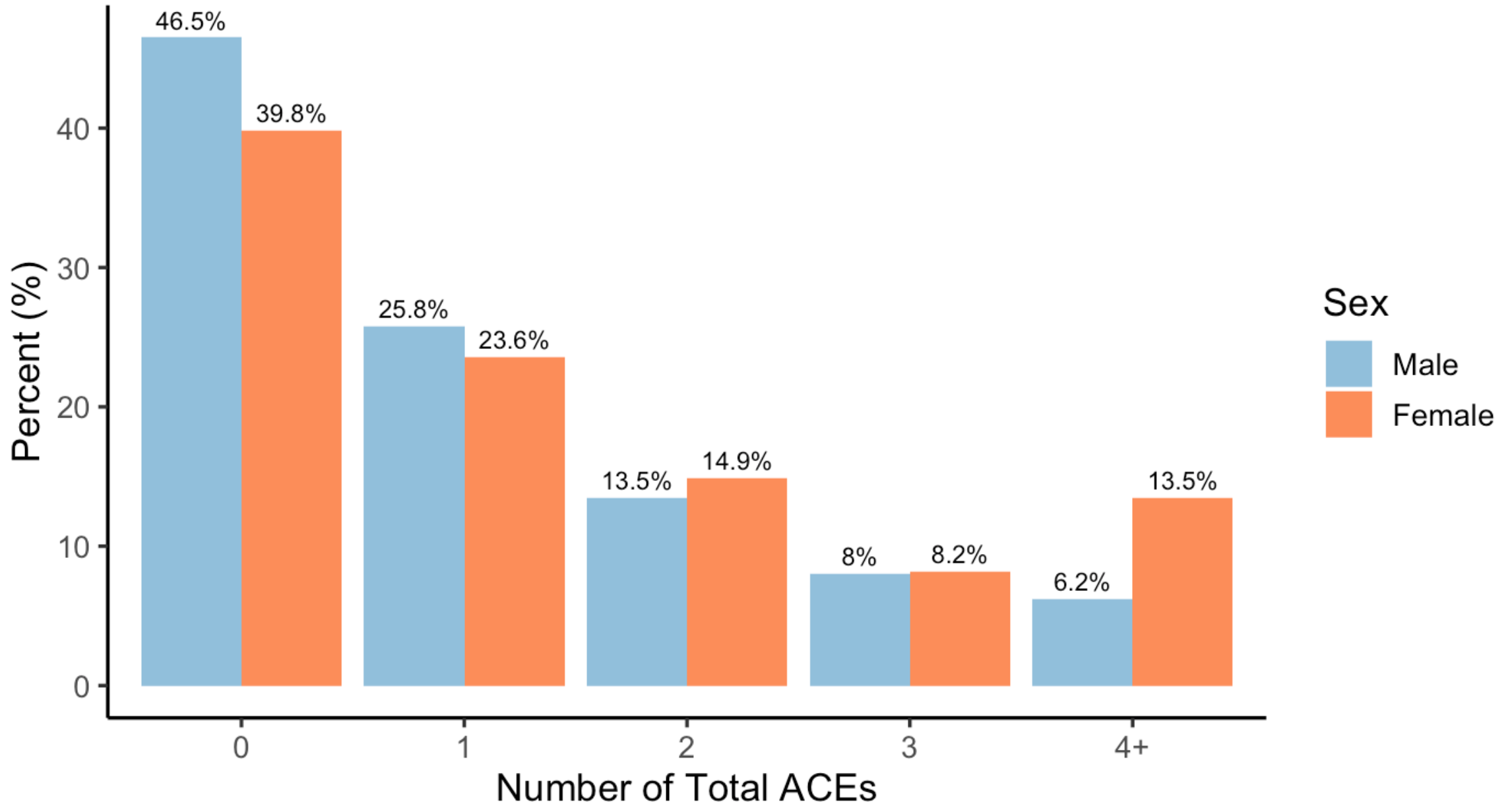
# Provided unpaid care to another person for 6+ months (n = 1769)



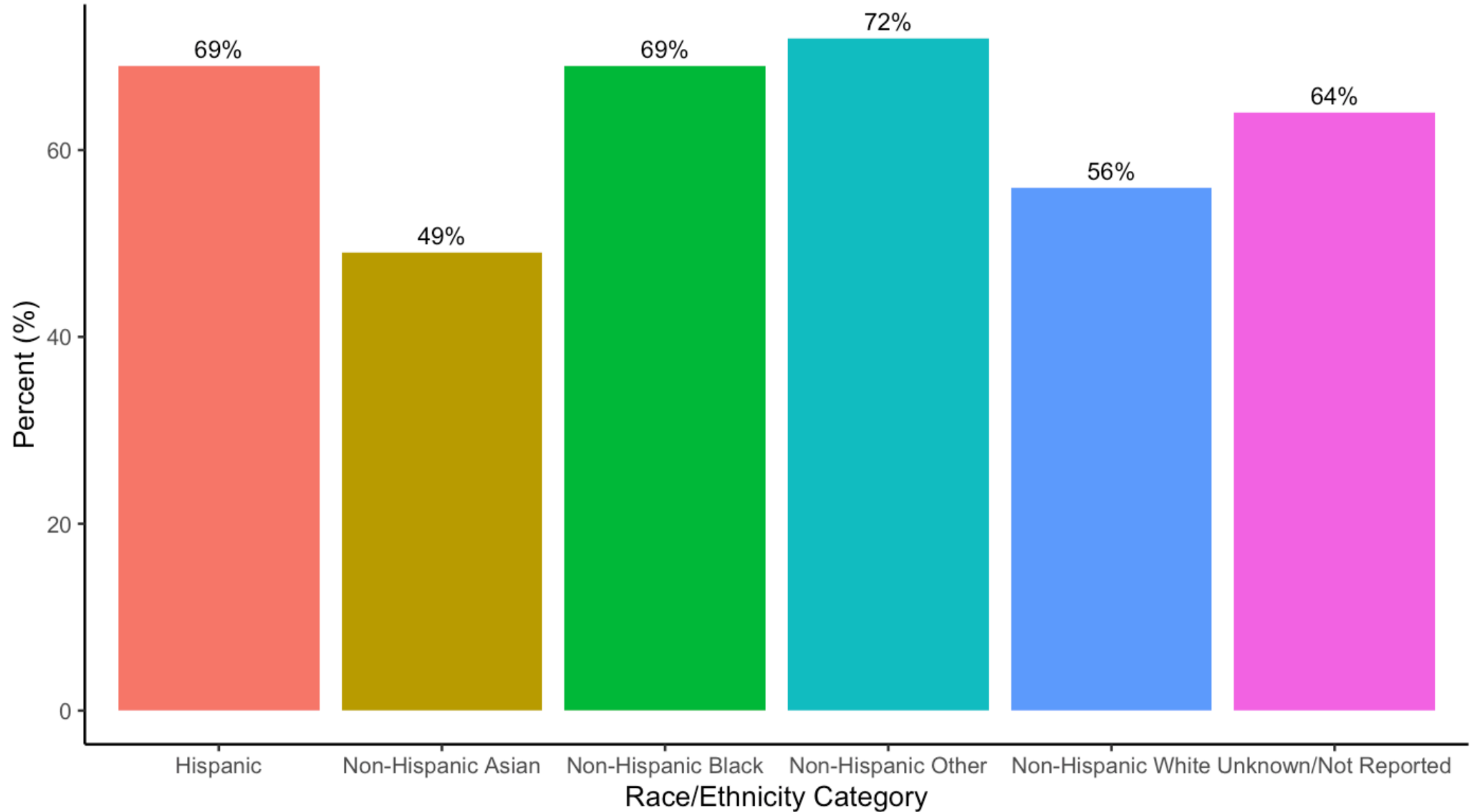
## Among those providing unpaid care, relationship to care recipient (n = 893)



## Counts of Adverse Childhood Experiences (n = 1284)



# Those reporting any Adverse Childhood Experience by race and ethnicity (N = 1284)





# Research Highlights

Data & Analysis Core  
Chloe Krakauer

Neuroimaging Core  
Christine MacDonald

Neuropathology Core  
Caitlin Latimer

# Prevalent Cancer Status and Cognitive Function



Vaidehi Chudgar  
MPH Candidate  
Columbia University

- **Background:**

Prior work has shown lower dementia risk among people ever diagnosed with cancer. The relationship with cognition is unclear.

- **Preliminary results:**

- Prevalent cancer diagnosis at ACT study entry is not related to CASI-IRT level or decline.

- **Next steps:**

- Consider incidence cancer diagnosis
- Link to cancer registry data (Bowles et al., 2017)

# Early Life Socioeconomic Status and Neuropathological Outcomes



Zekai Yang  
MS Candidate  
Columbia  
University

- **Research Questions:**

- Is higher early life socioeconomic status related to lower prevalence of neuropathological outcomes?
- Does early life socioeconomic status modify the relationship between neuropathological outcomes and ever-dementia diagnosis?

- **Preliminary Results:**

- Early life socioeconomic status is not consistently related to overall neuropathological score nor individual measures of AD, vascular burden, TDP-43, or Lewy body disease.
- No evidence of effect modification

# Associations between Childhood Adversity and Late-Life Brain Health

- **Background:** ACEs, including abuse and household dysfunction, have been linked to poorer health outcomes, but their relationship to structural brain volumes in older adults is unclear.
- **Study Overview:** Using ACT Life Course Survey and antemortem MRI data, we examine associations between ACEs (total count reported – 0, 1, 2, 3, 4+) and MRI-based brain volumetric outcomes
- **Methods:** To address non-random selection into MRI scans, we apply inverse probability weighting (IPW). Separate linear regression models estimate the association between ACE count volumetric outcome.



Malika Top  
MS Candidate  
Columbia University

# Question: how is time spent in different living arrangements associated with changes in cognition (CASI)?



Joint work by Chloe Krakauer, PhD (KPWHRI, pictured), Rebecca Hubbard, PhD (Brown University), Sarah Lotspeich, PhD (Wake Forest University), and Sarah Tom, PhD and Yu Huang (Columbia University)

## Snapshots of living arrangement at each visit:

- **Challenge:** if someone moved between visits, we cannot know how much time they spent in each living arrangement

## Methods:

- Determine deficits from limiting data to participants who *did not move between visits*.
- Determine if the following estimators using *all* biennial visits perform better than the use of a limited dataset.
- Assessed via simulation study using plasmode-generated datasets.

## Preliminary results:

- Living arrangement did not change between 84% of pairs of biennial visits.
- Low bias using limited dataset, *even when* transition times depend on prior cognition (a confounder in our analyses), **but** loss in precision.
- Other estimators do not consistently perform better than limited dataset.

# Approved Proposals with New Junior Collaborators



Michelle R. Caunca, PhD, MD  
Postdoctoral Fellow  
UCSF

Associations between  
Individual-Level  
Property Value and  
Cognitive Performance



Erin R. Kulick, PhD, MPH  
Assistant Professor  
Temple University

Associations between Area-  
Deprivation Index and Cognitive  
Function and Decline

# Next Steps



# Next Steps

- Overall focusing on clinical, environmental, and behavioral exposures likely to differ by sex and that contribute to vascular disease and dementia
- Linking to geographic data:
  - Redlined areas
  - Residential density
  - Noise exposure
  - Park space
- Geocode residential addresses after 2023



# Next Steps

- Life Course Survey
  - Administer original life course survey to newly enrolled participants
  - New survey focusing on sex-related variables such as:
    - Menopause symptoms
    - Men's health history
    - Reproductive history
    - Vascular risk factors
    - Social and health behaviors



# Thank You Life Course Core Team!

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