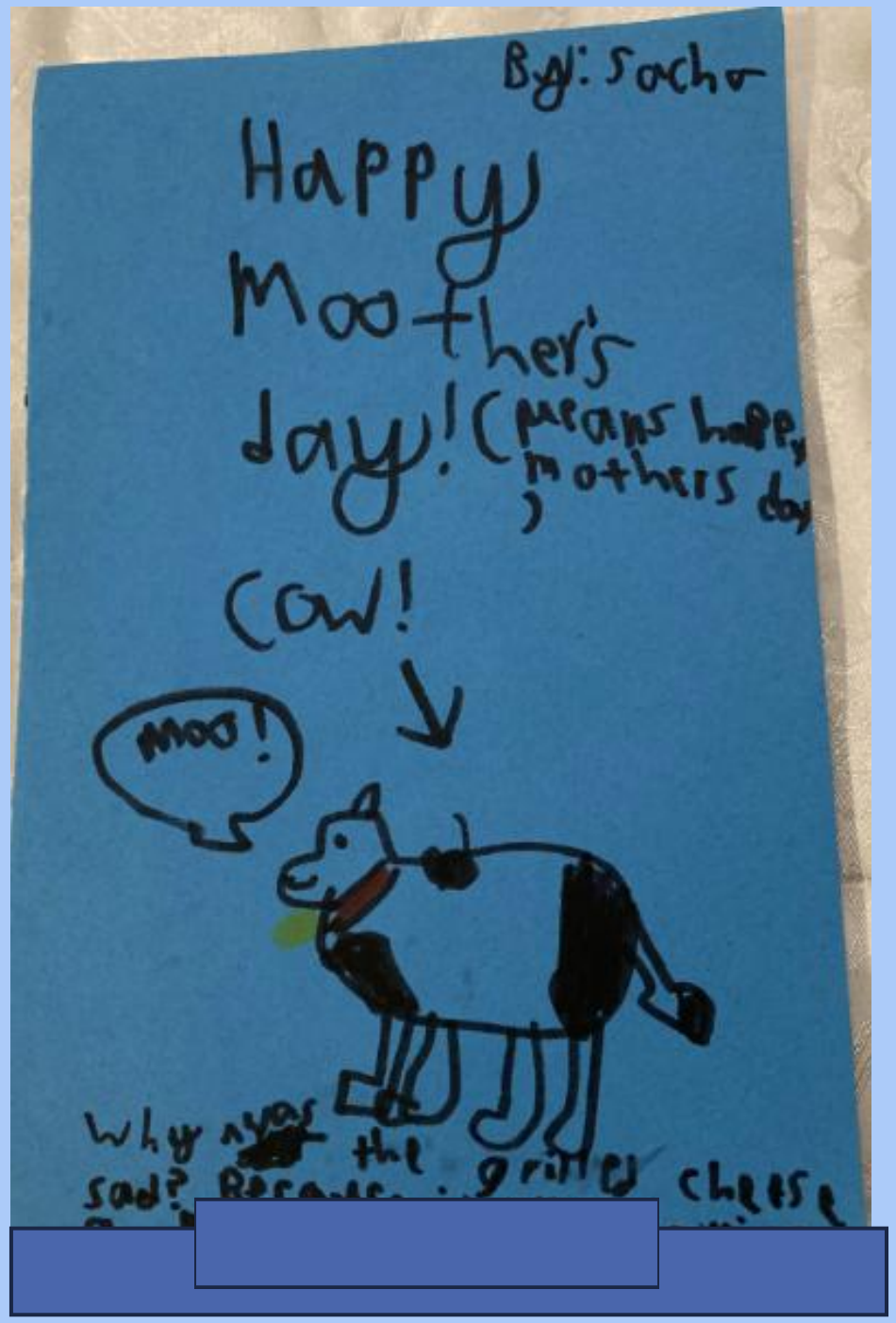
Updates from the ACT U19 Life Course Core

Sarah Tom, Columbia University

Dori Rosenberg, Kaiser Permanente Washington Health Research Institute


By: Sacha
Happy
Moo-ther's
day! (means happy
mothers day
)
cow!
moo!

Overarching goal of the life course core: better understand social and structural determinants of health across the life course at multiple levels of influence

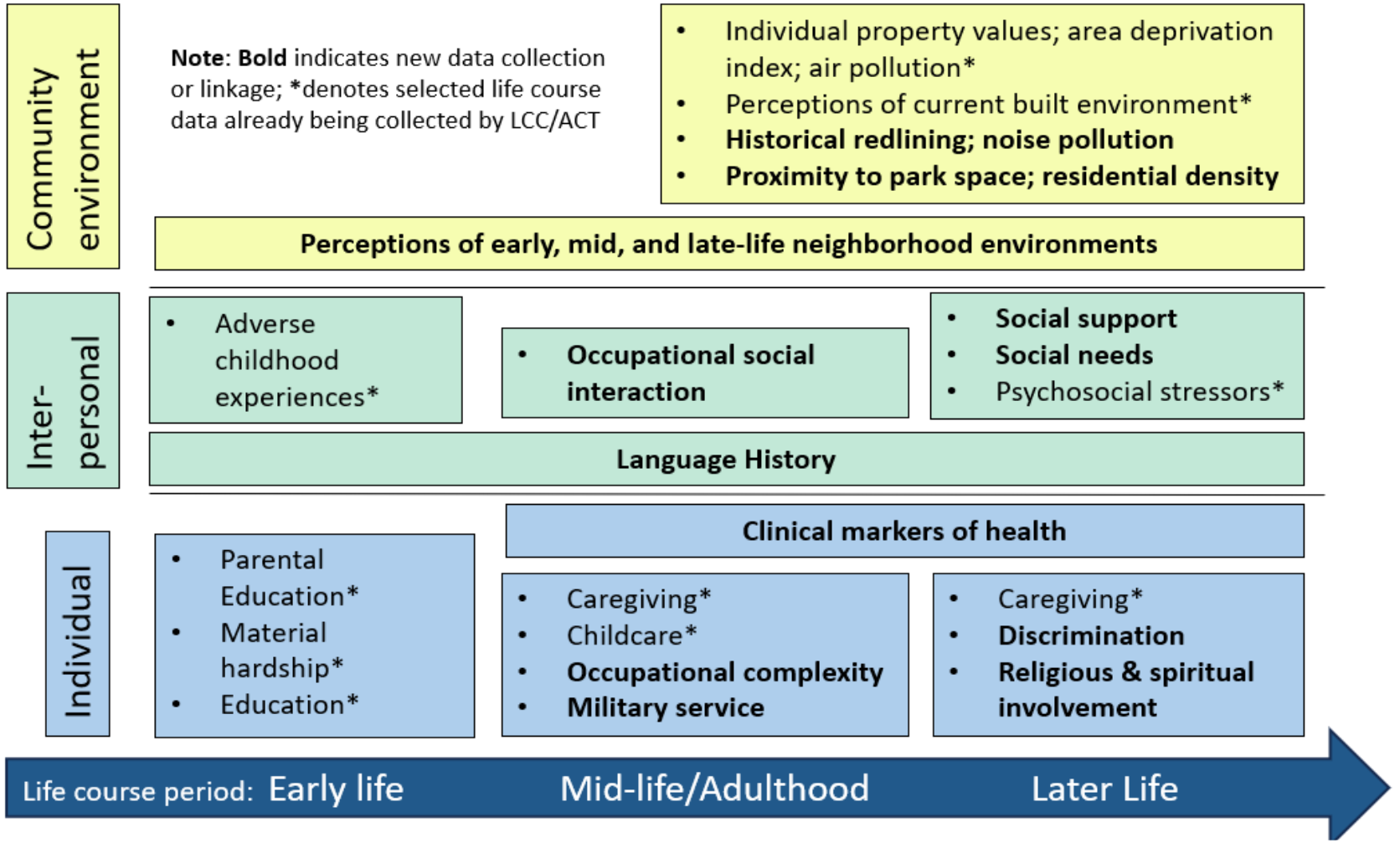


Figure 1. Overview of selected multilevel life course data collection in ACT

Year 4 Milestones

Milestone 1:
Continuing to link to geocoded data sources

Milestone 2:
Continuing to field the Life Course Survey

Milestone 3:
Continuing to meet with cores and projects to facilitate use of life course data

Milestone 4:
Development of one paper to extend the Life Course framework by using existing ACT data

Milestone 1: Geocoded Data

Addresses compiled through Kaiser Permanente billing records, ACT records, and the ACT Air Pollution Study

- 6993 unique addresses from 4778 ACT participants from 2005-2021

Addresses are being linked to:

- King County individual level property values from the County Assessor's office
- Area level socioeconomic environment (Area Deprivation Index; in progress)

Milestone 1: Geocoded Data Next Steps

- Compiling ACT addresses from 2021 and on
- Geocoding and linking to property values and ADI
- Sharing with the ACT Repository
  - Files contain addresses with date ranges
  - Files contain property value for each linked year

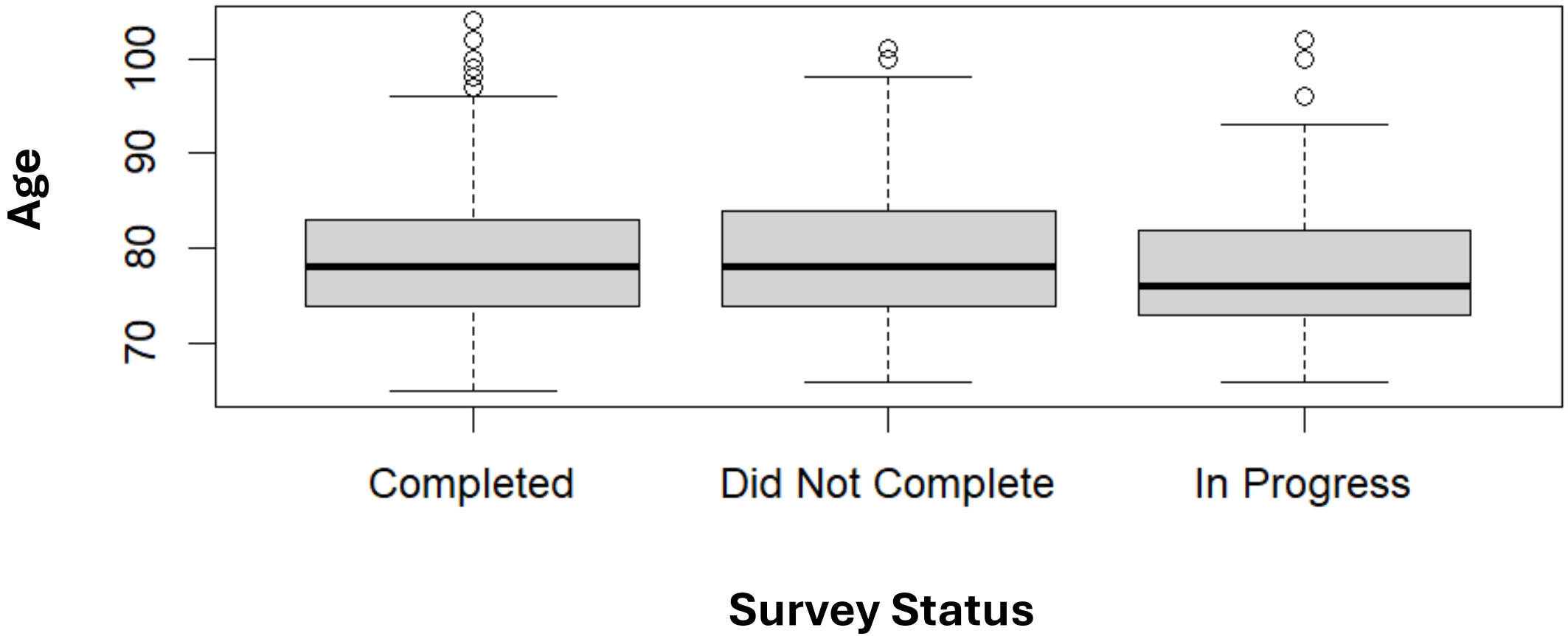
Milestone 2: Life Course Survey

- We have fielded a life course survey since year 2 to assess themes including:
    - Perceived neighborhood walkability and safety
    - Caregiving
    - Childcare
    - Adverse childhood experiences

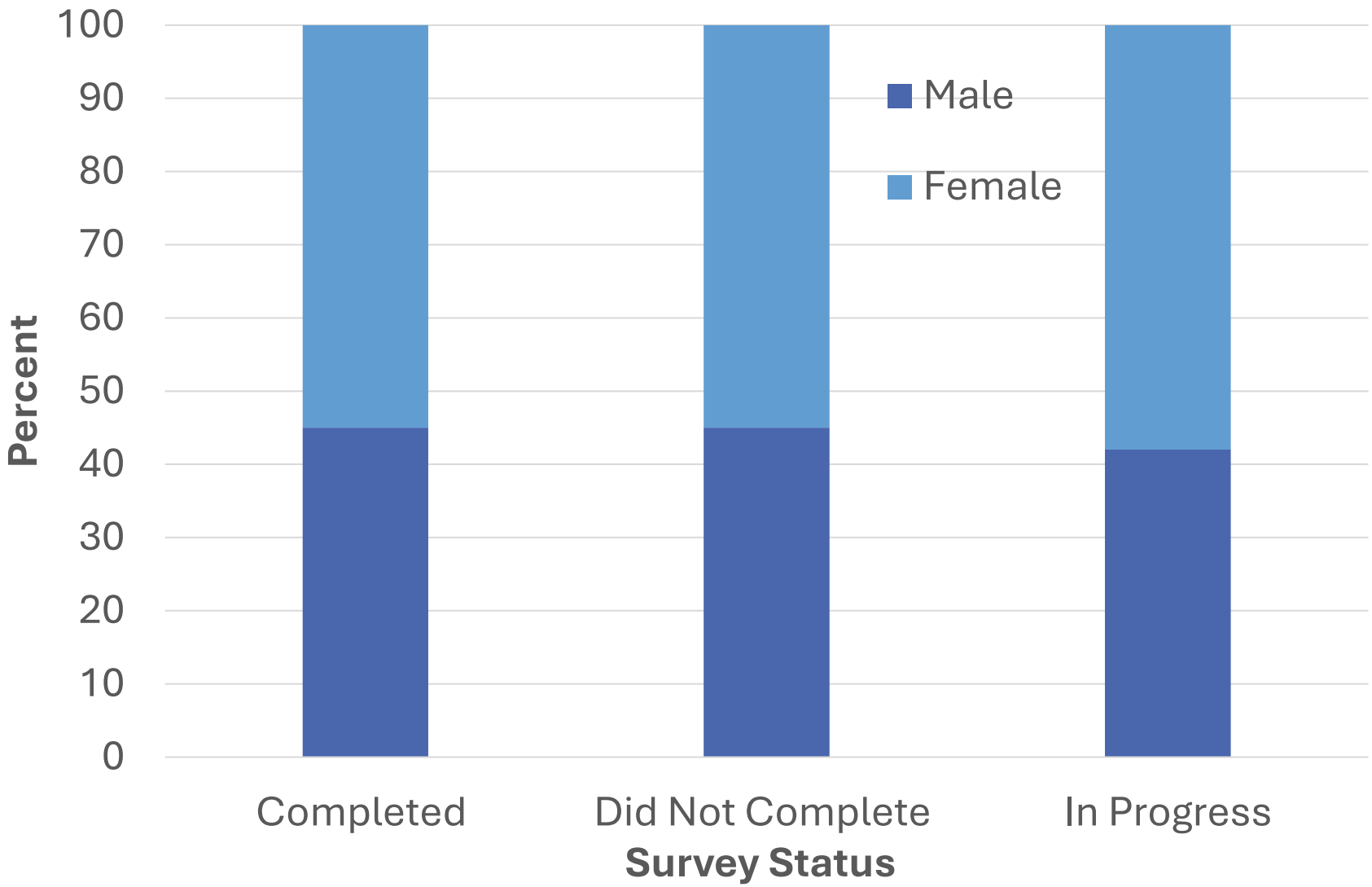
Milestone 2: Life Course Survey

- As of April 2025, the survey has been sent to 1933 ACT participants
  - 75% (n = 1458) completed the survey
  - 15% (287) did not complete the survey
  - 10% (188) are still in progress

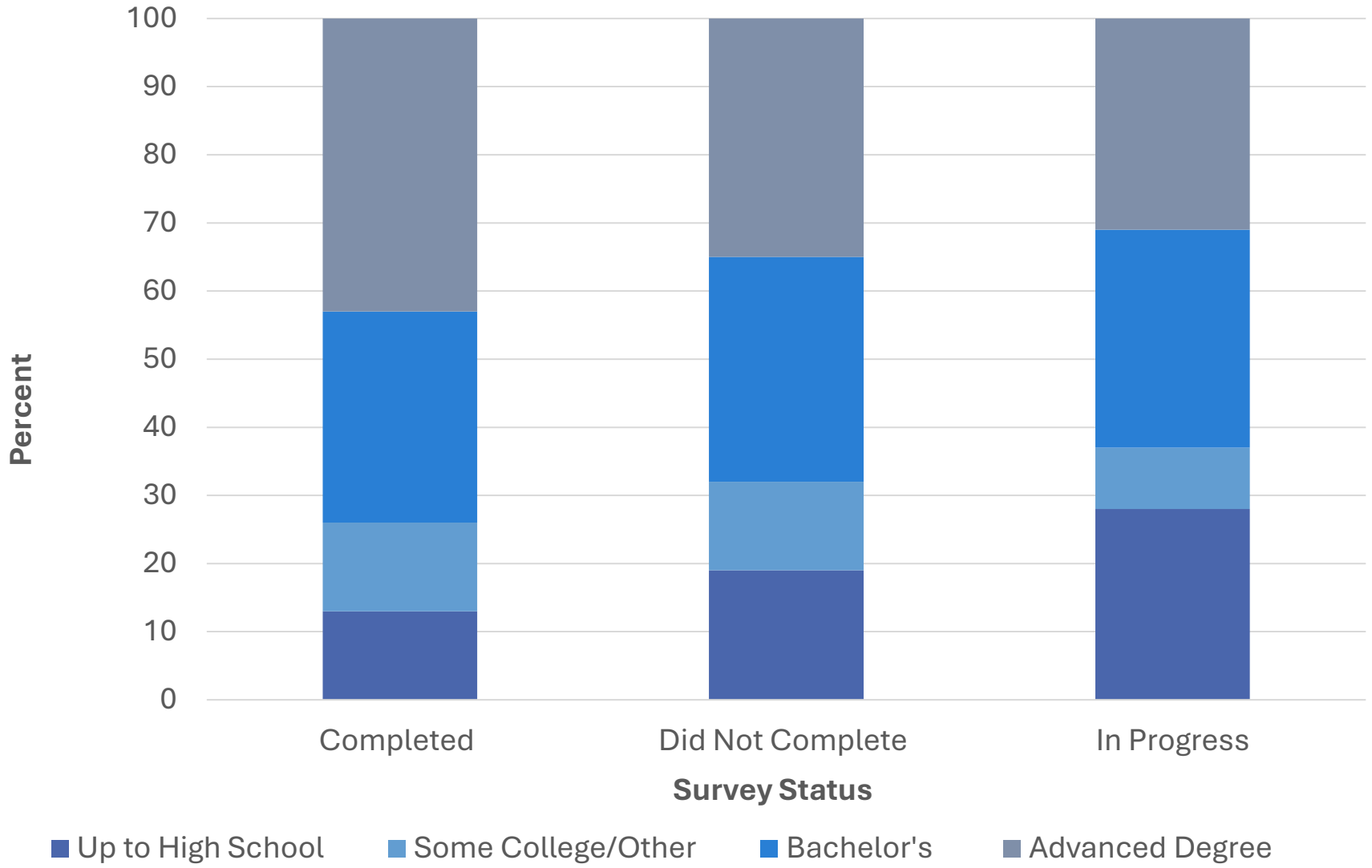
Age Distribution by Survey Status



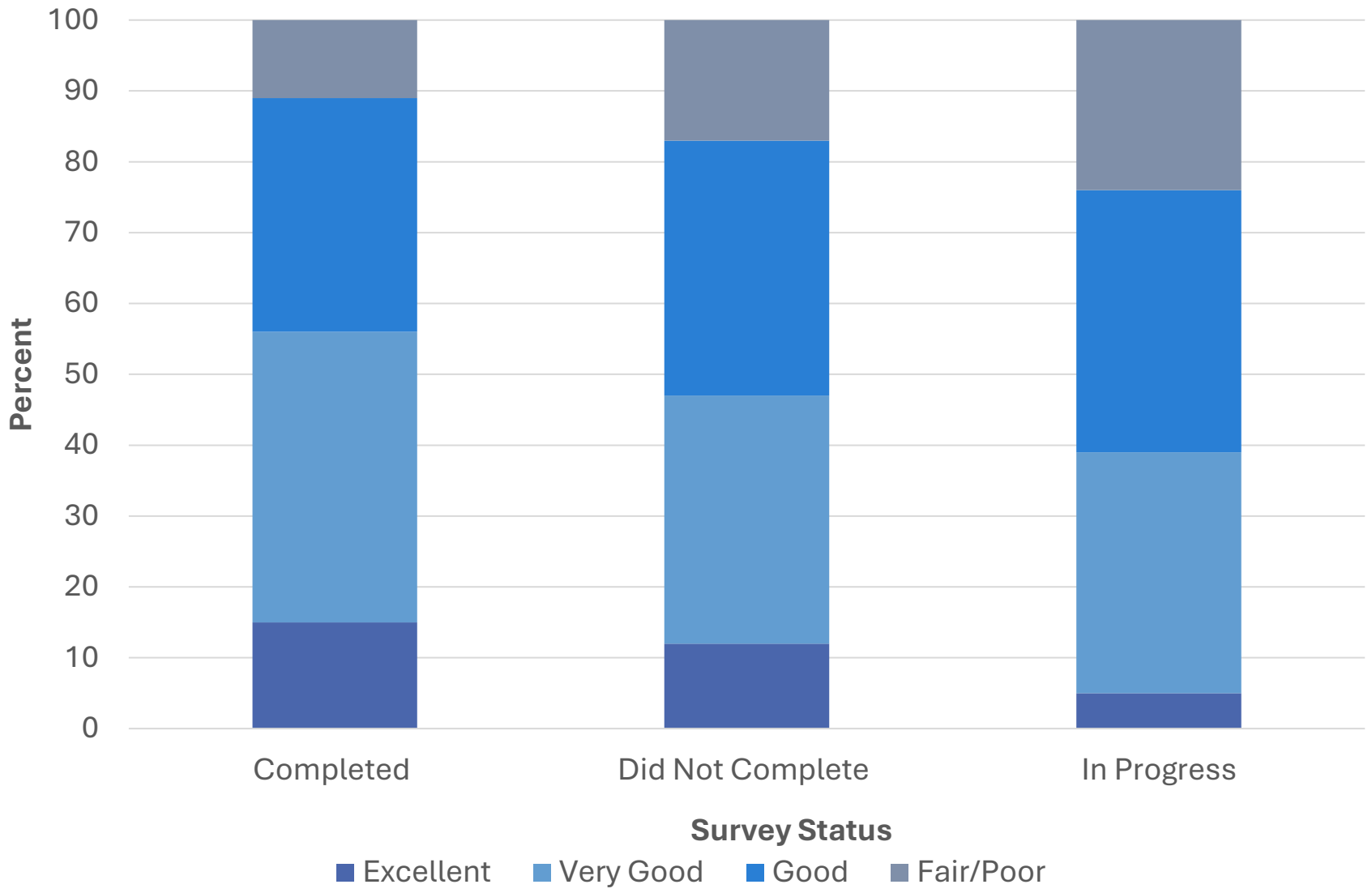
Sex Distribution by Survey Status



Education Distribution by Survey Status



Overall Health by Survey Status

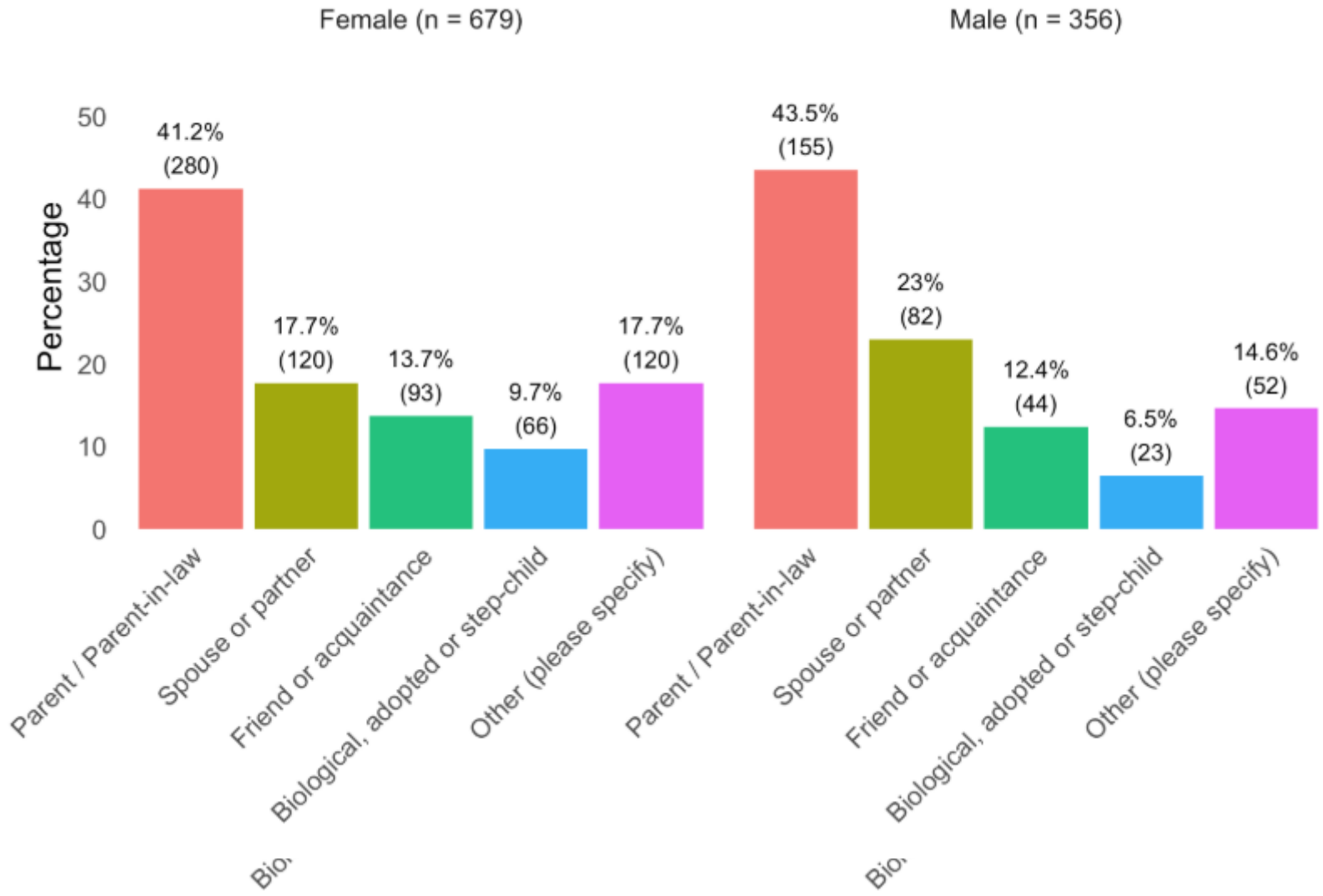


Milestone 2: Life Course Survey Results

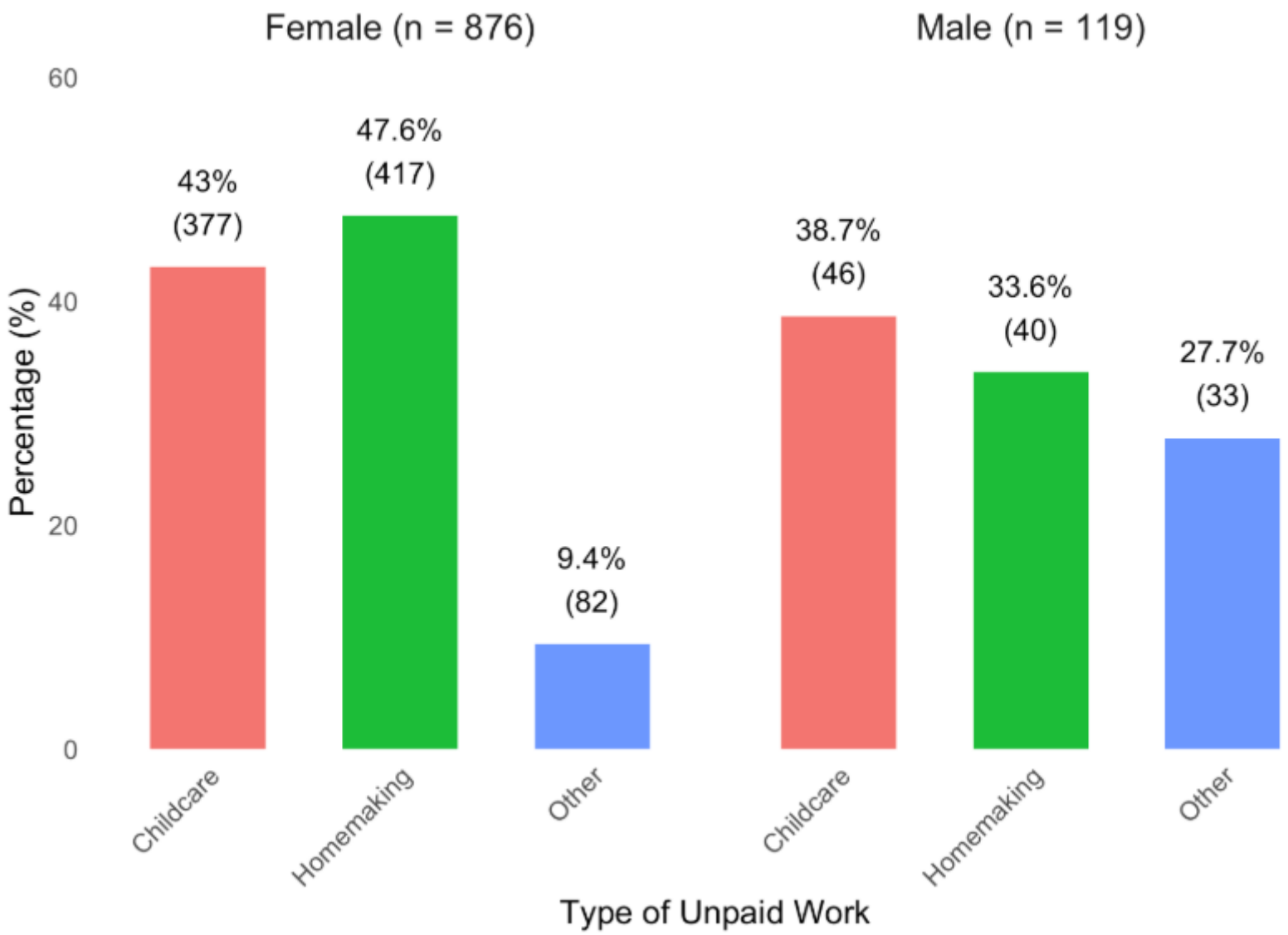
- ***Caregiving***
  - 55% of women; 42% of men

- ***Unpaid work***
  - 46% of women; 10% of men

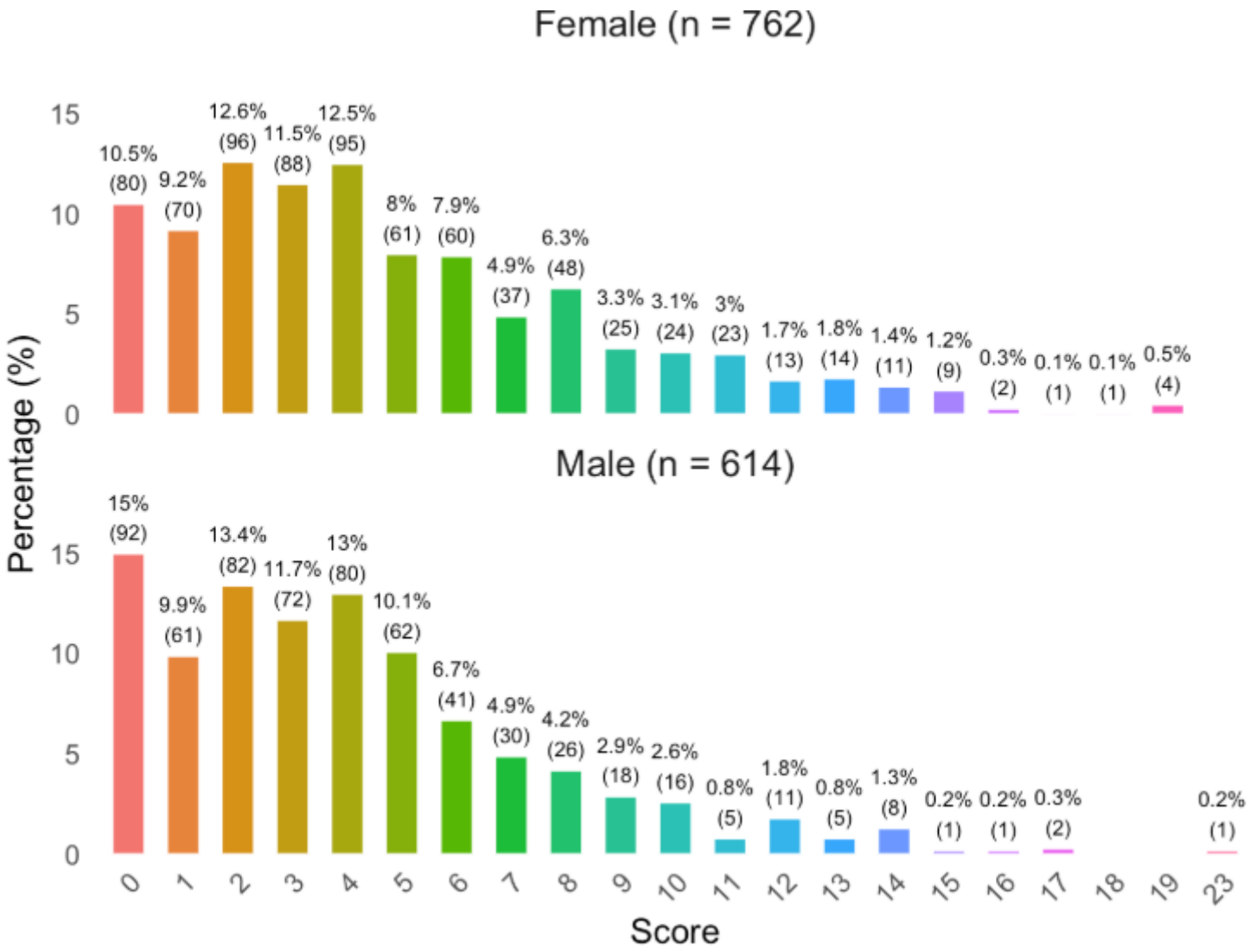
Recipient of Participant's Care, by Sex



Nature of Unpaid Work, by Sex



Chronic Stress, by Sex



Milestones 3 and 4

Collaboration

Papers

Proposals

Adverse Childhood Experiences and Older Adult Brain Structure (with Neuroimaging Core and Christine MacDonald)

Malika Top
MS Biostatistics Student
Columbia University

Cynthia Cui
MS Biostatistics Candidate
Columbia University

Early Life Socioeconomic Factors and AD-Related Neuropathology (with Neuropathology Core and Caitlin Latimer)

Property Value and Cognition (with Data & Analysis Core and Chloe Krakauer)

Michelle Caunca, MD, PhD
Neurology Resident
UCSF

Internet Use and Cognition

- Aim 1: To assess the association between internet use and cognitive domain levels
    - Visual attention and task switching (Trails Making Test A and B)
    - Executive function, lexical retrieval and production (category and letter fluency)
    - Visuospatial and executive function (Clock drawing test)

- Aim 2: To assess the association between frequency of email use and cognitive domain levels

Tobechi Dimkpa
Epidemiology MPH Candidate
Columbia University

Internet Use and Email Frequency

- Ever used the internet (n = 1479)
  - Internet users- 89% (n = 1,312)
  - Non-internet users– 11% (n = 167)
- Frequency of email use (among those ever using the internet, n = 1455)
  - Frequent users – 34% (n = 491)
  - Occasional users– 22% (n = 318)
  - Never users– 44% (n = 646)

Key Results

- Internet users had faster completion of trails making tests A and B and better verbal letter and category fluency compared to those who did not use the internet.

- Internet use was not related to clock drawing

- Among those using the internet, those who did not use email had worse cognition levels across domains.

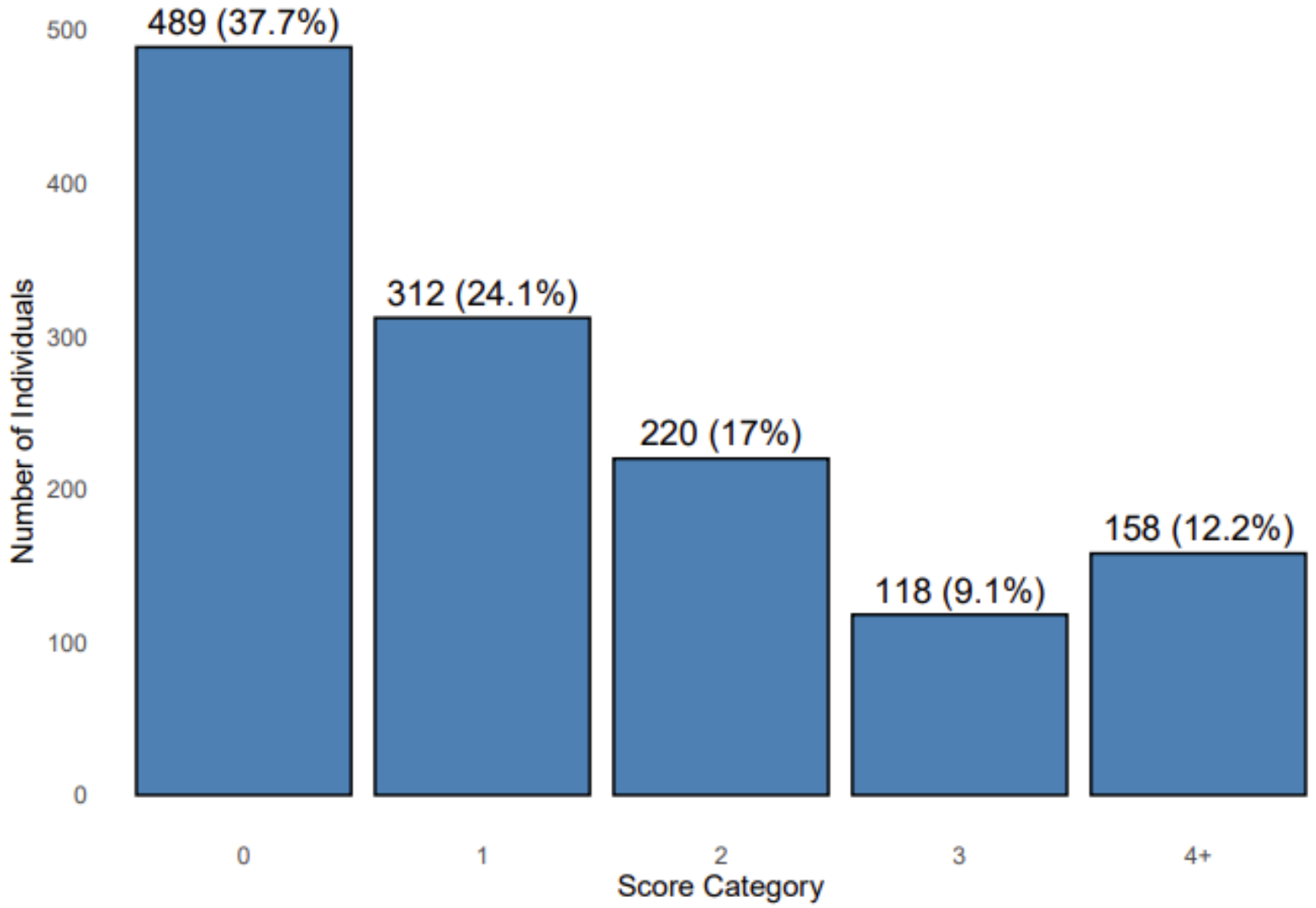
Adverse Childhood Experiences and Cognitive Domains

Betty Wu
Biostatistics MS Candidate
Columbia University

Primary Aim:

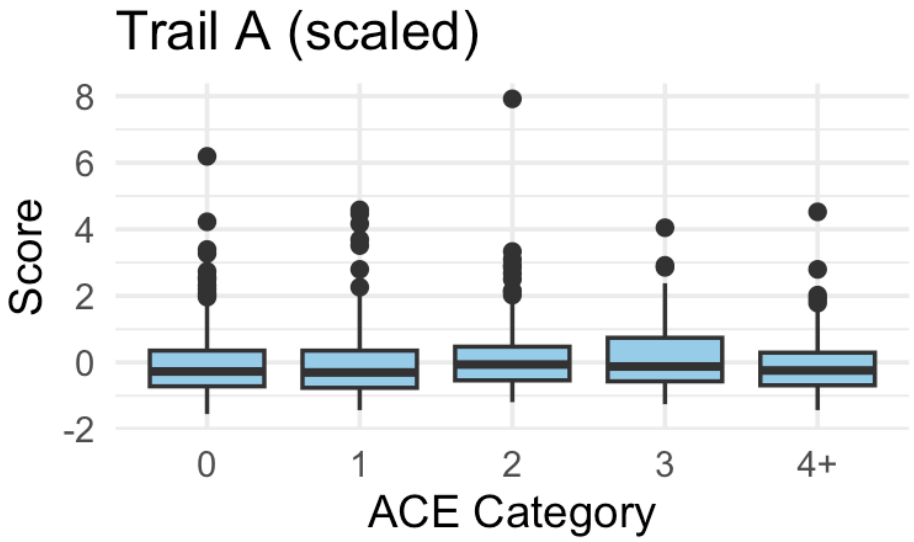
- Investigate the association between Adverse Childhood Experiences (ACEs) and cognitive function in older adults across multiple cognitive domains, including the Trail Making Test A (TMT-A), Trail Making Test B (TMT-B), test, verbal fluency (supermarket and letter tests) .

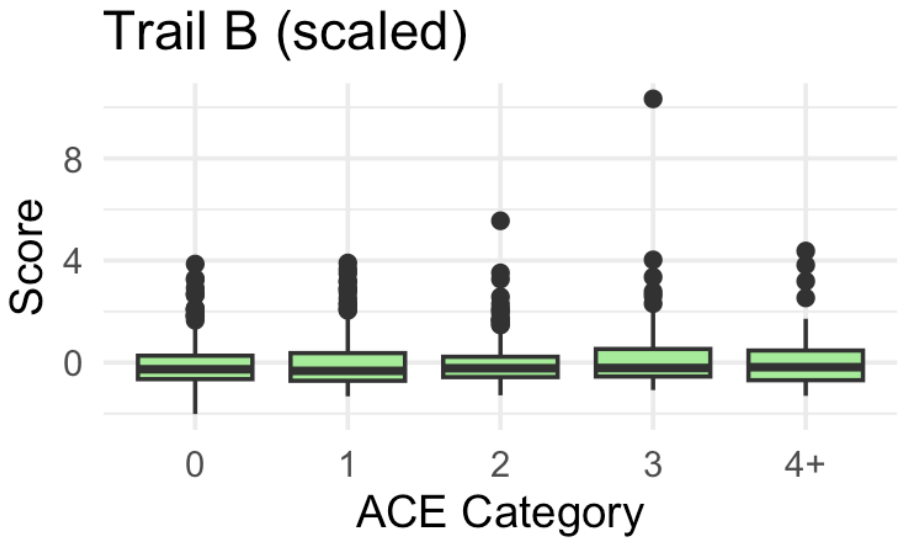
Distribution of Adverse Childhood Experiences

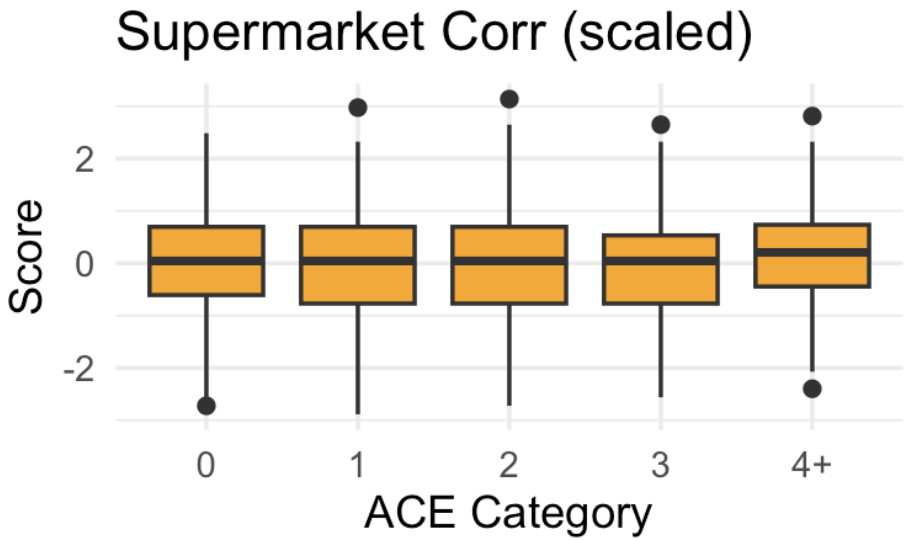


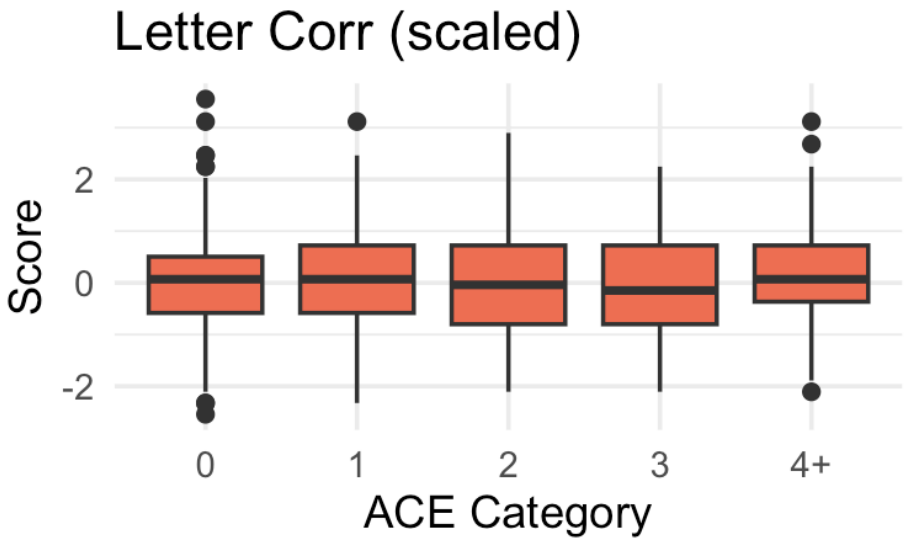
Data/Methods - Visualization

No consistent associations in models adjusting for age, sex, education, and health status.









Living Arrangement and Cognition

- We hypothesize that compared to people living alone, those living with a spouse only would have better cognition, while those in households that included other family, or non-relatives would have worse cognition.
- Additionally, we explore whether these relationships vary by sex.

Yu Huang
Biostatistics MPH Candidate
Columbia University

Table 1: Socioeconomic and health characteristics of the study sample

Variables	Live alone (n=873; 37.9%)	Live with relatives/ friends/ unrelated persons (n=273; 11.9%)	Live with spouse and other relatives (n=117; 5.1%)	Live with spouse only (n=1039; 45.1%)	Overall (N=2302)
Age, mean (SD)	80.9 (8.26)	80.8 (8.57)	75.1 (6.78)	76.2 (6.51)	78.5 (7.86)
Sex, n (%)					
Female	627 (71.8)	195 (71.4)	47 (40.2)	456 (43.9)	1325 (57.6)
Education, n (%)					
High school/some college/associate's degree	305 (34.9)	119 (43.6)	34 (29.1)	219 (21.1)	677 (29.4)
Bachelor's degree	272 (31.2)	72 (26.4)	31 (26.5)	308 (29.6)	683 (29.7)
Post-secondary degree	296 (33.9)	82 (30.0)	52 (44.4)	512 (49.3)	942 (40.9)
Employment status, n (%)					
Currently working	105 (12.0)	44 (16.1)	33 (28.2)	177 (17.0)	359 (15.6)
Missing	55 (6.3)	13 (4.8)	3 (2.6)	34 (3.3)	105 (4.6)
Social support, median (IQR)	6 (6, 8)	6 (6, 7)	6 (6, 8)	6 (6, 7)	6 (6, 8)
Missing	85 (9.7%)	25 (9.2%)	4 (3.4%)	38 (3.7%)	152 (6.6%)
CES-D Flag, n (%)					
Have symptoms	87 (10.0%)	15 (5.5%)	9 (7.7%)	48 (4.6%)	159 (6.9%)
Missing	72 (8.2%)	25 (9.2%)	3 (2.6%)	43 (4.1%)	143 (6.2%)
CCI, median (IQR)	1 (0, 2)	1 (0, 2)	0.5 (0, 2)	0 (0, 2)	1 (0, 2)
Missing	75 (8.6%)	16 (5.9%)	3 (2.6%)	46 (4.4%)	140 (6.1%)
Self-rated health status, n (%)					
Excellent, very good, good	694 (79.5%)	202 (74.0%)	106 (90.6%)	935 (90.0%)	1937 (84.1%)
Fair or poor	123 (14.1%)	57 (20.9%)	8 (6.8%)	70 (6.7%)	258 (11.2%)
Missing	56 (6.4%)	14 (5.1%)	3 (2.6%)	34 (3.3%)	107 (4.6%)

Note: There are 11 missing data in living arrangement, the total sample size is 2313.

Results

Multivariable Analysis

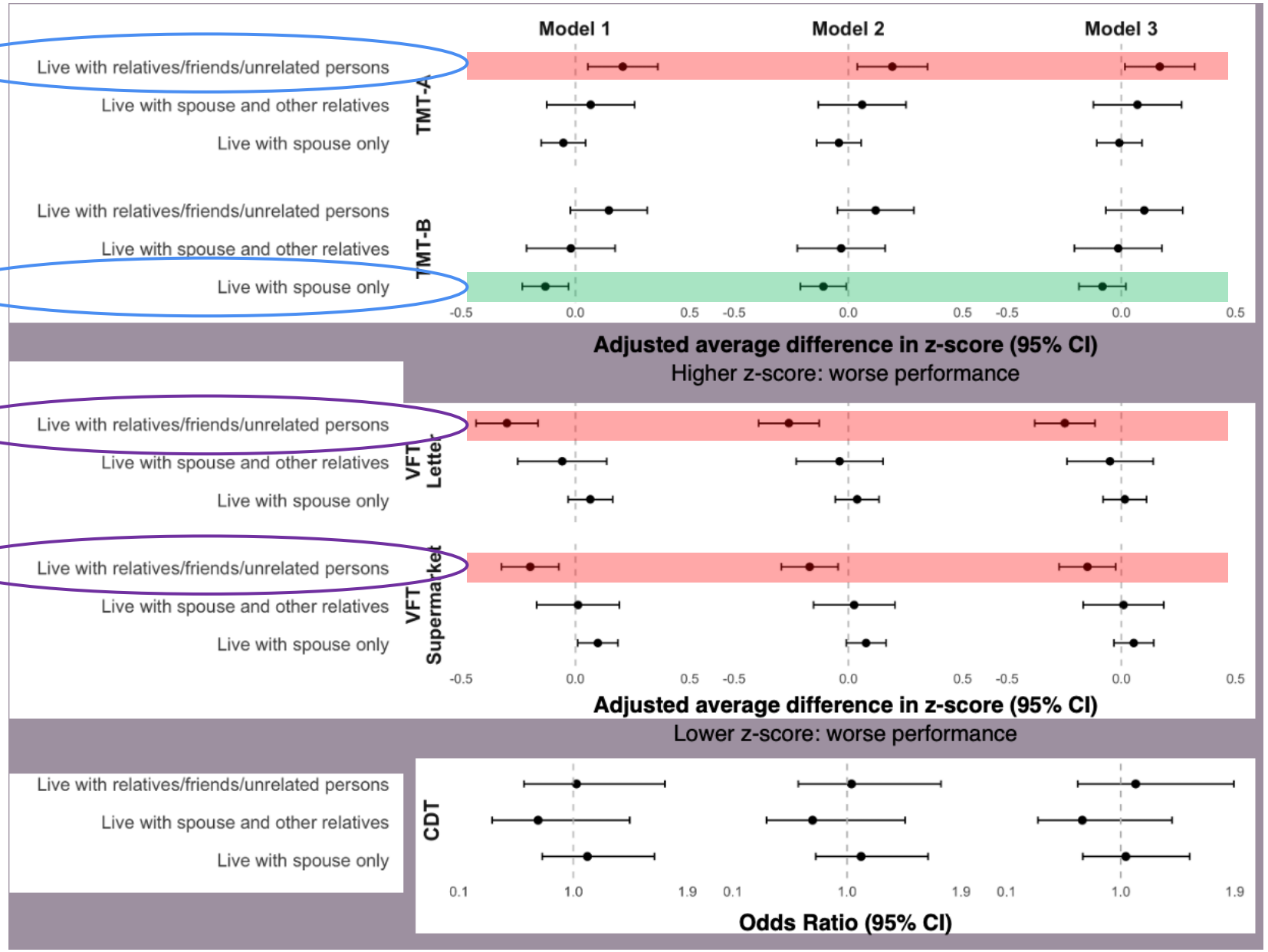
- Reference: live alone

- Better performance
  - TMT: lower → better
  - VFT: higher → better
  - CDT: 1 → better

worse performance

better performance

Model 1: adjusted for age and sex.
Model 2: additionally adjusted for education.
Model 3: additionally adjusted for current employment status, CCI, depressive symptoms, self-reported health, and social support.



Thank You to Our Team!

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Thank you!

Questions and Comments

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