Miscarriage in relation to financial hardship in childhood, adolescence, and adulthood

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Background

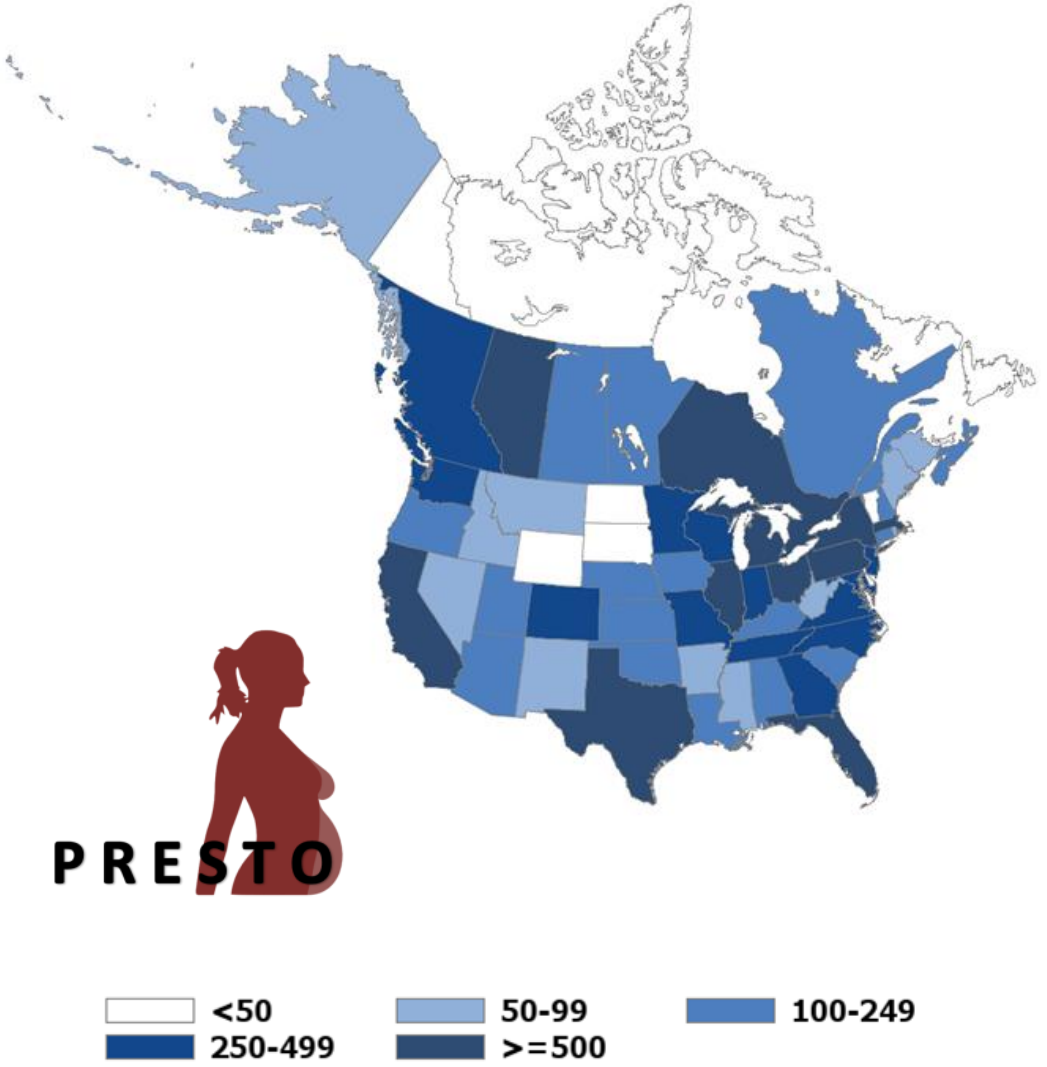
- Financial hardship has been associated with subfertility, ovarian decline, and early menopause, yet its effect on miscarriage (pregnancy loss <20 weeks) is less clear
- Life course conceptual models + novel epidemiologic methods provide a framework to postulate direct effects of interest

<u>Study Objective:</u> To estimate the effect of financial hardship during 1) specific life stages, and 2) cumulatively across the life course, on miscarriage

Study Population

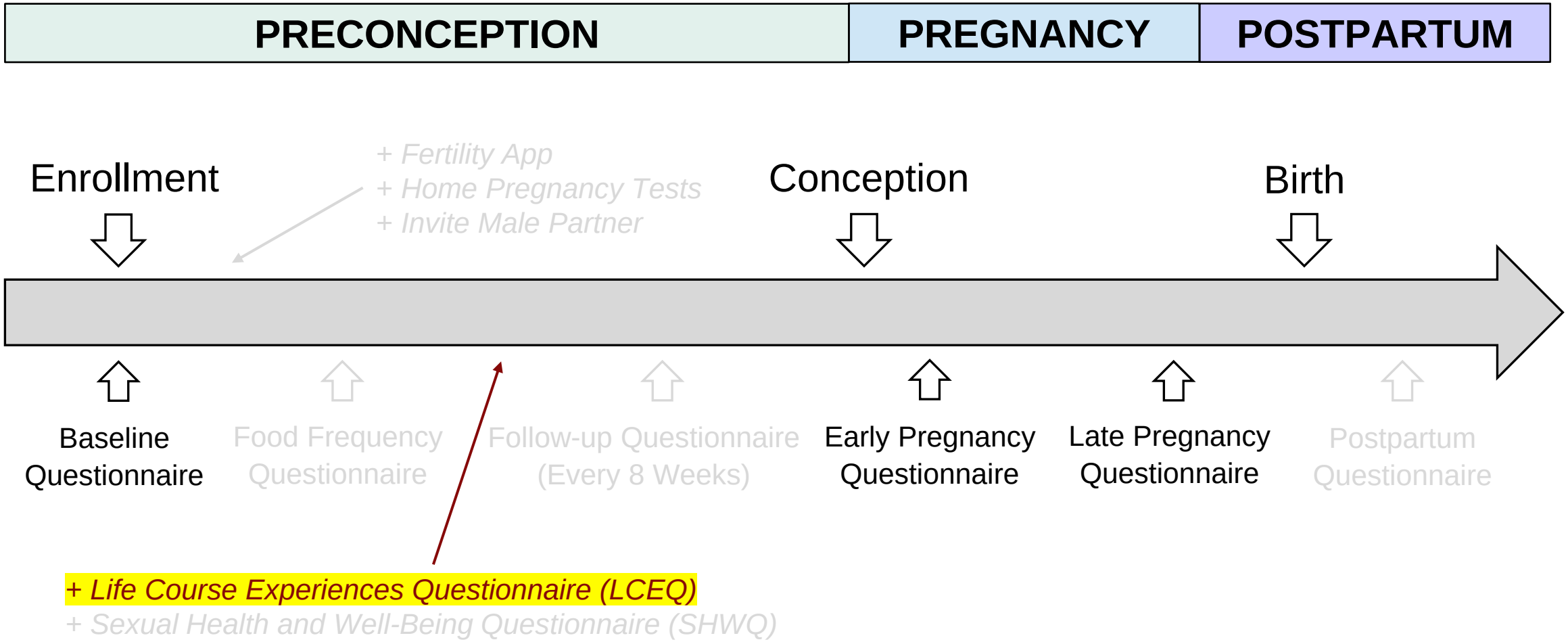
To learn more about the study:

- Pregnancy Study Online (PRESTO):
  a prospective preconception cohort study
  - Assigned female sex at birth
  - Aged 21-45 years
  - Residents of the USA or Canada
  - Planning pregnancy
- Recruited using internet-based methods (e.g., online ads) and word of mouth



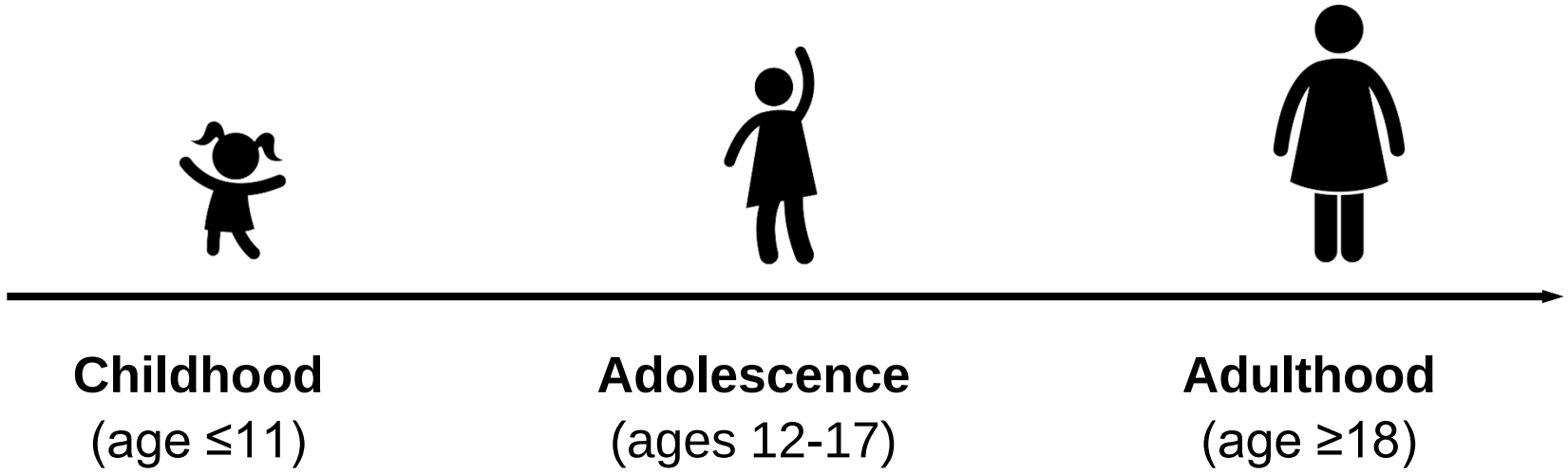
Study Design

To learn more about the study:



Assessment of Financial Hardship

- “In your household, has there ever been a time when you or your family…”
  - “Did not have enough money to pay for food, rent, or mortgage?”
  - “Had to borrow money to pay for medical expenses?”
  - “Received public assistance or welfare?”



Assessment of Miscarriage

- “Since your last questionnaire, have you had any of the following?”
  - Miscarriage (including chemical pregnancy)
  - Blighted ovum
  - Ectopic pregnancy *(Censored)*
  - Induced abortion *(Censored)*

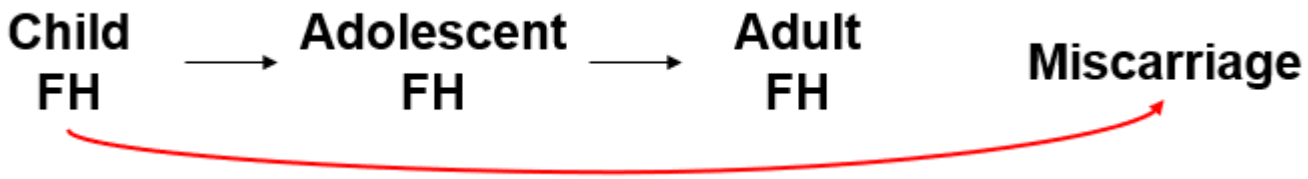
- “How many weeks did the pregnancy last?”
- “What was the date of your first positive pregnancy test?”

Statistical Analysis

- Cox proportional hazards regression to estimate hazard ratios (HRs) and 95% CIs
  - Time scale: Gestational weeks
  - Time zero: Gestational week at first positive pregnancy test
  - HR > 1.0 indicates increased miscarriage risk
- Used inverse probability of selection weights (IPSW) and treatment weights (IPTW)
  - To address potential selection bias from differential completion of the LCEQ
  - To adjust for time-dependent confounding

Models

	Critical Periods	Accumulation of Risk
What?	Identifies specific life stages when exposure may be harmful	Suggests the effects of exposure accumulate over time, irrespective of life stage
How?	Using separate regressions, model financial hardship during each life stage compared to no financial hardship during that life stage as the reference	Model financial hardship during adolescence and adulthood within strata of prior exposure to financial hardship



Critical Periods model, where only child financial hardship has a direct influence on miscarriage

Models

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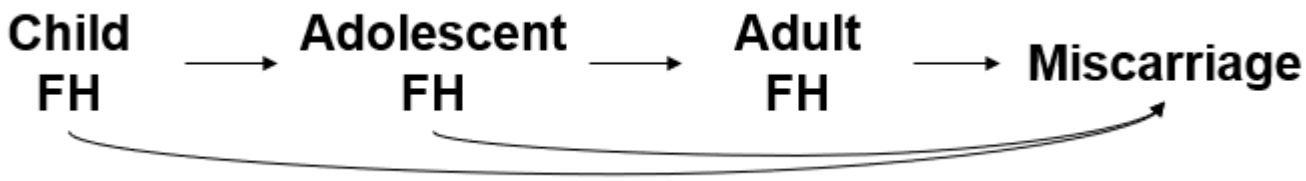
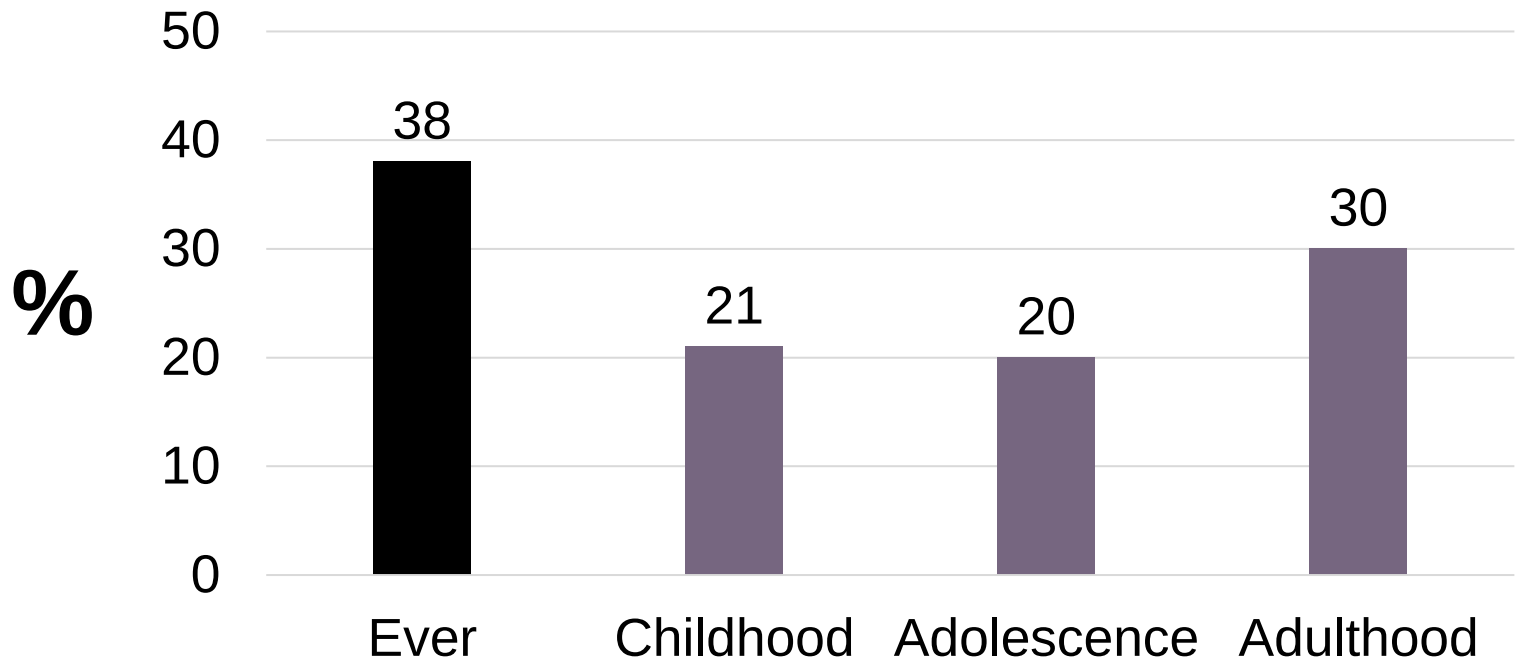


Accumulation of Risk model

Results

- Among 5,585 participants, 23% reported miscarriage
- Financial hardship was most often experienced during adulthood



Results: Sample Demographics

Mean age = 31 years
13% BIPOC

26% with depression diagnosis
27% with anxiety diagnosis

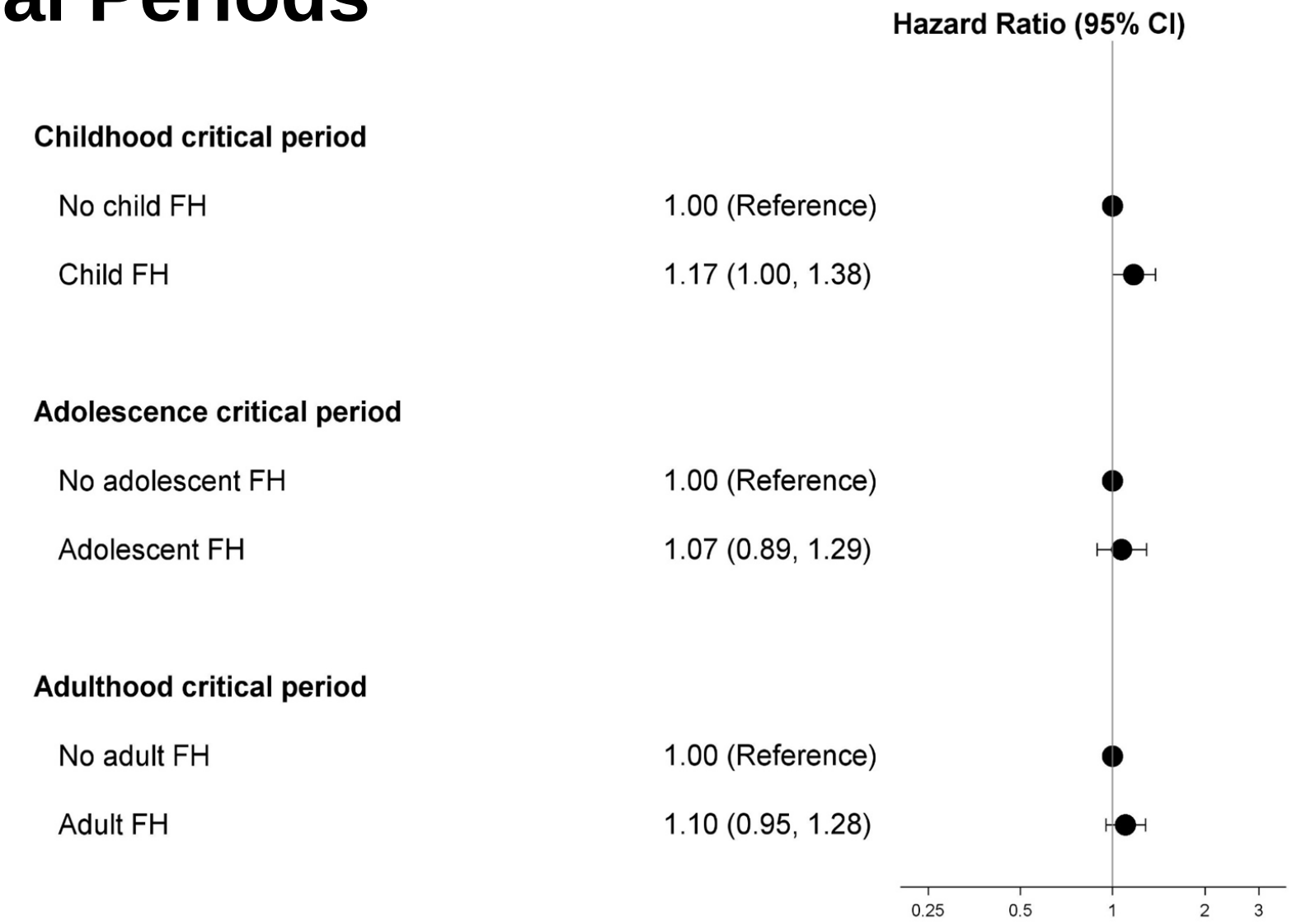
85% with Bachelor's degree
88% are currently employed

29% with child trauma
42% with adolescent trauma

13% with ≥7 alcoholic drinks/week
4% are current smokers

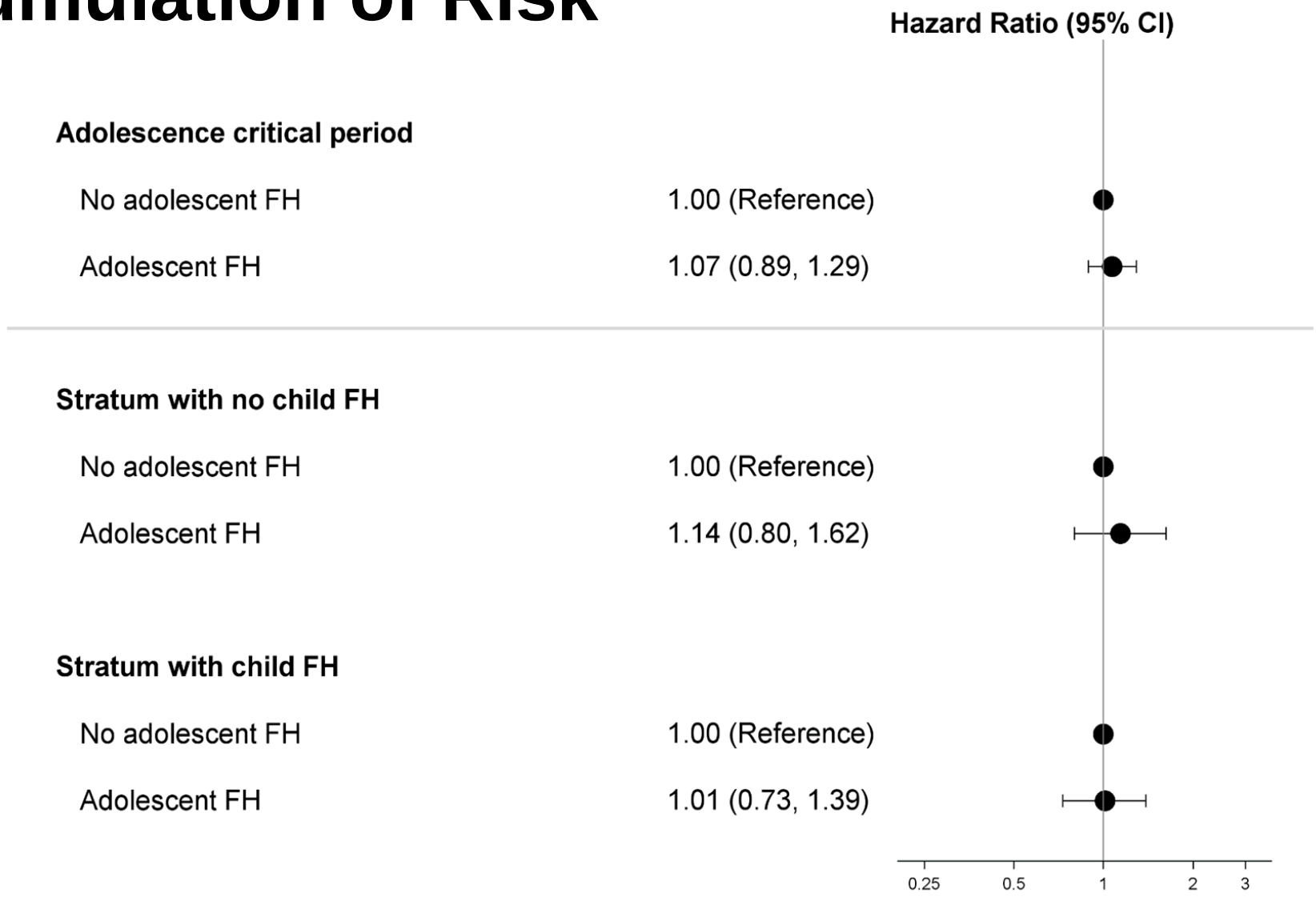
86% with private health insurance
25% with history of miscarriage

Results: Critical Periods



FH = financial hardship

Results: Accumulation of Risk



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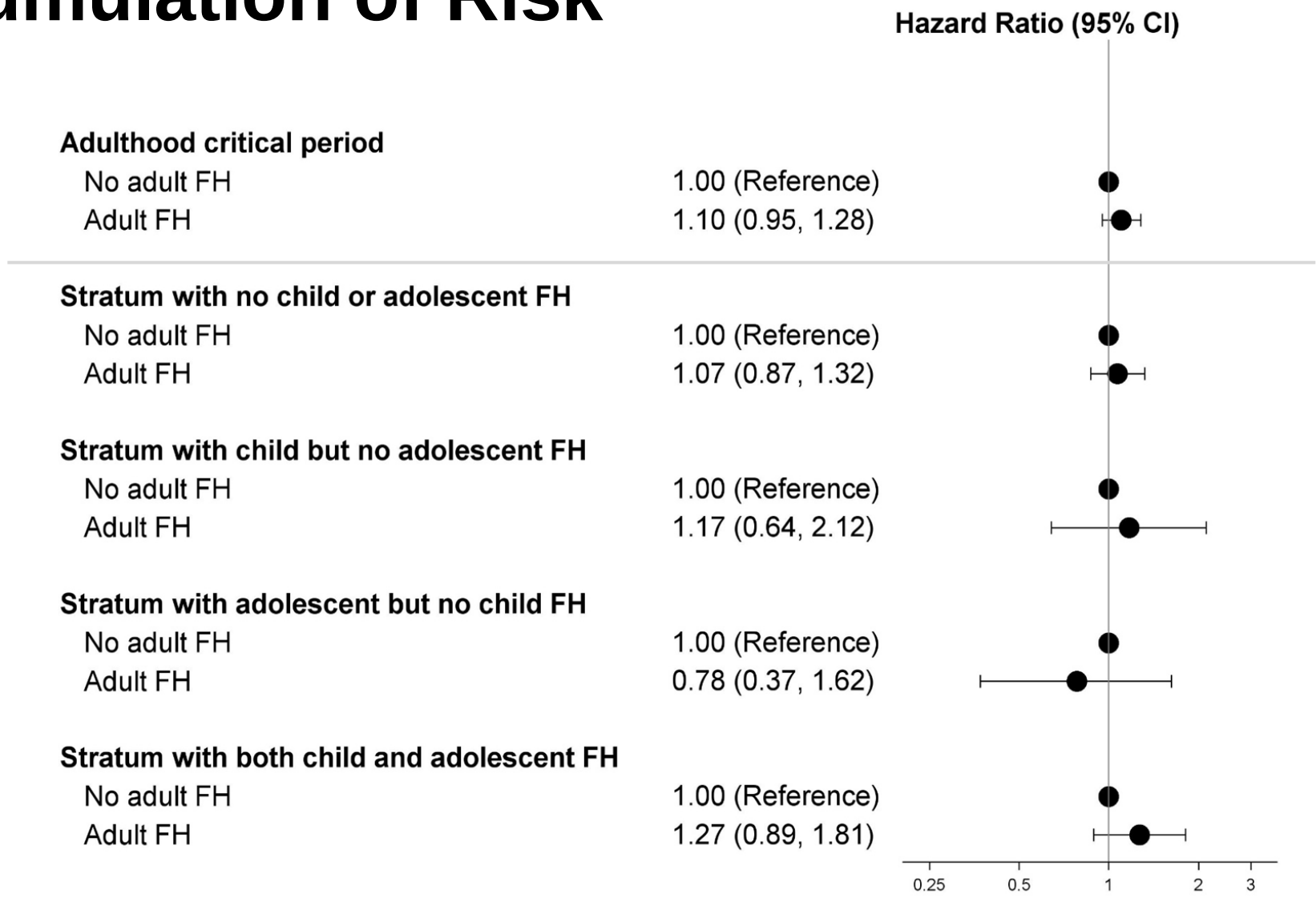
Results: Accumulation of Risk



FH = financial hardship

Limitations

- Measures do not capture precise timing, length, and severity of financial hardship
- Potential for residual and unmeasured confounding
- IPSW*IPTW model misspecification
- Small number of participants identified as BIPOC (22% of the PRESTO cohort)
- PRESTO is an internet-based convenience sample of pregnancy planners with higher-than-average socioeconomic status, which limit generalizability of results

Summary

- We observed a modest elevated risk of miscarriage among participants who experienced financial hardship, with the strongest effects for hardship in childhood

Acknowledgements

Enroll in PRESTO! presto.bu.edu

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Thank you! Questions?

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