



Background

- Cigarette smoking is the leading cause of preventable death, disease, and disability for the over 30 million smokers in the U.S. (CDC)
- Secondhand smoke exposure is also detrimental to health and causes heightened asthma, respiratory symptoms, and pneumonia in infants and young children (Office on Smoking and Health (US) 2006)
- During 2011–2012, secondhand smoke exposure among people in the United States was highest among children aged 3-11 years (Cornelius et al. 2022) and data from 2000–2004 revealed that over one third of children in the United States live with least one adult smoker (King et al. 2009)
- Associations exist between parental smoking and children's behavior including increased school absenteeism, odds of developing neurobehavioral disorders, and rates of mental disorders (Bandiera et al. 2011; Kabir et al. 2011; Levy et al. 2011)

The Present Study

Parental Smoking



Adolescent Immune Health and Risk Behavior

- The Stress Process Model is used to examine the association between parental smoking and immune health and risk behavior outcomes in adolescents
- Key independent variable/stressor: parental smoking
- Dependent variables: immune health, substance use, and risk behavior
- Hypothesis: parental smoking will increase adolescent's (a) level of CRP protein in blood, (b) number of subclinical symptoms, (c) probability of early sexual debut, (d) probability of inconsistent condom usage, (e) self-reported risky behavior, (f) number of drinks per sitting, (g) probability of smoking regularly

Data and Methods

- National Longitudinal Study of Adolescent Health (Add Health)
- Longitudinal, nationally representative study
- Follows people from adolescence to middle adulthood
- Social, behavioral, and biological data (Harris 2013)
- Largest nationally representative and ethnically diverse sample with peripheral blood transcriptome profiles
- Primary guardian: mother, stepmother, grandmother, father, stepfather, or another guardian
- Bivariate associations between parental smoking and risk behaviors at baseline
- Multivariable analysis utilizing generalized multilevel models including random intercepts, correcting for longitudinal data

Results

Figure 1. Predictions of C-Reactive Protein Levels based on Whether One's Primary Guardian Smoked in the National Longitudinal Study of Adolescent Health.

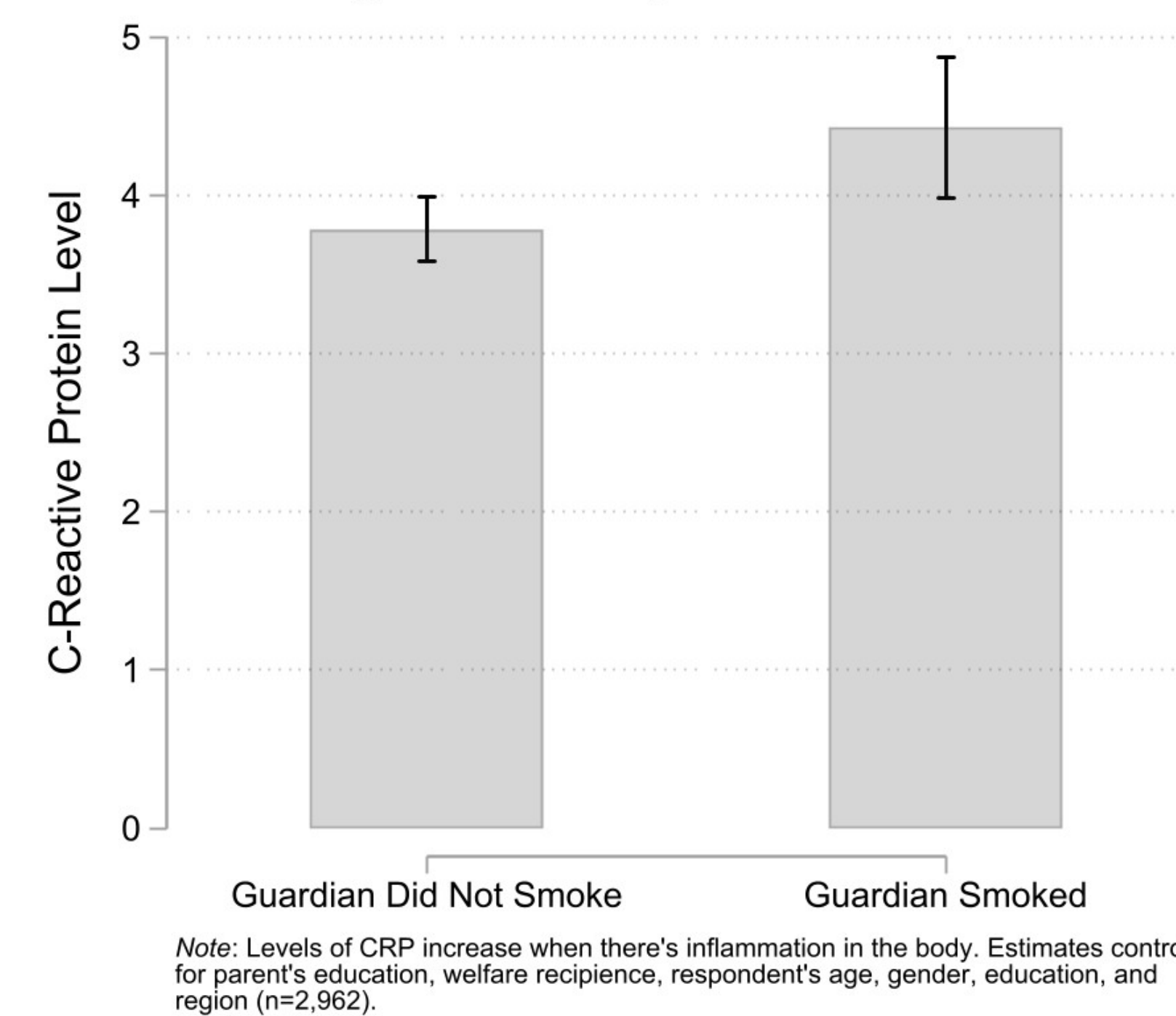


Figure 2. Predictions of Counts of Subclinical Symptoms based on Whether One's Primary Guardian Smoked in the National Longitudinal Study of Adolescent Health.

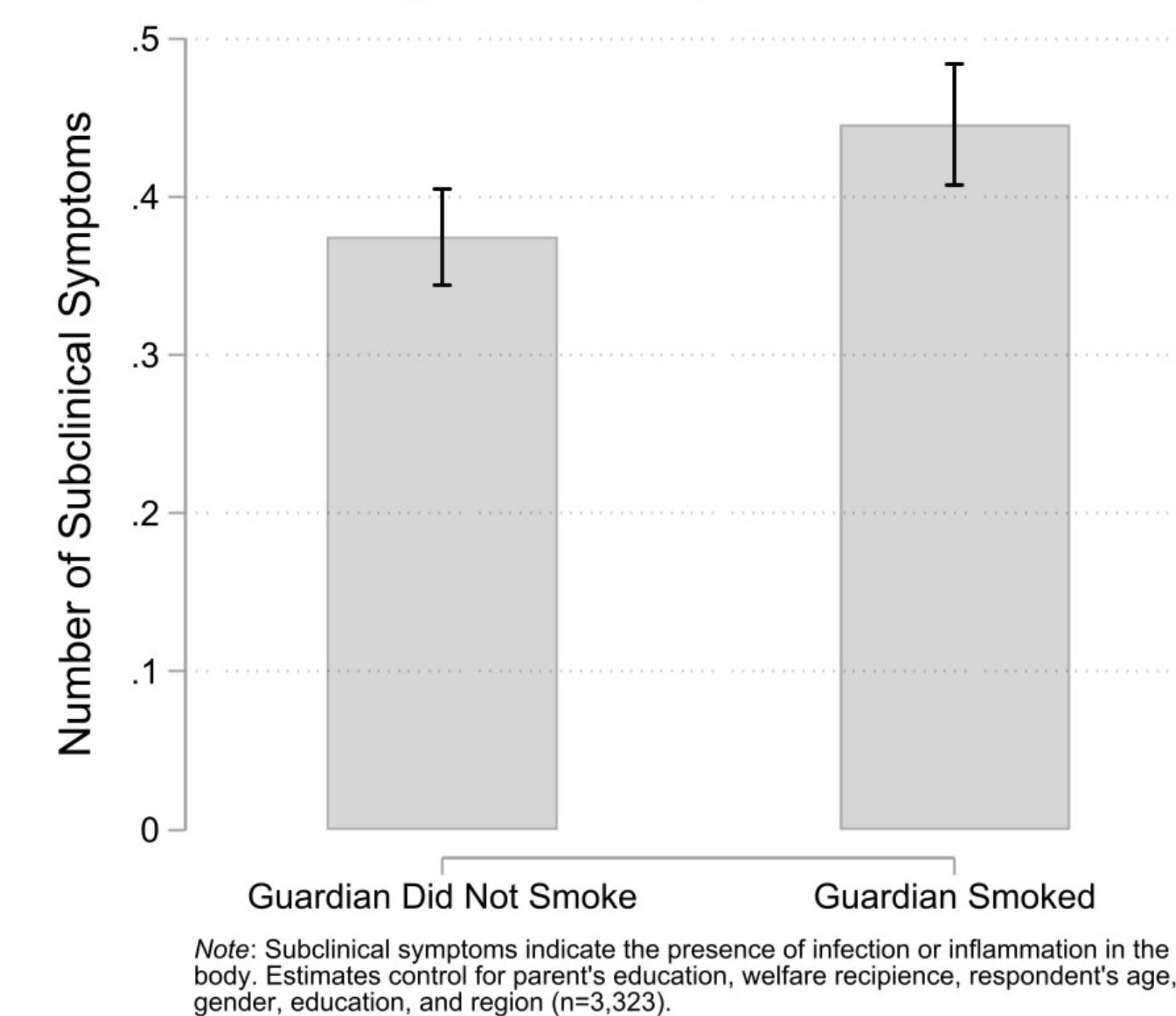


Figure 3. Predictions of Early Sexual Debut based on Whether One's Primary Guardian Smoked in the National Longitudinal Study of Adolescent Health.

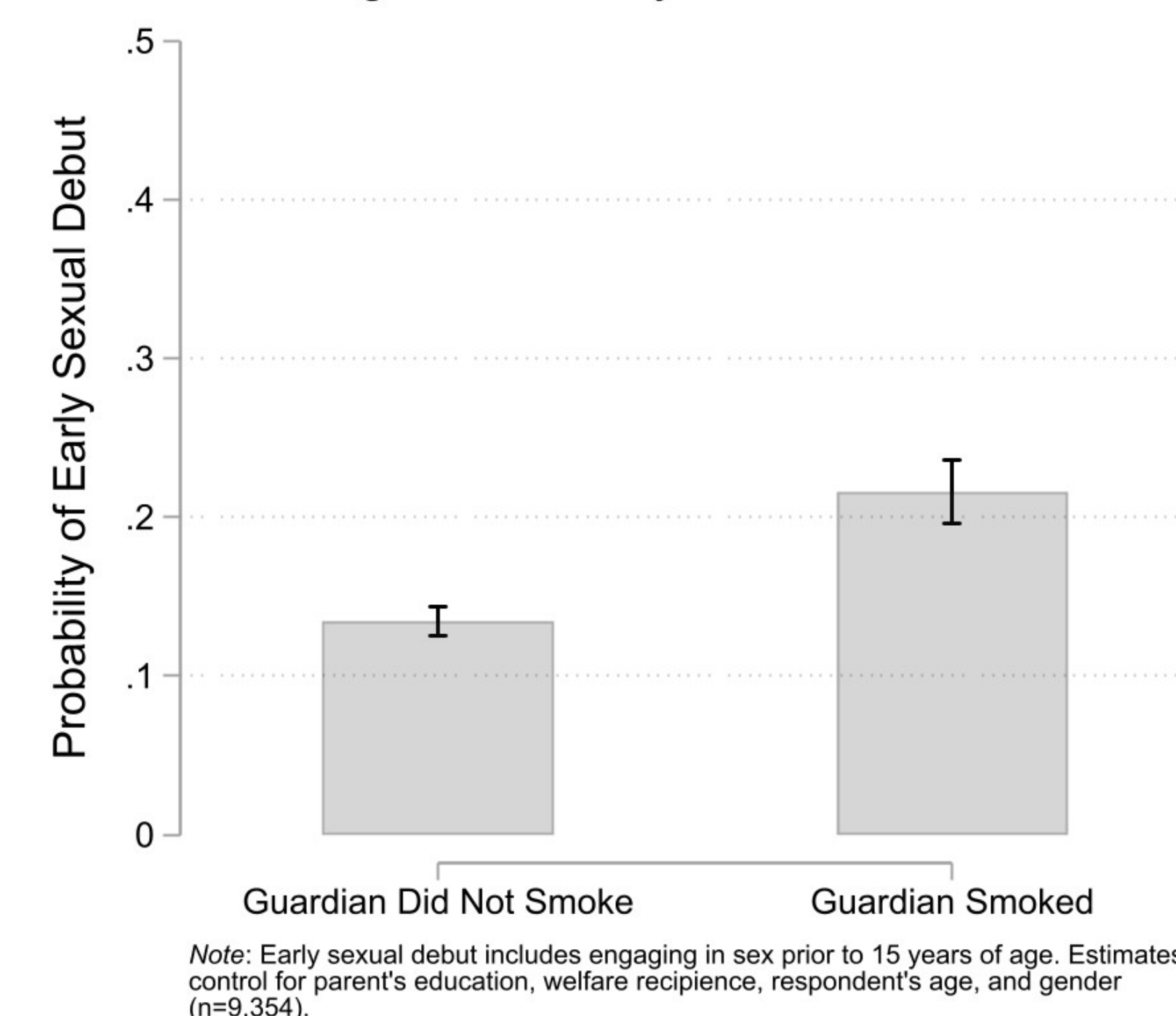
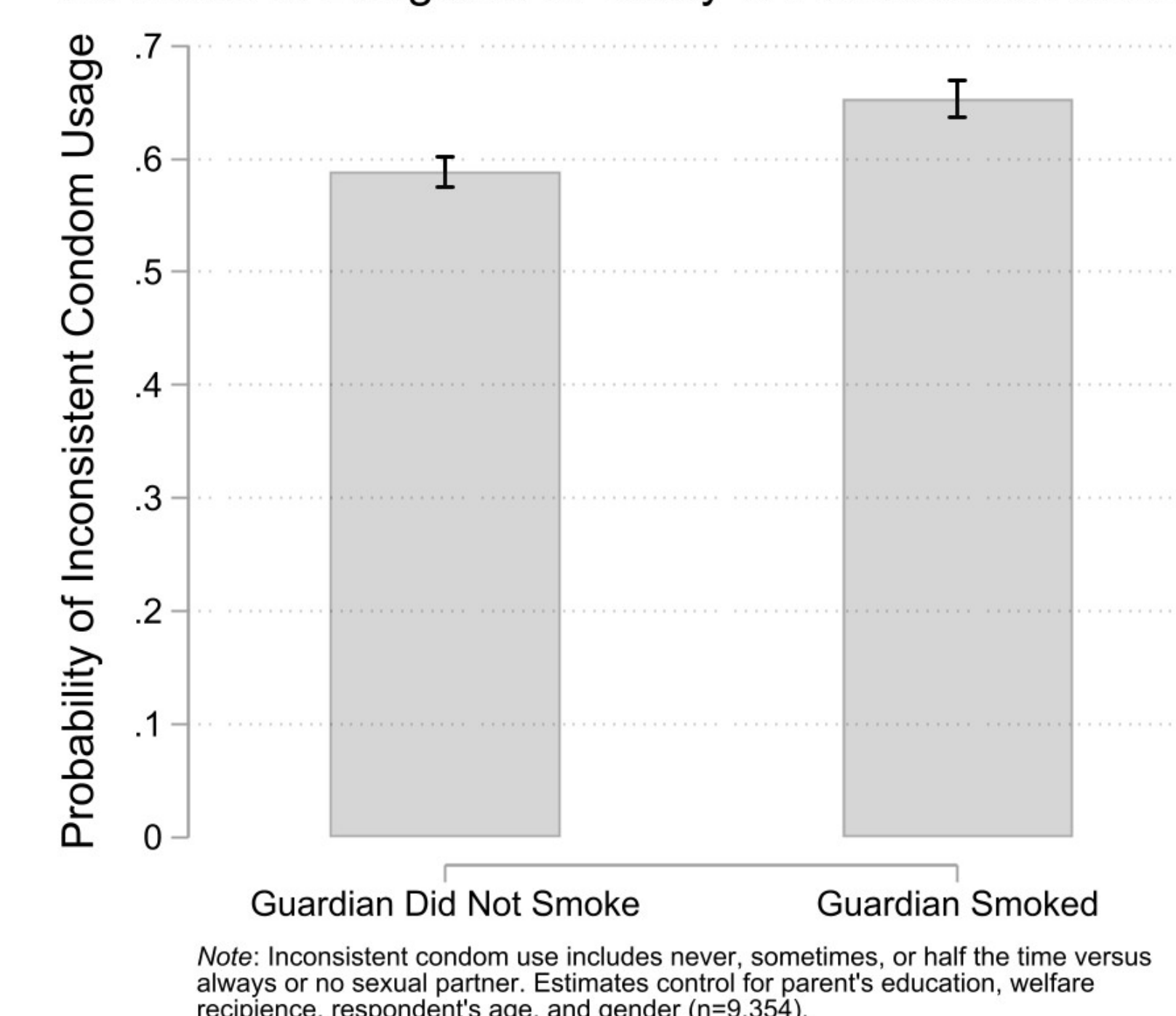


Figure 4. Predictions of Inconsistent Condom Usage based on Whether One's Primary Guardian Smoked in the National Longitudinal Study of Adolescent Health.



Results

Figure 5. Predictions of High Self-Reported Risky Behavior based on Whether One's Primary Guardian Smoked in the National Longitudinal Study of Adolescent Health.

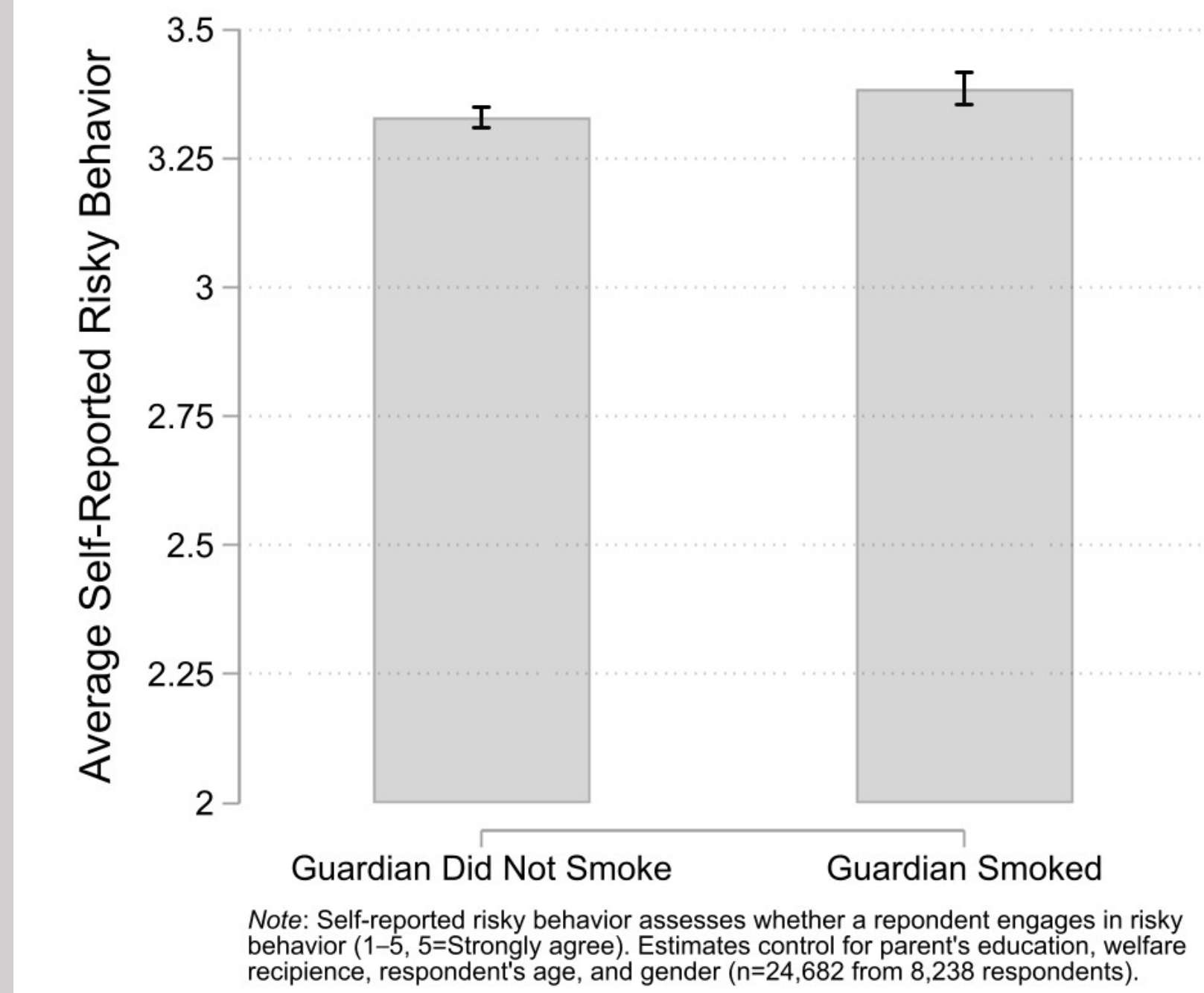


Figure 6. Predictions of Counts of Drinks per Sitting based on Whether One's Primary Guardian Smoked in the National Longitudinal Study of Adolescent Health.

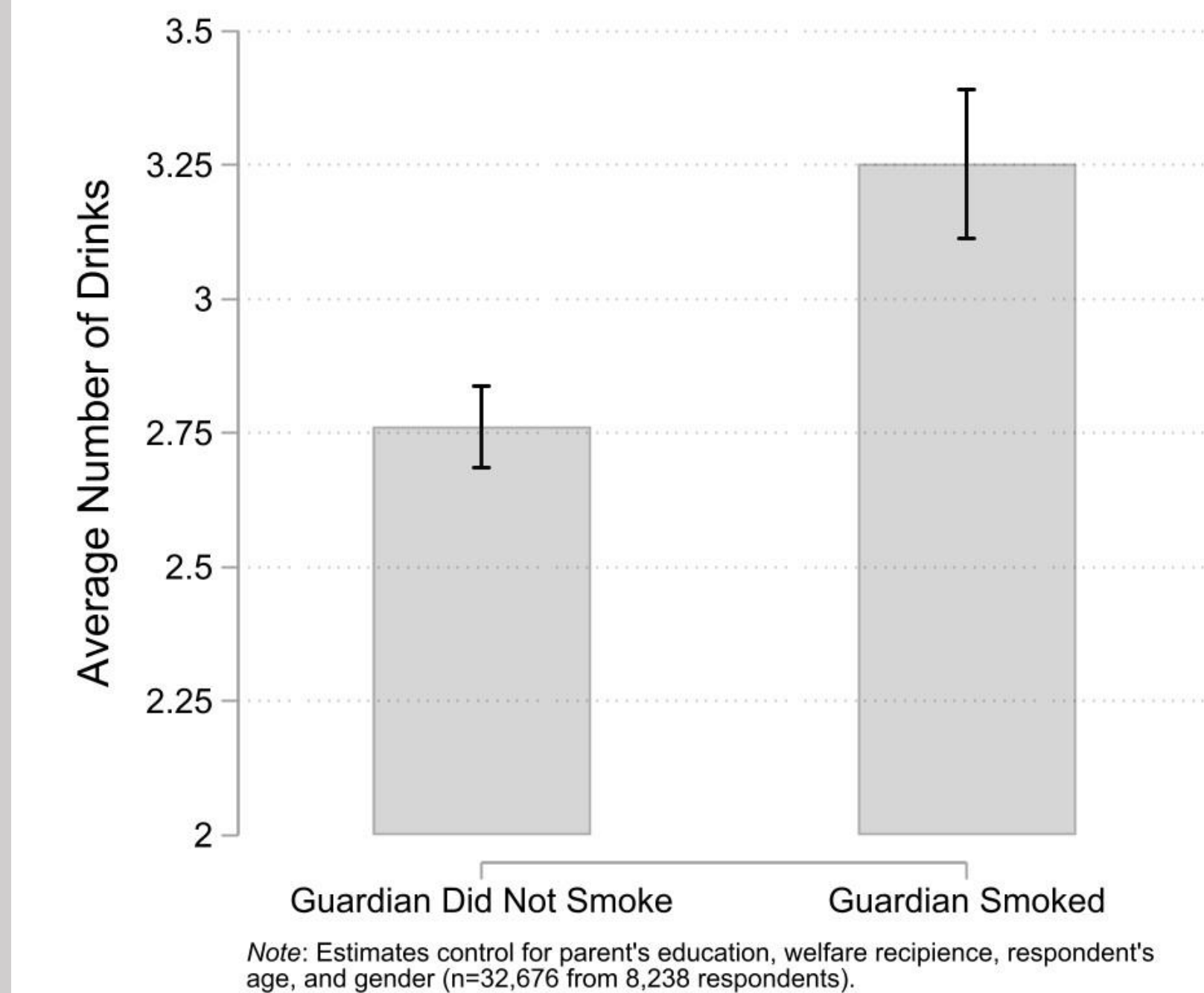
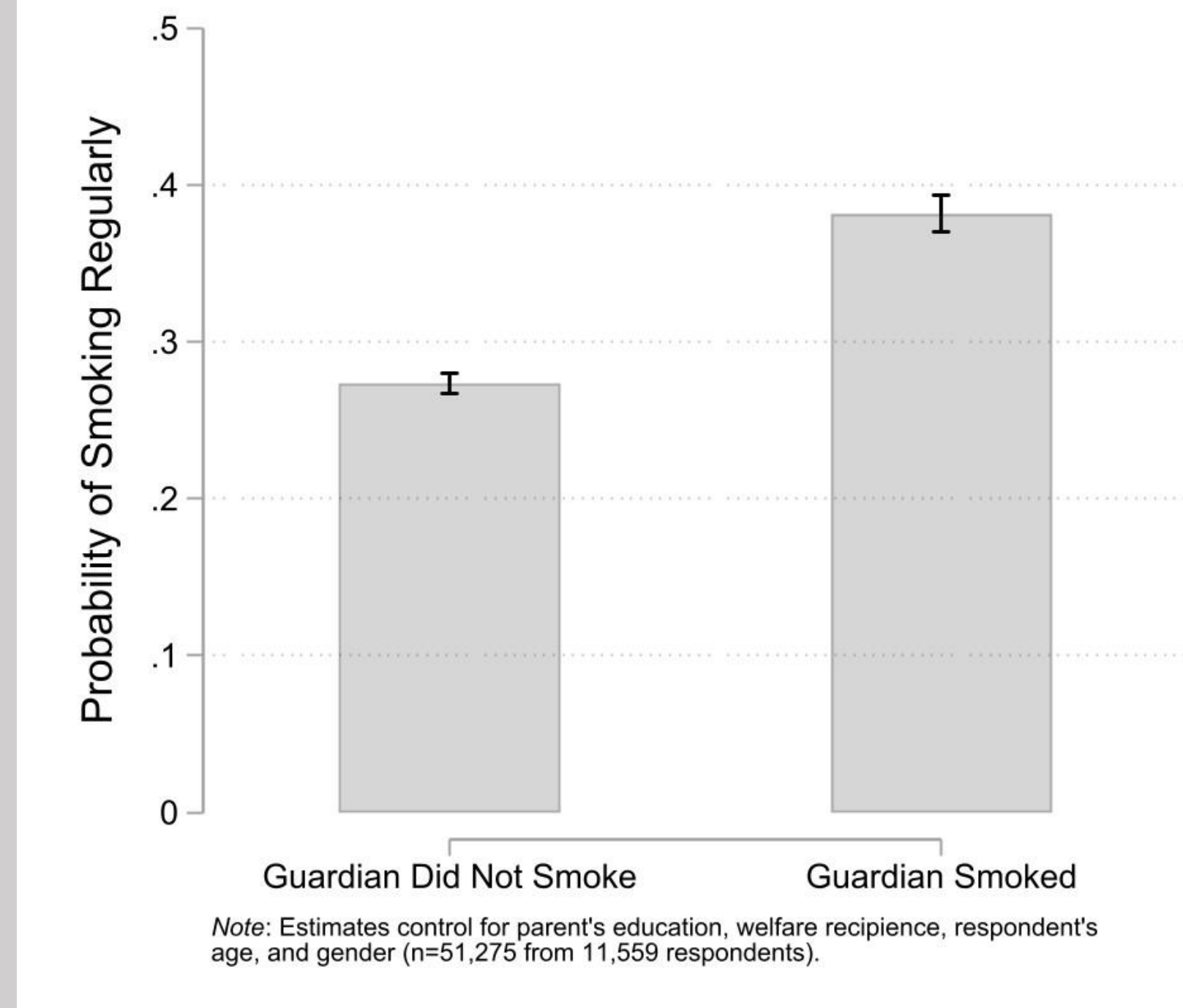


Figure 7. Predictions of Smoking Cigarettes Regularly based on Whether One's Primary Guardian Smoked in the National Longitudinal Study of Adolescent Health.



Discussion and Conclusions

- Secondhand smoke exposure increases the probability of children's tobacco use, alcohol use, and early sexual debut—risky behaviors that persist as main health challenges for adolescents and lead to increasing health problems (YRBS, CDC)
- Because there is no risk-free level of secondhand smoke, more smokefree laws prohibiting indoor smoking need to be enacted (CDC)
 - Including private areas including apartment buildings, hotels, and multi-unit housing
- Parents and guardians must understand the serious risks associated with secondhand smoke exposure and take necessary steps to reduce exposure in children, especially in their own homes
- Future research is needed to investigate the role that race, ethnicity, and gender have on these outcomes