

**Biomarkers of Air Pollution and Asthma Medication Use: Addressing Temporal Limitations of Environmental Health Analyses Within NHANES**

PRESENTER:  
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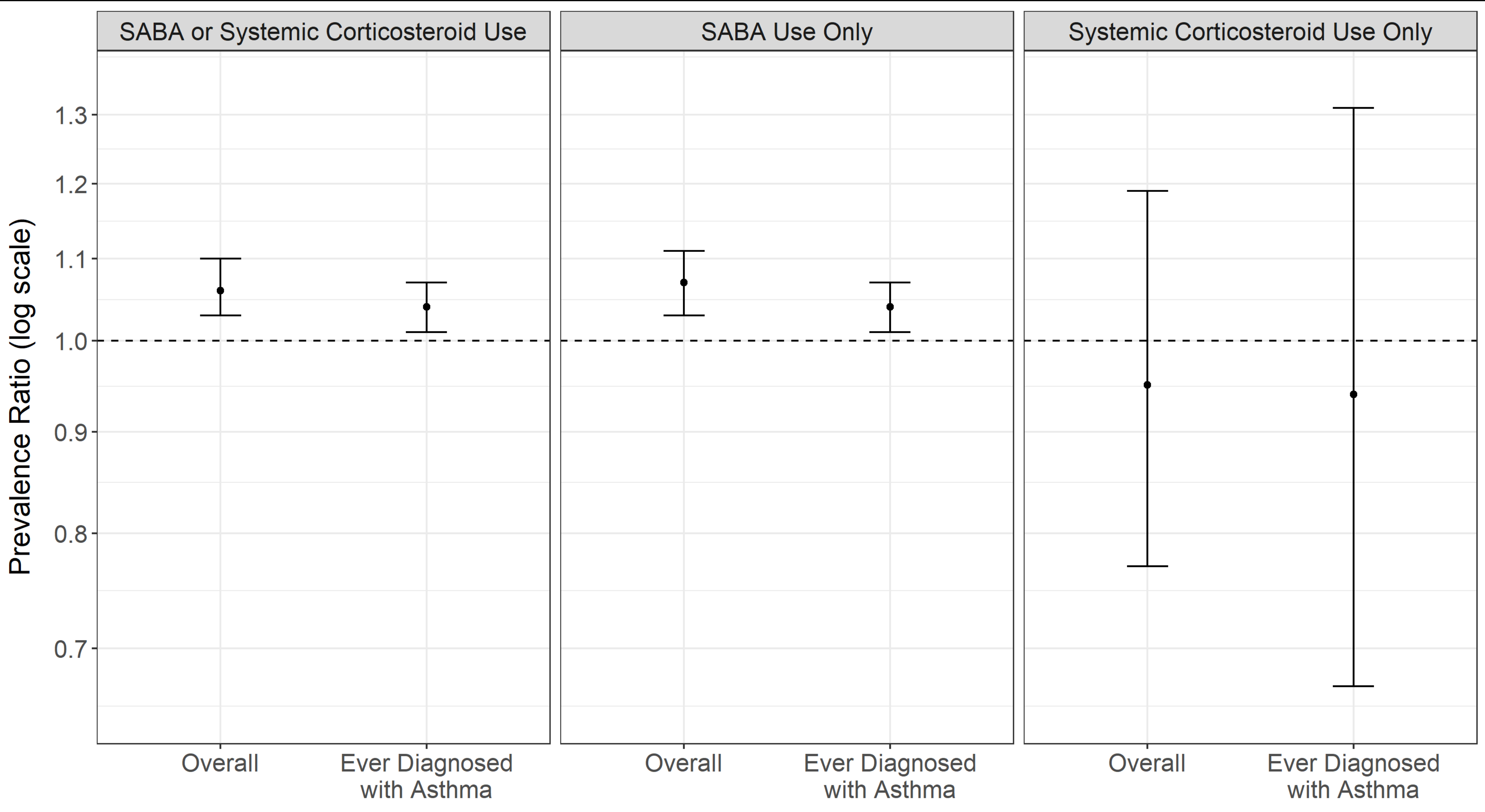
**BACKGROUND:** Within cross-sectional studies like the U.S. National Health and Nutritional Examination Survey (NHANES), previous studies have used ever having an asthma diagnosis as an outcome when examining associations with polycyclic aromatic hydrocarbon (PAH) exposure.

**OBJECTIVE:** Examine the relationship between markers of PAH exposure and 30-day short-acting beta agonist (SABA) or systemic corticosteroid use, a temporally appropriate indicator for recent asthma symptoms.

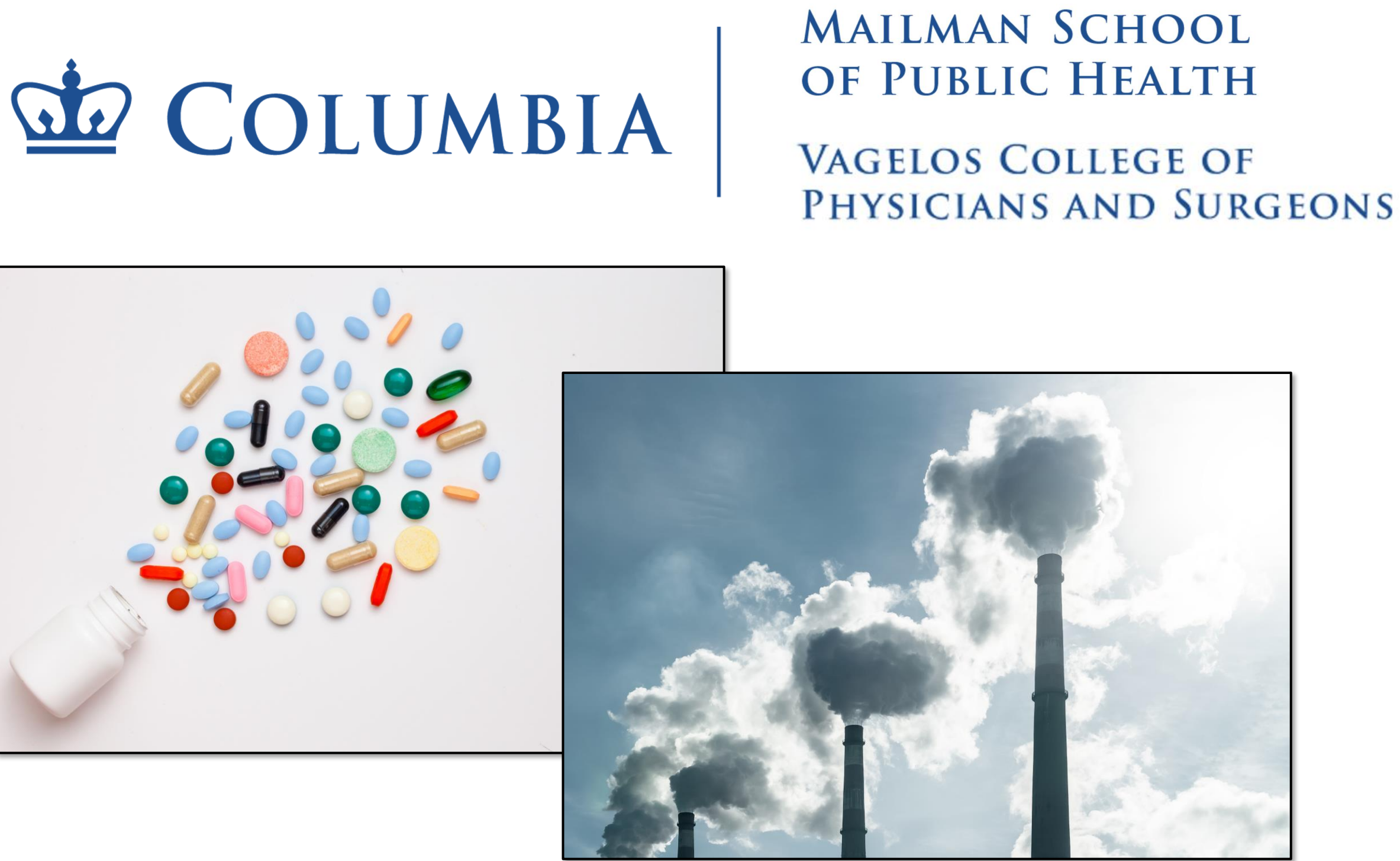
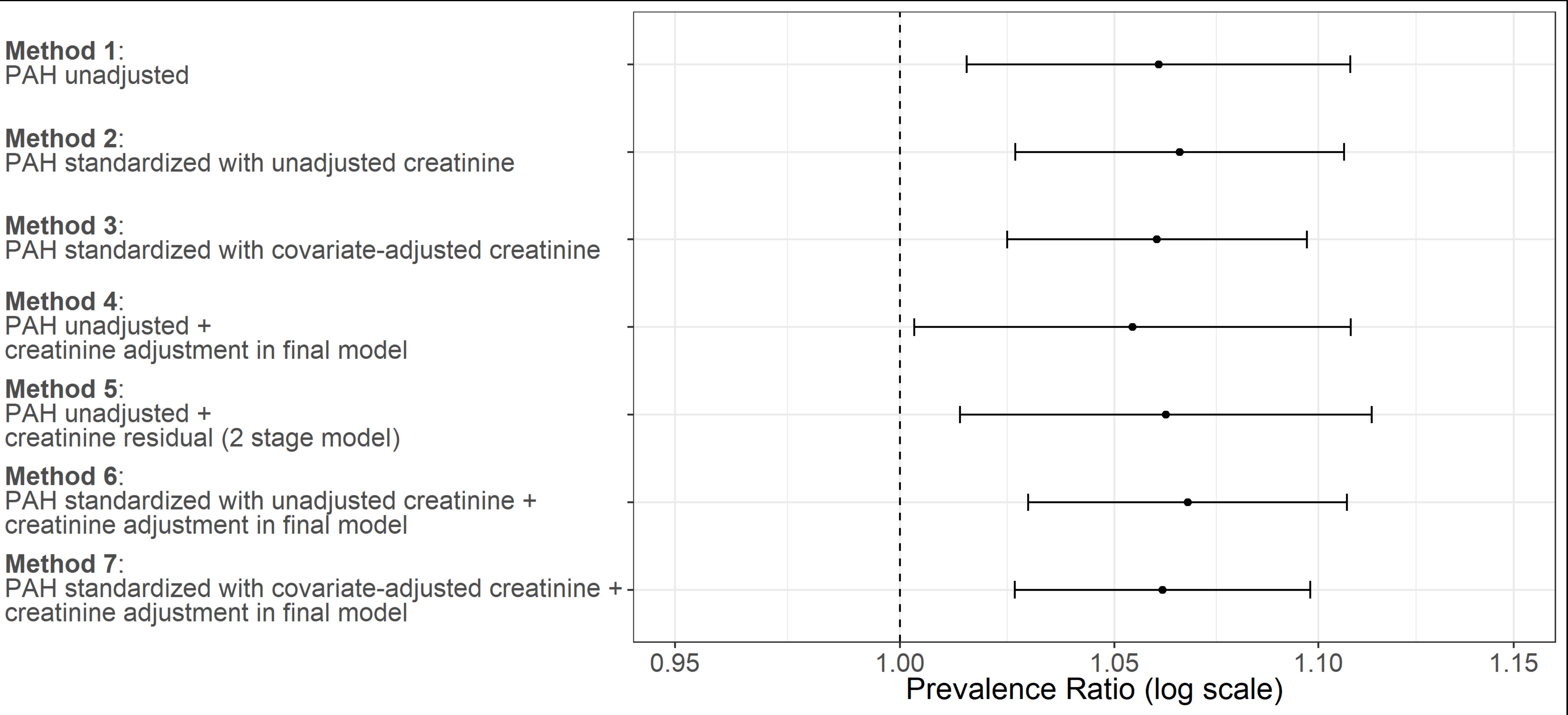
**METHODS**  
**Study Population:** N=16,550 participants across multiple waves of NHANES (2005-2016) with laboratory data.

- Statistical analysis using quasi-Poisson regression**
- Independent variable: PAH metabolite, urinary 1-hydroxypyrene
  - Dependent variable: SABA or systemic corticosteroid use
  - Confounders: Age, female/male designation, race/ethnicity, poverty, insurance coverage, and serum cotinine
  - Effect Modifiers: Age, controller medication use
  - Sensitivity Analyses:
    - Among those ever diagnosed with asthma
    - Different urine creatinine dilution adjustment methods

PAH exposure was **positively associated** with SABA or systemic corticosteroid use, across urine creatinine dilution adjustment methods



Association Between PAH exposure and SABA or Systemic Corticosteroid Use Across Urine Creatinine Dilution Adjustment Methods



- RESULTS**
- An increase of one standard deviation of PAH exposure was associated with 1.06 (95% CI 1.03-1.10) times the prevalence of SABA or systemic corticosteroid use.
  - No effect modification by age ( $p$ -interaction = 0.56) or controller medication use ( $p$ -interaction = 0.82).
  - Similar associations:
    - Among those ever diagnosed with asthma (PR = 1.04, 95% CI 1.01, 1.07)
    - Across different urine creatinine dilution adjustment methods
    - For SABA use only as an outcome (PR = 1.07, 95% CI 1.03, 1.11), but not for systemic corticosteroid use only (PR = 0.95, 95% CI 0.77, 1.19).

**CONCLUSIONS**  
PAH exposure was positively associated with SABA or systemic corticosteroid use, across various urine dilution adjustment methods. It is important to ensure appropriate temporality between exposures and outcomes in cross-sectional studies.

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