

## Disparities in Race/Ethnicity in Relation to Air Pollution Exposure and Asthma in Adults

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**Background and Objectives:** Relationships between chronic exposures to air pollution and various respiratory health outcomes have yet to be clearly articulated for adults. Recent data from nationally representative surveys suggest increasing disparity by race/ethnicity regarding asthma-related morbidity and mortality. The objectives of this study are to evaluate the relationship between exposure to fine particulate matter ( $PM_{2.5}$ ) and the prevalence of respiratory outcomes for black and white adults using modeled air pollution and health outcome data and to examine potential differences in  $PM_{2.5}$  sensitivity across race/ethnicity.

**Methods:** Respondents from the 2002-2005 National Health Interview Survey (NHIS) were linked to annual kriged  $PM_{2.5}$  data from the U.S. Environmental Protection Agency's AirData system. Logistic regression was employed to investigate relationships between increases in ambient  $PM_{2.5}$  concentrations and self-reported prevalence of asthma status and asthma attacks. Models examined relevant health, behavioral, demographic, and resource-related covariates. Stratified analyses were conducted to determine whether sensitivity to exposure varied by race/ethnicity.

**Results:** Of nearly 110,000 adult respondents, approximately 8,000 and 4,000 reported current asthma and recent attacks, respectively. Overall, odds ratios (OR) for current asthma (0.97 [95% Confidence Interval: 0.87-1.07]) and recent attacks (0.90 [0.78-1.03]) did not suggest an association with  $PM_{2.5}$ . Stratified analyses revealed significant associations for non-Hispanic blacks (OR = 1.73 [1.17-2.56] for current asthma and OR = 1.76 [1.07-2.91] for recent attacks) but not for non-Hispanic whites. These inferences were unaffected by further examination by insurance status and urbanicity.

**Conclusion:** Non-Hispanic blacks, but not non-Hispanic whites, may be at increased sensitivity of asthma outcomes from  $PM_{2.5}$  exposure.