

## LINKAGE OF THE NATIONAL HEALTH INTERVIEW SURVEY TO CLIMATE INDICATORS: A RESOURCE FOR UNDERSTANDING THE IMPACT OF CHANGE

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**Background and Aims:** Although there is growing literature describing acute health effects of extreme climate events, such as heat waves, less is known about the effects of climate changes on chronic conditions. Appropriate measures that reflect long term climate changes that can be linked to health outcome data are unknown. This study describes potential climate indicators for linkage to the U.S. National Health Interview Survey (NHIS).

**Methods:** 2006-2008 NHIS data for adults were linked to county-level climate data from National Climatic Data Center. Health measures examined included: fair/ poor health, heart disease, hypertension, and asthma. Using 1977-1987 as the baseline, the 99<sup>th</sup> and 1<sup>st</sup> percentiles of maximum and minimum temperatures for each county and month (about 300 values) were used to define thresholds of excessively hot and cold days. Indicators were created for each county by summing the number of days in the prior 5 years that exceeded thresholds and identifying the 90<sup>th</sup> percentile of days; approximately 75% of NHIS respondents lived in counties with complete data for the prior 5 years. Odds ratios (AOR) of associations between indicators and health measures were adjusted for race/ethnicity, age, region, and urbanization.

**Results:** Respondents in areas with a relatively large number of hot days over the prior 5 years may experience more adverse health outcomes, including hypertension, heart disease, and fair/poor health. Furthermore, living in areas with a large number of hot spring days was associated with significant increases in hay fever (AOR=1.24 (95% CI 1.04, 1.48)) and asthma emergency department visits (AOR=1.68 (CI 1.08, 2.62)). Cold days were not associated with these outcomes.

**Conclusions:** People in unusually hot areas may experience more adverse health conditions, although mechanisms are not understood. Developing appropriate indicators of extreme climate conditions will increase our ability to monitor potential impacts of climate change on health.