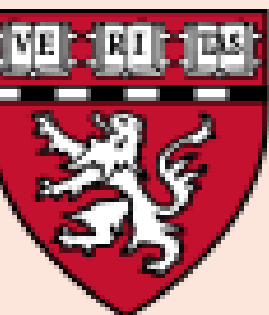




Trends in Racial and Ethnic Disparities in Heat-Related Illness Hospitalizations, 1998-2019



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Background

- Extreme heat events are increasing in frequency/severity and could drive heat-related illness (HRI) hospitalizations
- Disadvantaged and minority communities face structural vulnerabilities (e.g., housing, occupation, green-space disparities) that may widen HRI disparities
- No prior studies assessed time-trends in population-level HRI hospitalization rates nor racial/ethnic disparities therein

Methods

- **Data:** National Inpatient Sample, 1998–2019 (exclude 2015 ICD transition); adults ≥ 18 y hospitalizations from May–September annually
- **Exposure:** Year and race/ethnicity
- **Outcome:** annual age-standardized (to 2000 population) hospitalization rate for HRI (ICD-9/10 codes) per million U.S. adults
- **Analysis:** Bivariable linear regression (estimate annual rate change and pooled logistic regression (estimate in-hospital mortality) by race/ethnicity (race×year interaction)

Principal Findings

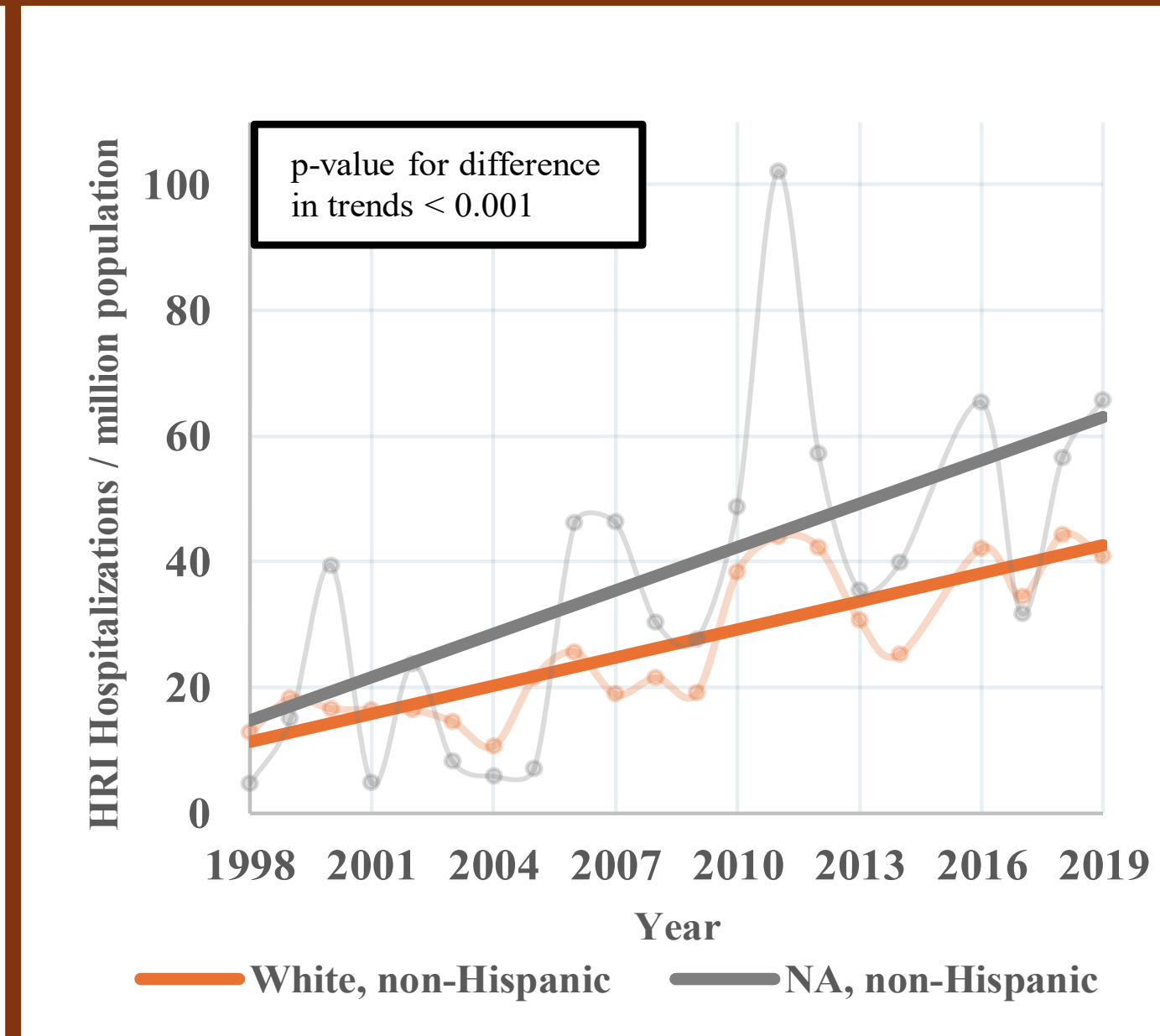
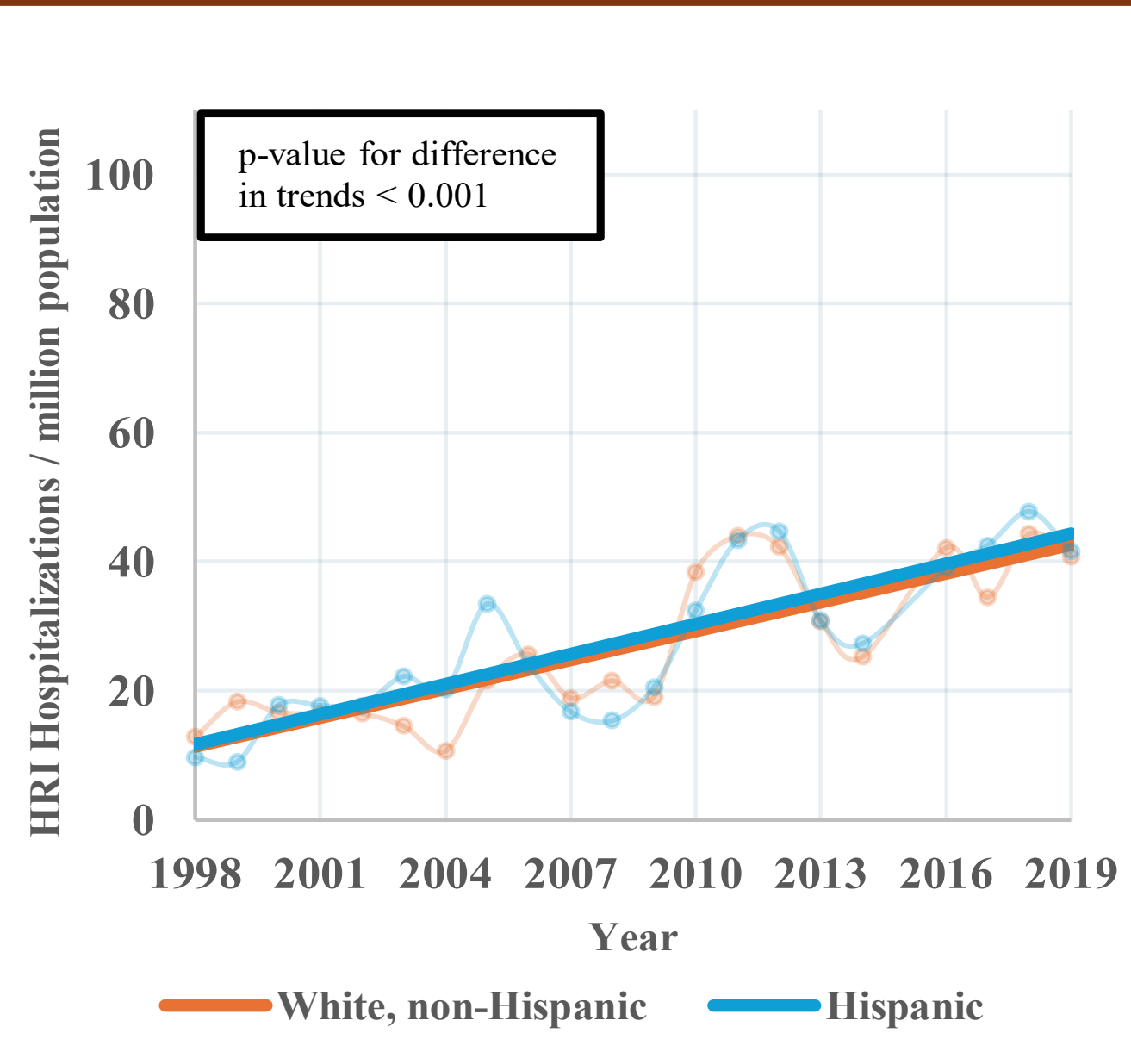
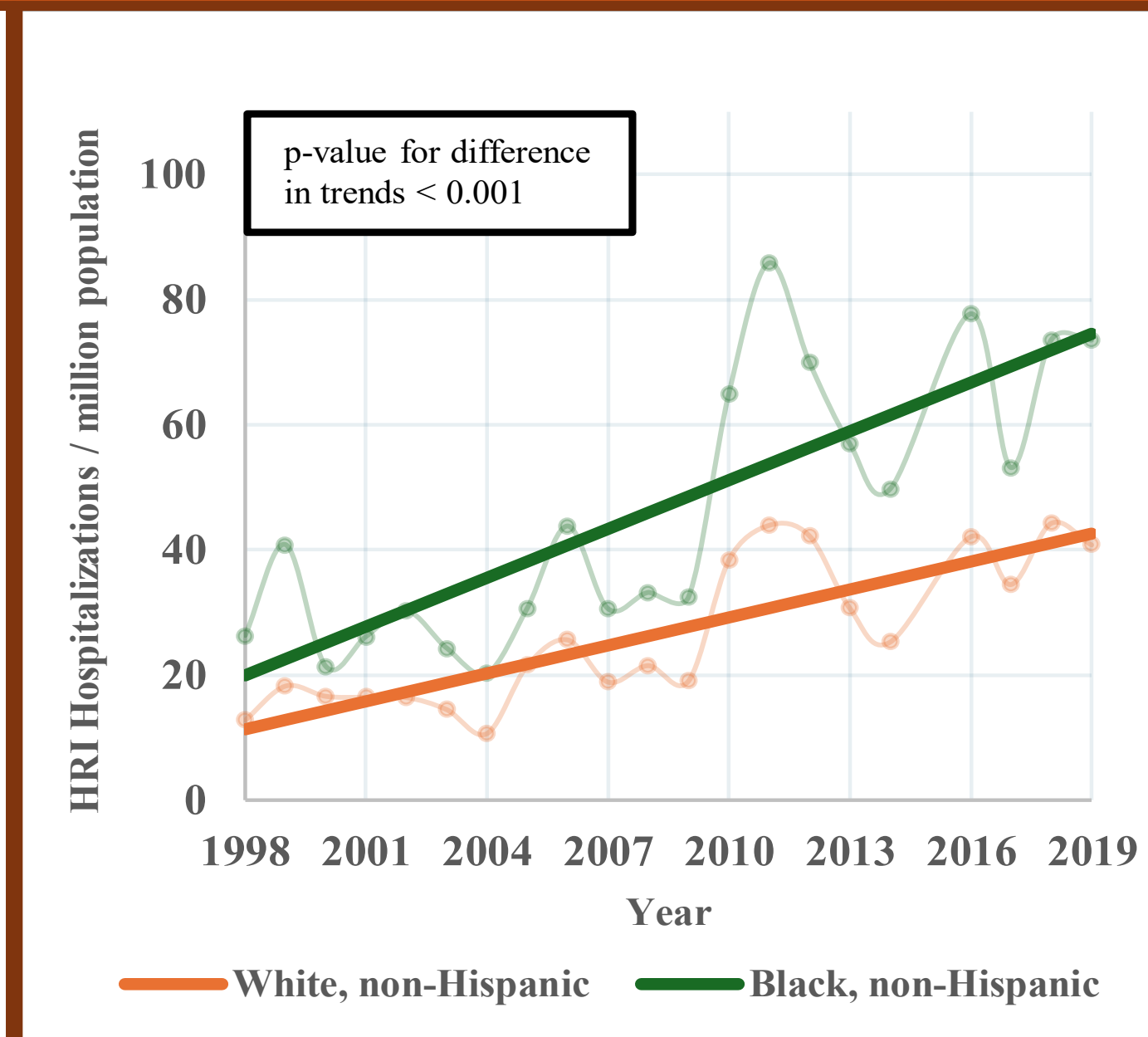
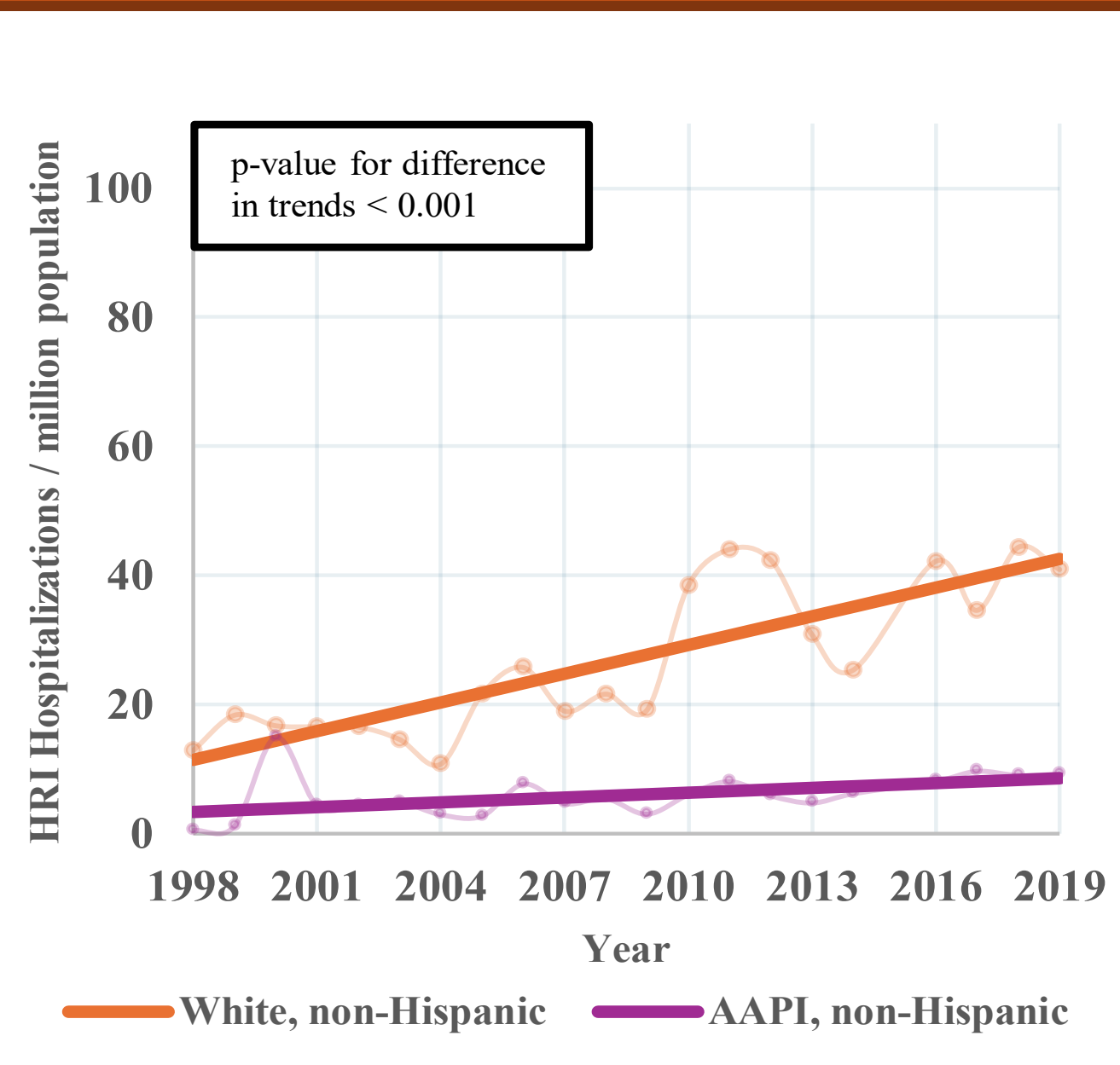
- HRI hospitalization rate increased by 26.5 per million U.S. adults, rising from 20.0/million in 1998 to 46.5/million in 2019 ($p < 0.001$)
- All racial and ethnic groups have experienced rising age-standardized HRI hospitalizations rates, but rates increased most for Black, NA, and Hispanic individuals
- Hispanic adults had higher odds of in-hospital mortality (adjusted OR 1.6, 95% CI 1.3–2.0) when compared to White adults

Limitations

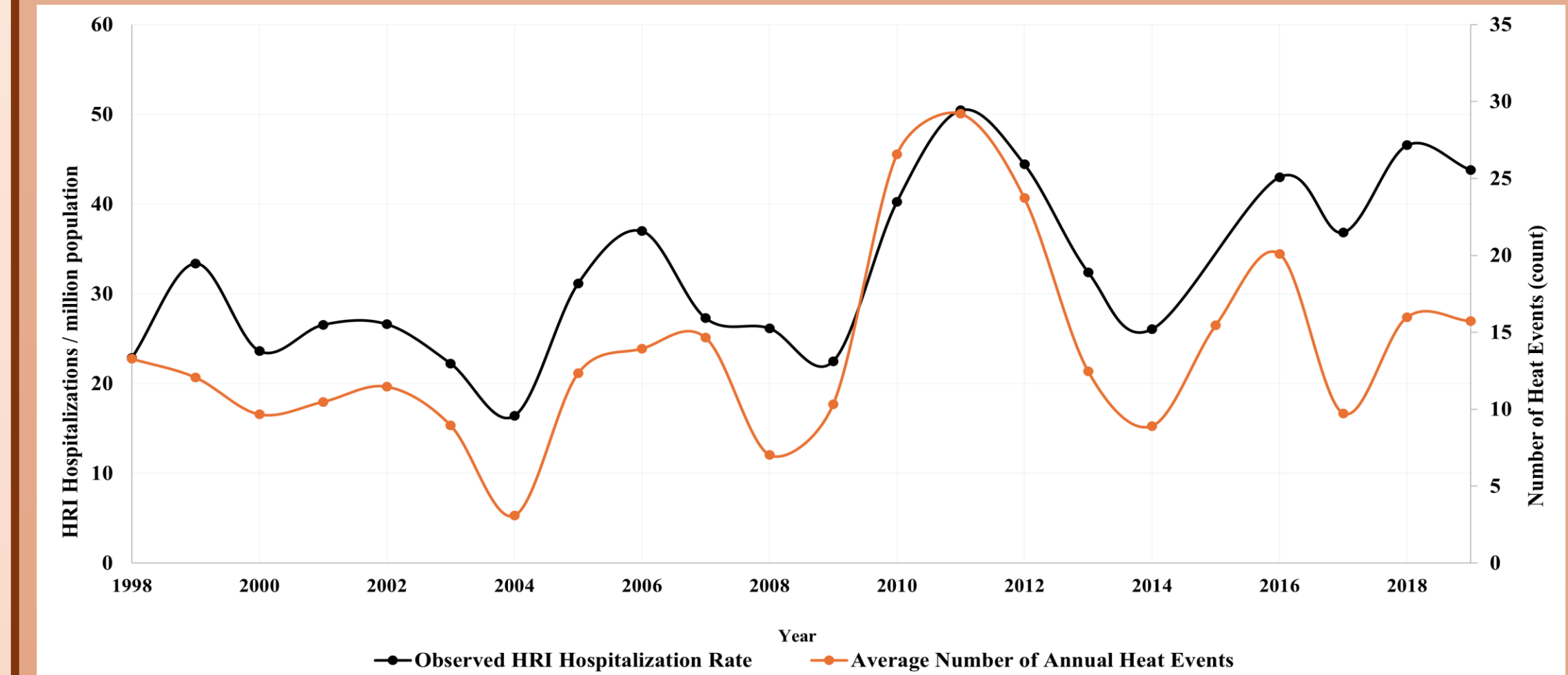
- 13% of sample had missing data on race/ethnicity
- NIS excludes federal hospitals, including Indian Health Service hospitals, likely leading to underestimation of HRI hospitalization rates
- Reliance on HRI ICD codes, which are likely underutilized by clinicians

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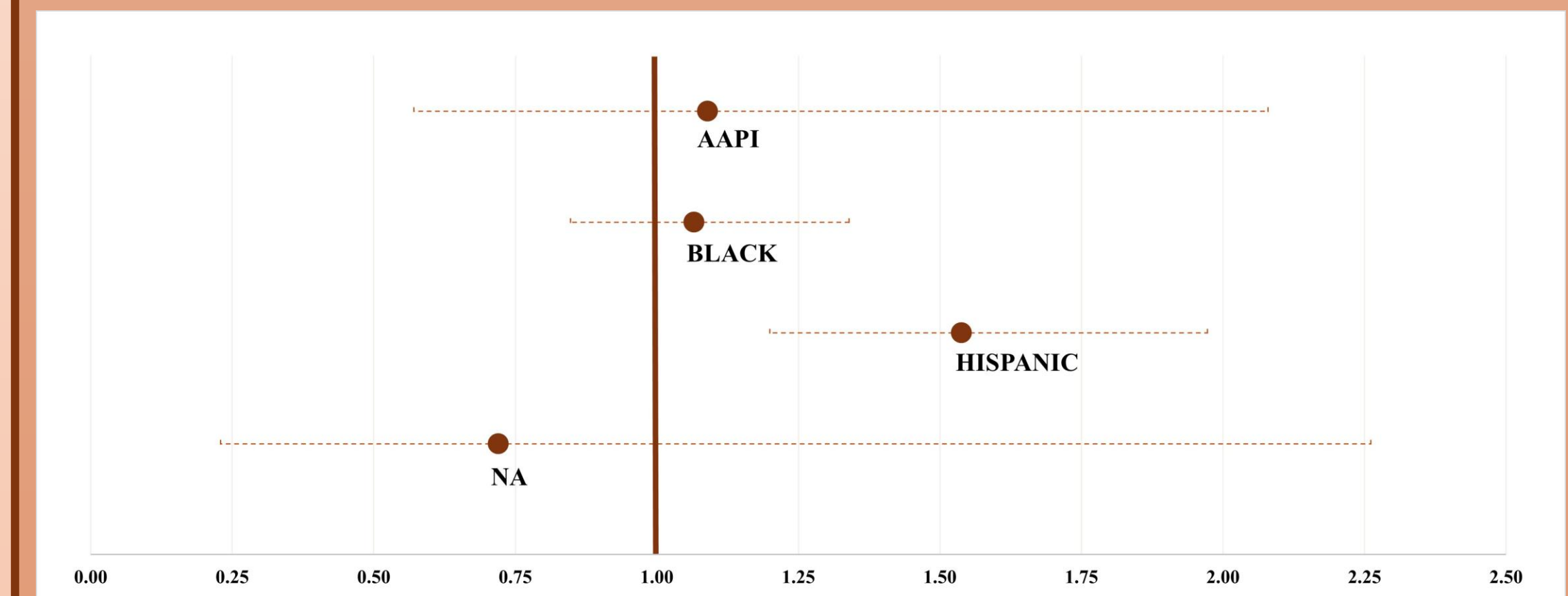
HRI hospitalization rates more than doubled in the last 20 years, with Black, Native American, and Hispanic adults disproportionately impacted



Average Number of Heat Events in the Contiguous United States Annually and Annual (May-September) HRI Hospitalization Rates



In-Hospital Mortality, Pooled HRI Hospitalizations 1998-2019



Policy Implications

- **Infrastructure:** Expand tree canopy, cooling centers, and green infrastructure in heat-vulnerable neighborhoods
- **Occupational protections:** Enact and enforce heat-safety standards (rest breaks, hydration, shaded work areas)
- **Clinical/public education:** Train clinicians & community health workers to educate at-risk patients on heat-illness prevention and early signs

Additional results:

