

Breaking the Monolith: Understanding Asthma Burden in Asian American, Native Hawaiian and Pacific Islander Californians

BACKGROUND & RESEARCH OBJECTIVE

- 15% (6 million) of Californians identify as Asian American, Native Hawaiian, or Pacific Islander (AANHPI).
- The Accounting for Health and Education in Asian Pacific Islander Demographics Act in 2016, AB 1726, mandated agencies to disaggregate data for AANHPI Californians.
- While statewide data have not yet been analyzed, a healthcare system study¹ found significantly higher childhood asthma risk among Native Hawaiian & Pacific Islander (NHPI) and Filipino/a children vs. Asian American (AsA) and non-Hispanic White children.

Research Objective: Compare incident asthma Emergency Department (ED) visit risk between AsA and NHPI populations in 2019 and assess spatial trends of these groups at the sub-county (ZIP) level.

METHODS

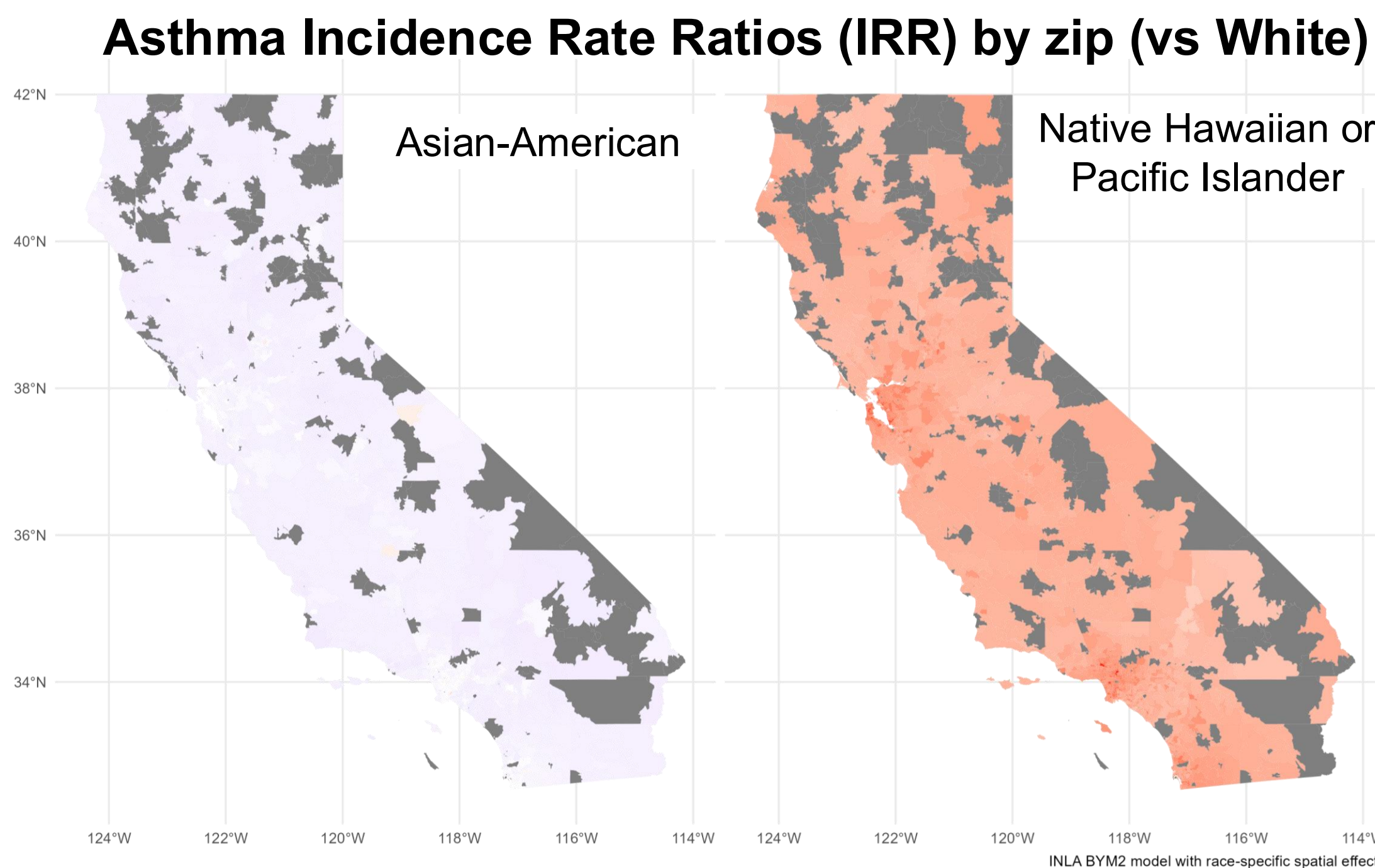
Study Population

- ED visits in 2019 with asthma ICD-10 codes (J45) from the Department of Health Care Access & Information (HCAI)
- Population by age, sex, race, and ZIP code (Esri)

Analysis

- Calculated age-standardized incidence ratio (SIR) of an ED visit for asthma by race/ethnicity.
- Used Bayesian spatial modeling (R-INLA)² to estimate ZIP-code-level asthma incidence rate ratios (IRRs) by race/ethnicity, improving precision in areas with sparse data and highlighting spatial trends across AsA vs. NHPI populations.

RESULTS



NHPI Californians are over 4 times more likely to go to the ER for asthma than White Californians, whereas Asian Americans had a 15% lower rate, on average.

CONCLUSIONS

- Our findings reinforce that treating AANHPI populations as a single group can obscure substantial disparities. These results support the importance of data disaggregation policies like AB 1726.
- Bayesian spatial modeling allowed us to estimate reliable asthma incidence rates at the ZIP-code level, even in areas with small populations or sparse data.
- Ongoing analysis will focus on identifying ZIP codes with consistently high asthma ED rates among NHPI Californians for targeting asthma management programs.

Race/Ethnicity	N(%)	SIR (95% CI)	IRR (95% CI)
Black	31,792 (19.8%)	3.31 (-0.1, 6.7)	6.35 (6.23, 6.46)
NHPI	1,456 (0.9%)	2.13 (-0.03, 5.29)	4.17 (3.95, 4.41)
Hispanic	69,206 (43.2%)	1.56 (0.06, 3.07)	1.98 (1.94, 2.02)
Other	10,125 (6.3%)	0.99 (-0.39, 2.37)	0.57 (0.55, 0.59)
White	39,004 (24.3%)	0.88 (0.01, 1.75)	1.00 (reference)
AsA	8,614 (5.4%)	0.75 (-0.24, 1.75)	0.86 (0.83, 0.88)

SIR (95% CI) = unmodeled age and population Standardized Incidence Ratio (95% confidence interval)
IRR (95% CI) = modeled Incidence Rate Ratio of given race vs. White (ref) (95% credible interval)

- There were 1,456 NHPI visits (1%) and 8,614 AsA visits (5.4%) to EDs for asthma in 2019.
- Both unmodeled and modeled rates reveal a high asthma burden among NHPI Californians, but the disparity becomes even more pronounced when race-specific risk is allowed to vary by ZIP code.

REFERENCES

- ¹ Arroyo, A., Eapen, N. M., Choi, C. J., Wu, L., Nishizaki, A., & Millstein, J. (2024). Racial and ethnic differences in risk of childhood asthma among Asian American, Native Hawaiian, and Pacific Islander subgroups. *The Journal of Pediatrics*, 262, 113347.
- ² Rue, Havard, Finn Lindgren, and Elias Teixeira Krainski. 2024. *INLA: Full Bayesian Analysis of Latent Gaussian Models Using Integrated Nested Laplace Approximations*.

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