

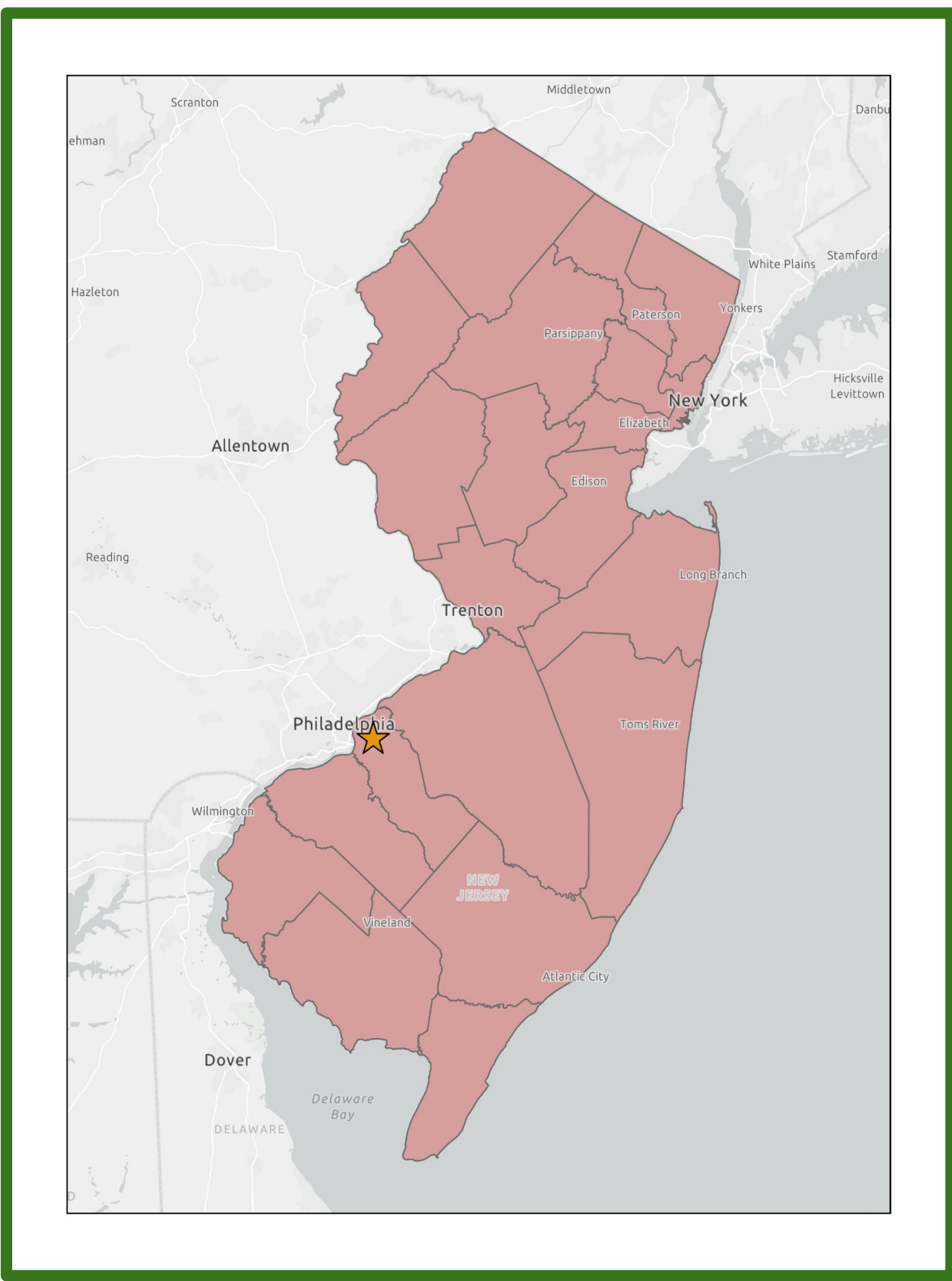
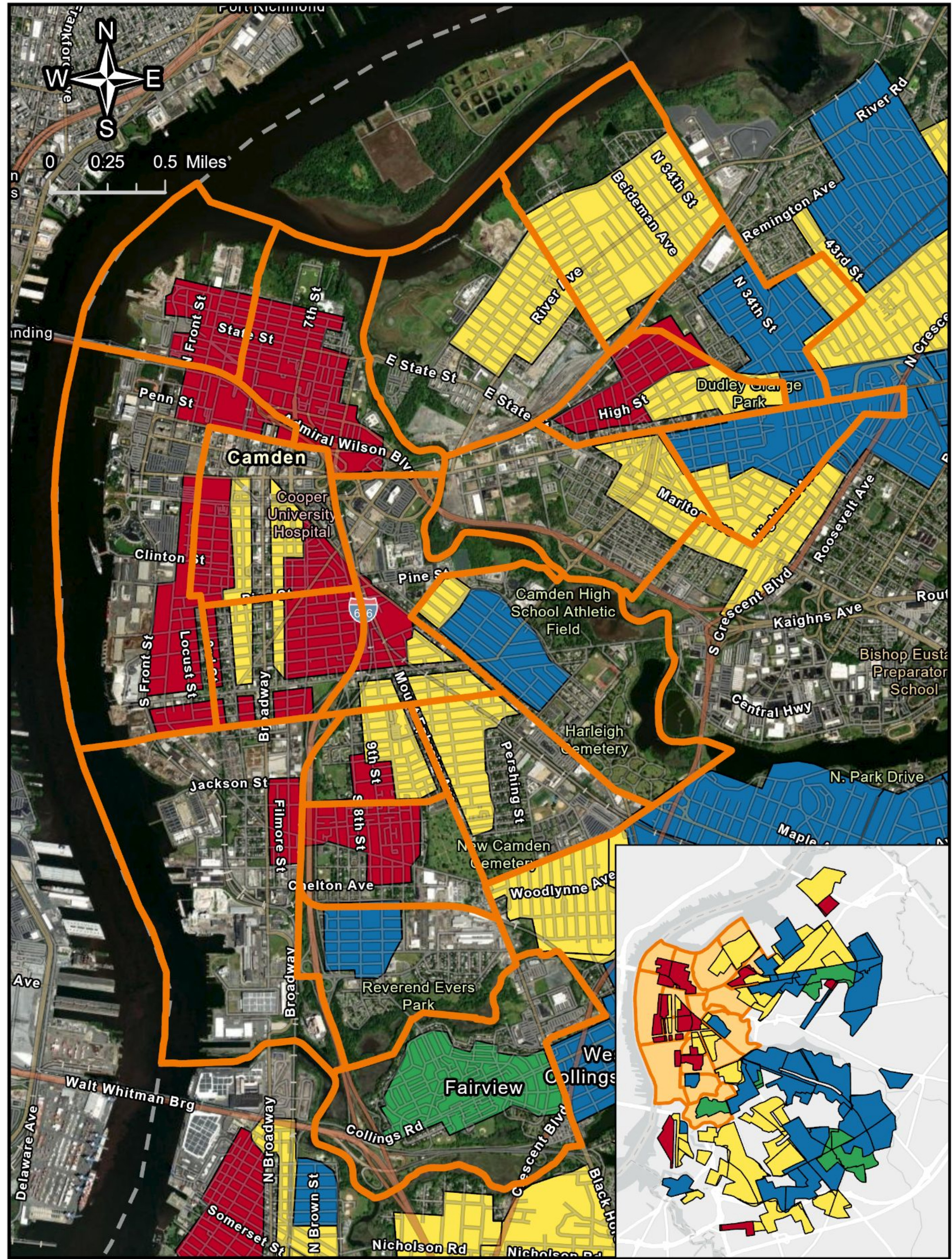
# Unequal Burdens: Exploring the Intersection of Air Quality, Built Environments, and Health Outcome

Undergraduate Research Intern: Sean Olcese

Project Supervisor: Qian He, PhD, AICP

Principal Investigator: Mahbubur Meenar, PhD, GISP

This research examines how historical redlining practices in Camden, NJ correlate with present-day disparities in demographics, income, environmental exposure, and health outcomes. By spatially analyzing historic HOLC zones against modern census and pollution data, this study highlights persistent inequalities shaped by discriminatory policies.



## Key Findings:

### Demographics & Income

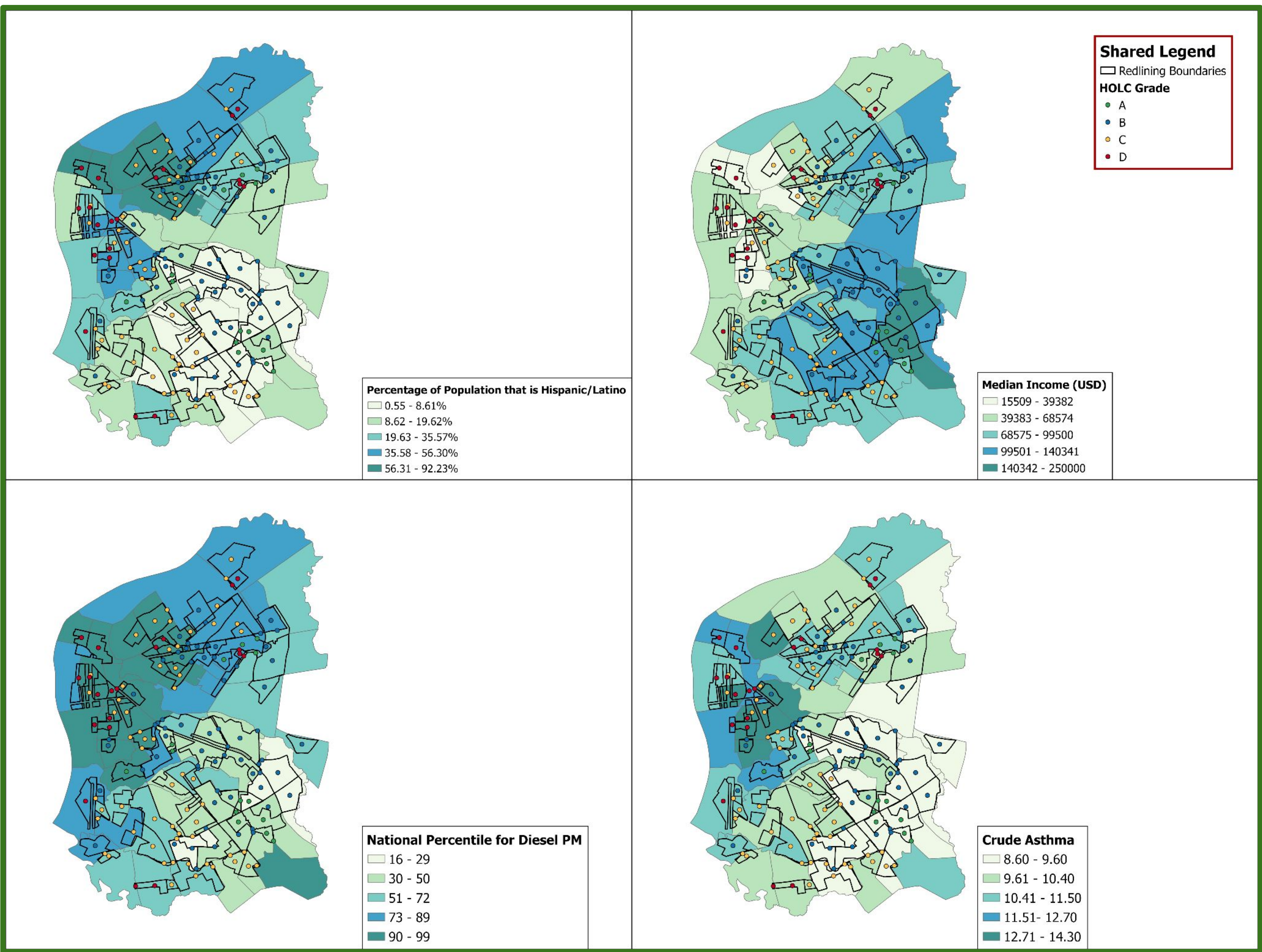
- Grade D areas have the highest Black and Hispanic/Latino populations.
- Median income is lowest in Grade D zones and highest in Grade A.

### Land Use & Environment

- Less green space and more industrial land in redlined areas.
- Higher pollution (NO<sub>2</sub>, PM<sub>2.5</sub>, ozone, diesel, toxic release) in Grade D zones.
- More traffic exposure in lower HOLC grades, increasing air pollution risks.

### Health Impacts

- Asthma and COPD rates are highest in Grade D areas, linking redlining to negative health outcomes.

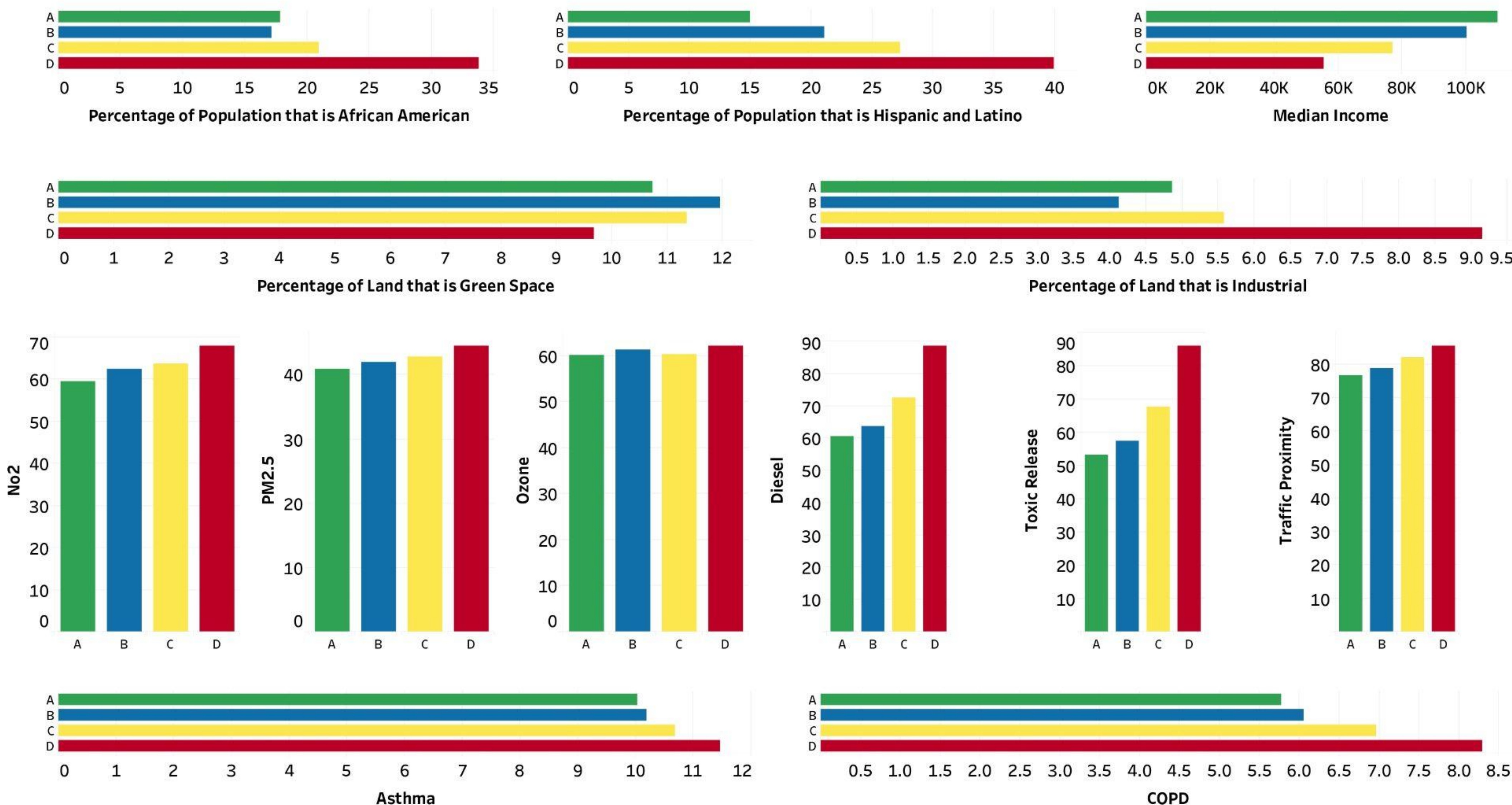


## Methods

**Data Sources:** University of Richmond *Mapping Inequality*, ACS Census Data – Tract Level, CDC Places, EPA EJ Screening, DVRPC, PolicyMap

**Analysis:** Census tract data was intersected with HOLC zones to calculate demographic, economic, and environmental means for each grade.

**Tools Used:** ArcGIS Pro for spatial analysis, Tableau for data visualization.



## Conclusions and Discussion

- Redlining's legacy remains visible, shaping economic, environmental, and health disparities in Camden.
- Grade D areas face the greatest burdens—lower incomes, more pollution, and higher asthma and COPD rates.
- These inequalities reflect lasting systemic issues that require targeted interventions.
- Solutions include improving air quality, expanding green spaces, and equitable urban planning to address past injustices.



Rowan University