Plant a Tree, Save A Life?

The Effects of Historical Redlining on Urban Tree Canopy Coverage & Community Health in Los Angeles County

DS4A Team 101 | Anakaren Cervantes, Dana Kraus, Erika Wingfield, Oritseweyinmi "Henry" Ajagbawa, Yiu Ho Au

What Was Redlining?

During the 1930s and 40s, the federal government's Home Owners' Loan Corporation (HOLC) developed neighborhood appraisal maps for over 200 urban areas across the United States, **grading neighborhoods from A to D according to their perceived risk.** Grading was based in large part on race and other demographic factors, a practice known as "redlining." Areas graded A were considered most desirable, while areas graded D were considered "hazardous."

Hypothesis

Areas graded lower during redlining will have lower urban tree canopy coverage. Lower urban tree canopy coverage will have downstream effects on air quality, presence of heat islands, and cardiovascular risk.

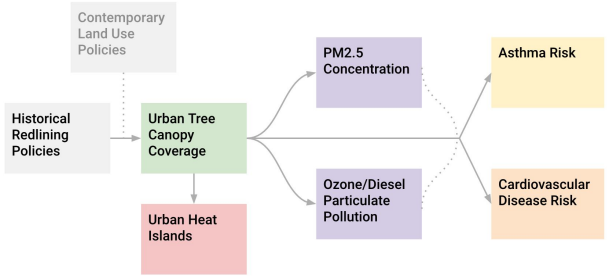
Methodology

First, we use a linear regression to establish that historical redlining policies are a statistically significant factor behind current tree canopy coverage in our data set even controlling for race. Then we use the same technique to show, based on our data, that tree canopy coverage can help mitigate asthma events and cardiovascular events, controlling for age and race.

Data

- LA County Tree Canopy Data
- Mapping Inequality: Redlining in New Deal America
- Residential Housing Segregation and Urban Tree Canopy in 37 US Cities (Locke et al., 2020)
- CalEnviroScreen 3.0 from OEHHA
- CalEPA Urban Heat Island Index

Conceptual Model



Highlights

- A **D-graded neighborhood** is expected to have **20% less urban tree canopy coverage today**, compared to an A-graded neighborhood
- Our model estimates that there is a **0.93 percentile reduction** in the **asthma event percentile for each percentage increase in canopy coverage**
- Holding race constant, our model estimates that there is is a **0.54 percentile reduction** in the **cardiovascular event percentile for each percentage increase in canopy coverage**