The enduring legacy of inequitable exposure to climate stressors

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City of Richmond
Tree Canopy %
NLCD 2011
VULNERABILITY

Richmond's Urban Heat Islands
Afternoon (3-4PM) Temperatures, 7/13/2017

< 94°F
94 - 95°F
95 - 96°F
96 - 97°F
> 97°F

REDLINING MAP (1937)

Hoffman et al., in prep

A B C D
5. Inhabitants

a. **Type** 95% negro

b. **Estimated annual family income** $350 - $750 per year

c. **Foreign-born** empty; 0

d. **Negro** Yes; 95%

e. **Infiltration of** 0

f. **Relief families** High in relation to the whole

g. **Population is increasing** No; decreasing Yes; static

https://dsl.richmond.edu/panorama/redlining/#loc=5/36.457/-88.242&adview=full
5. Inhabitants

a. Type  Best people

b. Estimated annual family income  $7,500 & upward

c. Foreign-born  empty; 0

d. Negro  empty; 0

e. Infiltration of  0

f. Relief families  0

g. Population is increasing yes; decreasing no; static

https://dsl.richmond.edu/panorama/redlining/#loc=5/36.457/-88.242&adview=full
Warmer in formerly redlined areas
More hard, dark surfaces

Hoffman et al., 2020
+4.7°F warmer LSTs in “D” vs. “A” neighborhoods

Hoffman et al., 2020
California cities exhibit higher rates of asthma ED/UCC visits in formerly redlined areas.

Nardone et al., 2020
California cities exhibit higher rates of asthma ED/UCC visits in formerly redlined areas.
Home Owners' Loan Corporation (HOLC)
Neighborhood Redlining Grade

- A (Best)
- B (Still Desirable)
- C (Declining)
- D (Hazardous)

EJSCREEN Indexes 2018
Traffic Proximity
- Data Not Available
- Less than 50th percentile
- 50-60th percentile
- 60-70th percentile
- 70-80th percentile
- 80-90th percentile
- 90-95th percentile
- 95-100th percentile
Poverty
Age (Under 18 and 65+)
Disability
Working Outdoors
Households without access to a vehicle
65+ living alone
Population in emergency and transitional shelters for people experiencing homelessness
Housing cost burden
No central air conditioning

Health Conditions
- COPD
- Coronary Heart Disease
- High Blood Pressure
- Asthma
- Diabetes
- Kidney Disease
- Obesity

Urban heat islands
Thanks!

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