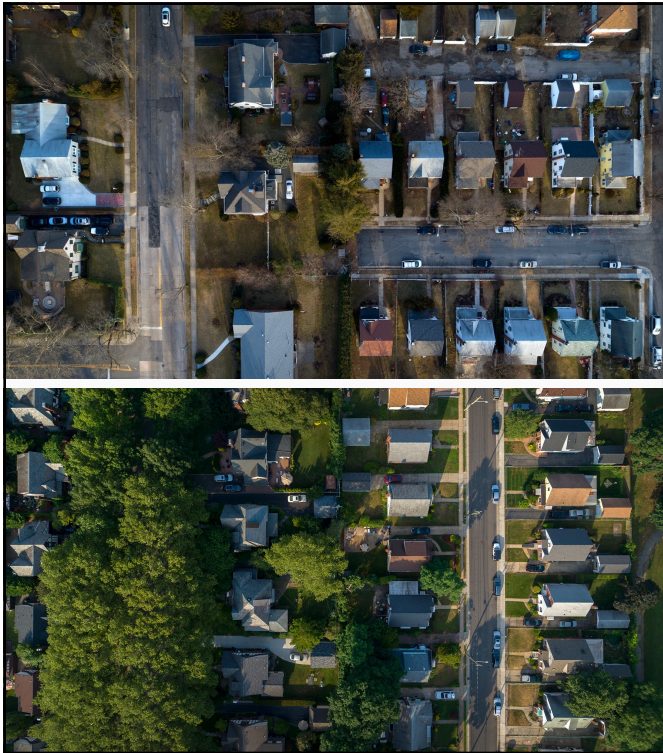




Advancing a Community-Based Participatory Climate Science

The case of urban heat

Vivek Shandas, *Professor*
Portland State University

Current and ancestral lands of the Tualitin, Klackameth, Tillamok, Kalaypuya, Multnomah, Tumwater, Watlala band of the Chinook and many other tribes

1

A bit about me....



As a socio-spatial urban ecologist, I draw on theories of social marginalization, adaptive management, and community resilience to identify the ways in which historical and current-day policy structures generate distributional injustices. My focus is largely on urban areas and regions as places of rapid landscape transformation, power-sharing, and centers of cultural diversity, which together offer a means for improving the dialog about and implications of local decisions. The study of impacts from climate-induced extreme events is a compelling and integrative means for describing the the social, spatial, and structural (institutional) injustices that help to define the necessary work to be done

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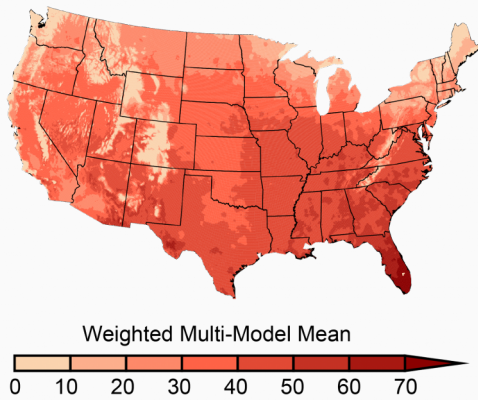
Landscape Legacies



3

The Climate Age

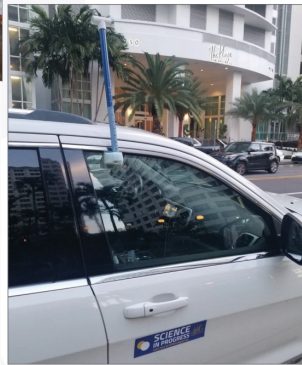
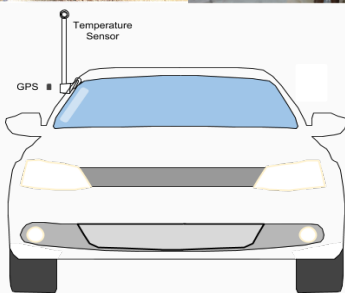
Projected Change in Number of Days Above 90°F
Mid 21st Century, Higher Scenario (RCP8.5)



Source: Yale e360, NOAA

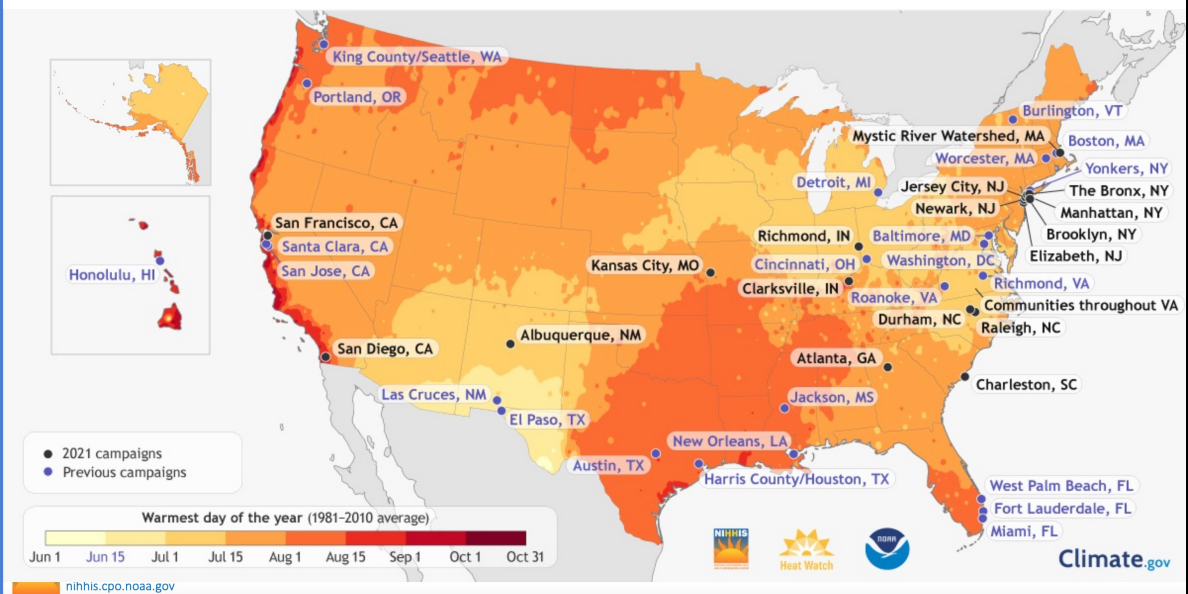
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Community-Based Participatory Climate Science



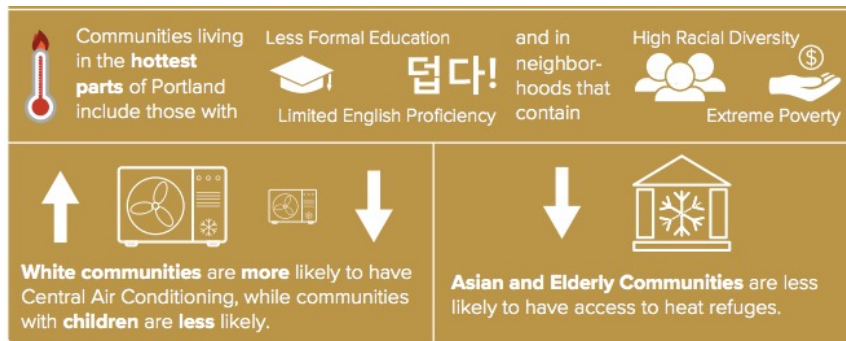
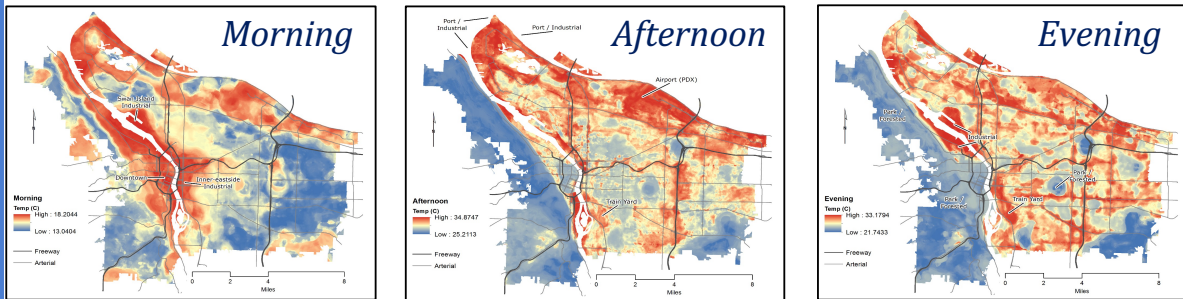
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Mapping Heat with Communities



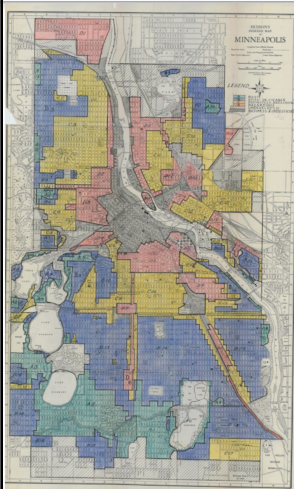
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Air Temperatures and Inequities

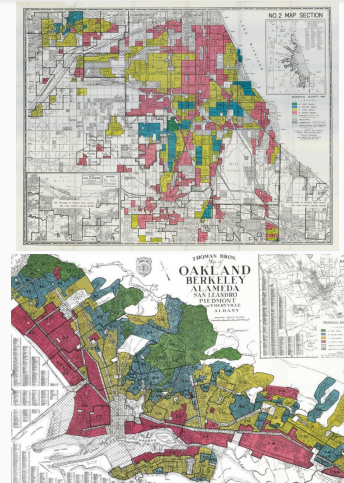
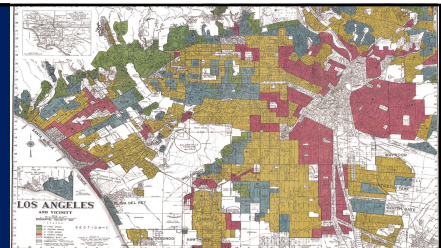


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Federal Planning Decisions

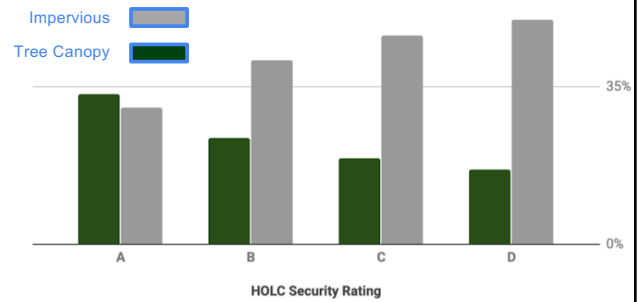
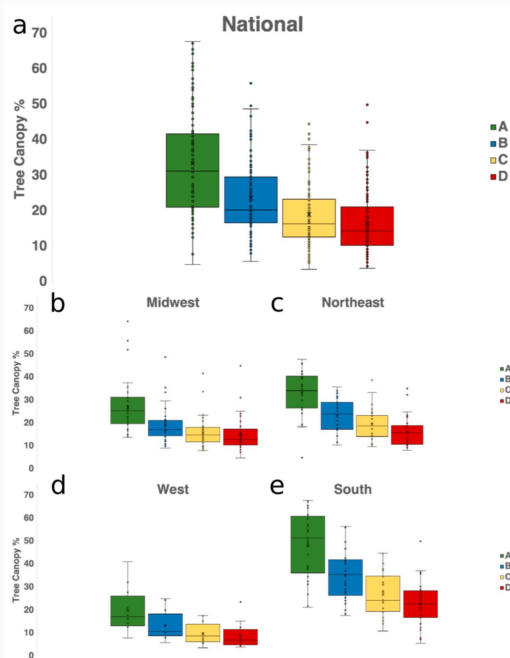


According to [Article XVIII](#) of the State Constitution, “no free negro or mulatto, not residing in this State at the time of the adoption of this constitution, shall ever come, reside, or be within this State, or hold any real estate, or make any contract or maintain any suit therein.”



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Relining and Green Space



Conscious and Deliberate Planning

1. Greater amount of asphalt & pavement
2. Highway projects and big box stores
3. Large-scale housing projects
4. Industrial facilities
5. Lack of parks and green spaces

Hoffman, Shandas, & Pendelton, 2020

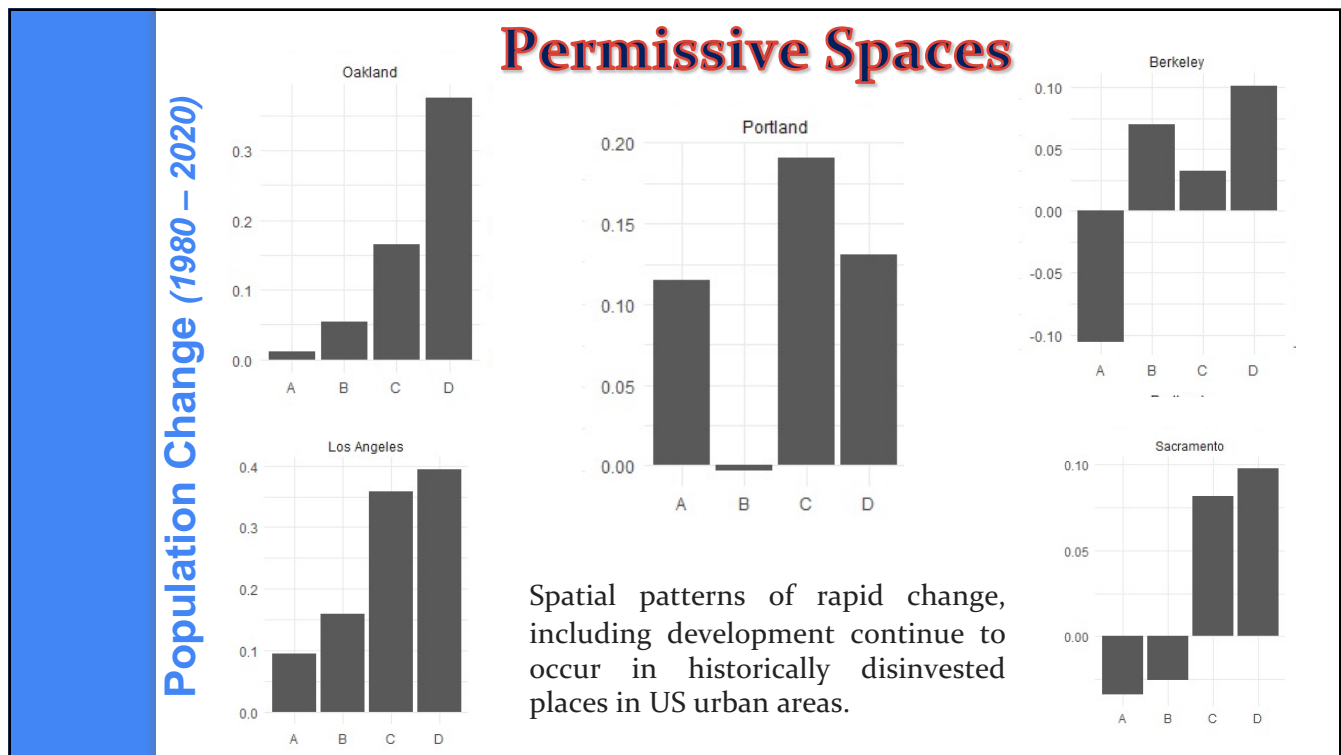
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Redlining & Temperature Differences

Ranking	State	City	D-A Rating Difference (°F)
1	OR	Portland	12.8
2	CO	Denver	12.0
3	MN	Minneapolis	10.8
4	GA	Columbus	10.3
5	FL	Jacksonville	9.9
6	CT	East Hartford	9.7
7	TN	Chattanooga	9.6
8	IN	Indianapolis	9.5
9	VA	Roanoke	9.5
10	PA	Philadelphia	9.4
11	KY	Louisville	9.4
12	MD	Baltimore	9.3

Hoffman, Shandas, & Pendelton, 2020

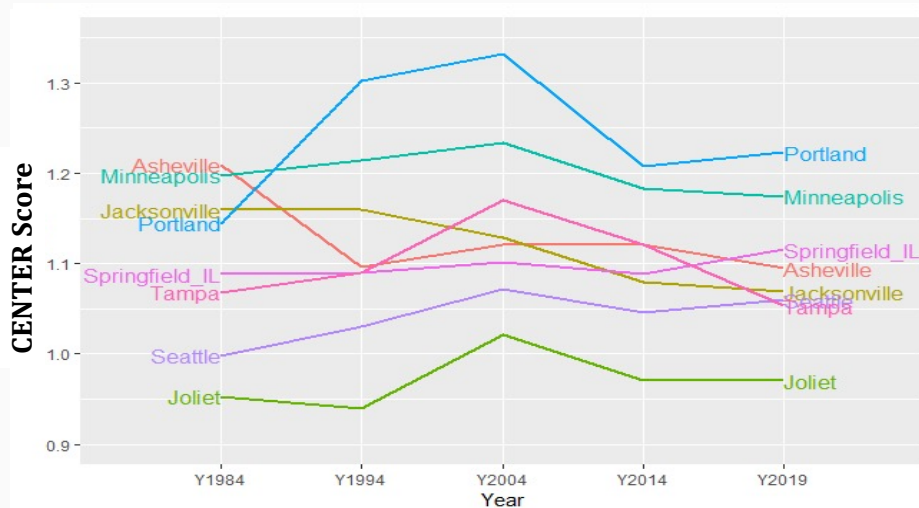
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Neighborhood Greening over Time

By centering disinvested communities in **relation to real and pressing needs**, urban forestry organizations can begin to improve access to ecosystem services provided by trees – understand how different stakeholders relate to greening efforts



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Climate Equity Lens

1. Ground the effort in the principle that all individuals have the right to be protected from climate-induced events.
 - Which communities are experiencing the most acute harms from climate-induced events?
2. Shift the burden of proof from individuals to systemic processes, organizations policies, and management practices that increase impacts to historically marginalized communities.
 - What (or who) is amplifying spatial injustices from climate change?
3. Adopt a public health model of prevention as the preferred strategy to eliminate a threat before it occurs.
 - What can be done to reduce the effects of climate change on the public's health?

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Advancing Cooling Interventions

- Social vulnerability: Which communities are exposed to a greater number and intensity of extreme climate events?
- Community Awareness: How might we ensure that those most vulnerable to climate-induced stressors, like extreme heat, are prepared?
- Distribution of green assets: To what extent do green spaces as cooling interventions exacerbate displacement?
- Transportation: How do we prioritize those climate-based interventions for public transit users and pedestrians?
- Built environment: In what ways do our urban development patterns and designs interact with climate systems to amplify harms in specific areas?
- Housing policy: Can increased housing density be achieved while keeping temperatures the same (or less) than today?

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Three Closing Provocations...

1. The same systems that created these inequities have not changed since the inception of redlining policies.
2. Simply moving trees into disinvested neighborhoods can further amplify existing inequities (e.g. trust, economic insecurities, tree survivorship, etc.).
3. Needed are community-based neighborhood scale engagement campaigns that center on current needs and sharing power.

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Contact

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