Urban Green Resilience Planning & Vulnerability to Future Climate Gentrification

Galia Shokry Postdoctoral Researcher



Department of Environmental and Sustainability Sciences

Co-authors: Drs. Isabelle Anguelovski, James Connolly, Andrew Maroko, and Hamil Pearsall



Image credit: Philadelphia Green City Clean Waters



Laboratory for Urban Environmental Justic and Sustainability



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Key Motivations

- Green infrastructure can have myriad social, health and safety **benefits**.
- Green infrastructure is deployed to enhance climate resilience and economic growth
- Greening tends to be **inequitable** in terms of environmental privilege and environmental burdens
- A new emphasis on equity focused on overburdened neighborhoods



Key Motivations

- Federal Justice 40 Initiative & NJ's Environmental Justice Rules underscore the urgency of equitable planning.
- Overburdened communities also tend to be more exposed to climate risks due to historic housing segregation practices such as redlining.
- A methodology to predict vulnerability to future climate gentrification based on neighborhood sensitivity and adaptive capacity





Research Question:

To what extent do green resilient infrastructure protect vulnerable groups or do they actually lead to new inequities and insecurities? What is Climate (or Resilience) Gentrification?

A process in which climate change risks, impacts and/or adaptations interact with socioeconomic and physical transformations to urban neighborhoods, spurring new inequities.

Climate Gentrification Pathways



 High-income groups move away from high risk to low risk (lower-income) areas

Keenan et al., ERL 2018





Nathan Benn/Getty Images

'Climate gentrification' is coming to Miami's real estate market.

Prospective homeowners often evaluate nearby schools, public parks, and public transportation options. But future homeowners in coastal cities might want to consider another factor before making a down payment: climate change.

Research from Harvard <u>shows a link</u> between elevation and price appreciation in Miami neighborhoods. Properties at higher elevations in Miami-Dade County have been increasing in value since 1971. For the most part, that's been due to non-climate factors. But since 2000, the

Note: Only the study area of Miami-Dade County is shown; jurisdictions in white did not have adequate data for analysis.

Figure 5. Map of random effect regression coefficients for elevation on price appreciation by jurisdiction.

Climate Gentrification Pathways



2. Only wealthy can afford to live in high-risk areas

Keenan et al., ERL 2018

Climate Gentrification Pathways



3. (Public)
Investment in
climate resilience
may indirectly
increase local
property values

Keenan et al., ERL 2018



- Emblematic greening programs against climate risks and impacts
- Urban development trajectory of historic disinvestment and recent gentrification
- Good, high-resolution availability of green spatial data (ongoing and projected) and vulnerability to gentrification factors

Green Resilient Infrastructure (GRI):

Surface-level, vegetated interventions to mitigate climate or environmental risks while enhancing neighborhood attractiveness



GRI programs

Green Schools





Residential Rain Check

Parks





Study 1 – Results Shokry et al., 2020, *Urban Climate*

Social-Ecological Vulnerability 2016

GRI 2000 to 2016



Study 1

Green Resilience Gentrification

Gentrification and GRI 2000-2016



Significant at p<0.01 for Gentrification to GRI

Significant at p<0.01 for GRI to Gentrification score

Study 1

Socially vulnerable residents & neighborhood change





Conditions of gentrified/gentrifiying neighborhoods in Philadelphia









Conditions of new neighborhoods of displaced residents

AD

1 10 m - 100

X

Vulnerability to future climate gentrification

A **customized** vulnerability framework for climate adaptation studies

Exposure	how exposed a social-environmental system is to a particular risk or stressor
	(i.e., green resilient infrastructure)
Sensitivity	factors that down-regulate the system's response to the risk and/or intensify its impact
	(i.e., factors that might augment a neighborhood's likelihood of gentrifying)
Adaptive	factors that improve the system's ability to respond to and/or recover from risks to its well-being
Capacity	(i.e., factors that might mitigate gentrification and/or moderate the likelihood of the displacement of socially vulnerable residents)

Focusing on neighborhood structural and contextual characteristics

Summary Conceptual Framework

Analyzing Vulnerability to Future Climate Gentrification associated with Green Resilience

1. Identify indicators for sensitivity, adaptive capacity, exposure, and social vulnerability



Perceptions of and Responses to Vulnerability to Climate Gentrification

6. Contextualize results through analysis of interviews on perceptions of & response to vulnerability to gentrification

Analyzing Vulnerability to Future Climate Gentrification a

1. Identify indicators for sensitivity, adaptive capacity, exposure



Summary Conceptual Framework

Results for Vulnerability to Gentrification Index

More GRI planned for tracts that are:

- Sensitive to gentrification the most numerous tract typology
- And for wealthier and gentrified central city areas
- + those adjacent undergoing economic reinvestment:

Urban renewal

New private housing developments and major renovations

Empowerment and Opportunity Zones

Historic districts



Perceptions of & responses to vulnerability to future climate gentrification

To ground truth and expand the interpretation of our quantitative findings



- Semi-structured interviews
- w/ community representatives, city activists, environmental non-profits, planners and policy makers
- Understand GRI procurement and implementation
- Perceptions of greening
- Perceptions of gentrification pressures and anti-displacement strategies

Image from Whyy

Implementing GRI equitably

We need to be well-meaning environmental organizations. We can't just be pushing this one solution of 'environment is good' because we know what that has meant for the last 120 years – environment is good – well for sure for a certain swab of people who have privilege is what that has meant.

- Employee, national conservation organization





Implementing GRI equitably





We're trying to come to terms with the fact that no matter what the intention is, no matter what long-time resident community leader plants the tree, the property value goes up and it becomes a more desirable place to live and the people with more money – they're the ones that get to have their desires fulfilled.

- City employee, environmental program

Reinforcing anti-displacement capacity and environmental protection



People may think that we're too early, we're not. There are a lot of organizations that are now too late. [...] If you wanted to do something in certain areas, it's just harder now because you already have development happening and now you cannot purchase property at the rate that you could have purchased property before. Neighbors are selling their homes so they're already being pushed out. Once that's happening, you're a bit too late.

- CBO employee, Hunting Park neighborhood



Don't fix it. Sell it.



Reinforcing anti-displacement capacity and environmental protection



Neighborhoods that get wiped out by gentrification are the least organized and the least prepared - they didn't see it coming.

- CBO employee, East Parkside neighborhood



Don't fix it. Sell it.



Key Takeaways

- Vulnerable residents face a perpetual **double insecurity** and displacement risk one by climate risks and impacts and the other by climate gentrification.
- Displacement and re-exposure to climate risks will continue to be perpetuated ... even with an equity lens
- Our customized vulnerability assessment provides a tool for predicting the extent to which socially vulnerable residents may be at risk of climate gentrification
- There is a need to **mitigate harmful development while bolstering social infrastructure**, i.e., affordable housing, but much, much more... to <u>prevent</u> displacement



Funding from recent NSF grant
Mapping vulnerability to climat

NJ's coastal cities and

towns

- Mapping vulnerability to climate gentrification & Stakeholder workshops
- A program of prediction and prevention in NJ coastal cities and towns
- Please contact me if you would like to know more, provide feedback and/or collaborate.

Study 1:

Shokry, et al., 2020, Understanding climate gentrification and shifting landscapes of protection and vulnerability in green resilient Philadelphia, *Urban Climate*

Study 2:

Shokry, et al., 2022, "They didn't see it coming": Green resilience planning and vulnerability to future climate gentrification, *Housing Policy Debate*

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Social-Ecological Type Indicators

Social Vulnerability Variables

- poverty status
- unemployed
- non-Bachelor's degree holders
- aged over 65
- single-parents
- minorities
- limited English language proficiency

Biophysical Environmental Variables

- FEMA 100-year floodplain
- Combined Sewer System (CSS) area
- Impervious surfaces data 2004

Social-Ecological Vulnerability

2000

