

# NYC: Landscape, Extreme Heat & Equity

**Emily Nobel Maxwell**

**Director**

**Cities Program, New York, The Nature Conservancy**

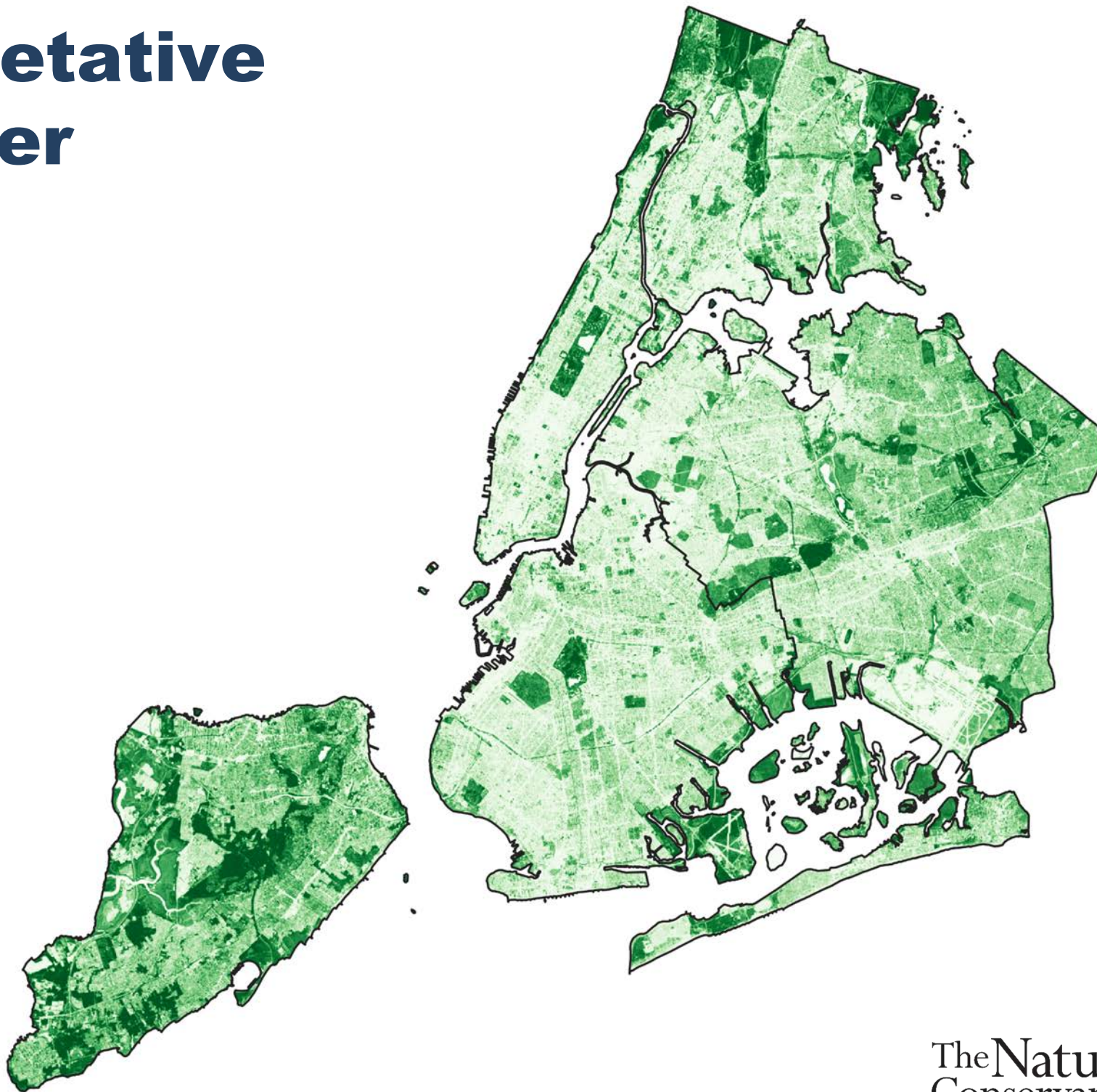


# Who We Are

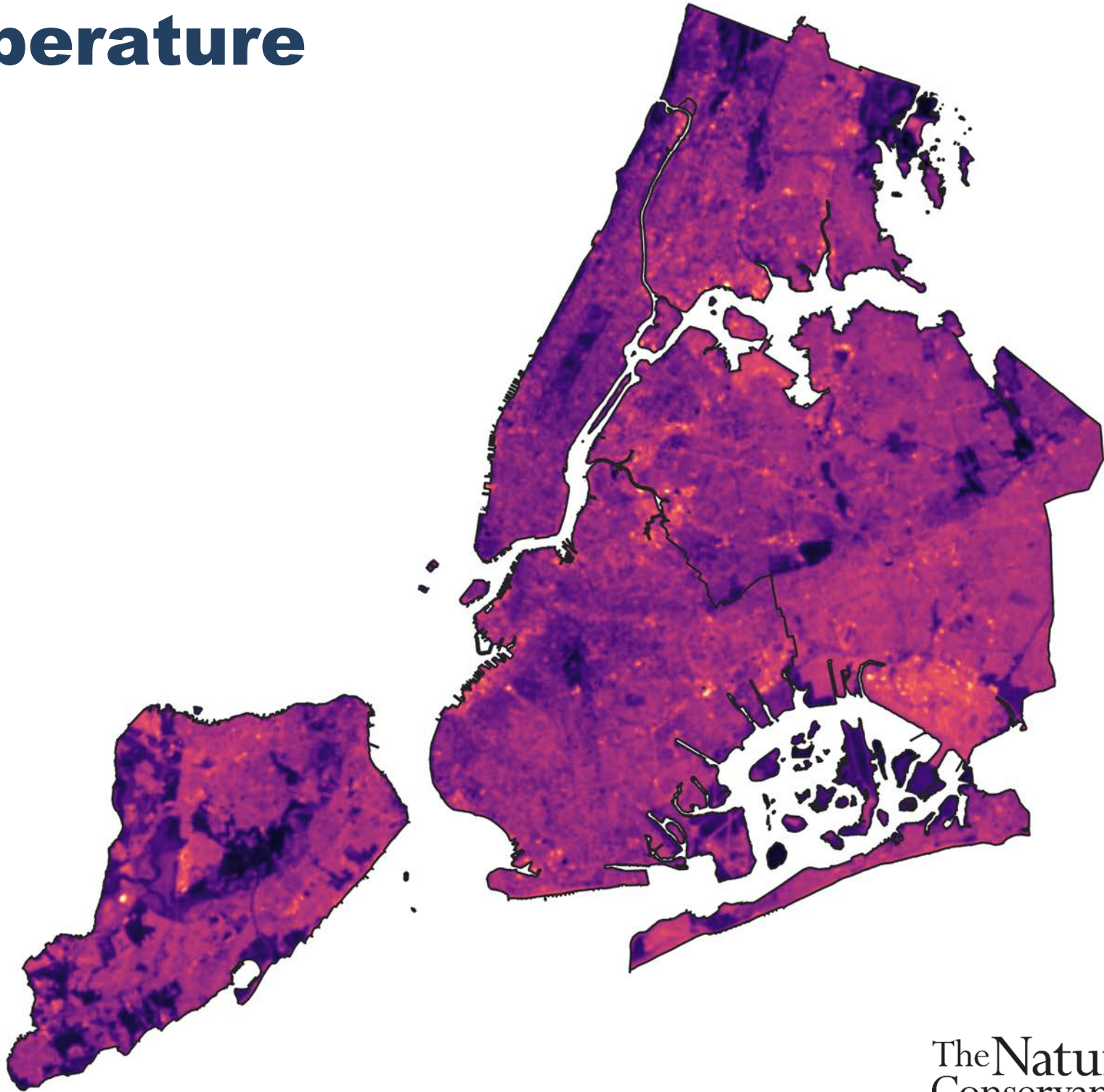
The mission of The Nature Conservancy is to conserve the lands and waters on which all life depends.



# Vegetative Cover

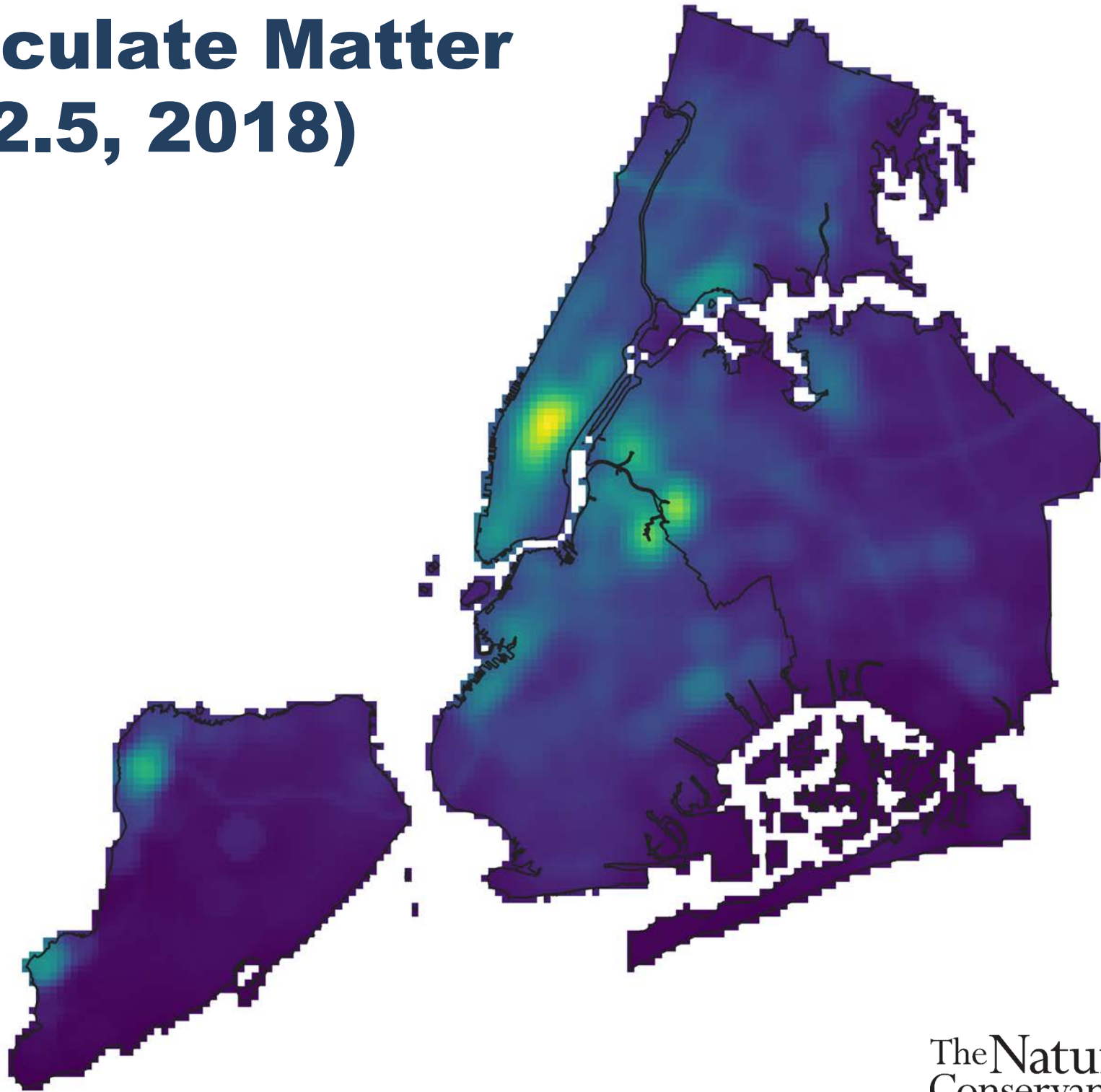


# Temperature

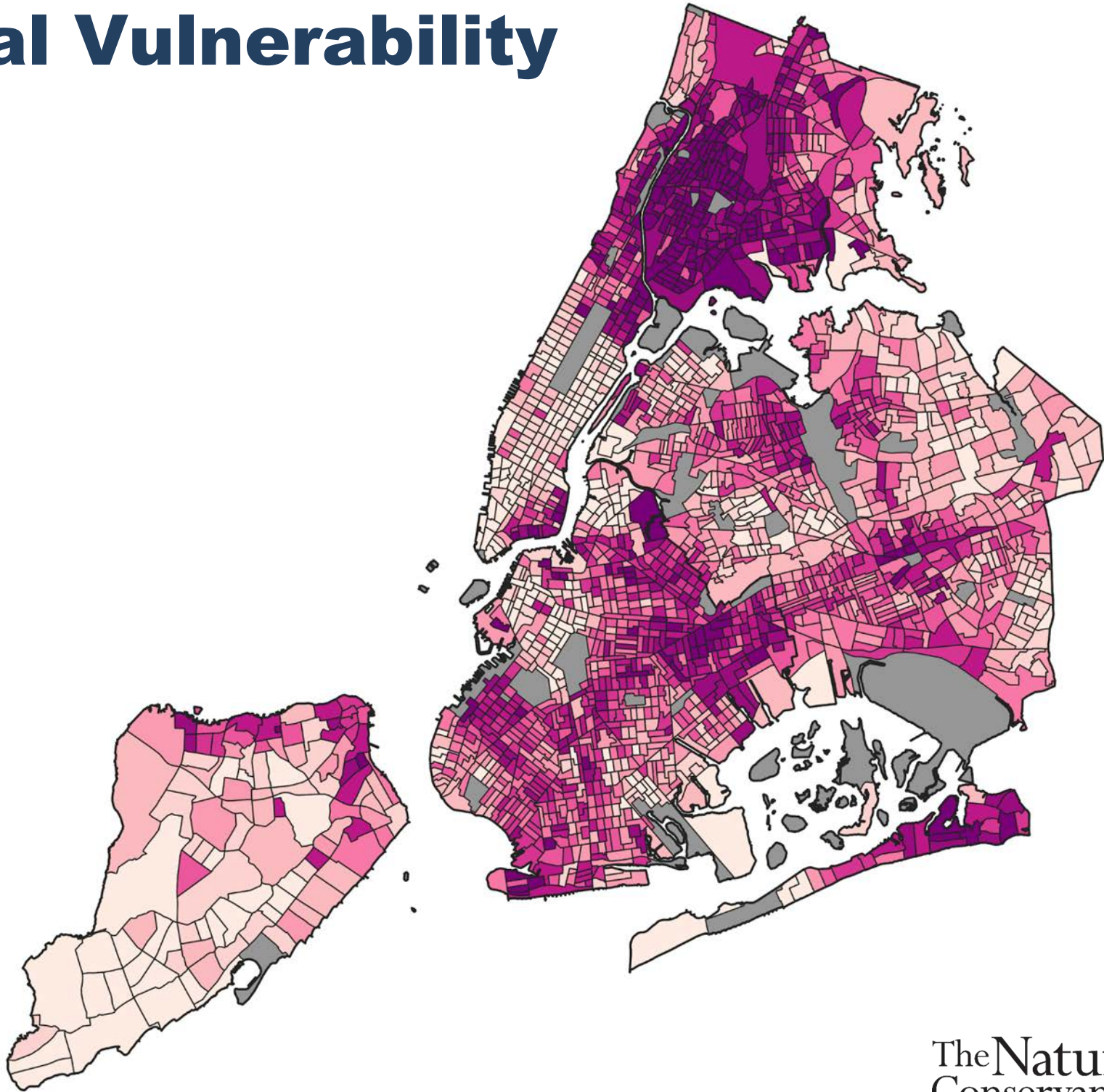




# Particulate Matter (PM 2.5, 2018)



# Social Vulnerability













# Roofs: An untapped asset





**>1 Million Buildings**

**40,000 acres**



# Green Roof Benefits

- 21-26% Reduction in Building Energy Use
- Significant Stormwater Absorption
- Reduced Air Temperatures and Air Pollution
- Multi-functional Space
- Extends Roof Lifespan





# **First Assessment of Green Roofs in NYC**

**How Many?**

**736**

**Where?**

**Mostly Midtown and Downtown**

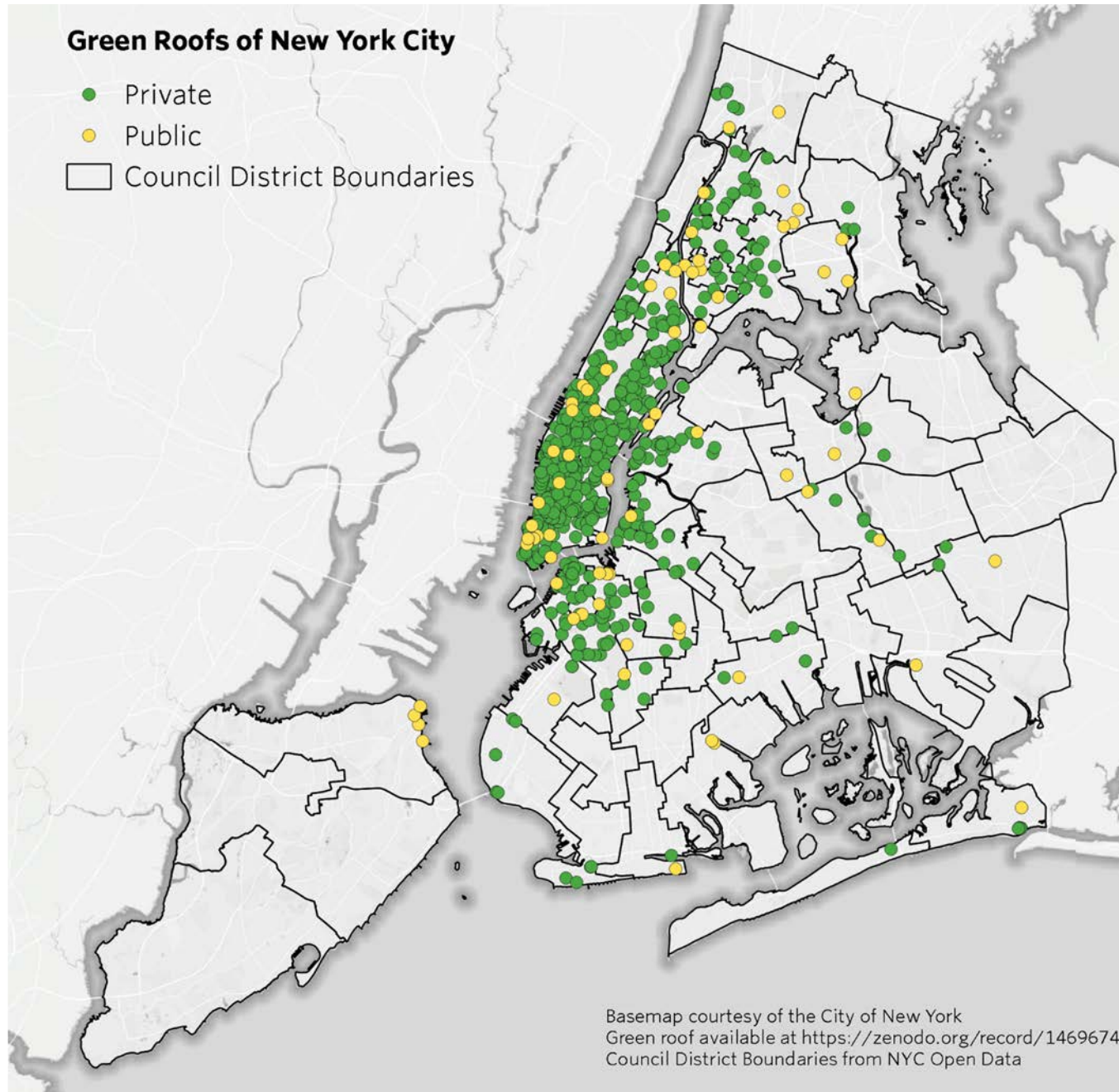
**Manhattan**

**What Types of Buildings?**

**Primarily Privately Owned Residential  
& Institutional**

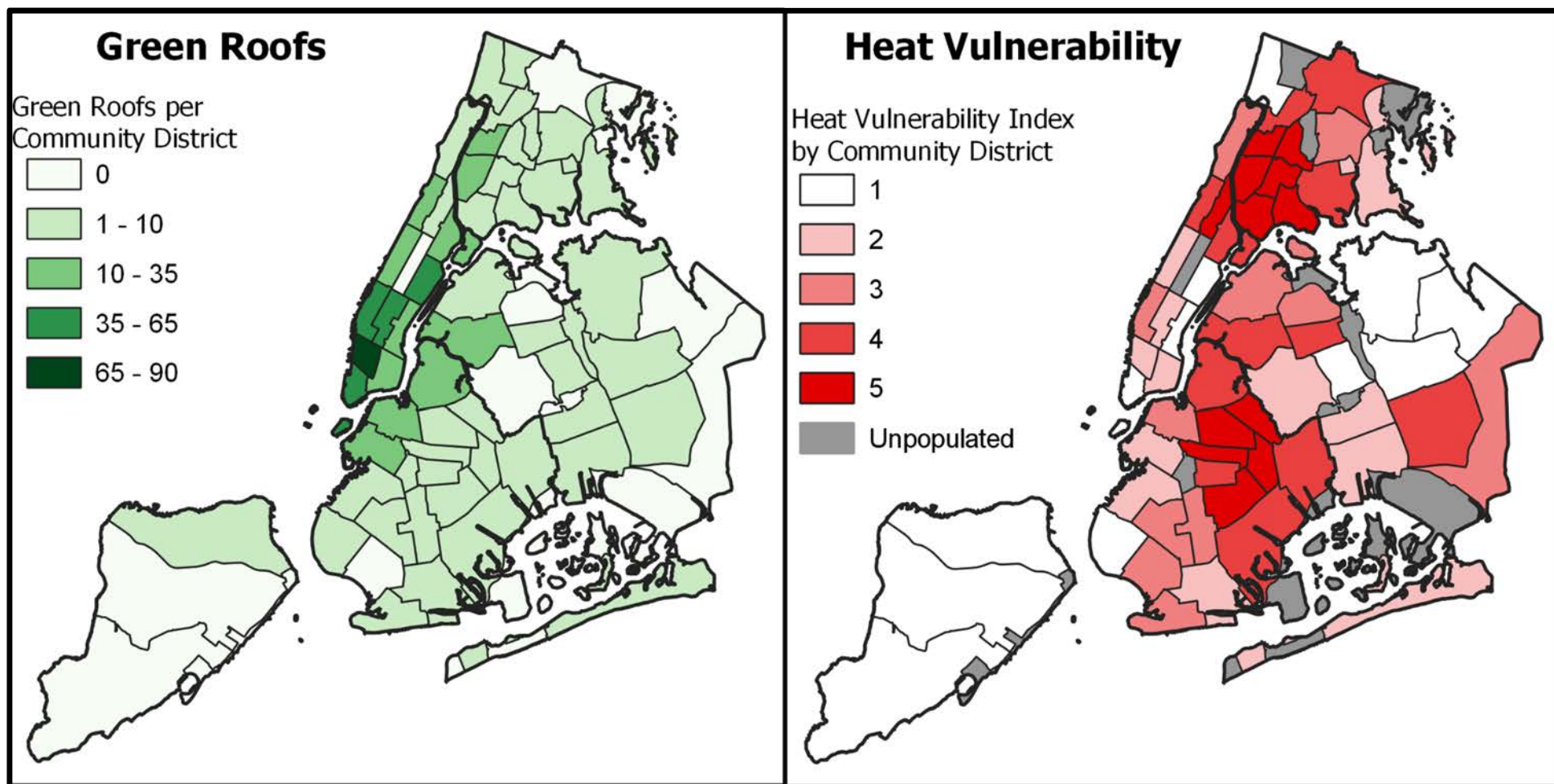


# Only 0.07% of all rooftops have a green roof



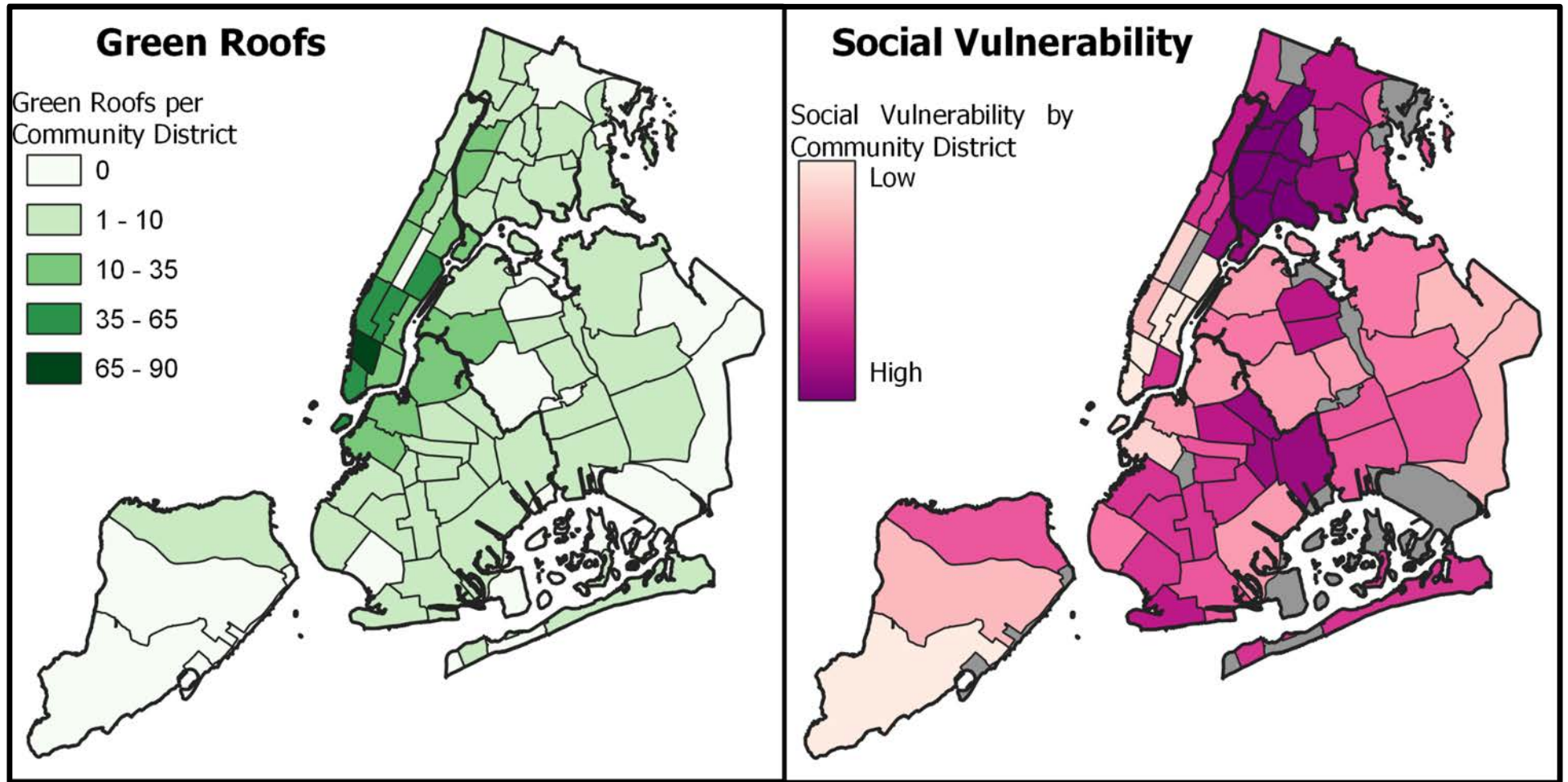


# Inequitable Distribution: Heat





# Inequitable Distribution: Social Vulnerability





# Urban Forest





*Photo credit: Diane Cook and Len Jenshel*

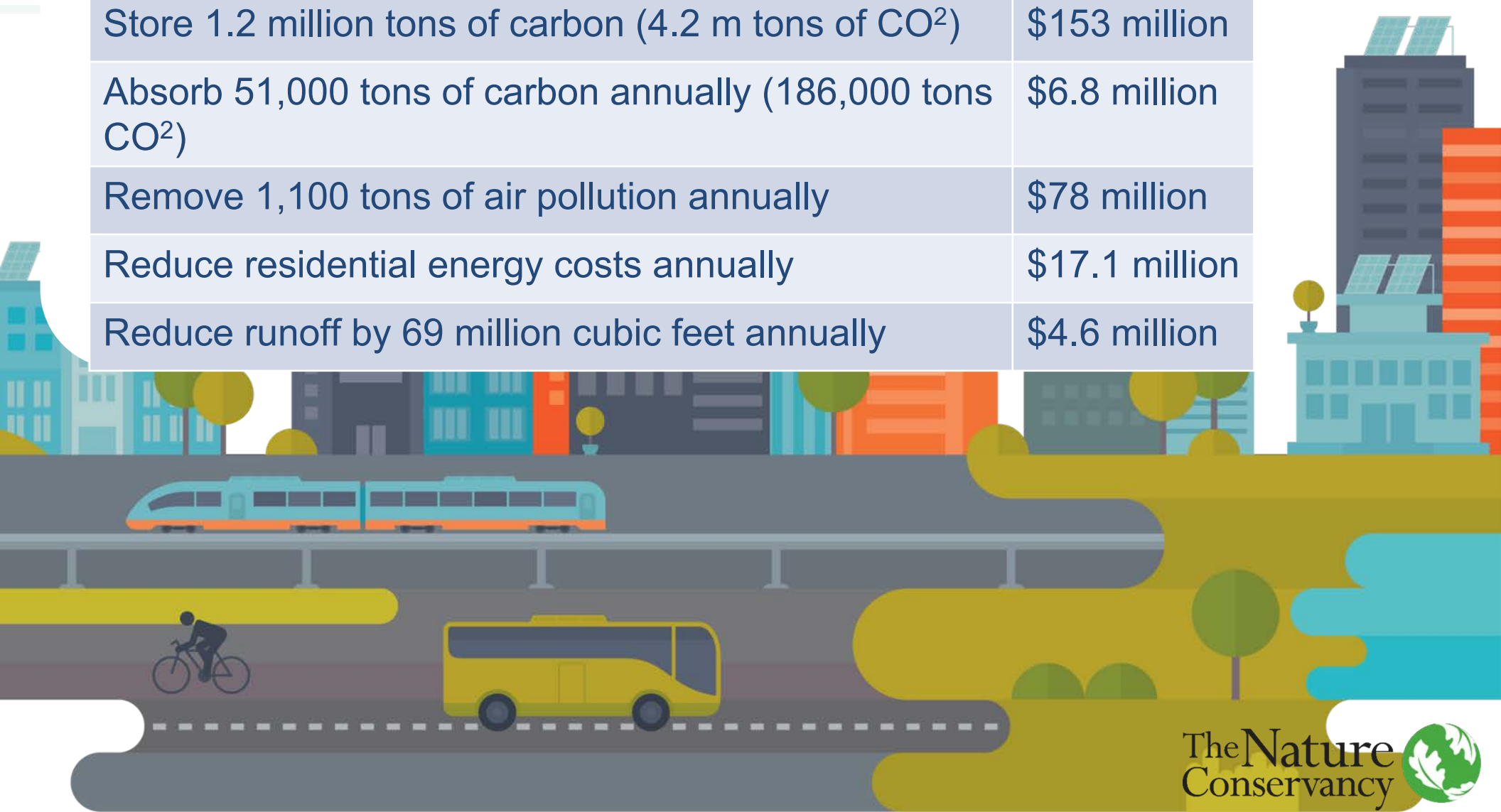
# NYC Trees: the Basics

- Approximately 7 million trees
- 666,134 street trees
- 22% percent of land covered by tree canopy
- At least 138 Species of Trees in NYC
- Spread across a variety of land uses and ownership types



# NYC Trees: Annual Services

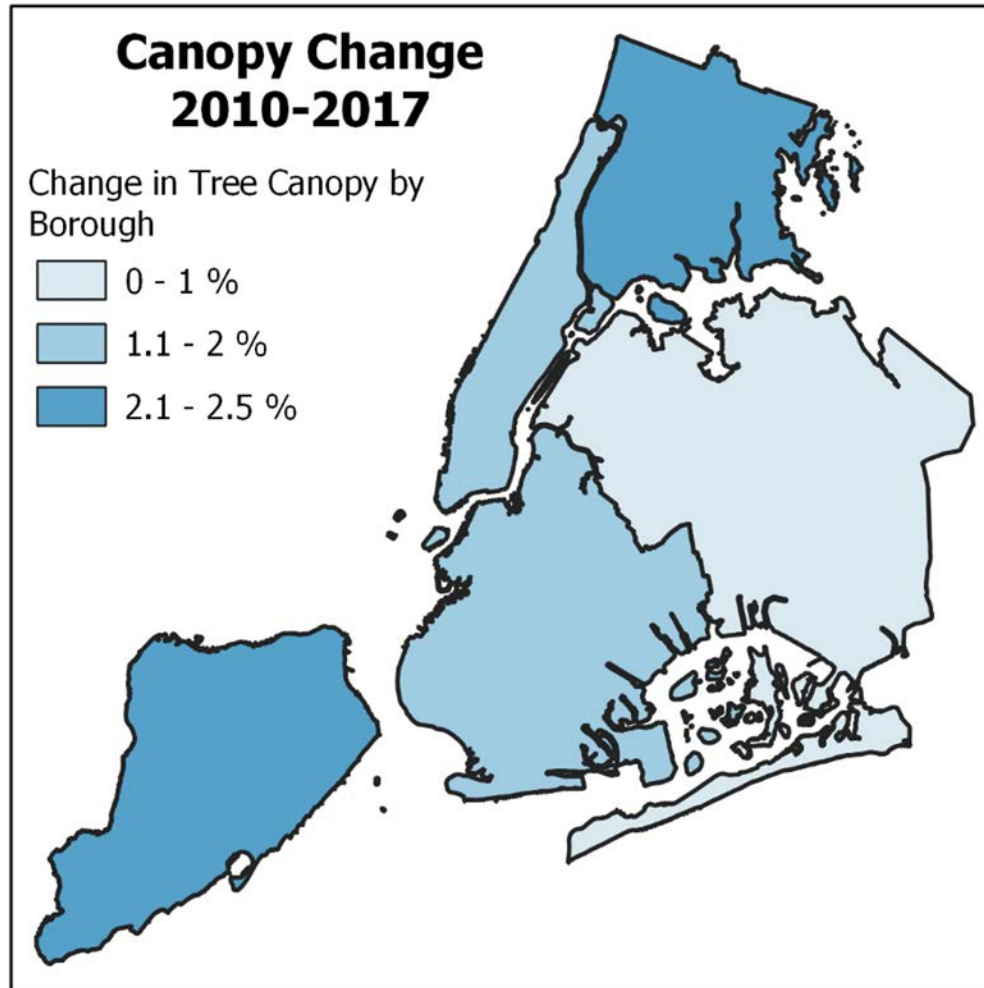
Replacement value (one-time)	\$5.7 billion
Store 1.2 million tons of carbon (4.2 m tons of CO <sup>2</sup> )	\$153 million
Absorb 51,000 tons of carbon annually (186,000 tons CO <sup>2</sup> )	\$6.8 million
Remove 1,100 tons of air pollution annually	\$78 million
Reduce residential energy costs annually	\$17.1 million
Reduce runoff by 69 million cubic feet annually	\$4.6 million





# Canopy Change Over Time

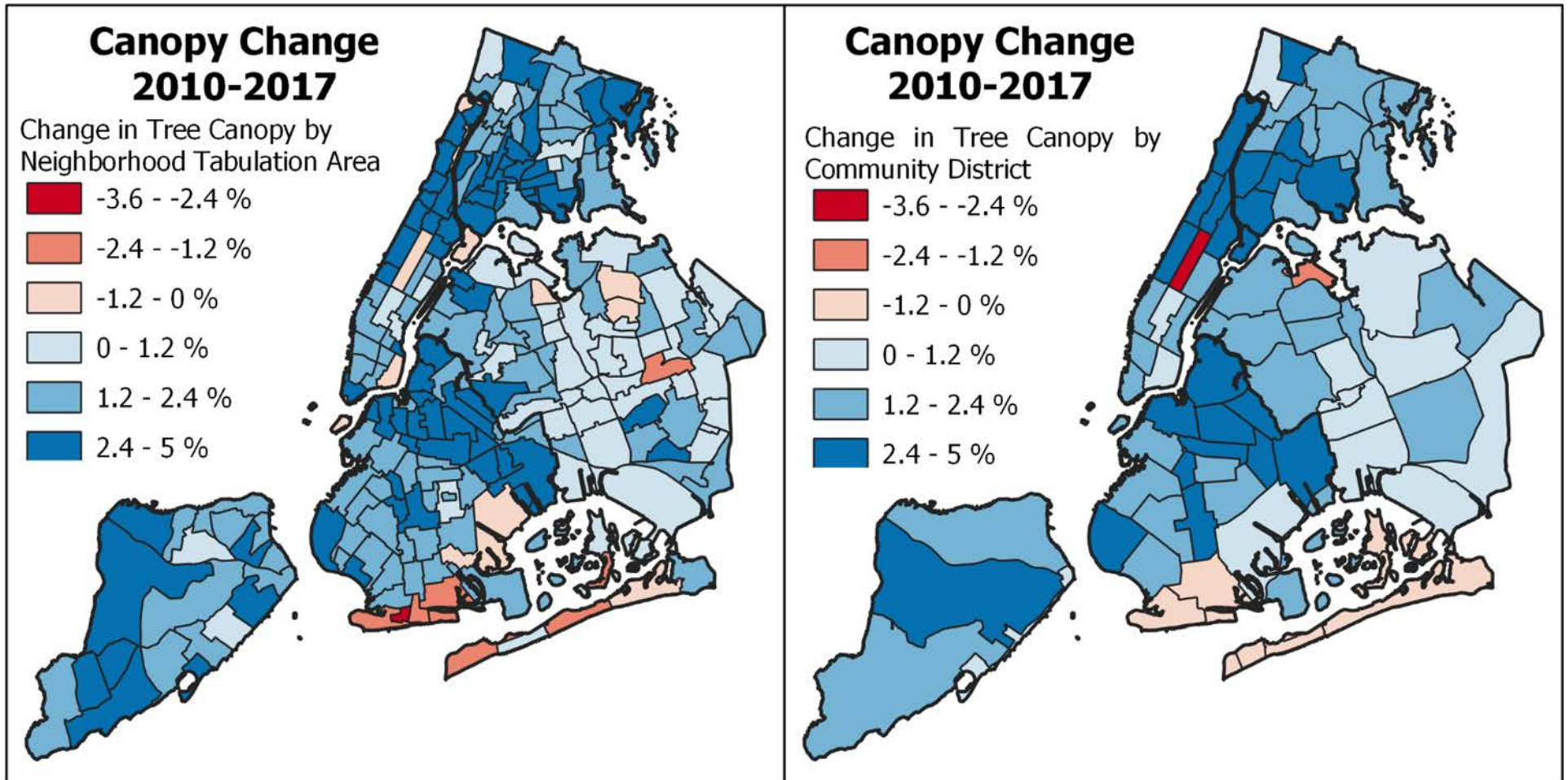
## By Borough





# Canopy Change Over Time

By Neighborhood Tabulation Area and Community District





# Tree Canopy and Heat Vulnerability

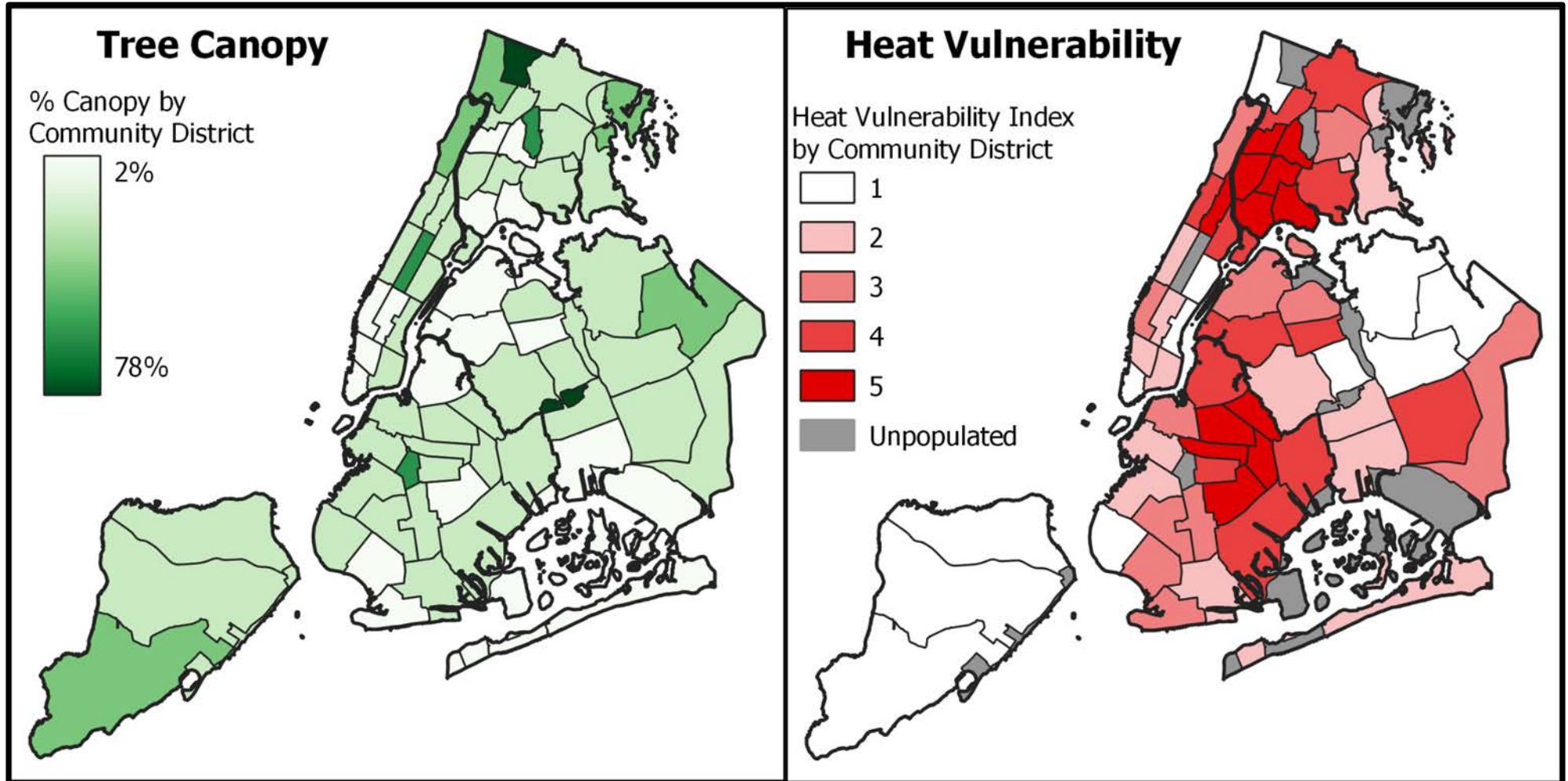


Figure Credit: New York City Environmental Justice Alliance and The Nature Conservancy



# Just Nature NYC

Our Just Nature NYC Partnership with NYC Environmental Justice Alliance advocates more nature-based solutions, especially trees, across New York City to support climate justice and equity.





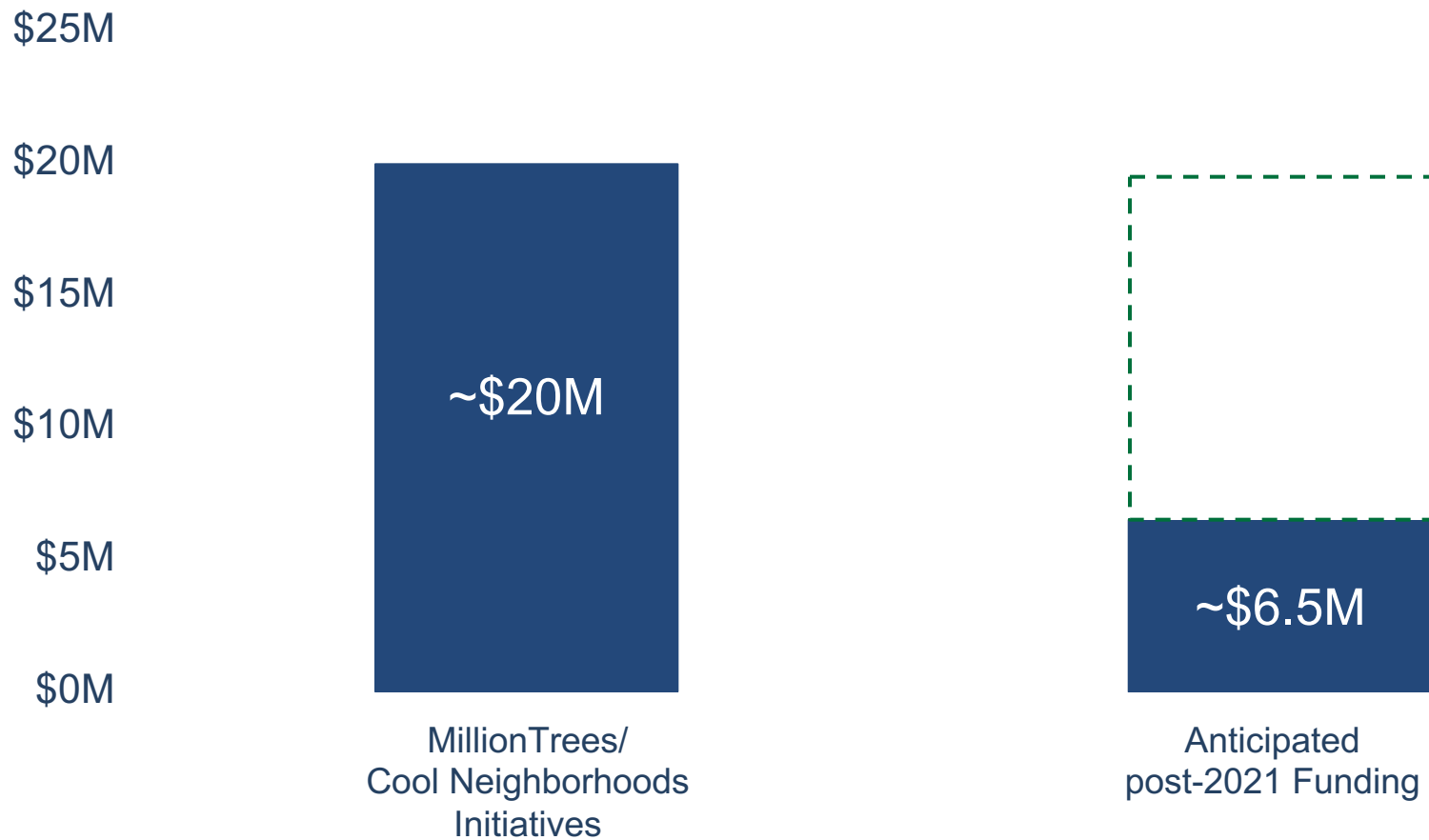
*Photo credit: Diane Cook and Len Jenshel*

# NYC Trees: Challenges Faced

- No powerful advocates/leadership
- Disparate management & inequitable distribution
- Lack protection
- Climate change
- Pests and pathogens



# Budget Challenges



■ Annual Tree-Related Capital Commitments



# NYC Urban Forest Task Force

Bjarke Ingels Group  
Brooklyn Botanical Garden  
Citizens Budget Commission  
Citizens Committee for New York City  
City University of New York  
Con Edison  
Coney Island Beautification Project  
Davey Resource Group  
Design Trust for Public Space  
Drexel University  
El Puente  
Gowanus Canal Conservancy  
Green City Force  
Hudson Square Business Improvement District  
Jackson Heights Beautification Group  
Long Island City Partnership  
National Wildlife Federation  
Natural Areas Conservancy  
New York Cares  
New York League of Conservation Voters  
New York Restoration Project  
New Yorkers for Parks  
NYC Department of Health and Mental Hygiene  
NYC Department of Parks and Recreation  
NYC Environmental Justice Alliance

NYC Housing Authority  
NYC Soil & Water Conservation District  
NYS Department of Environmental Conservation  
NYU Langone Health  
Partnerships for Parks  
Queens Botanical Garden  
Real Estate Board of New York  
Rutgers University  
Snug Harbor Cultural Center & Botanical Garden  
Starr Whitehouse  
The Earth Institute at Columbia University  
The Evergreens Cemetery  
The Nature Conservancy  
The New School  
The New York Botanical Garden  
The Trust for Governors Island  
Trees New York  
Tri-Lox  
Trust for Public Land  
Urban Arborists  
Urban Systems Lab  
USDA Forest Service  
Wave Hill  
West 80s Neighborhood Association  
Whitman Nurseries





Photo credit: US Navy/flickr.com

# Recommendations

- Ensure rules and incentives to promote justice, equity, expansion and better distribution of green roofs
- Preserve and increase funds for urban forestry, both capital and operational
- Advance and expand Cool Neighborhoods program
- Play Fair for Parks: ensure adequate funding for parks and green jobs for New Yorkers





Photo credit: US Navy/flickr.com

# Thank you!

Emily Nobel Maxwell  
Director, Cities Program, NY  
[emaxwell@tnc.org](mailto:emaxwell@tnc.org)