

# Mitigating the Socioeconomic Impacts of Climate Change

TH305

Thursday, June 21, 2018, 8:45am – 9:45am

1 CEU

This presentation is protected by U.S. and international copyright laws.

Reproduction, distribution, display and use of the presentation without written permission of the speaker is prohibited.

This program is registered with the AIA/CES for continuing professional education. As such, it does not include content that may be deemed or construed to constitute approval, sponsorship or endorsement by AIA of any method, product, service, enterprise or organization.

The statements expressed by speakers, panelists, and other participants reflect their own views and do not necessarily reflect the views or positions of The American Institute of Architects, or of AIA components, or those of their respective officers, directors, members, employees, or other organizations, groups or individuals associated with them.

Questions related to specific products and services may be addressed at the conclusion of this presentation.

# Course / Learning Objectives

- Examine the ways in which underserved populations (nationally and internationally) are disproportionately, negatively impacted by the effects of climate change.
- Analyze the positive impact of potential interventions such as cooling stations, public transit, emergency shelter, and charging stations.
- Identify the value proposition in providing resiliency-minded amenities, such as facilitating the approvals process and attaining community buy-in, marketing investment, and reduced-cost insurance.
- Explore available funding mechanisms for climate-change initiatives that can benefit vulnerable communities.

# Course Focus

- Explore why already underserved populations are the most vulnerable.
- Identify interventions that can reduce this impact.
- Examine the value proposition for the larger community.
- What is the role of architects in all this?



# Nicole Voss, AIA

Project Architect at Arrowstreet



# Angela O'Byne

FAIA, NCARB, LEED AP

President, Perez



# Emily Zimmer, AIA

Architect, Disaster Recovery & Resiliency



# Brian Swett

Director of Cities and Sustainable Real Estate

Arup, Boston

# City Resilience Index



**A'18** AIA Conference on Architecture 2018  
June 21-23, New York City



2. Diverse livelihoods & employment

2.1.2: To what extent is there a public aid system that is inclusive for all (dependent on need)?

Quantitative metrics	Preferred metric
	Percentage of population living below national poverty line (UNSDN, 2015)



9. Reliable communications & transport

9.1.2: To what extent does the city provide a diverse, affordable public transport system?

Quantitative metrics	Preferred metric
	Percentage of commuters using a travel mode other than a personal vehicle (as a percentage of total commuters) (ISO 17120)



11. Empowered stakeholders

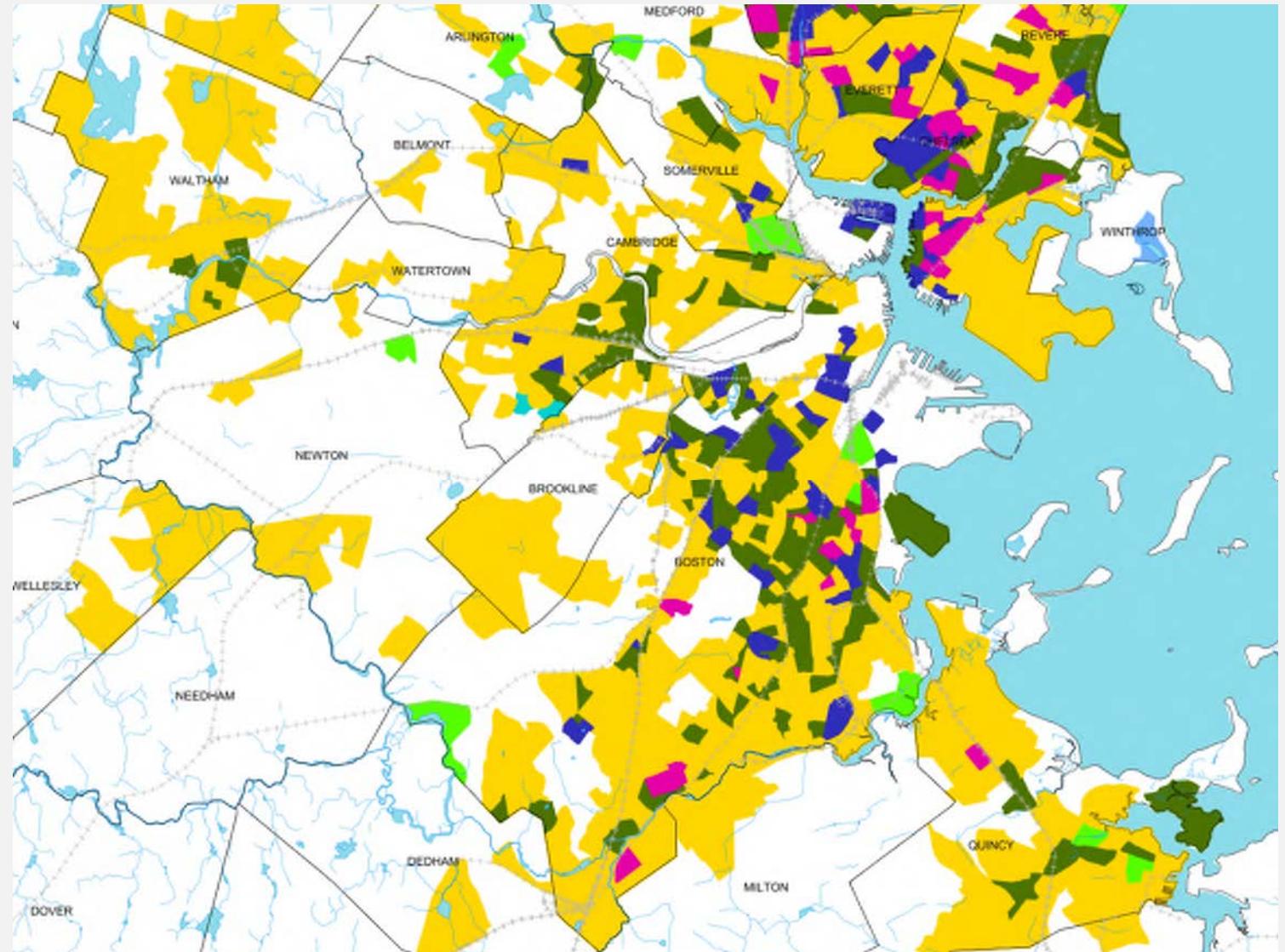
11.1.1: To what extent is quality education accessible and affordable to all?

Quantitative metrics	Preferred metric
	Percentage primary education completion rates (Adapted from World Bank)

# Boston Environmental Justice Areas



Source: MassGIS Environmental Justice Viewer



# Climate Ready Boston: Social Vulnerability Indicators



Social vulnerability is defined as the disproportionate susceptibility of some social groups to the impacts of hazards, including death, injury, loss, or disruption of livelihood.

Source: Climate Ready Boston, 2016

# Climate Ready Boston: Flooding & Vulnerable Populations

1% Annual Coastal Flood Risk: 2070s



Social Vulnerability: Low Income



Social Vulnerability: People Of Color



Social Vulnerability: Children



Social Vulnerability: Limited English



Social Vulnerability: Disability



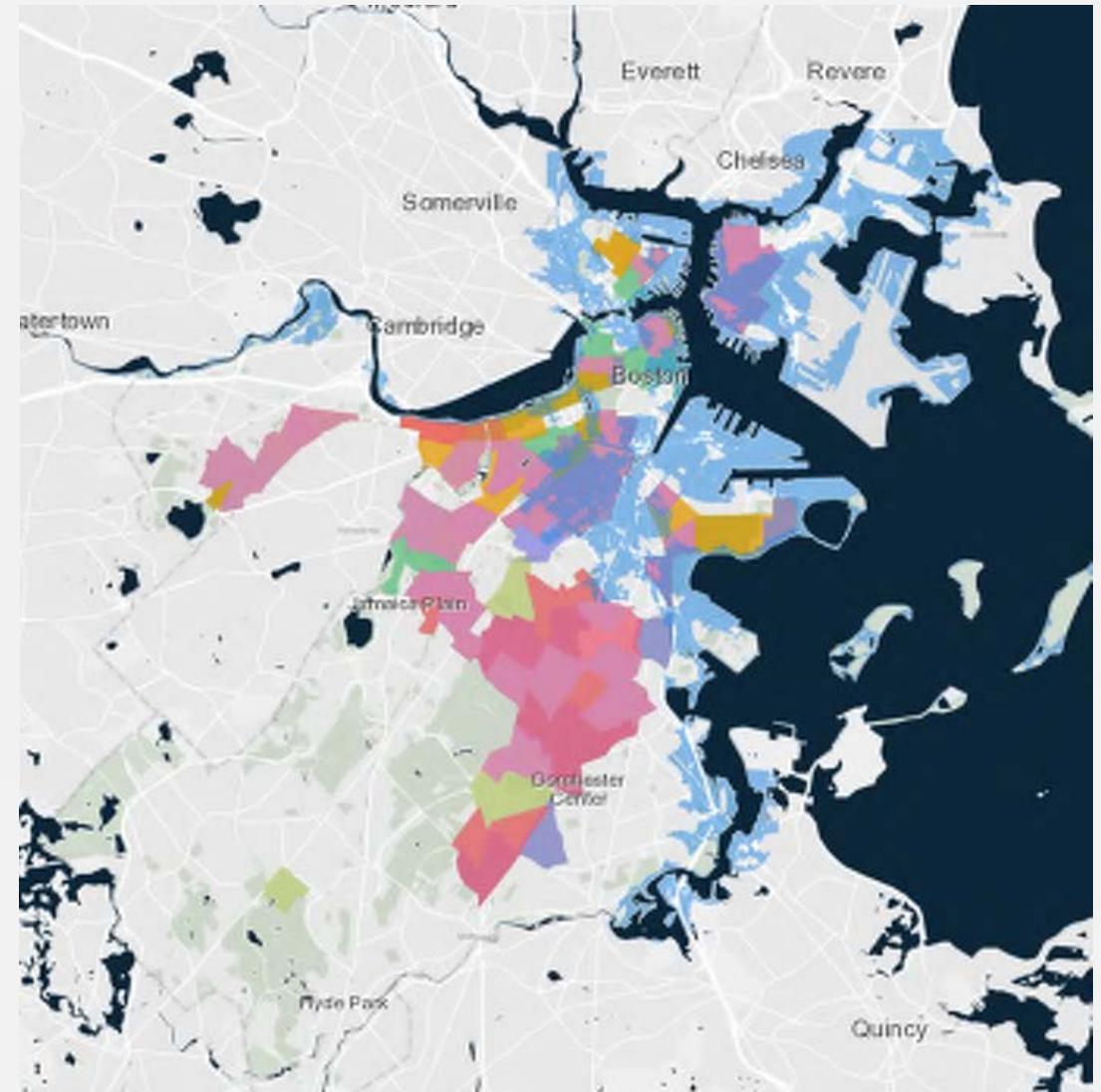
Social Vulnerability: Medical Illness



Social Vulnerability: Elderly

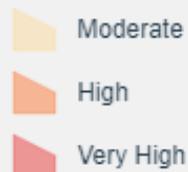


Source: Climate Ready Boston, 2016



# Climate Ready Boston: Urban Heat Island & Vulnerable Populations

## Heat: Daytime Land Surface Temp



## Social Vulnerability: Low Income



## Social Vulnerability: People Of Color



## Social Vulnerability: Children



## Social Vulnerability: Limited English



## Social Vulnerability: Disability



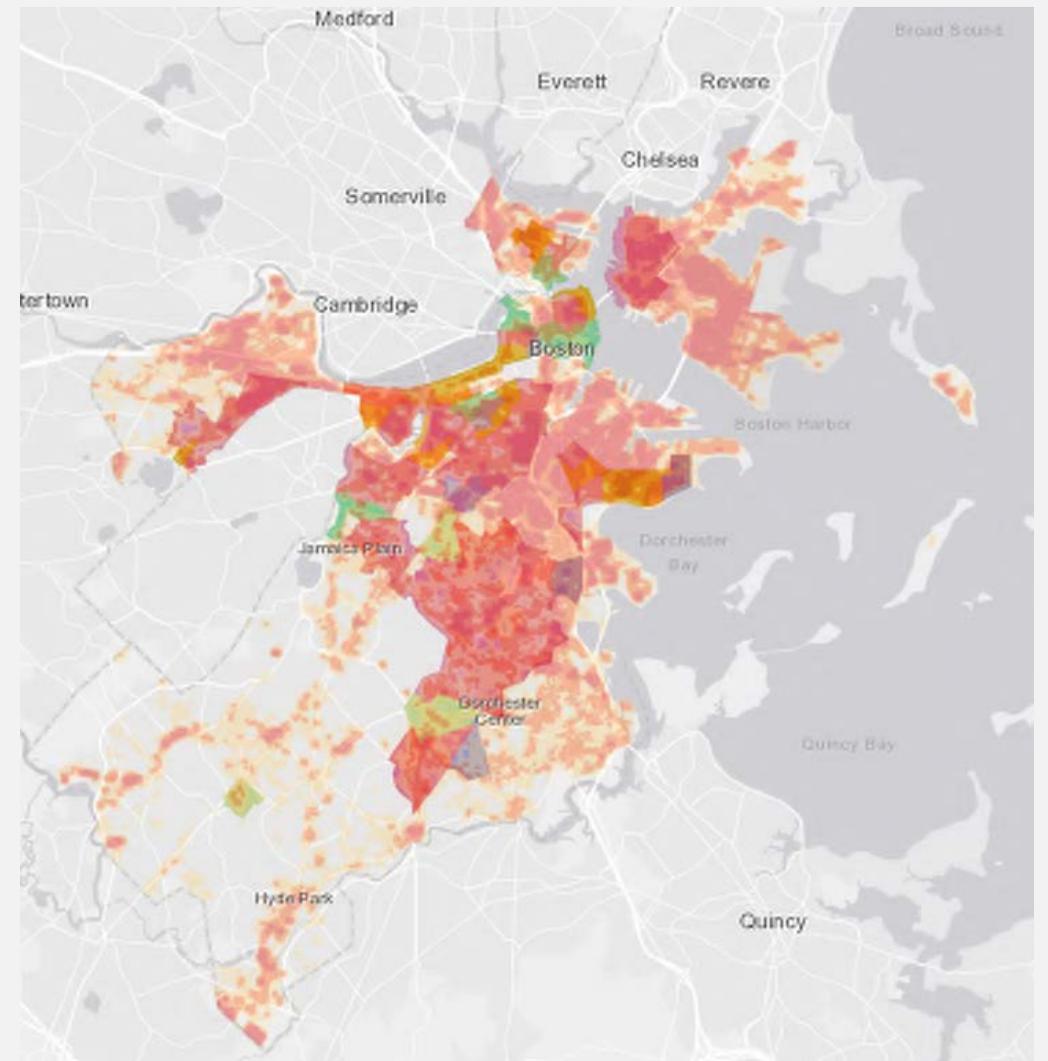
## Social Vulnerability: Medical Illness



## Social Vulnerability: Elderly



Source: Climate Ready Boston, 2016



# Climate Ready Boston: Flood Losses & Population Exposure



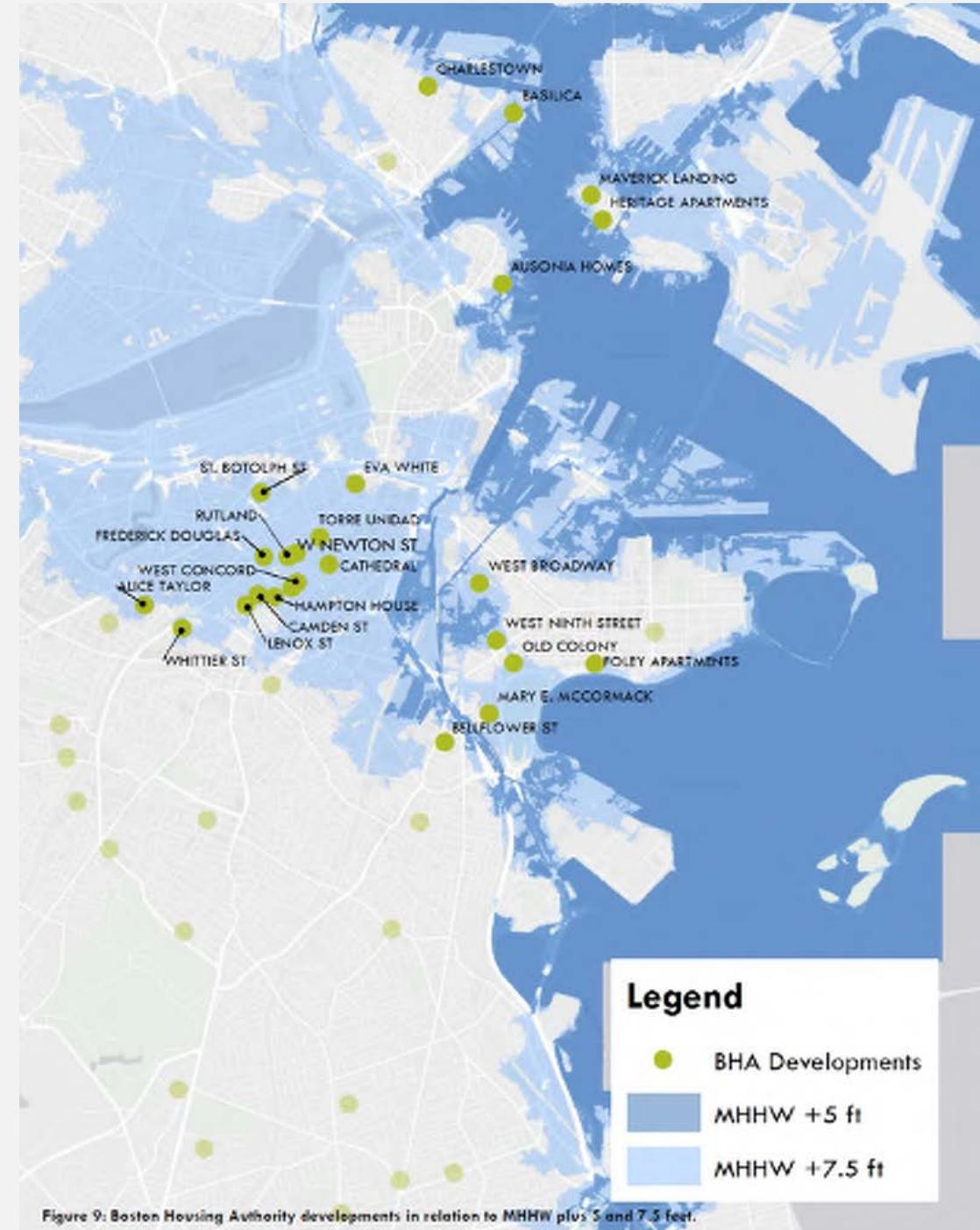
Source: Climate Ready Boston, 2016

**POPULATION EXPOSED BY SEA LEVEL RISE CONDITION**

Neighborhood	Total	9" SLR (2030s - 2050s)				21" SLR (2050s - 2100s)				36" SLR (2070s or later)			
		AMHT	10%	1%	0.10%	AMHT	10%	1%	0.10%	AMHT	10%	1%	0.10%
East Boston	40,500	280	800	7,000	14,670	770	9,090	14,700	18,500	6,300	18,180	19,070	20,410
Downtown	30,020	630	2,190	4,680	9,800	860	3,770	9,940	12,810	2,990	11,120	15,950	16,090
South Boston	31,780	100	1,680	2,330	6,400	100	3,090	7,340	9,210	2,270	8,750	10,940	12,280
Dorchester	87,380	0	150	340	5,740	20	3,530	5,100	6,590	160	5,760	6,820	9,700
Charlestown	16,430	350	400	1,340	3,600	350	2,530	3,730	4,750	1220	3,920	5,180	5,540
South End	38,600	0	0	0	230	0	0	240	23,350	0	24,980	27,400	35,940
Back Bay/Beacon Hill	22,600	0	0	0	0	0	0	0	1,920	0	10	4,630	13,650
Roxbury	71,580	0	0	0	0	0	0	0	720	0	1060	1,830	3,590
Allston/Brighton	74,990	0	0	0	0	0	0	0	190	0	0	190	2,380
Fenway/Kenmore	44,260	0	0	0	0	0	0	0	0	0	60	31,400	0
Harbor Islands	0	0	0	0	0	0	0	0	0	0	0	0	0
Hyde Park	32,310	0	0	0	0	0	0	0	0	0	0	0	0
Jamaica Plain	42,070	0	0	0	0	0	0	0	0	0	0	0	0
Mattapan	33,680	0	0	0	0	0	0	0	0	0	0	0	0
West Roxbury	30,440	0	0	0	0	0	0	0	0	0	0	0	0
Roslindale	37,720	0	0	0	0	0	0	0	0	0	0	0	0
<b>Boston Total</b>	<b>634,440</b>	<b>1,360</b>	<b>5,260</b>	<b>15,700</b>	<b>42,250</b>	<b>2,110</b>	<b>22,010</b>	<b>43,060</b>	<b>78,655</b>	<b>12,930</b>	<b>73,790</b>	<b>90,080</b>	<b>150,950</b>

# Climate Ready Boston, October 2013: Public Housing & Flooding

Source: Climate Ready Boston, October 2013



# Boston's Resilience Strategy

CITY of **BOSTON** | Mayor Martin J. Walsh

PAY AND APPLY PUBLIC NOTICES FEEDBACK TRANSLATE 

HOME | DEPARTMENTS | RESILIENCE AND RACIAL EQUITY

## RESILIENCE AND RACIAL EQUITY

The Mayor's Office of Resilience and Racial Equity leads efforts to help Boston plan for and deal with catastrophes and slow-moving disasters – like persistent racial and economic inequality – that have become part of 21st century life.



CONTACT

 [617-635-0739](tel:617-635-0739)

 [BOSTONRESILIENCE@BOSTON.GOV](mailto:BOSTONRESILIENCE@BOSTON.GOV)

 1 CITY HALL SQUARE, ROOM 603  
BOSTON, MA 02201  
UNITED STATES

# Resilient Boston: An Equitable & Connected City

## VISION 1



### REFLECTIVE CITY, STRONGER PEOPLE

A Boston that reflects upon its history and confronts present realities of racism in daily life and during emergencies to learn and reduce the impact of trauma on individual and community health and well-being.

**GOAL 1.1:** Advance the ongoing development of community training for healing, well-being, and preparedness in the face of chronic stresses and traumatic events.

**GOAL 1.2:** Facilitate an open, ongoing dialogue for healing, learning, and action to address racism and strengthen social cohesion in communities.

**GOAL 1.3:** Acknowledge the damage that systemic racism continues to inflict on our communities and develop deliberate institutional approaches to achieve and sustain racial equity in Boston policies, practices, and culture.

## VISION 2



### COLLABORATIVE, PROACTIVE GOVERNANCE

An inclusive and collaborative City government culture that offers residents a meaningful role in decision-making processes and facilitates cross-departmental partnership.

**GOAL 2.1:** Ensure employment equity and better serve all Bostonians by increasing the representation of the city's diverse population in City government.

**GOAL 2.2:** Enhance decision-making capacity in City government by bringing together our residents' and our government representatives' knowledge and skills to better develop policies, practices, and processes.

**GOAL 2.3:** Improve the collaboration, evaluation, and delivery of City services to better meet the needs of all Boston residents.

## VISION 3



### EQUITABLE ECONOMIC OPPORTUNITY

Access to economic and social pathways that support closing the wealth gap to ensure our quality of life is not determined by our race or ethnicity.

**GOAL 3.1:** Increase access to good-paying jobs, entrepreneurial opportunities, and asset-building strategies.

**GOAL 3.2:** Ensure safe, affordable, stable housing for all Bostonians.

**GOAL 3.3:** Enhance digital equity by increasing access to technology tools, computers, and the Internet.

**GOAL 3.4:** Prioritize equitable education opportunities to close the gap for young people of color.

## VISION 4



### CONNECTED, ADAPTIVE CITY

Increased connectivity of communities of color, while adequately preparing for threats to infrastructure used by all Bostonians.

**GOAL 4.1:** Develop a redundant and reliable public transportation network to provide equitable accessibility for all Bostonians.

**GOAL 4.2:** Prepare for the impacts of climate change and other threats, while accelerating sustainable infrastructure, environment, and communities.

**GOAL 4.3:** Improve the collaboration of partners working in Boston communities to address climate change and other emergencies.

Source: Resilient Boston, 2017

# Resilient Boston

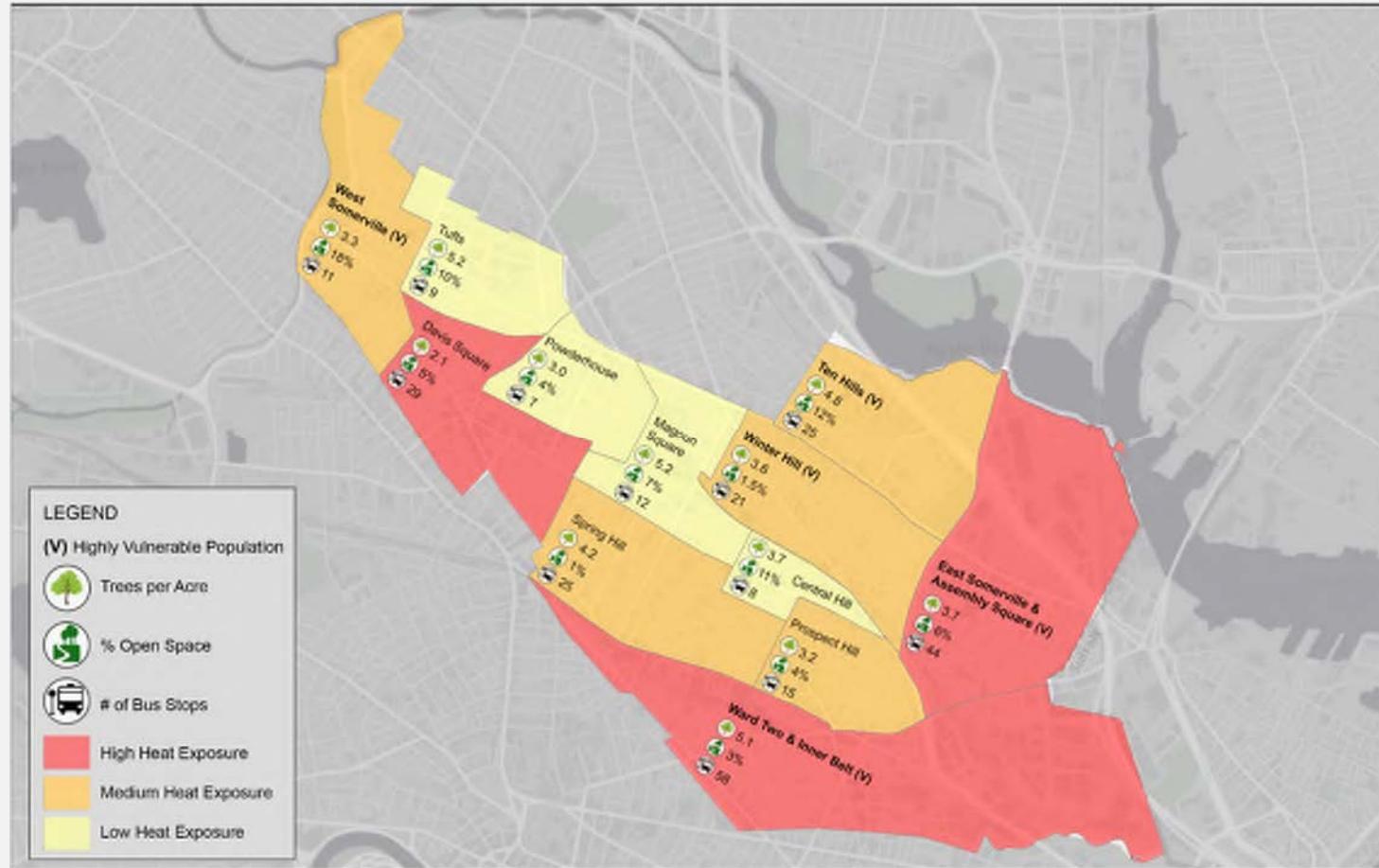
## Vision 4: Connected, Adaptive City

INITIATIVE	ACTION
17: Advance Resilient Transportation Systems	17-1: Fairmount Indigo Line Service Improvements to Promote Equity
	17-2: Climate-Resilient Transportation Infrastructure
	17-3: Sidewalk Maintenance Policy
18: Develop Place-Based Mitigation and Adaptation Strategies	18-1: Engagement and Research
	18-2: Evaluation and Replication
	18-3: Remediation and Reactivation of Brownfields
19: Expand Distributed Energy to Vulnerable Communities	19-1: Lower Roxbury Microgrid Pilot
	19-2: Expand Microgrids

20: Adapt for Extreme Heat	20-1: Heat and Vulnerability Analysis
	20-2: Heat Adaptation Projects
	20-3: Update Boston's Heat Emergency Action Plan
21: Protect Vulnerable Communities from Impact of Flooding	21-1: Neighborhood Water Management
	21-2: Resilient Fairmount Corridor
22: Empower Collaborative, Resilient Response to Disruptions	22-1: Climate Risk Engagement Campaign
	22-2: Neighborhood Response Plans
23: Invest in Adaptation Projects	23-1: Cost of Inaction Analysis
	23-2: Zoning and Designing for Resilience
	23-3: Financing Resilient Infrastructure

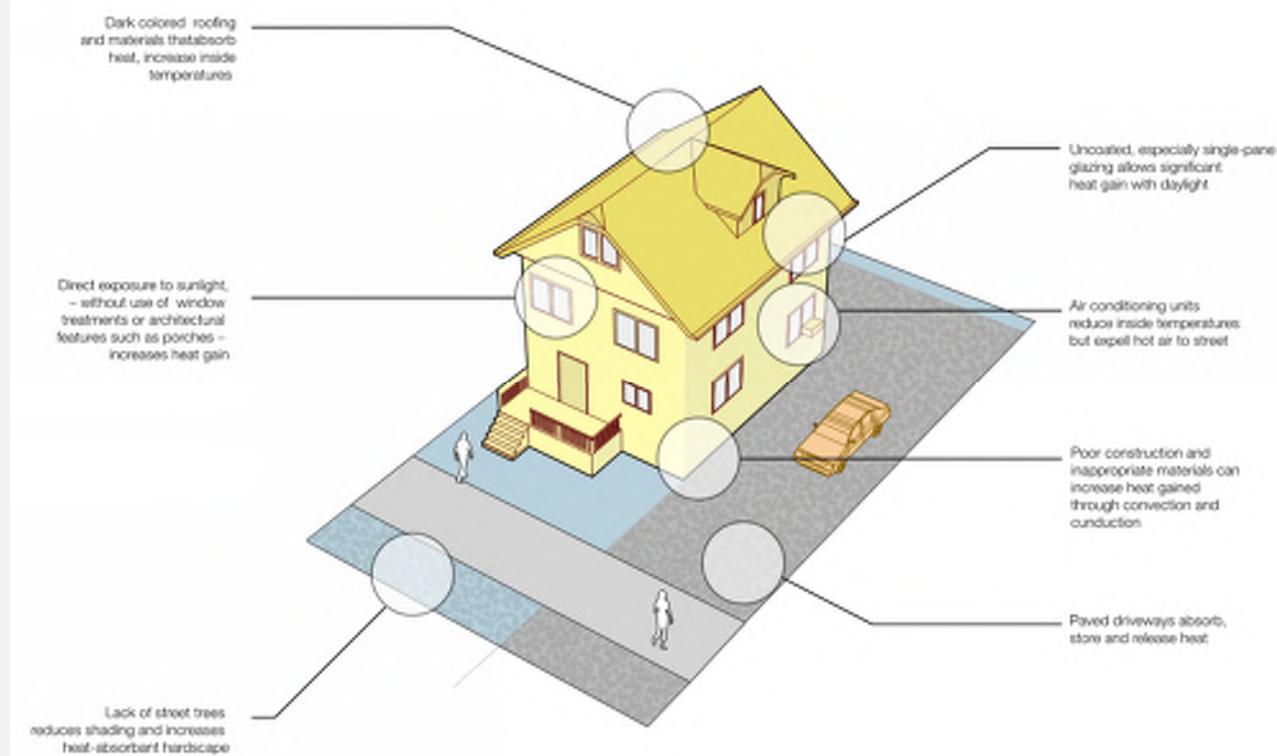
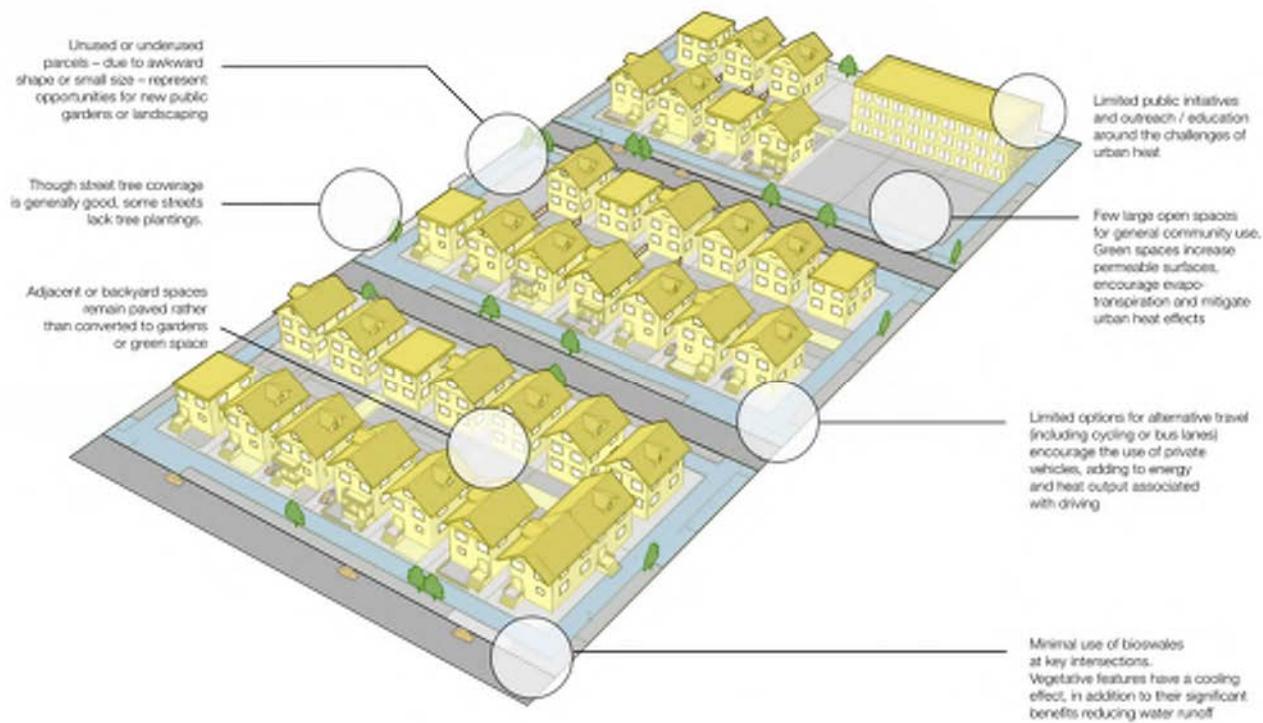
Source: Resilient Boston, 2017

# City of Somerville CCVA Heat Exposure & Vulnerable Populations



# City of Somerville CCVA Priorities

Rising Temperatures & Public Health Impacts to Vulnerable Populations

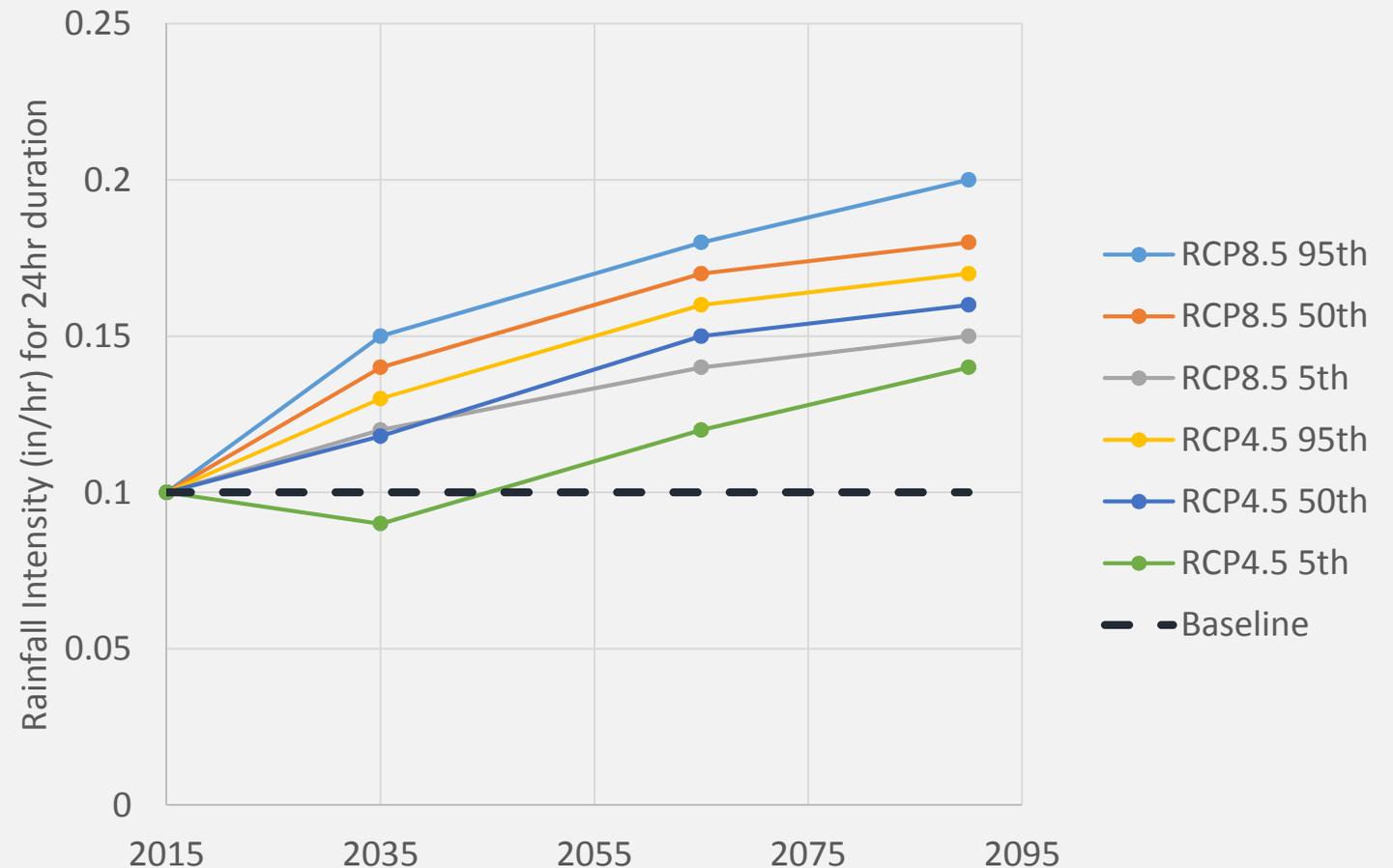




# WeatherShift



- Assess impact of estimated increases in rainfall intensity or extreme heat due to climate change
- Estimates indicate exceedance of current design standards triggering rain and temperature related failures



# Building Equity into Resilience Planning

## OPPORTUNITY

Public agencies are incorporating equity goals in adaptation planning but struggle with how to operationalize equity

## TOPIC / “LEVER”

Continued preference by engineers and decision-makers alike for the “traditional” benefit-cost analysis

## RESEARCH

Review of equity approaches for augmenting BCAs and how jurisdictions are currently grappling with equity in their adaptation planning processes

**(STRATEGIC OBJECTIVE)** to identify an accessible tool for including equity considerations in decision-making processes

## Researchers:

Jack Hogan, PE  
Climate Risk & Resilience Engineer

Emily Marsh  
Master of Urban Planning Candidate

**ARUP**

 Harvard University  
Graduate School of Design

Lower-income, marginalized  
populations will be  
**disproportionately** impacted  
by climate change.

# 70%

**Of displaced white residents** were able to return to their homes within a year of Hurricane Katrina.

# 42%

**Of displaced black residents** were able to return to their homes within a year of Hurricane Katrina.

The strongest predictors of whether a community will be able to quickly recover from a damaging weather events are **affluence** and **involvement in civic organizations**.

*Source: Christopher Burton, 2015*



# Benefit Cost Analysis

**(BENEFITS)**

total avoided losses over time

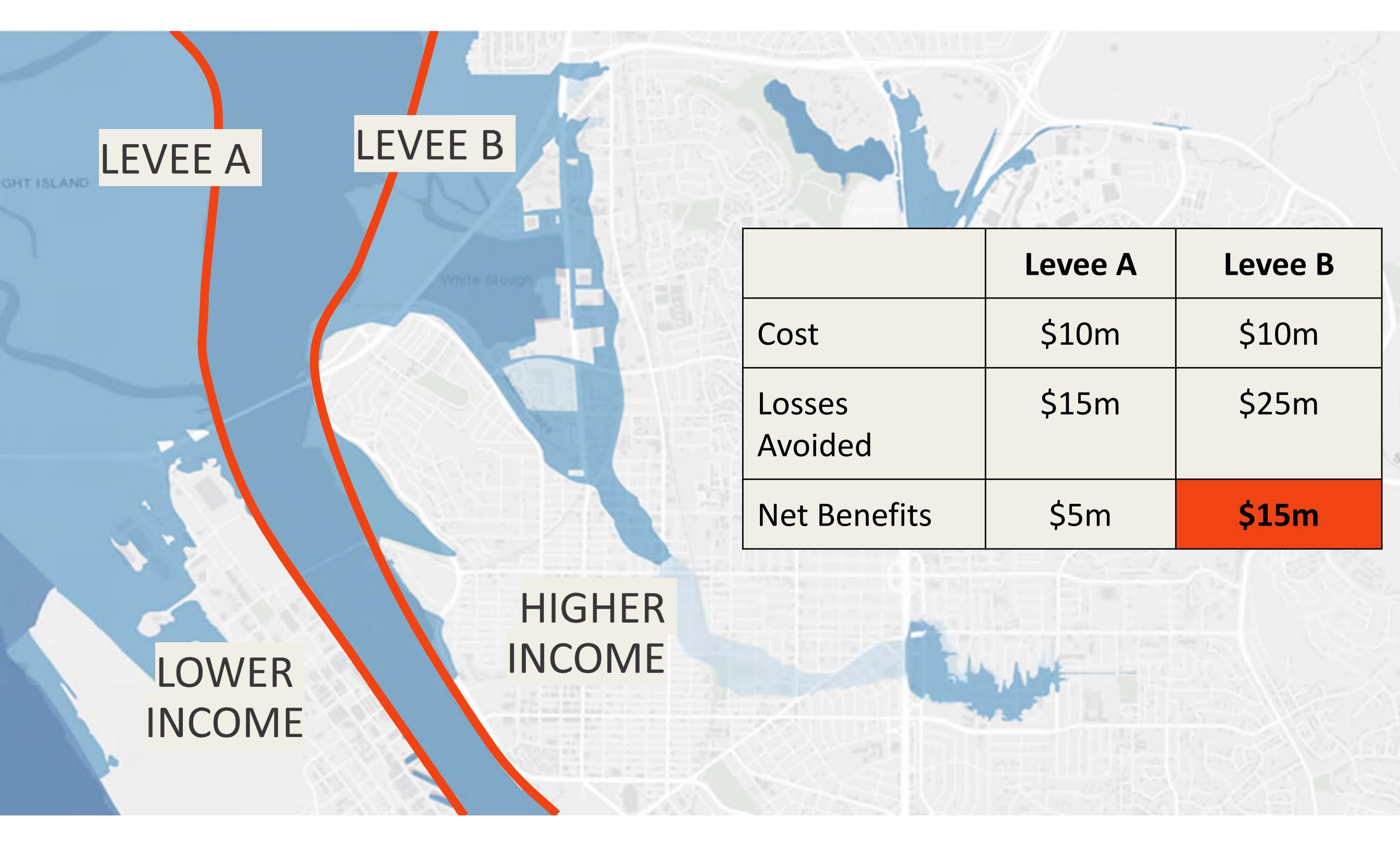
*minus*

**(COSTS)**

investment requirements of project alternatives

*results in*

**NET BENEFITS**



LEVEE A

LEVEE B

White Slough

HIGHER INCOME

LOWER INCOME

	Levee A	Levee B
Cost	\$10m	\$10m
Losses Avoided	\$15m	\$25m
Net Benefits	\$5m	<b>\$15m</b>

# Equity Weighted Approach

**(BENEFITS)**

total avoided losses over time *multiplied by the equity weight*

*minus*

**(COSTS)**

investment requirements of project alternatives

*results in*

**NET BENEFITS**

Income and Utility	Average Income	High Income	Low Income
Income	US\$ 100	US\$ 500	US\$ 50
Income + \$1	US\$ 101	US\$ 501	US\$ 51
Standard value: \$1	US\$ 1	US\$ 1	US\$ 1
Marginal utility of \$1	0.0040	0.0006	0.0090
Marginal utility value	1.00	0.15	2.28

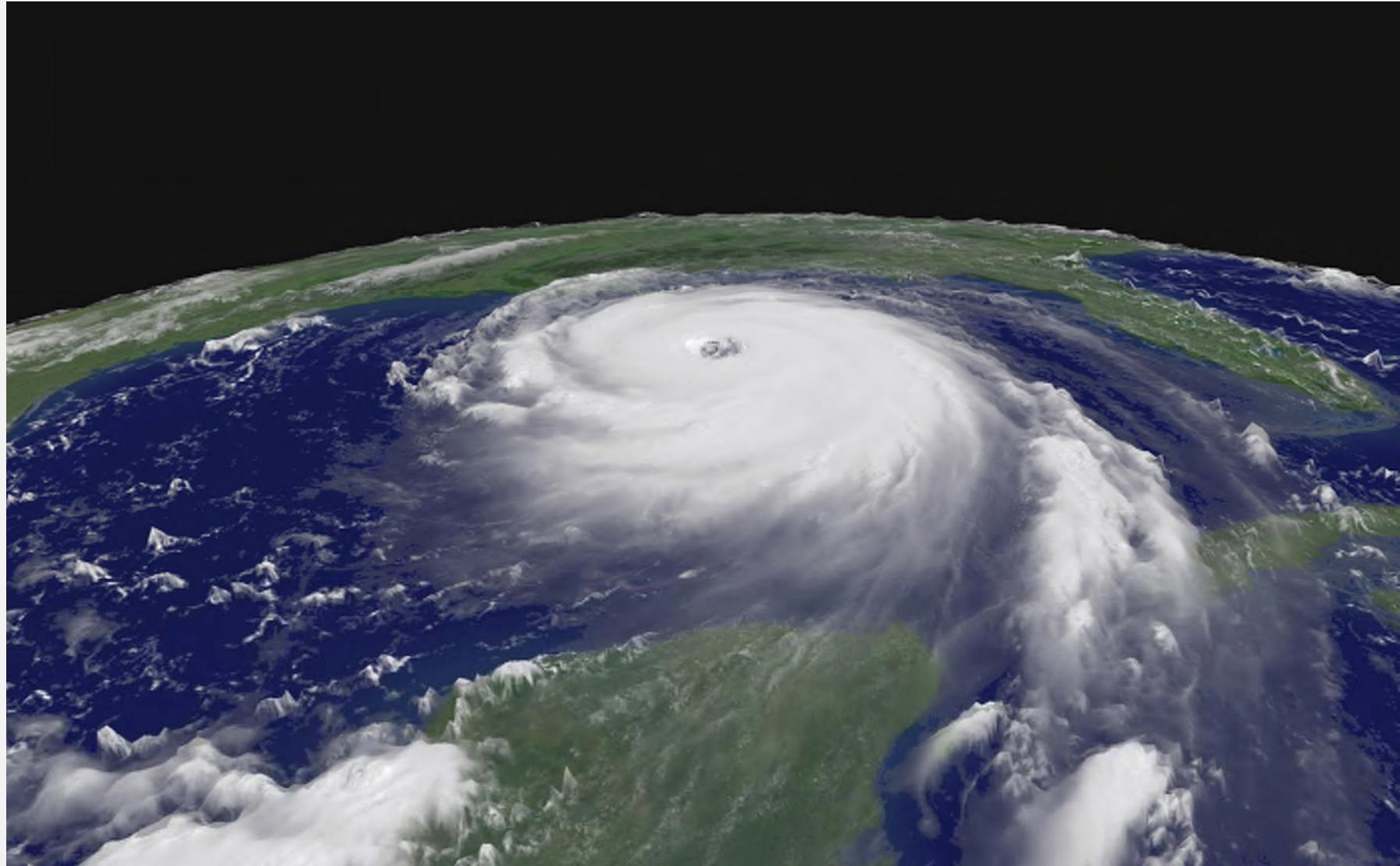
Source: Jarl Kind, 2017



	Levee A	Levee B
Cost	\$10m	\$10m
Losses Avoided	\$15m	\$25m
Net Benefits	\$5m	\$15m
Median Income	\$75K	
Household Income	\$50k	\$100k
<b>Weighting Factor</b>	<b>1.5</b>	<b>0.75</b>
<b>Value</b> of Avoided Losses	\$22.5m	\$18.75m
<b>Weighted</b> Net Benefits	<b>\$12.5m</b>	\$8.75m

2005

New Orleans, La  
Hurricane Katrina



2005

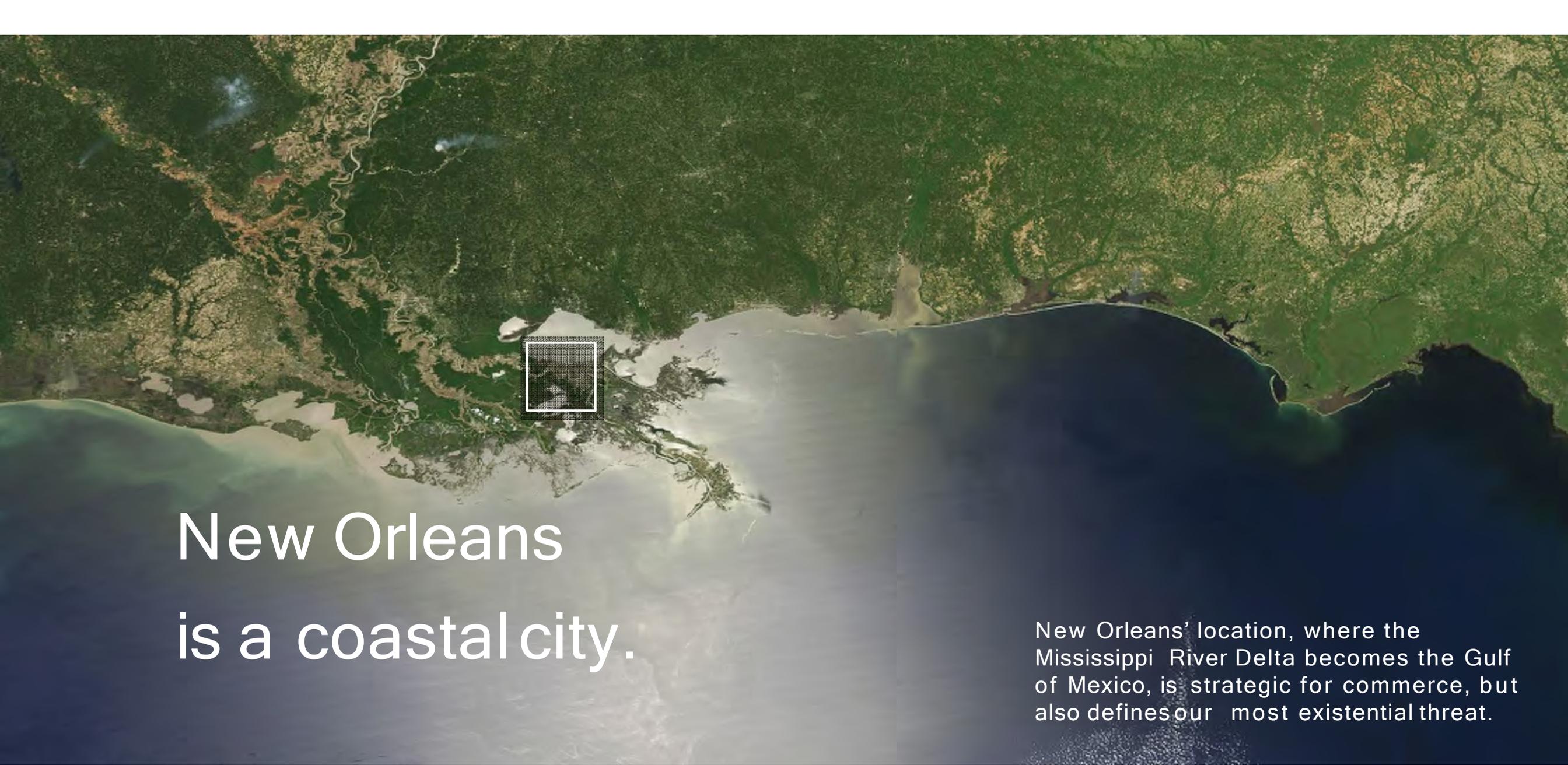
New Orleans, La  
Hurricane Katrina



2005  
New Orleans, La  
Hurricane Katrina



Why are already underserved populations the most vulnerable?

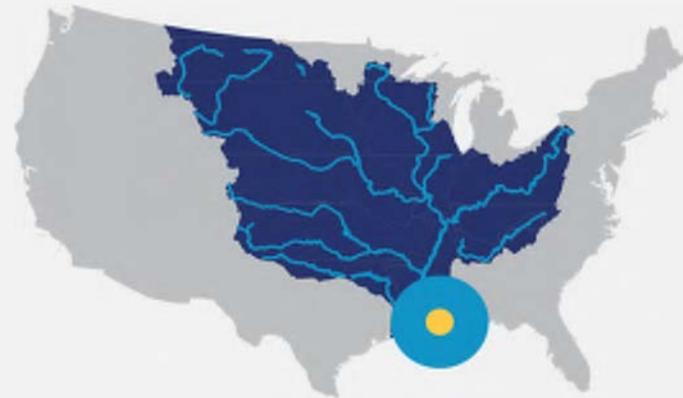


# New Orleans is a coastal city.

New Orleans' location, where the Mississippi River Delta becomes the Gulf of Mexico, is strategic for commerce, but also defines our most existential threat.

# GEOGRAPHY

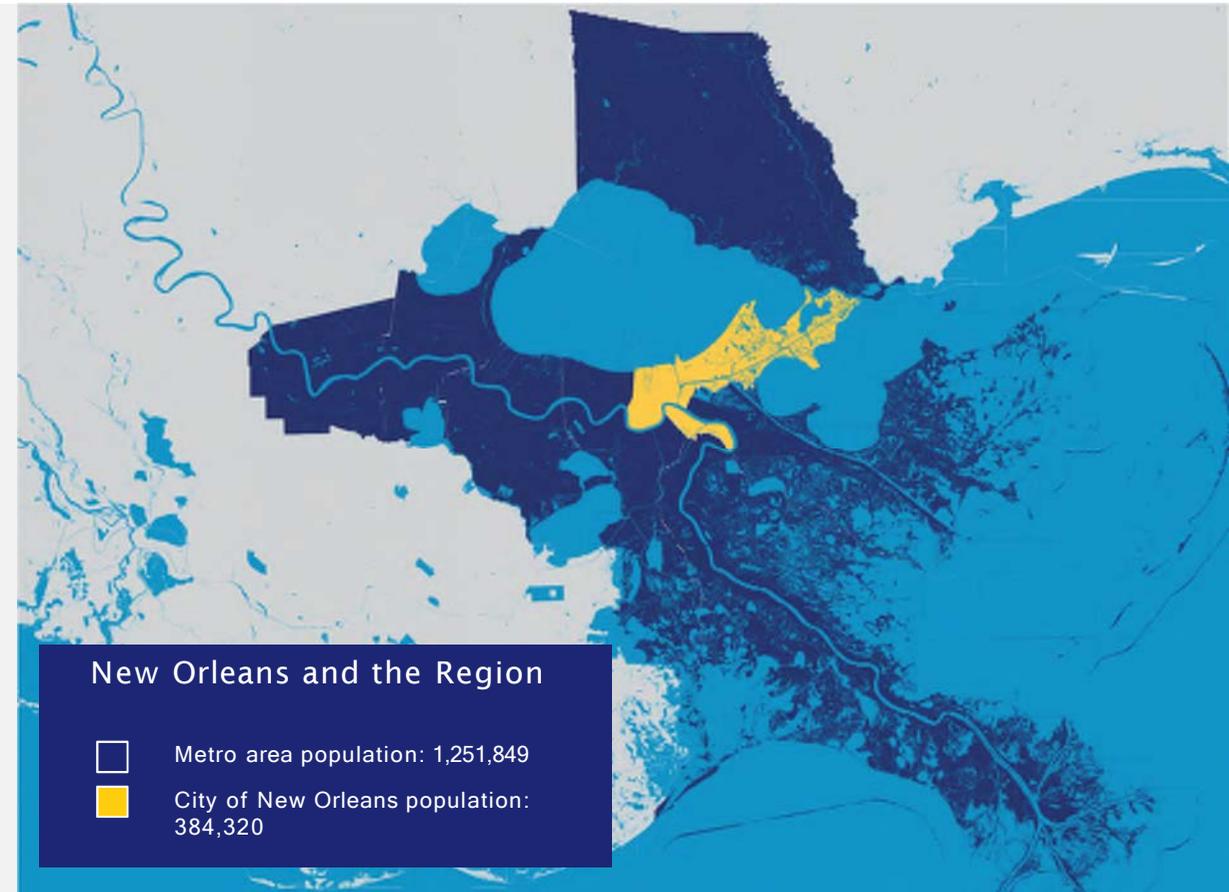
## New Orleans and the World



### New Orleans and the Nation

The Mississippi River drains 40% of the continental US.

25% of US waterborne exports are shipped through Louisiana's five major ports.



**New Orleans and the Region**

- Metro area population: 1,251,849
- City of New Orleans population: 384,320



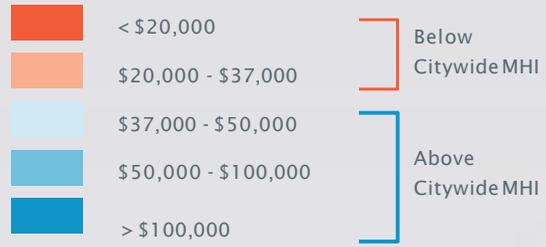
### Nature and the City

Land area: 169 mi<sup>2</sup> (438 km<sup>2</sup>)

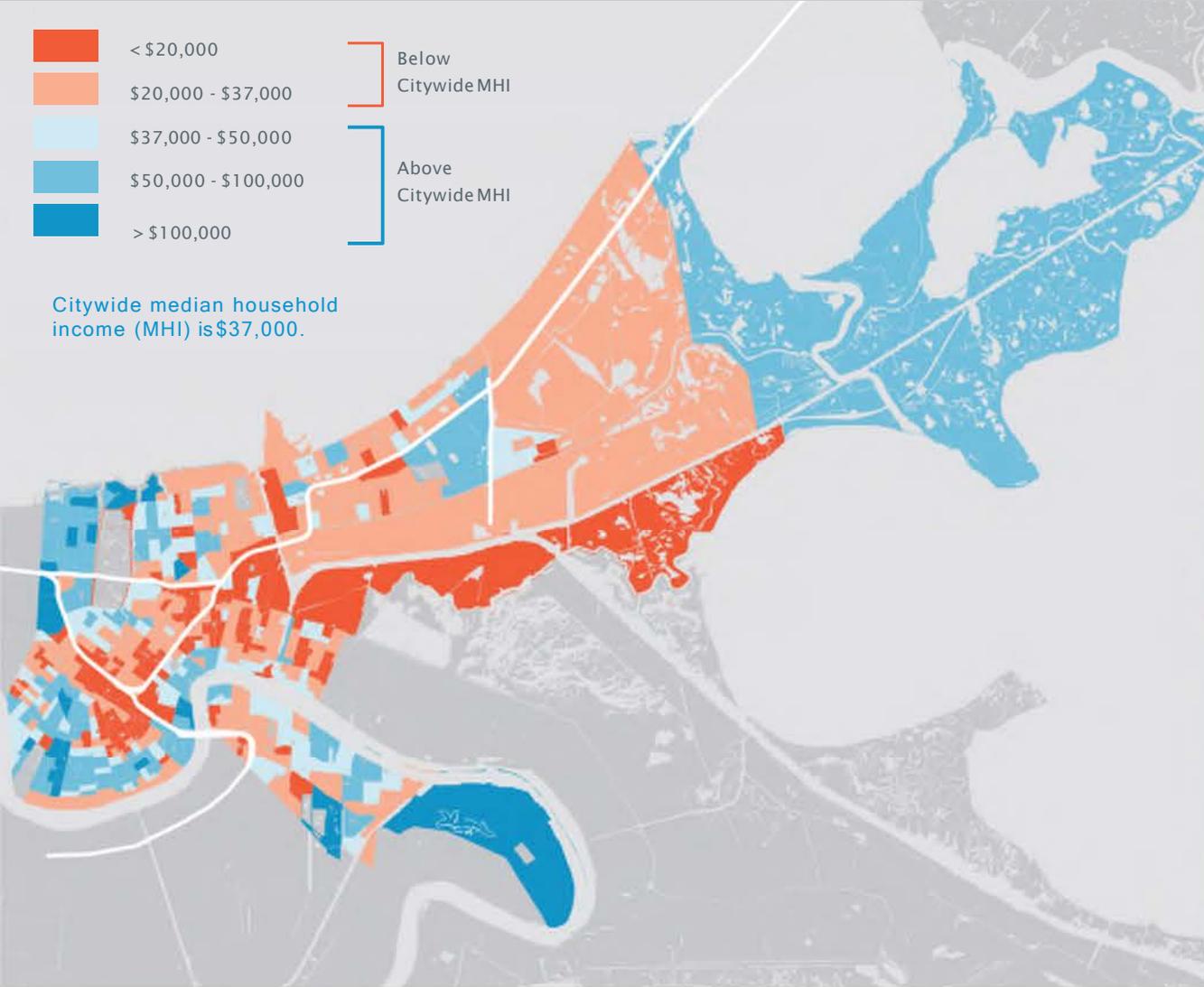
Over 1/3 of that land is wetlands.

# DEMOGRAPHICS

## New Orleans by Household Income

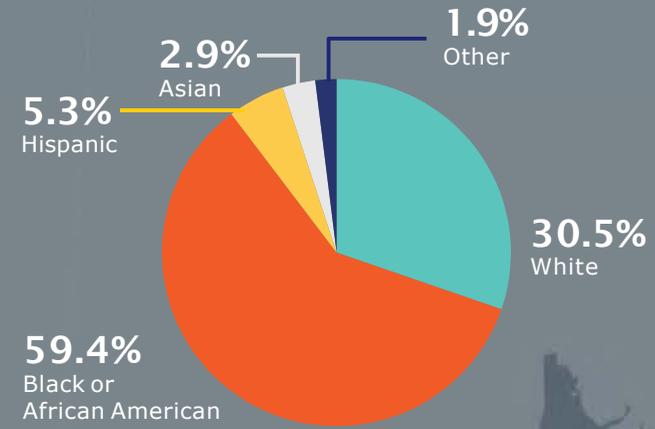


Citywide median household income (MHI) is \$37,000.

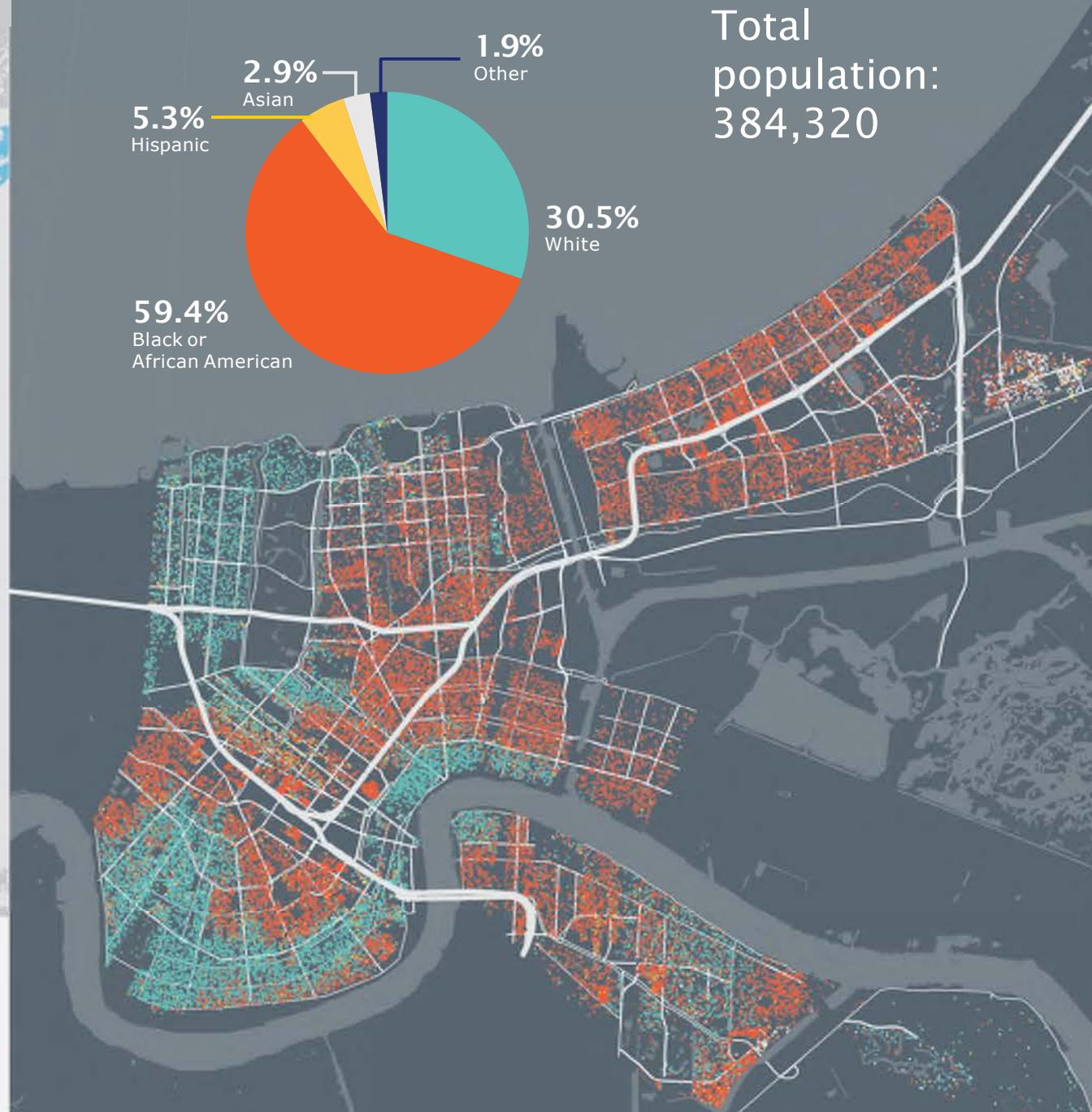


## New Orleans by Race/Ethnicity

1 dot = 10 people



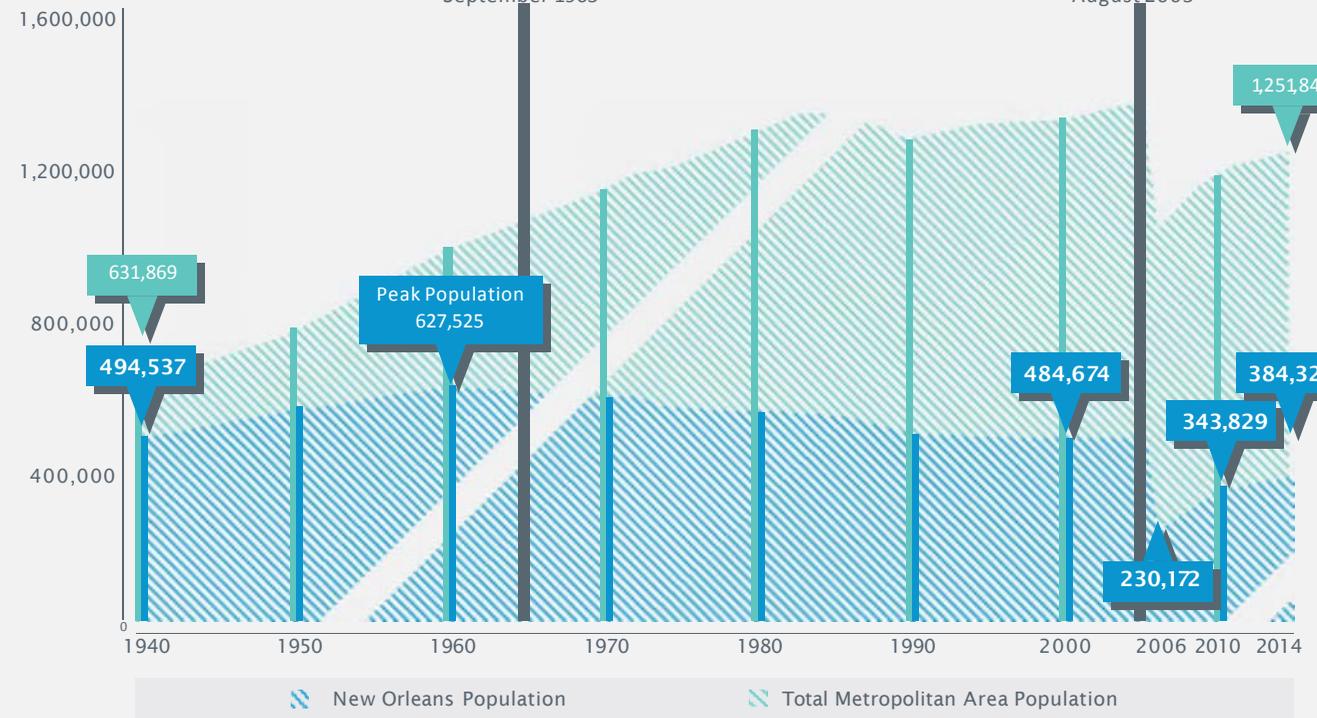
Total population: 384,320



# REGIONAL TRENDS

We have abandoned our long history of living with water. For the first two centuries of the city's existence, we occupied the high ground nearest the Mississippi River and the natural ridges throughout the region. With the advent of highly efficient pumping technology in the early 20th century, the draining of swampland in low-lying parts of the city and region incentivized new development to spread into previously uninhabitable locations. With this development came suburbanization and regional sprawl, setting the stage for challenges to our water management and flood protection systems, as well as to our ability to connect residents to regional job opportunities.

## Population Change: 1940 - 2014



## Population Density: 1940 - 2010

The population of New Orleans in 2000 was almost exactly the population of the city in 1940. However, the city occupied approximately twice the land area, spreading away from the high ground near the river toward lower-lying areas.



PEOPLE PER SQUARE MILE

0 - 1,000	1,001 - 5,000	5,001 - 10,000	10,001 - 20,000	20,001 - 30,000	> 30,000
-----------	---------------	----------------	-----------------	-----------------	----------

— New Orleans Boundry

Interventions that reduce impact:

Resilient NOLA – a plan  
Gentilly Resilience District

# Interventions

Throughout our city's history, water has been essential to New Orleans' existence, but has also threatened it. By adapting our city to our natural environment and the increasing risks of climate change, we can create opportunities for all New Orleanians to thrive. Successful adaptation will mean creating resilient systems and a culture of environmental awareness among all New Orleanians.



## Our climate is changing.

Louisiana is experiencing the highest rate of relative sea level rise in the world:

**4.3 ft (1.3m)**  
by 2100.

By 2050, Louisiana will likely experience temperatures

**above 95 °F (35 °C)**  
**on 80+ days per year.**



A resilient approach to infrastructure designs for multiple benefits, including spaces for recreation, sites for environmental engagement, and opportunities for commerce.  
Credit: Ripple Effect

**“This is a floating city, floating below the surface of the water.”**

— Benjamin Latrobe,  
describing New Orleans, 1819

# Advance coastal protection and restoration

## Leverage critical resources for coastal projects

**Lead:** City of New Orleans  
**Partners:** Louisiana Coastal Protection and Restoration Authority; Greater New Orleans, Inc

### ASPIRATION

The coast is healthy, functioning, and sustains industries, communities, and ecosystems.

### ▶▶▶ RESILIENCE VALUE

By protecting and restoring our coast, New Orleans can reduce flood risk, protect critical economic assets, and safeguard indispensable wildlife habitat and recreational areas.



Credit: CPRA

## Multiple Lines of Defense

Greater New Orleans is surrounded by 133 miles (214 kilometers) of newly strengthened levees, floodwalls, and pump stations—the largest coastal flood control system in the nation. This recent \$14.5 billion investment in hard infrastructure is critical to our future, but coastal restoration and comprehensive urban water management must complement and support that investment to ensure maximum flood protection capacity.



Credit: Greater New Orleans Urban Water Plan

## Water Boulevards



Today's conventionally paved streets are full of potholes and require frequent and expensive repairs, due in part to soil subsidence. Innovative street and public realm designs can slow and store rainwater, reducing flooding and slowing subsidence.

# Invest in comprehensive and innovative urban water management

## Implement Urban Water Plan projects

Lead: City of New Orleans

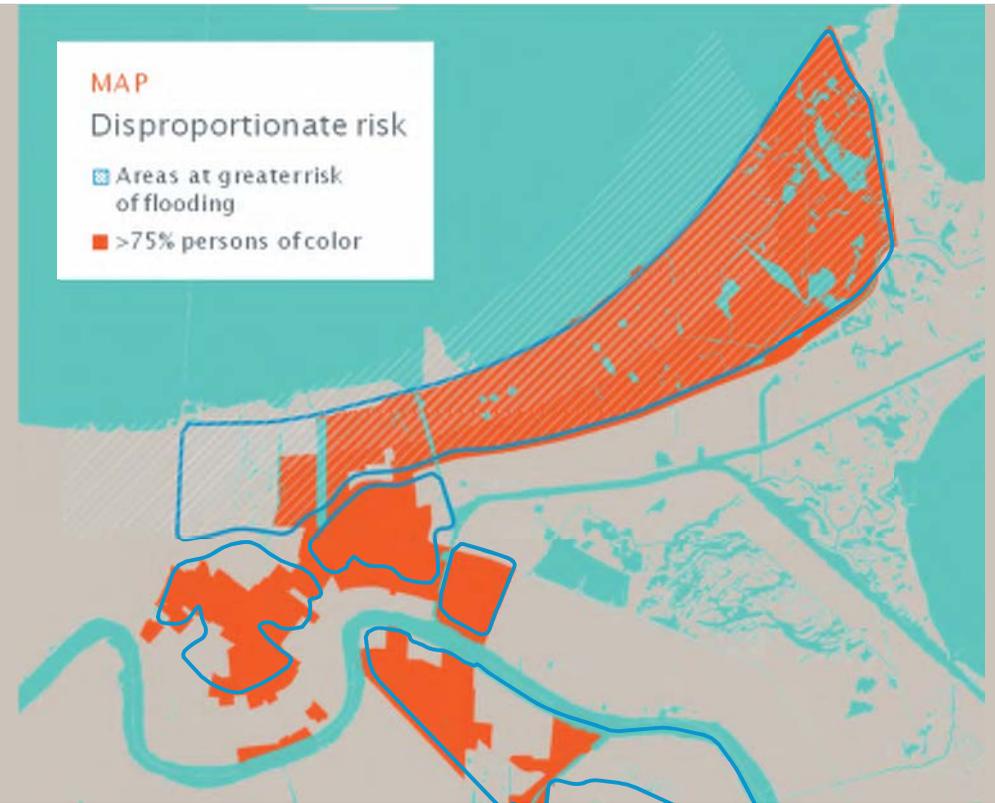
Partners: Sewerage & Water Board of New Orleans; Trust for Public Land; Deltares; Greater New Orleans Foundation; Trimble; New Orleans Redevelopment Authority; GNO, Inc

### ASPIRATION

New Orleans embodies the principle of *living with water*, managing urban stormwater and groundwater carefully to align with natural processes and support economic growth.

### ▶▶ RESILIENCE VALUE

Through comprehensive urban water management, New Orleans can lower infrastructure costs, reduce flood risk to people and property, temper soil subsidence, and transform unsightly infrastructure into attractive amenities that enhance neighborhoods and improve quality of life.



## Incentivize property owners to invest in risk reduction

### Establish resilience retrofit program

Lead: City of New Orleans  
Partner: Deutsche Bank—AllianceNRG

### ASPIRATION

Households and business owners have access to the resources, capacity, and expertise required to adapt to their changing environment and future threats.

### ▶▶ RESILIENCE VALUE

By investing in their own resilience, households and business owners will create readiness at the community level that will spur economic development, lower individual liability, and reduce the burden on public funds for disaster recovery.

# Create a culture of environmental awareness at every stage of life

## Establish resilience center



Credit: La CittaVita

Lead: City of New Orleans  
Partners: Rockefeller Foundation;  
Tulane University; GNO, Inc;  
100 Resilient Cities

### ASPIRATION

New Orleans is a global leader in urban resilience, with the facilities and resources to share our experiences while continuing to learn from the daily realities of a complex urban condition.

### RESILIENCE VALUE

By fortifying our neighborhoods and practitioners with leadership in resilience thinking and practice, we can empower New Orleanians to recognize complexity and make well-informed decisions.



The future Louisiana Children's Museum campus in City Park, focused on water education. Credit: LCM, Mithun

Lead: City of New Orleans  
Partners: Louisiana Children's Museum,  
Ripple Effect, Evacuteer

### ASPIRATION

The next generation of New Orleanians has an accurate understanding of our physical environment and the risks we face, and has developed the capacity to prepare for and adapt to those risks.

### RESILIENCE VALUE

By equipping our youth with the knowledge and understanding of local hydrologic and geographic conditions and processes, we develop leaders for today and tomorrow for adapting to our changing natural environment.

## Develop knowledge and capacity of emerging environmental stewards

# Invest in household financial stability

## Create emergency savings account program

Lead: Foundation for Louisiana  
Partners: City of New Orleans,  
Micro Finance Opportunities

### ASPIRATION

Households and business owners have the resources, capacity, and expertise required to adapt and respond to future shocks and threats.

### RESILIENCE VALUE

By increasing savings, households will have greater financial stability and be better prepared to respond to shocks while growing our overall economy in an equitable way.



## Incorporate living wage provision into public contracts

Lead: City of New Orleans  
Launch: 2015

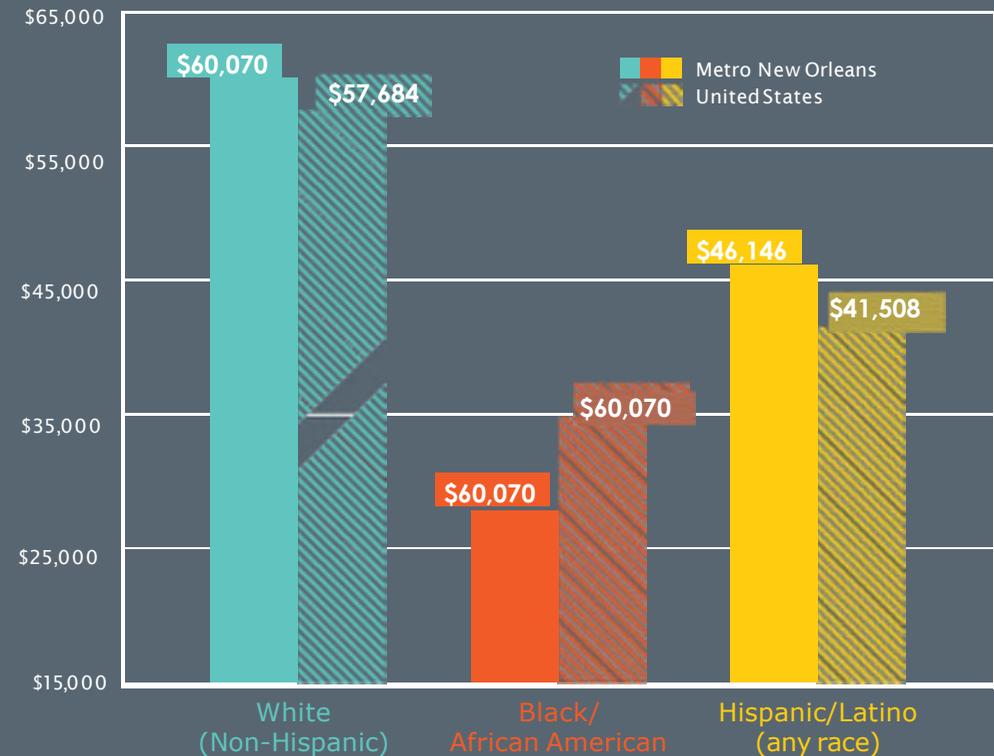
## Income inequality

New Orleans' median household income of \$36,631 is **30% lower** than the US median household income of \$52,250.

**12.5%** of New Orleans residents are unbanked (without a bank account) compared to 5.1% in the metropolitan area.

**32.5%** of African-American households in New Orleans are unbanked.

## Median Household Income by Race and Ethnicity



Source: The Data Center, New Orleans Index at Ten

# Lower barriers to workforce participation



## The Network for Economic Opportunity

**Lead:** City of New Orleans  
**Launched:** 2014  
**Partners:** Ford Foundation, WK Kellogg Foundation, Living Cities, Foundation for Louisiana, Greater New Orleans Foundation

# Continue to promote equitable health outcomes



## Fresh Food Retailer Initiative

**Lead:** City of New Orleans  
**Partners:** The Food Trust, HOPE Enterprise Corporation

## New Orleans Community Health Improvement Plan

**Lead:** City of New Orleans  
**Partner:** Louisiana Public Health Institute

## Welcome Table New Orleans

**Lead:** City of New Orleans  
**Partners:** William Winter Institute for Racial Reconciliation, WK Kellogg Foundation  
**Launched:** 2014  
**Purpose:** Join diverse groups of New Orleanians to work towards racial reconciliation



# Continue to build social cohesion

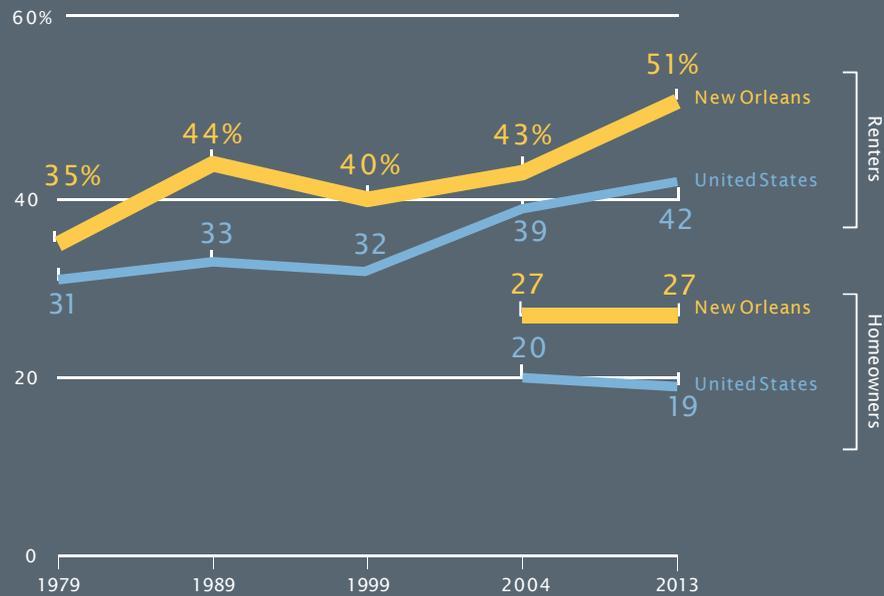
# Expand access to safe and affordable housing

## Launch Integrated Housing Policy

### Affordable Housing Requirements in Comprehensive Zoning Ordinance

Leads: City of New Orleans

#### Households paying unaffordable housing costs 35% or more of pre-tax income on housing



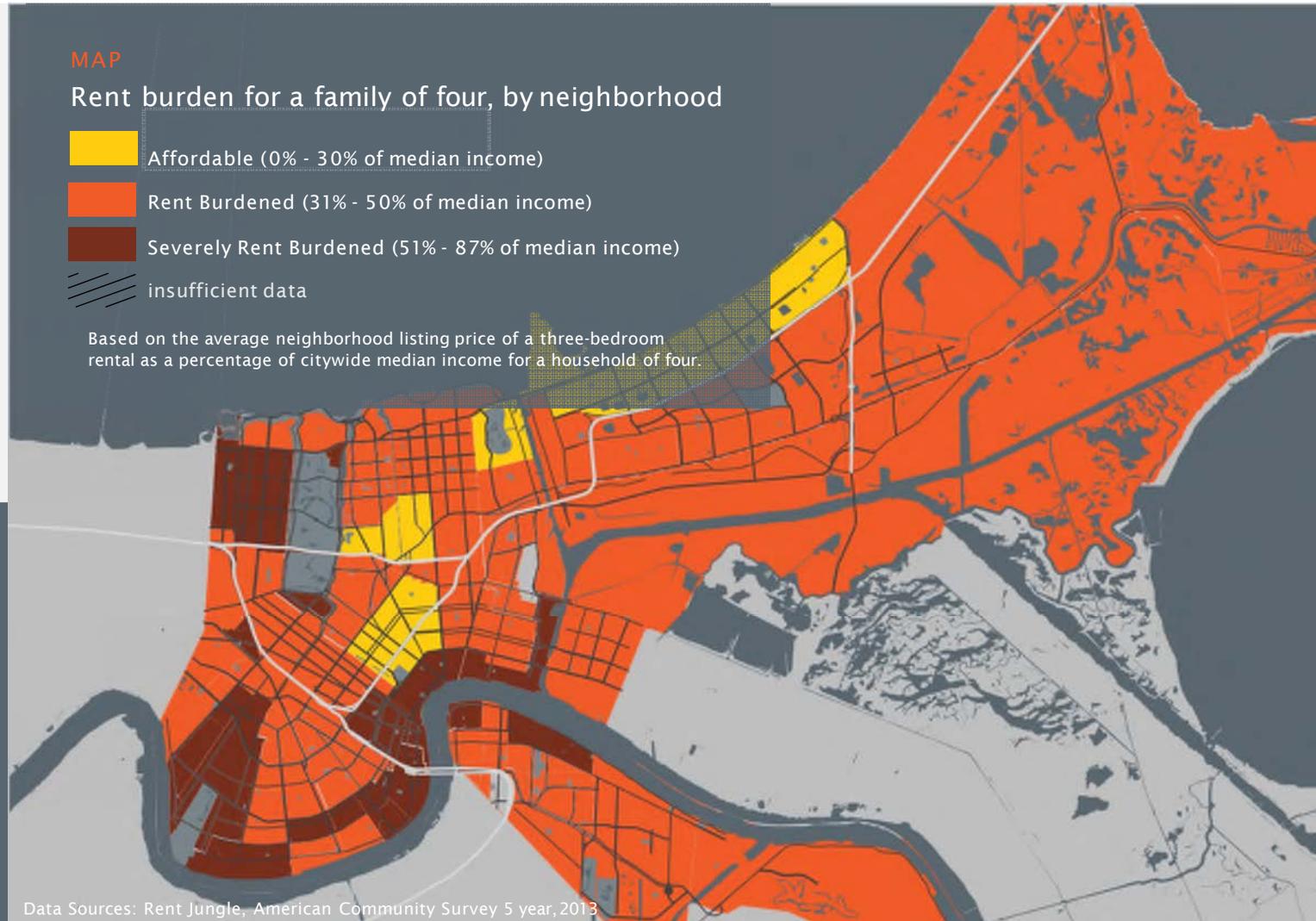
Source: The Data Center, NewOrleans Index at Ten

#### MAP

#### Rent burden for a family of four, by neighborhood

- Affordable (0% - 30% of median income)
- Rent Burdened (31% - 50% of median income)
- Severely Rent Burdened (51% - 87% of median income)
- insufficient data

Based on the average neighborhood listing price of a three-bedroom rental as a percentage of citywide median income for a household of four.



Data Sources: Rent Jungle, American Community Survey 5 year, 2013

**More than half of renters in New Orleans are rent burdened, meaning they spend more than 30% of their income on housing costs.**

**Monthly median rent for a one-bedroom apartment in New Orleans has increased from \$698 in 2004 to \$925 in 2014, surpassing the national average.**

# Redesign our regional transit system to connect people, employment, and essential services

## Redesign regional transportation systems

**Lead:** City of New Orleans, Regional Transit Authority  
**Partners:** Ride New Orleans, Bike Easy

**ASPIRATION**  
 New Orleans is a car-optional city with an integrated, efficient, and reliable multimodal regional transit system, prioritizing connections to employment and focusing on pedestrian and bicycle safety.



**RESILIENCE VALUE**

By investing in a robust world-class transit system, we will be more equitable, be more economically competitive, reduce our environmental impact, and support growth.

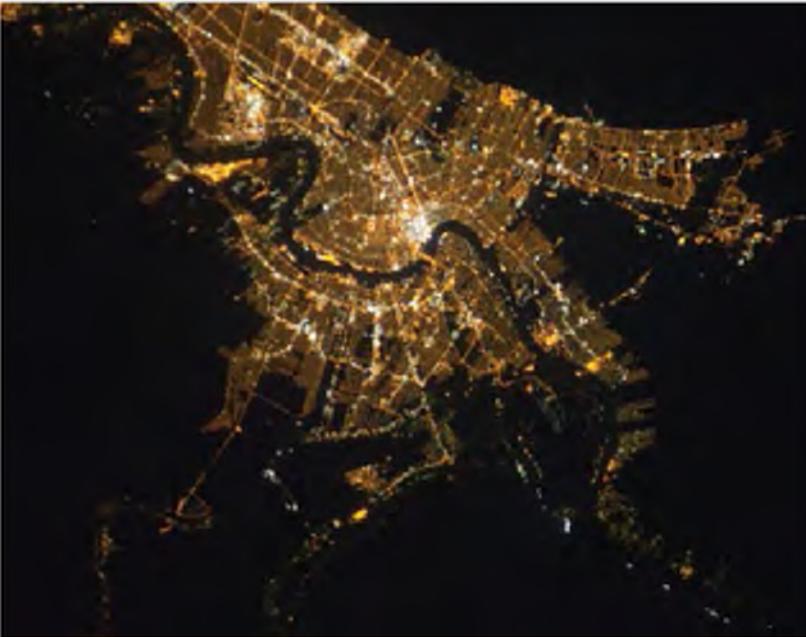


**Our jobs are regional, but our transit system is not.**



# Improve the redundancy and reliability of our energy infrastructure

## Launch microgrid pilot project



Lead: City of New Orleans

Partners: US Department of Energy, Sandia National Laboratories, Sewerage & Water Board of New Orleans, Entergy

### ASPIRATION

Greater New Orleans has a reliable and redundant energy production and distribution network that is able to meet and adapt to the increased demands and risks of the 21st century.

### RESILIENCE VALUE

By providing energy backup during shocks and outages for a variety of co-located critical infrastructures (e.g., pumping stations, hospitals, communications), we can support faster disaster response and recovery, and avoid losses of life and property.

Lead: City of New Orleans  
Partners: C40, Urban Sustainability Directors Network

### ASPIRATION

As a global community, we are slowing the pace of human-generated climate change.

### RESILIENCE VALUE

By joining the international community of cities committed to reducing their contribution to global climate change, we are also benefiting our local community through improved air quality and increased resource efficiency.



## Commit to mitigating our climate impact

### Design and implement climate action plan

# Promote sustainability as a growth strategy

Credit: NASA

**A'18** AIA Conference on Architecture 2018  
June 21-23, New York City

## Launch Downtown Energy Efficiency Challenge

Lead: Downtown Development District  
Partners: City of New Orleans, Entergy

### ASPIRATION

New Orleans is a national leader among peer cities in reducing energy use and its related environmental impact.

### RESILIENCE VALUE

By reducing energy use, New Orleans will reduce operating costs for businesses, reduce the city's impact on the environment, and promote the city as a leader in sustainability and climate adaptation.

## Integrate resilience-driven decision making across public agencies

## Establish Mayor's Office of Resilience and Sustainability

Lead: City of New Orleans  
Partners: 100 Resilient Cities, Urban Sustainability Directors Network

**ASPIRATION**  
City government evaluates investments, programs, and policies based on their ability to mitigate the impacts of future threats, to adapt the city to environmental change, and to take advantage of emerging opportunities.

**RESILIENCE VALUE**  
By crafting policies and programs based on their potential to create multiple benefits, New Orleans can make itself safer, healthier, and more economically stable using existing resources.

Lead: City of New Orleans  
Partners: iParametrics, Swiss Re

**ASPIRATION**  
The City of New Orleans is prepared for future disasters and ready to carry out an efficient, comprehensive, and equitable recovery while building adaptive capacity and providing cross-sectoral benefits.

**RESILIENCE VALUE**  
By planning for comprehensive disaster recovery in advance of a major shock, the city can accelerate the recovery process, make more efficient use of scarce resources, and reduce the overall economic impact of future shocks.

## Invest in pre-disaster planning for post-disaster recovery

## Create pre-disaster plan for post-disaster recovery

Lead: City of New Orleans  
Partners: New Orleans Redevelopment Authority, New Orleans Business Alliance, UN-ISDR, Walmart Foundation

**ASPIRATION**  
Businesses will have access to the resources, capacity, and expertise required to prepare and respond effectively to disasters and economic downturns.

**RESILIENCE VALUE**  
By investing in disaster preparedness, business owners will lower their own risk exposure, spur further economic development, and improve the continuity of critical services in times of disaster response and recovery.

## Develop the preparedness of our businesses and neighborhoods

## Develop small business and neighborhood resilience program

# SUMMARY OF FEATURED ACTIONS

Featured Actions				
Vision/Action	Lead	Partners	Funding Source(s)	Status
<b>Adapt to Thrive</b>				
Leverage critical resources for coastal projects	Mayor’s Office of Resilience & Sustainability	CPRA; GNO, Inc	RESTORE Act, BP Settlement, CPRA, NDRC	In development
Implement Urban Water Plan projects	City of New Orleans, Sewerage & Water Board	SWBNO; NORA; GNO, Inc; GNOF; Trust for Public Land; Deltares; Trimble	HMGP, NDRC, BP Settlement, SWBNO	Underway
Establish resilience retrofit program	Mayor’s Office of Resilience & Sustainability	Deutsche Bank	Public bond, private investment	In development
Develop emerging environmental stewards	Mayor’s Office of Resilience & Sustainability	Ripple Effect, Evacuteer, Louisiana Children’s Museum	Philanthropy, private investment	In development
Establish resilience center	Mayor’s Office of Resilience & Sustainability	Rockefeller Foundation; Tulane University; GNO, Inc	Philanthropy, private investment	In development
Design and implement climate action plan	Mayor’s Office of Resilience & Sustainability	C40, Urban Sustainability Director’s Network	CNO, philanthropy	In development
<b>Connect to Opportunity</b>				
Create emergency savings account program	Foundation for Louisiana	CNO, MFO	Philanthropy, private investment	In development
Launch digital divide innovation challenge	Mayor’s Office of Resilience & Sustainability	CityMart	Philanthropy, private investment	In development
<b>Transform City Systems</b>				
Establish Mayor’s Office of Resilience and Sustainability	Mayor’s Office	100 Resilient Cities, Urban Sustainability Director’s Network	CNO, philanthropy, private investment	Underway
Create pre-disaster plan for post-disaster recovery	Mayor’s Office of Resilience & Sustainability	iParametrics, Swiss Re	CNO, philanthropy	Proposed
Redesign regional transportation systems	City of New Orleans/RTA	Ride New Orleans, Bike Easy	TBD	Proposed
Launch Downtown Energy Efficiency Challenge	Downtown Development District	CNO, Entergy	private investment	In development
Develop small business resilience initiative	Mayor’s Office of Resilience & Sustainability	NORA; NOLABA; UN-ISDR; Walmart Foundation	Philanthropy, private investment	Underway
Launch microgrid pilot project	Mayor’s Office of Resilience & Sustainability	USDOE, Sandia National Laboratories, SWBNO, Entergy	Federal grant	Underway

# Gentilly Resilience District

Examples of proposed methods to reduce flood risk, slow land subsidence, and encourage neighborhood revitalization



# Gentilly Resilience District

Examples of proposed methods to reduce flood risk, slow land subsidence, and encourage neighborhood revitalization



## Projects

**1. Mirabeau Water Garden:** 25-acre site of a former convent of the Sisters of Saint Joseph designed to store up to 10 million gallons of stormwater while also serving as a space for recreation and environmental learning

**2. Pontilly Neighborhood Stormwater Network:** enhancements to the Dwyer Canal combined with vacant lots, streets, and alleyways designed to capture stormwater and beautify the Pontchartrain Park and Gentilly Woods neighborhoods

**3. Blue & Green Corridors:** neutral grounds of major boulevards improved to slow and store stormwater while facilitating safe and comfortable spaces to travel and recreate

**4. St. Bernard Neighborhood Campus:** integrated green infrastructure and recreational improvements at McDonogh 35 High School and Willie Hall Playground

**5. Milne Campus:** integrated recreational enhancements and water management features combined with water-focused education, economic, and workforce development activities

**6. St. Anthony Green Streets:** establishes a new standard for neighborhood streets and playgrounds that incorporates stormwater management as a key component of neighborhood revitalization.

**7. Dillard Wetlands:** retrofit existing woodlands to capture water from neighboring areas and serve as a nature preserve

**8. Dillard Campus:** green infrastructure and drainage improvements on the campus of Dillard University

**9. Oak Park Green Infrastructure:** green infrastructure on vacant lots near Lake Area High School in Oak Park

**10. Community Adaptation Program:** investments in stormwater management and other resilience features for Gentilly homeowners

**11. Reliable Energy & Smart Systems:** increase energy and water utility resilience through investments in micro-grids, energy redundancy at critical water infrastructure sites, and a water monitoring network

**12. Workforce Development:** train and prepare local residents to build water management projects and develop increasingly vital skills in water infrastructure development and maintenance

Value Proposition for the larger community....

# What is the role of Architects?

# FUNDERS

- **Public—federal gov funds state, county, municipal programs—disaster response, recovery, & resiliency**
  - FEMA
  - HUD
  - DOD
- **Private—charitable giving foundations fund local non-profits**
  - Rockefeller
  - Ford
  - Surdna
  - Trufund

## **FUNDERS**

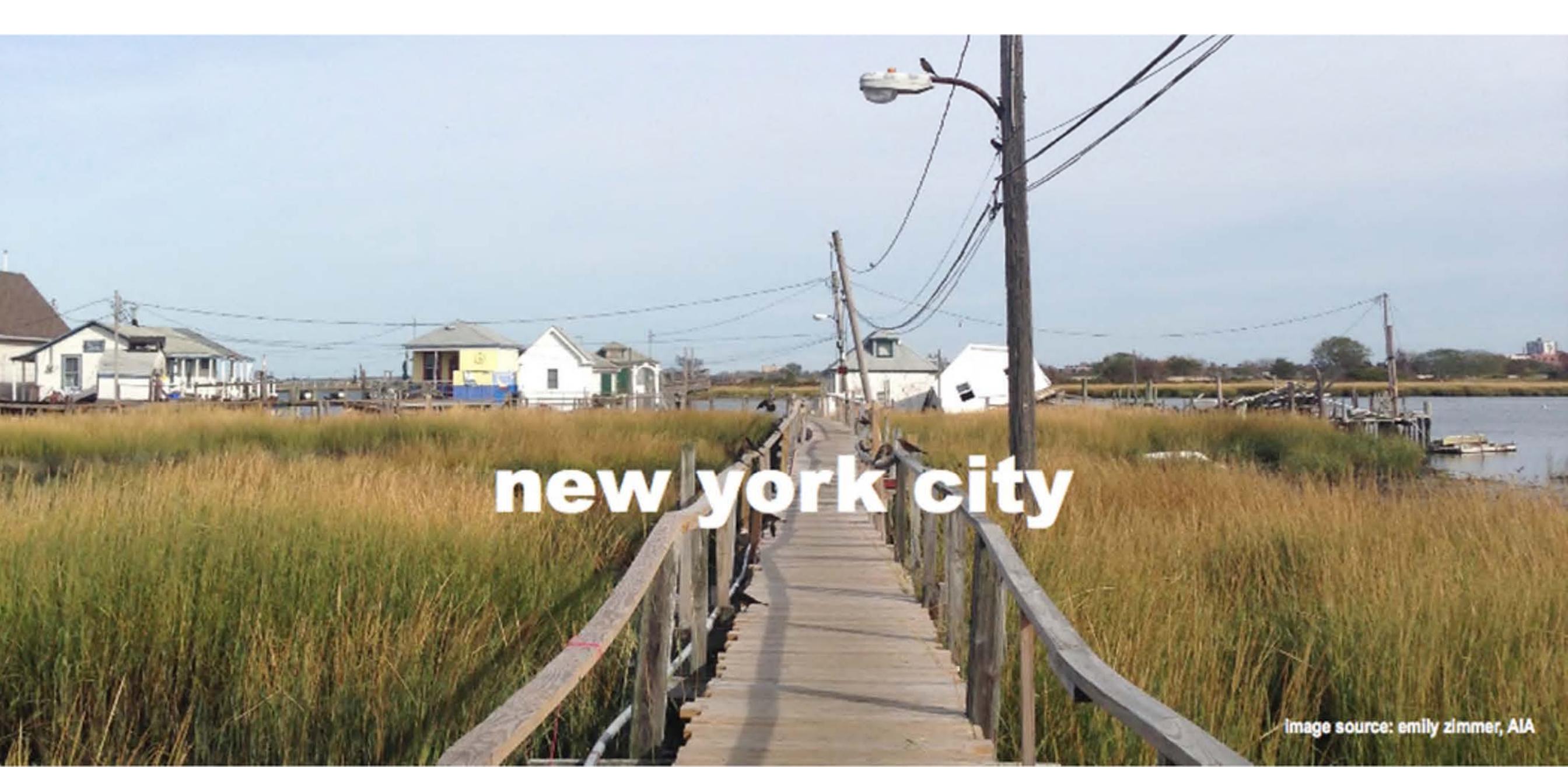
- **Non-Profits active after Hurricane Katrina / The role of Architects**
  - **GNOHA Greater New Orleans Housing Association & Housing NOLA**
  - **AIA NO Architect Pairing Program**
  - **AIA NO**
  - **City-Works**
  - **Evacuteer**
  - **Make It Right Foundation**
  - **Project Homecoming**
  - **Home Again**
  - **There's No Place Like Home**
  - **St. Bernard Project**
  - **LowerNine.org**
  - **Bike Easy**
  - **Louisiana VOAD (Voluntary Orgs Active in Disaster)**
  - **ICNA Relief (Islamic Circle of North America)**
  - **Red Cross**
  - **All Hands Volunteers**
  - **Global Coast Disaster Relief**
  - **Common Ground Relief**
  - **Many many others.....**

**2015**

**New Non-Profit:  
Evacuteer  
New Orleans, LA**

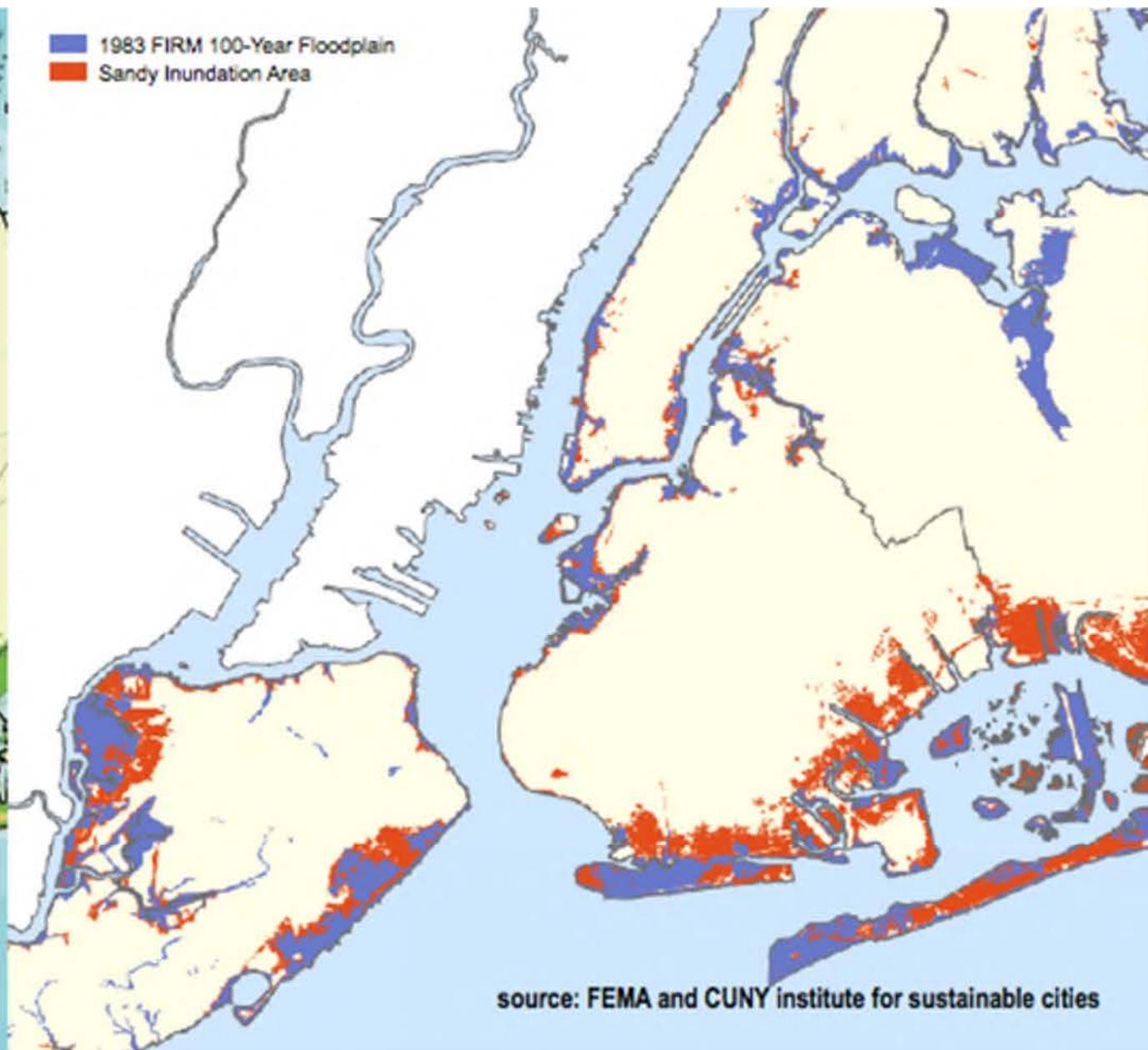
**A'18** AIA Conference on Architecture 2018  
June 21-23, New York City

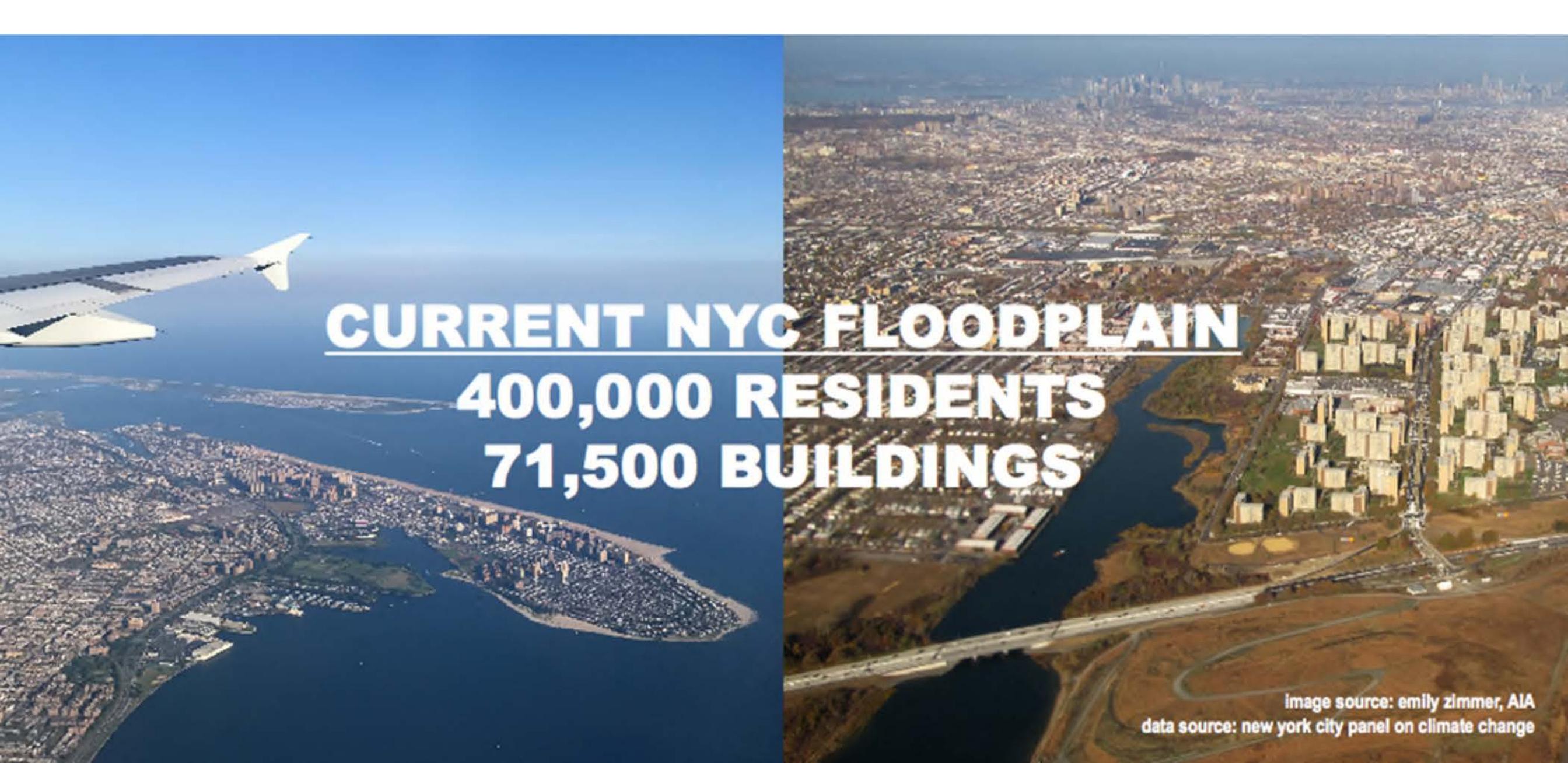




# new york city

Image source: emily zimmer, AIA





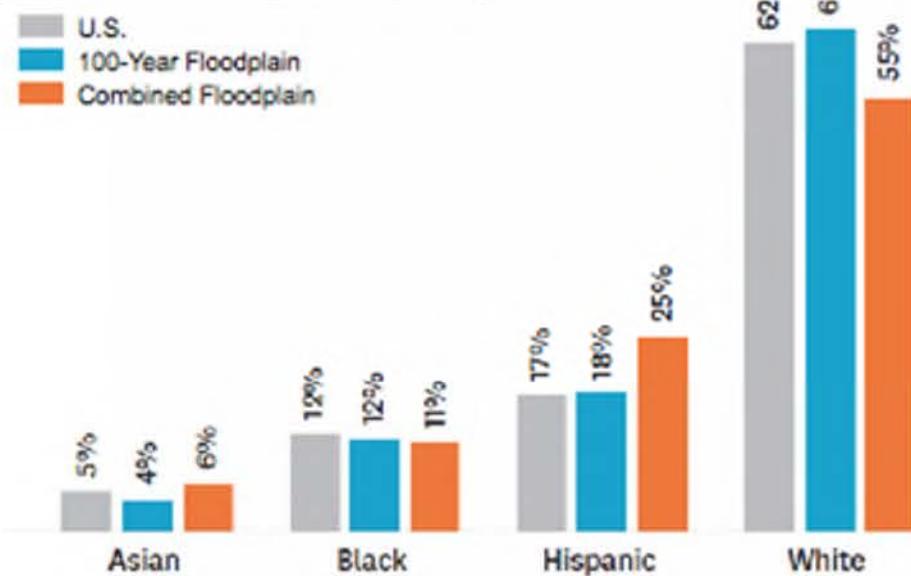
**CURRENT NYC FLOODPLAIN**  
**400,000 RESIDENTS**  
**71,500 BUILDINGS**

image source: emily zimmer, AIA  
data source: new york city panel on climate change

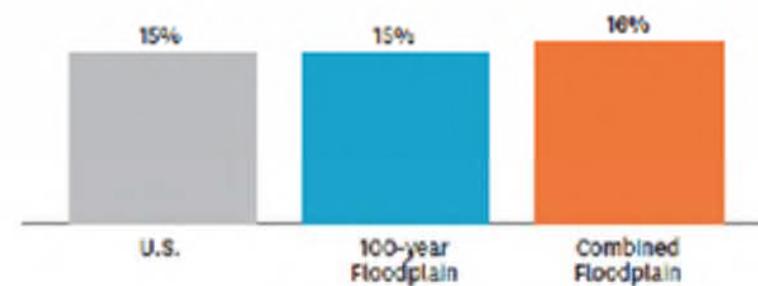


Image source: emily zimmer, AIA

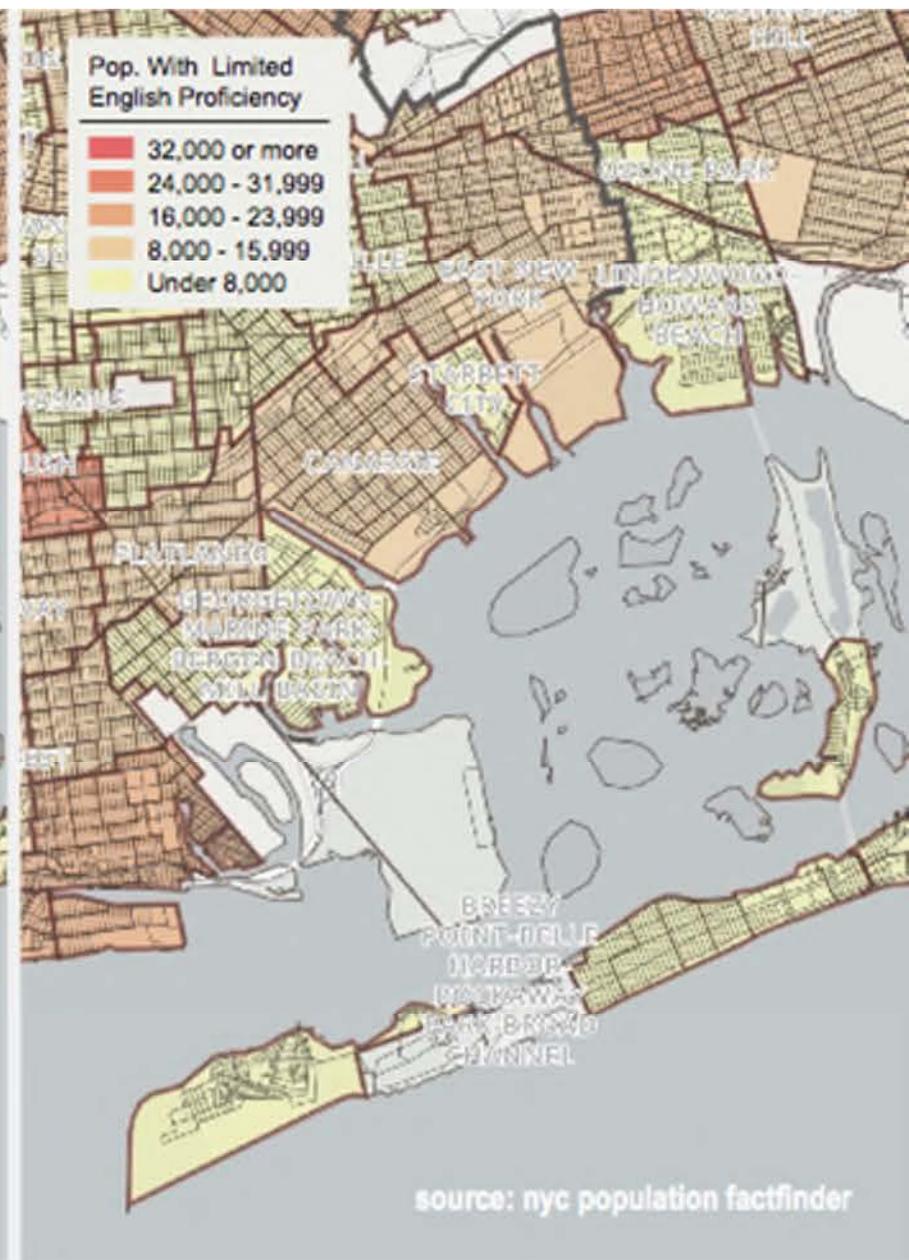
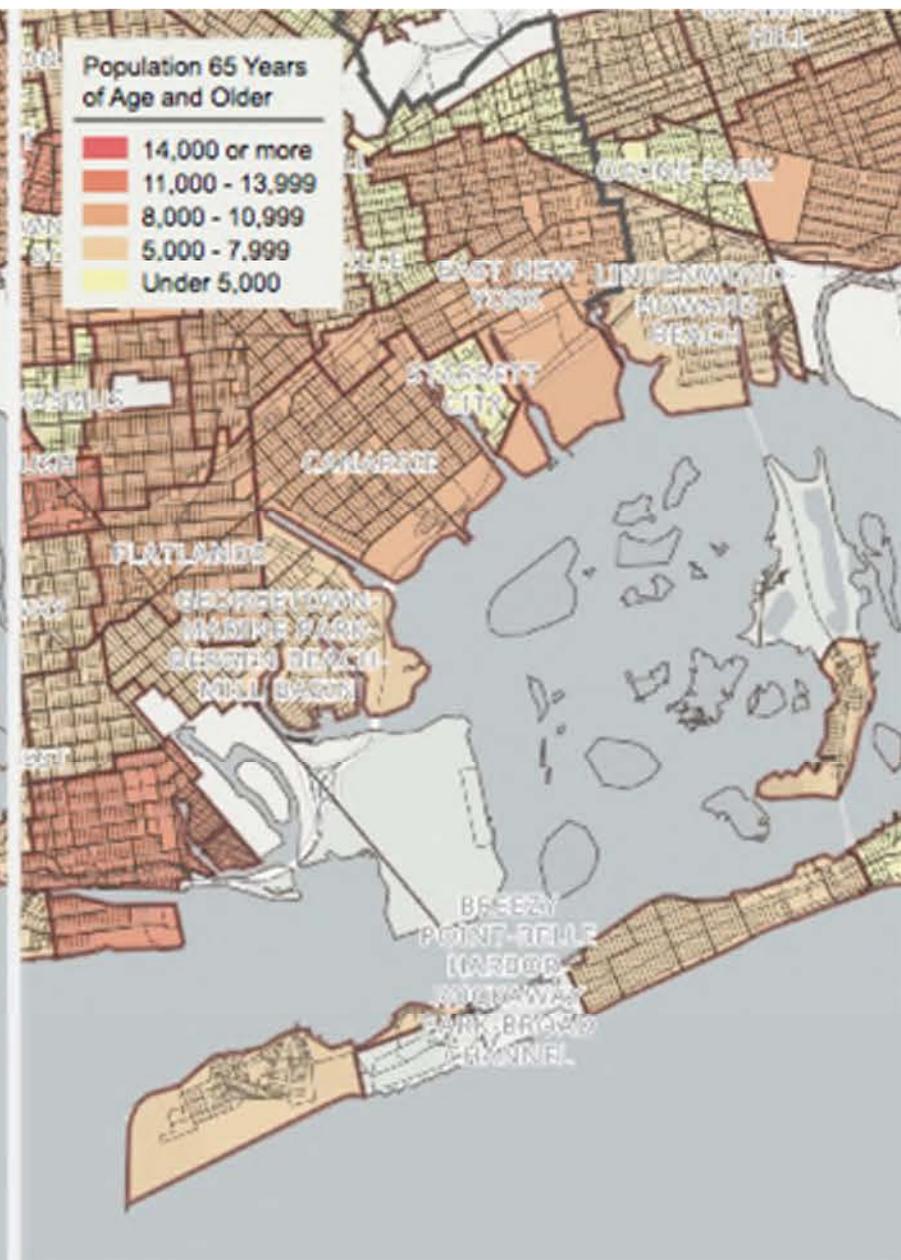
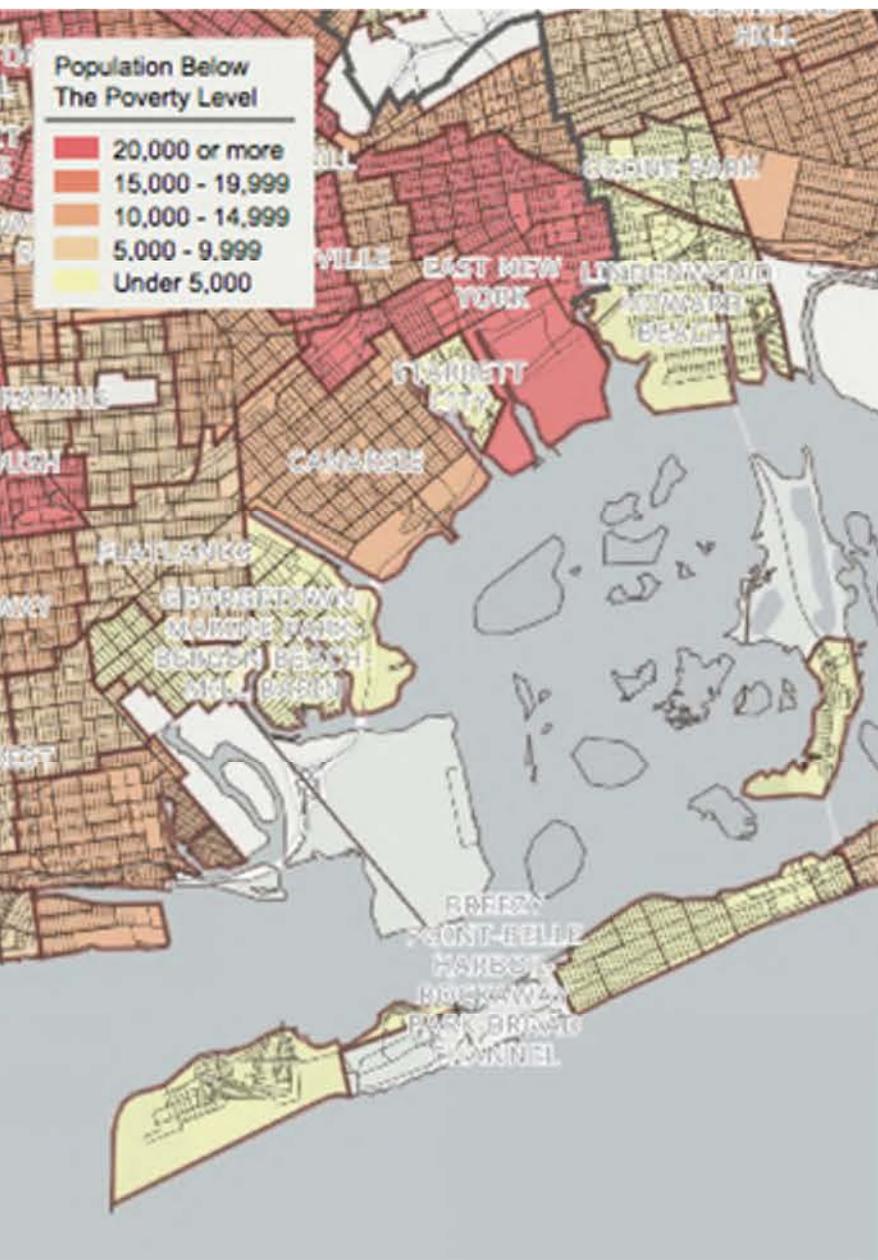
#### U.S. National Floodplain Demographics



#### Percent of Population Below the Poverty Line



source: nyu furman center



source: nyc population factfinder



**90,000 BUILDINGS  
70,000 HOUSING UNITS**

Image source: shan jayakumar, AFHny  
data source: "a stronger, more resilient new yprk"



# adapt v. retreat

image source: emily zimmer, AIA



Image source: nyc build it back program



background image source: google earth



Image source: emily zimmer, AIA



**2100 NYC FLOODPLAIN**  
**+100,00 BUILDINGS**  
**+860,000 RESIDENTS**

Image source: new york city flood hazard mapper  
data source: new york city panel on climate change

Thank you!