WEATHERING CHANGE

ANTIOCH UNIVERSITY NEW ENGLAND
Center for Climate Preparedness and Community Resilience

Strengthen communities to prepare, respond and recover in the face of climate impacts and other disruptions through collaborative, innovative solutions.

communityresilience-center.org

Dr. Abigail Abrash Walton
Co-Director CCPCR

Local Solutions for Strong Communities

… a series of online courses focused on the fundamentals of climate change resilience.

- Engage in each course for 4 weeks
- Enroll for graduate credit or audit the course
- Increase your skill set in climate resilience for better outcomes
- Discover solutions to local issues you face on the job or in your community.
- Register for one course or the whole series.

http://www.communityresilience-center.org/climate-change-resilience-series/

Local Solutions for Strong Communities

… a series of online courses focused on the fundamentals of climate change resilience.

Join us for the next online course in this series

Climate Impacts: Vulnerability and Adaptation Planning

Sunday, October 6 – November 2, 2019

http://www.communityresilience-center.org/climate-change-resilience-series/

Instructor: Dr. Christa Daniels

Save the Date!

2020 Local Solutions Eastern Climate Preparedness Conference

May 11-12, 2020 • Portland, Maine

http://www.communityresilience-center.org/conferences/2020-local-solutions-eastern-climate-preparedness-conference/

U.S. Climate Resilience Toolkit

Meet the challenges of a changing climate by finding information and tools to help you understand and address your climate risks.

toolkit.climate.gov

Ned Gardiner,
Engagement Manager

Logistics

If you have a question, please write it in the Q&A section (not Chat) and select to All Panelists, so we can see the questions.

If you are having technical difficulty, please use Chat and send to Host, so we can address the issue with you directly.

The presentation will be recorded and posted to the Antioch website within a week www.communityresilience-center.org

Mapping and Understanding Heat Health Vulnerability

Dr. Jeremy Hoffman

Chief Scientist, Science Museum of Virginia and Affiliate Faculty, Center for Environmental Studies, Virginia Commonwealth University

Dr. Jaime Madrigano

Policy Researcher, RAND Corporation and Affiliate Faculty, Pardee RAND Graduate School

WEATHERING CHANGE

U.S. Climate Resilience Toolkit

AU | ANTIOCH UNIVERSITY NEW ENGLAND
Center for Climate Preparedness and Community Resilience

UHI Mapping Campaign Dashboard

In progress Completed

City	Expression of Intent	Committed	Preparation & Training	Mapping Dates Set	Mapping Event(s)	Implementation Underway
Worcester, MA	●	●	●	Mapped on August 20	●	
Yonkers, NY	●	●	●	Mapped on August 4	●	
Boston, Cambridge, & Brookline MA	●	●	●	Mapped on July 29 & 30	●	●
Seattle, WA	●	●	●			
West Palm Beach, FL	●	●	●	Mapped on August 19	●	
Miami, FL	●	●	●			
Ft. Lauderdale, FL	●	●	●	Mapping on Sept. 18		
Honolulu, HI	●	●	●	Mapped on August 31	●	

2019 Urban Heat Island Mapping Campaign Sponsors

CAPA Strategies

NIHHIS

NOAA

Science Museum of Virginia

CRF

U.S. Climate Resilience Toolkit

Sign up for updates: NOAAClimateConnection@noaa.gov

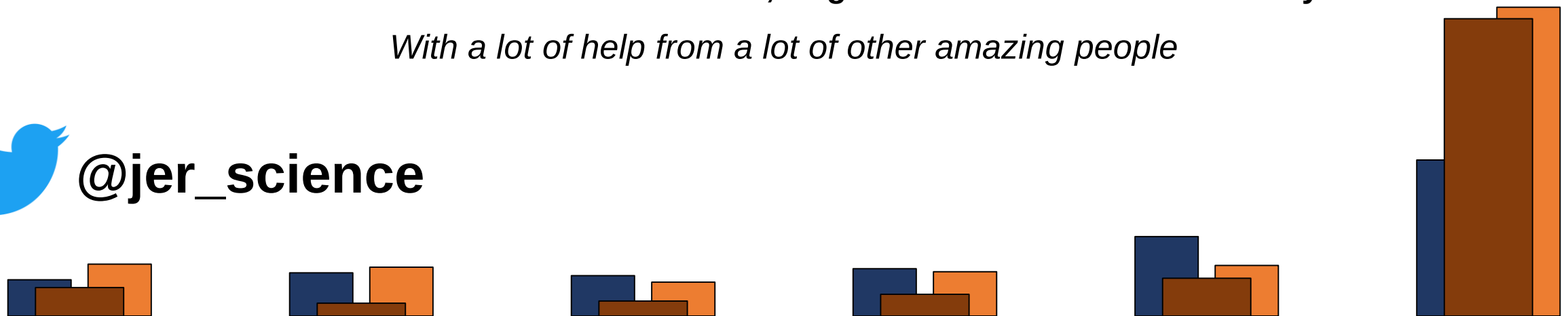
The Richmond Urban Heat Island Collective: Mapping and addressing extreme heat

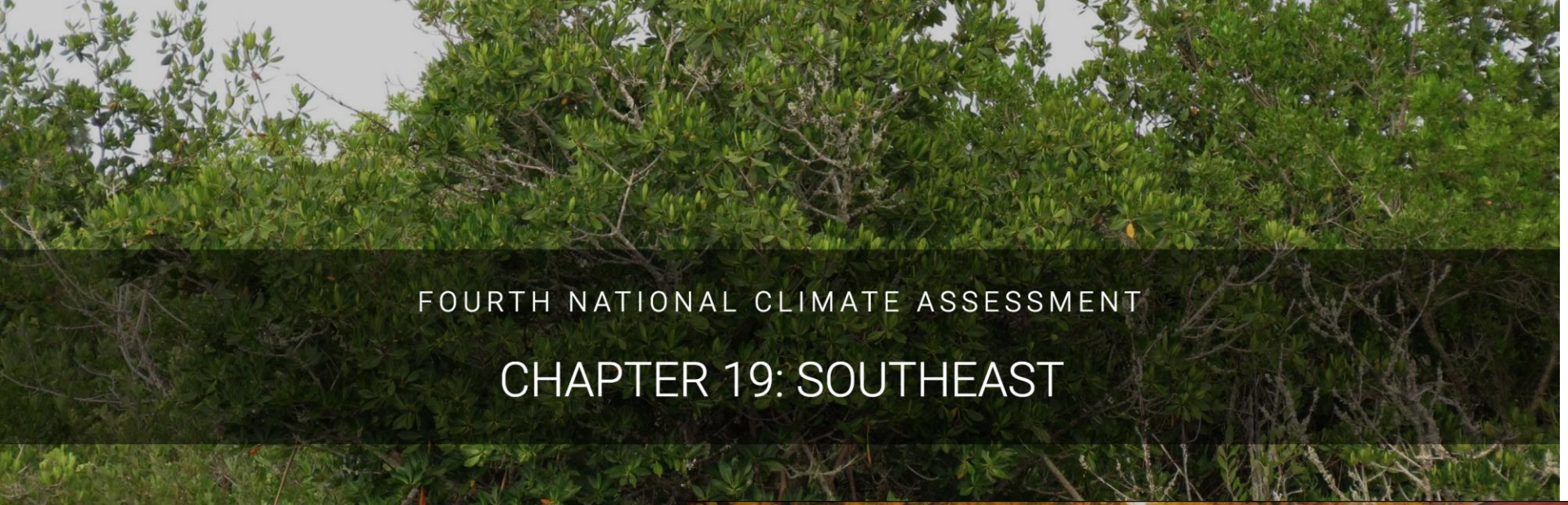
Jeremy S. Hoffman

Chief Scientist, Science Museum of Virginia
Center for Environmental Studies, Virginia Commonwealth University

With a lot of help from a lot of other amazing people

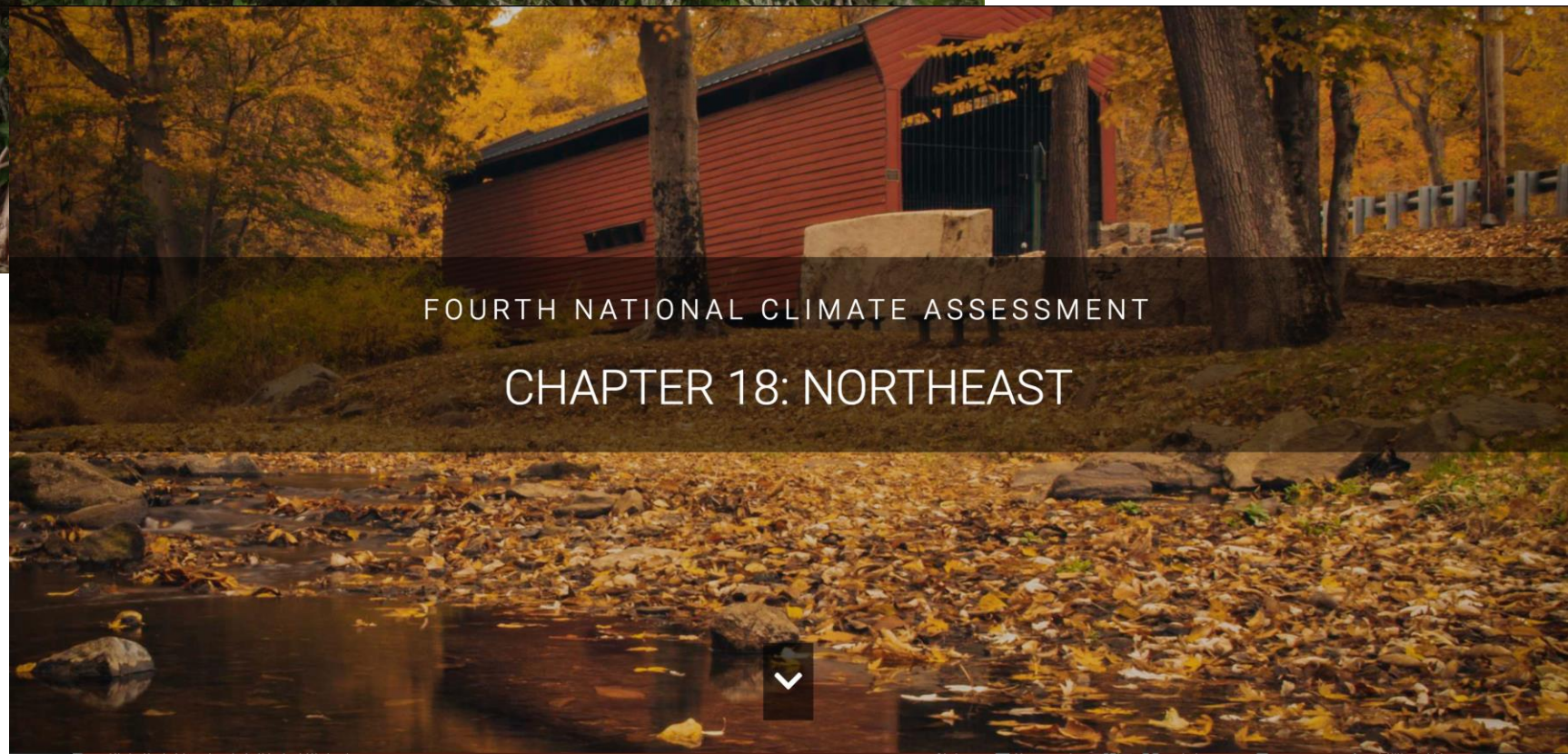
@jer_science





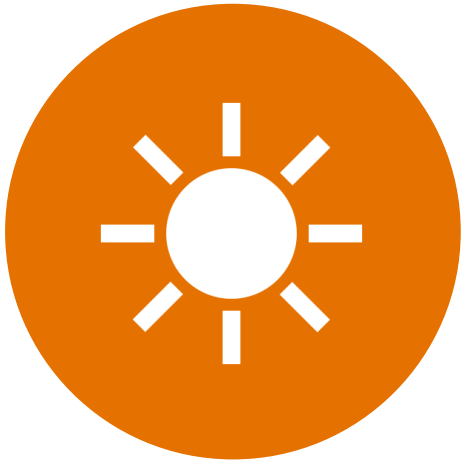
Dupigny-Giroux et al., 2018

Carter et al., 2018



Need to prepare for a:
hotter, wetter, sneezier and wheezier Virginia

Need to prepare for a:
hotter, wetter, sneezier and wheezier Virginia

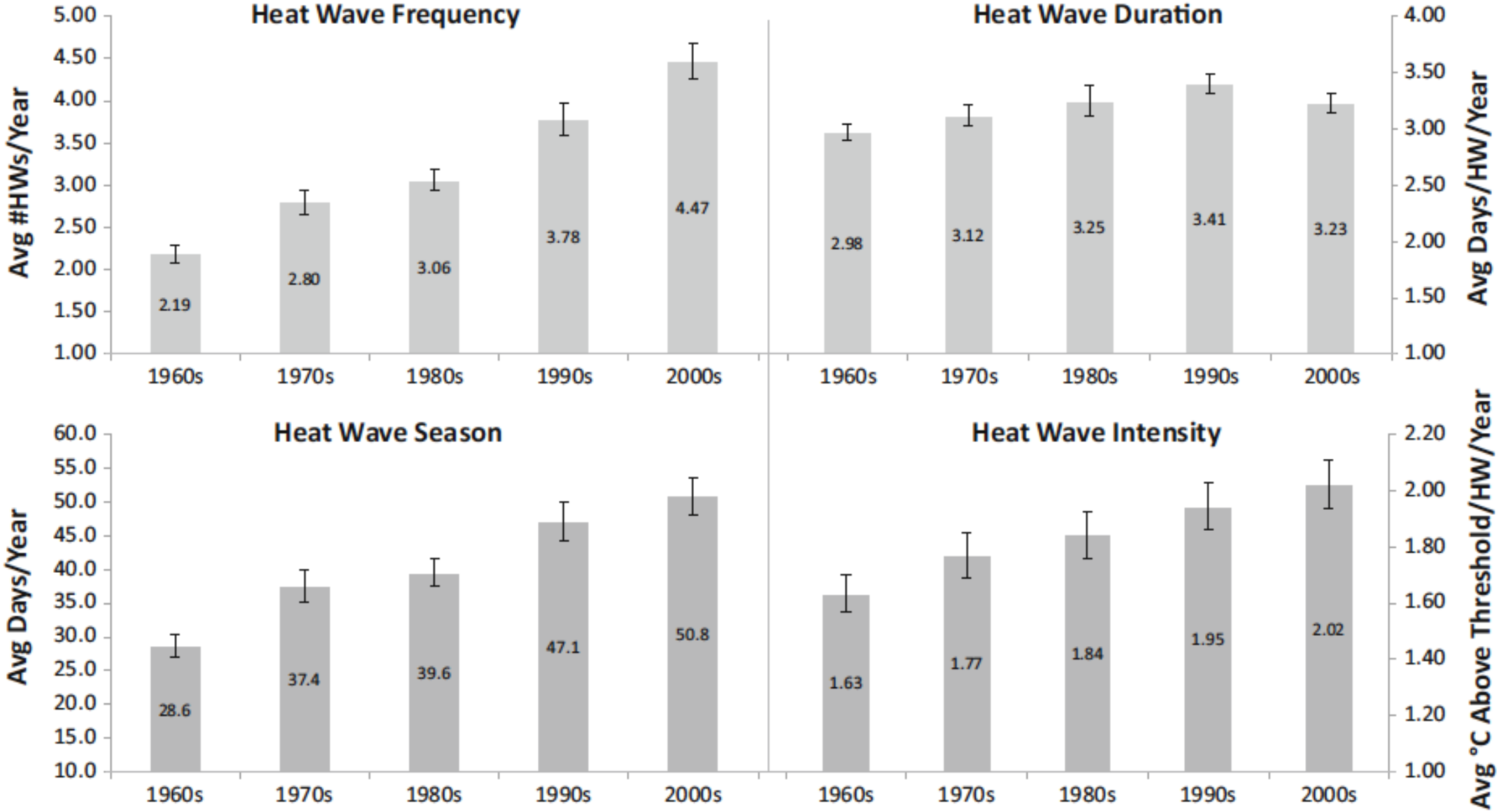



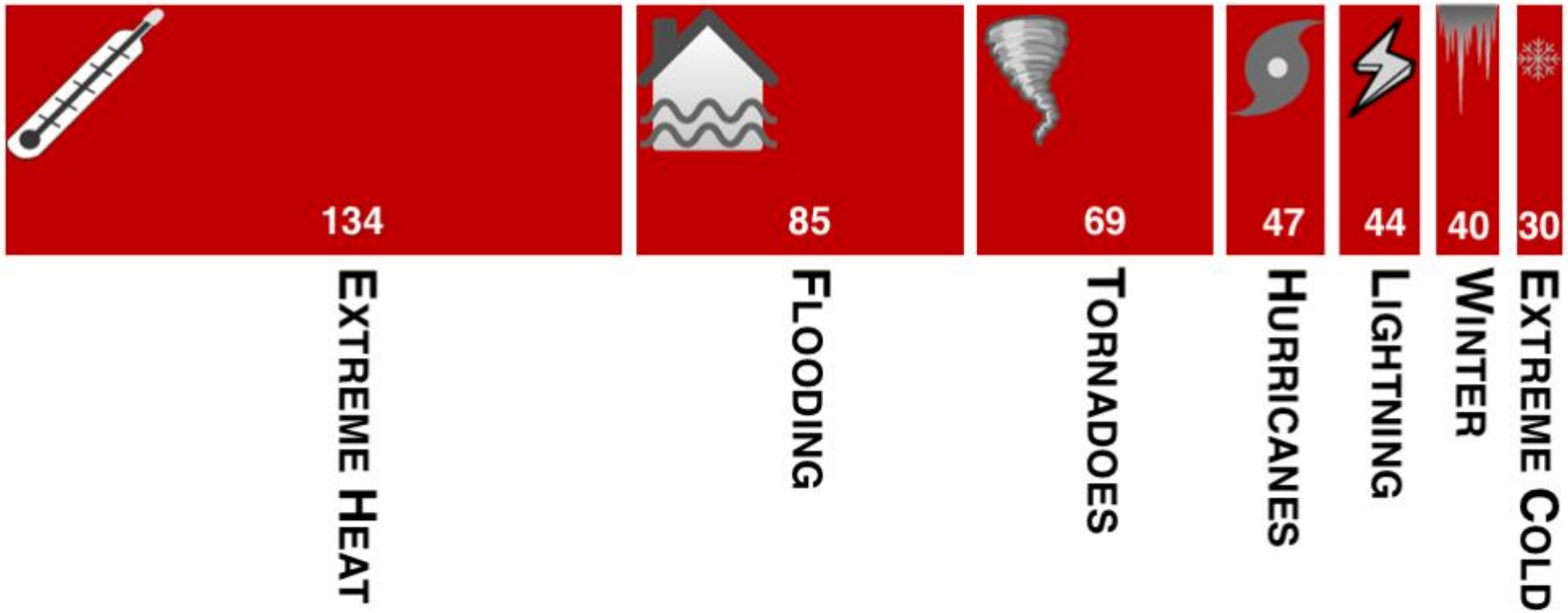
Fig. 2 Decadal average for each heat wave characteristic across all 50 cities

Habeeb et al., 2015

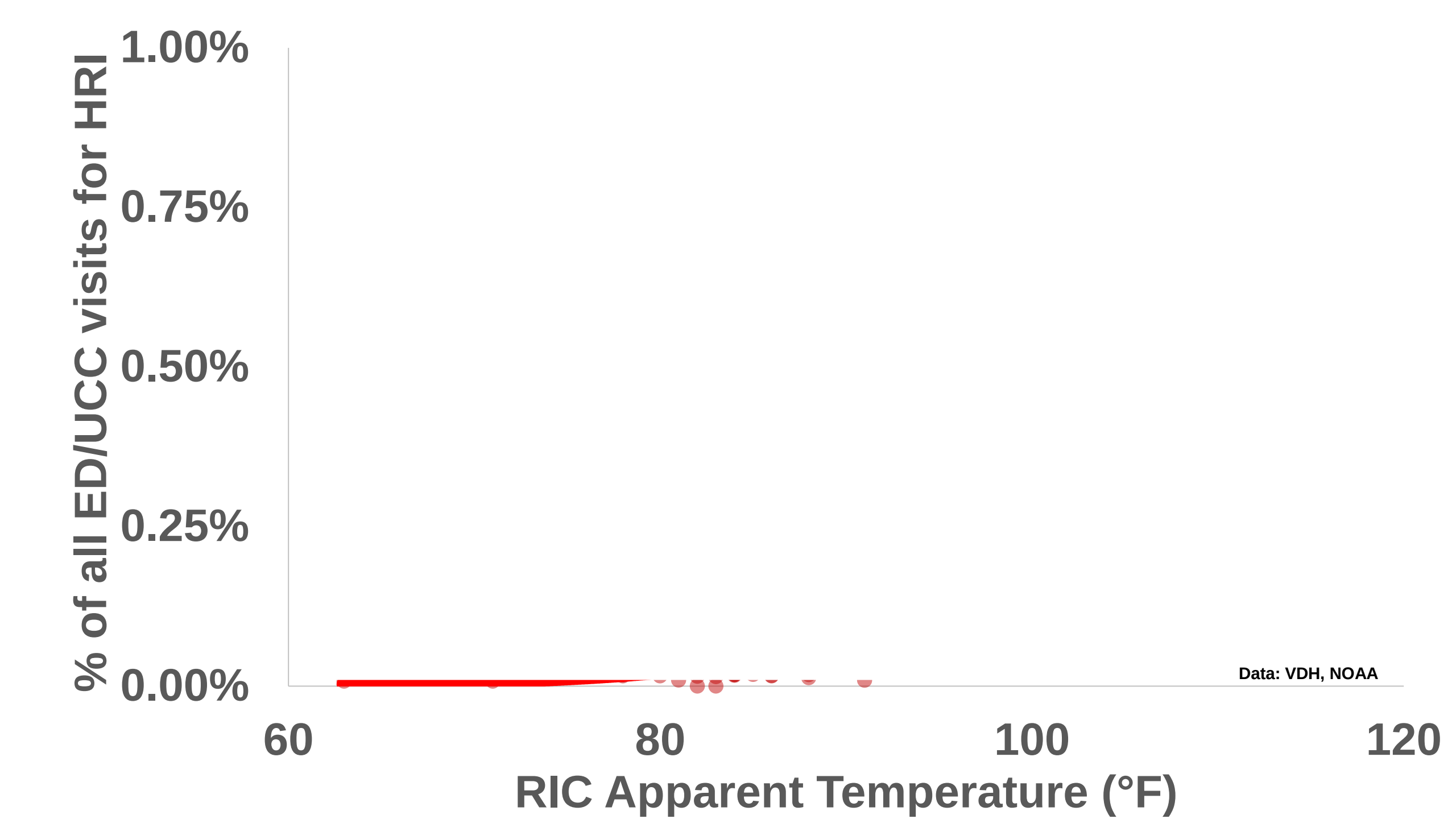
DEADLIEST WEATHER-RELATED HAZARDS

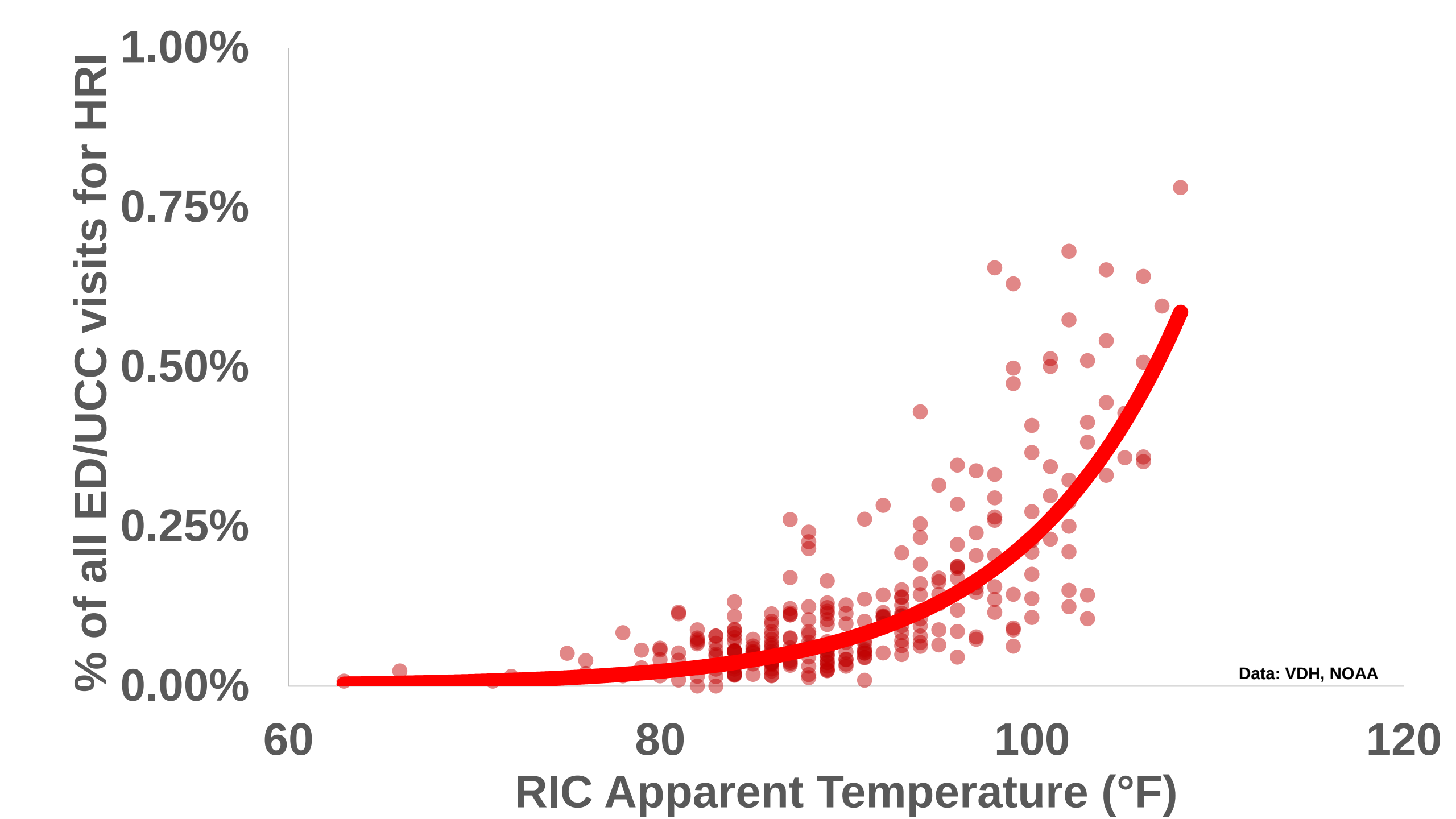
Science Museum of Virginia

AVERAGE NUMBER OF PEOPLE KILLED PER YEAR (1988-2017)



Source: National Weather Service Office of Climate, Water, and Weather Services Natural Hazard Statistics

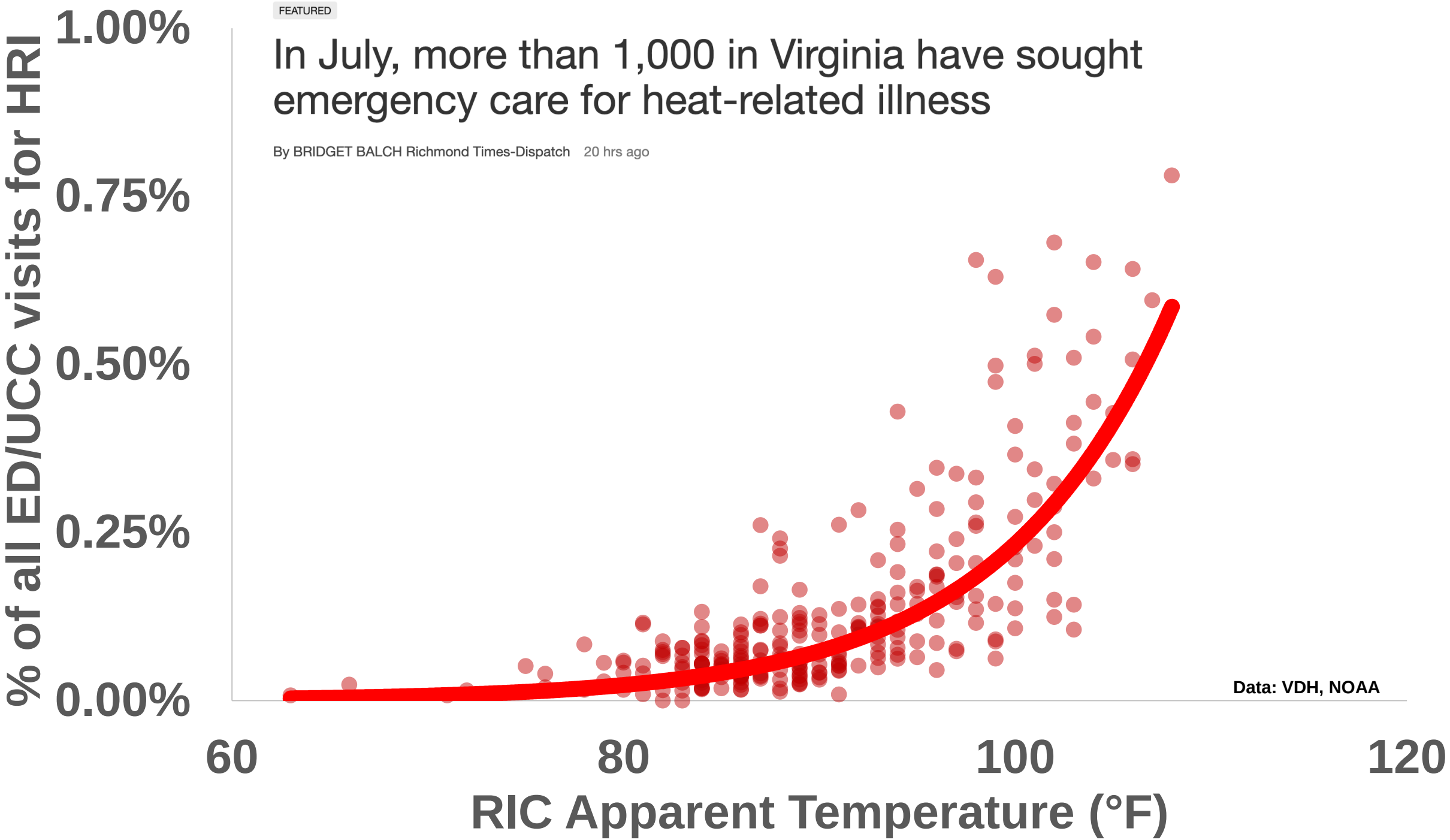

% of all ED/UCC visits for HRI
1.00%
0.75%
0.50%
0.25%
0.00%
Data: VDH, NOAA
60
80
100
120
RIC Apparent Temperature (°F)


% of all ED/UCC visits for HRI
1.00%
0.75%
0.50%
0.25%
0.00%
60
80
100
120
RIC Apparent Temperature (°F)
Data: VDH, NOAA

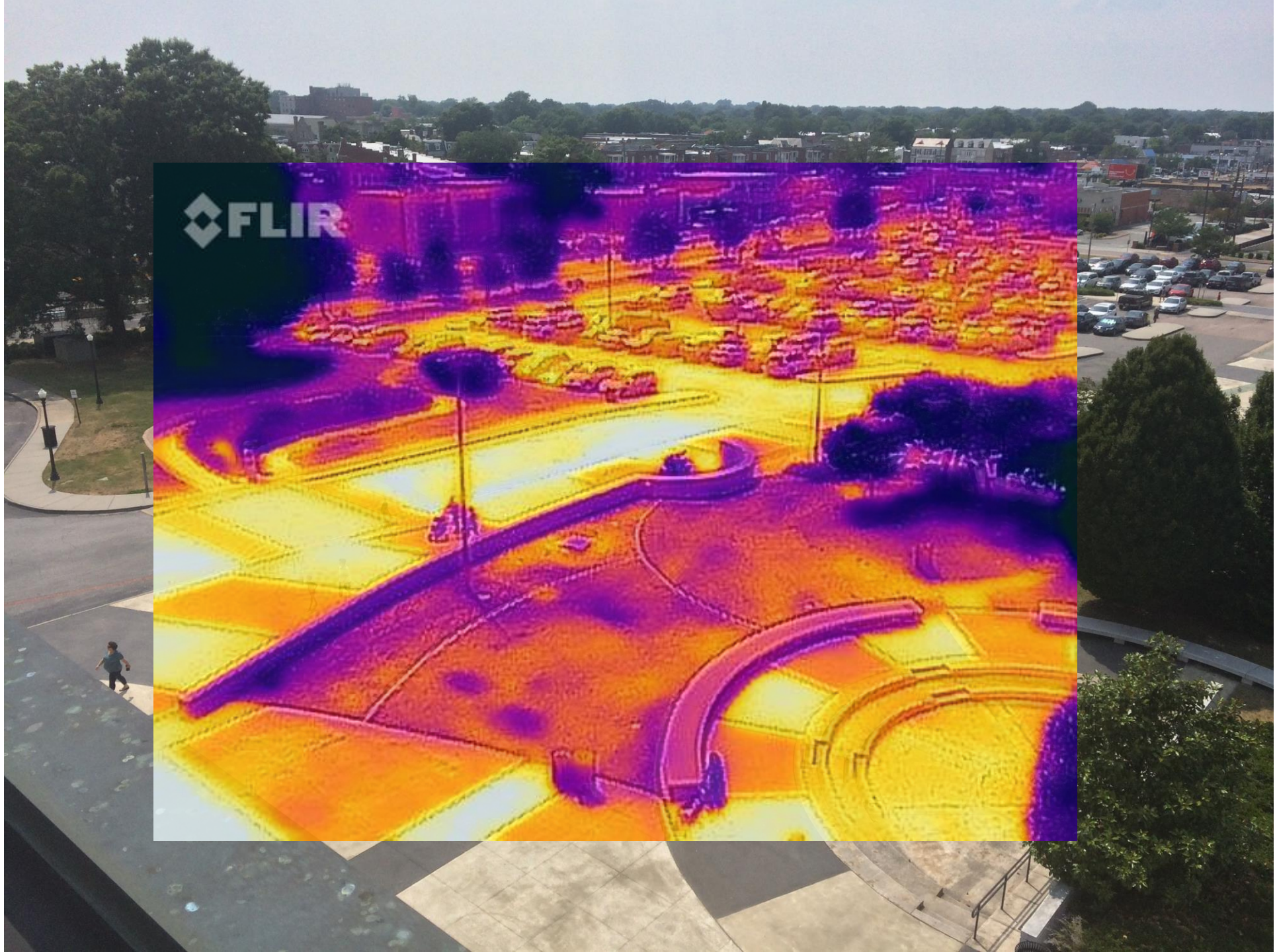
FEATURED

In July, more than 1,000 in Virginia have sought emergency care for heat-related illness

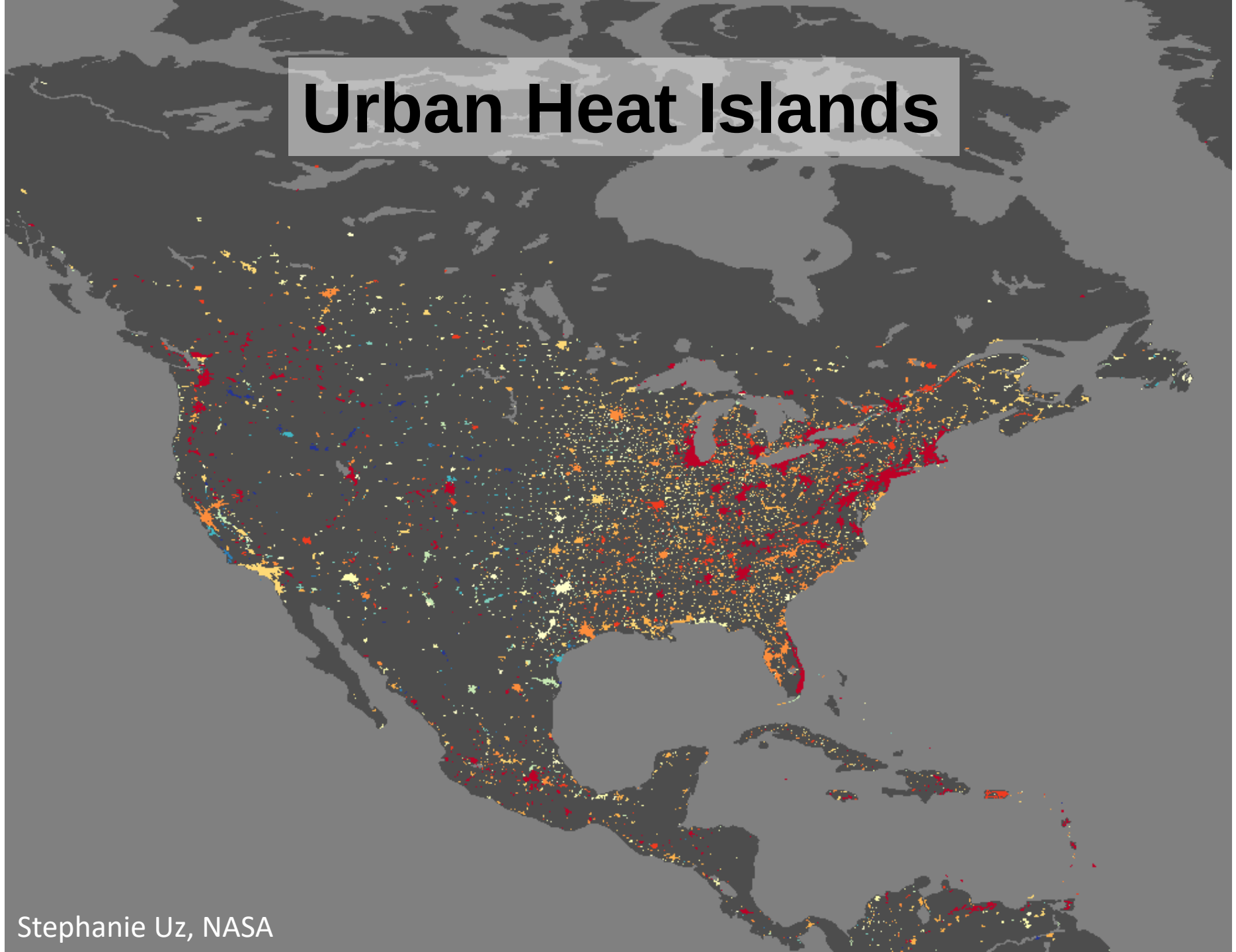
By BRIDGET BALCH Richmond Times-Dispatch 20 hrs ago



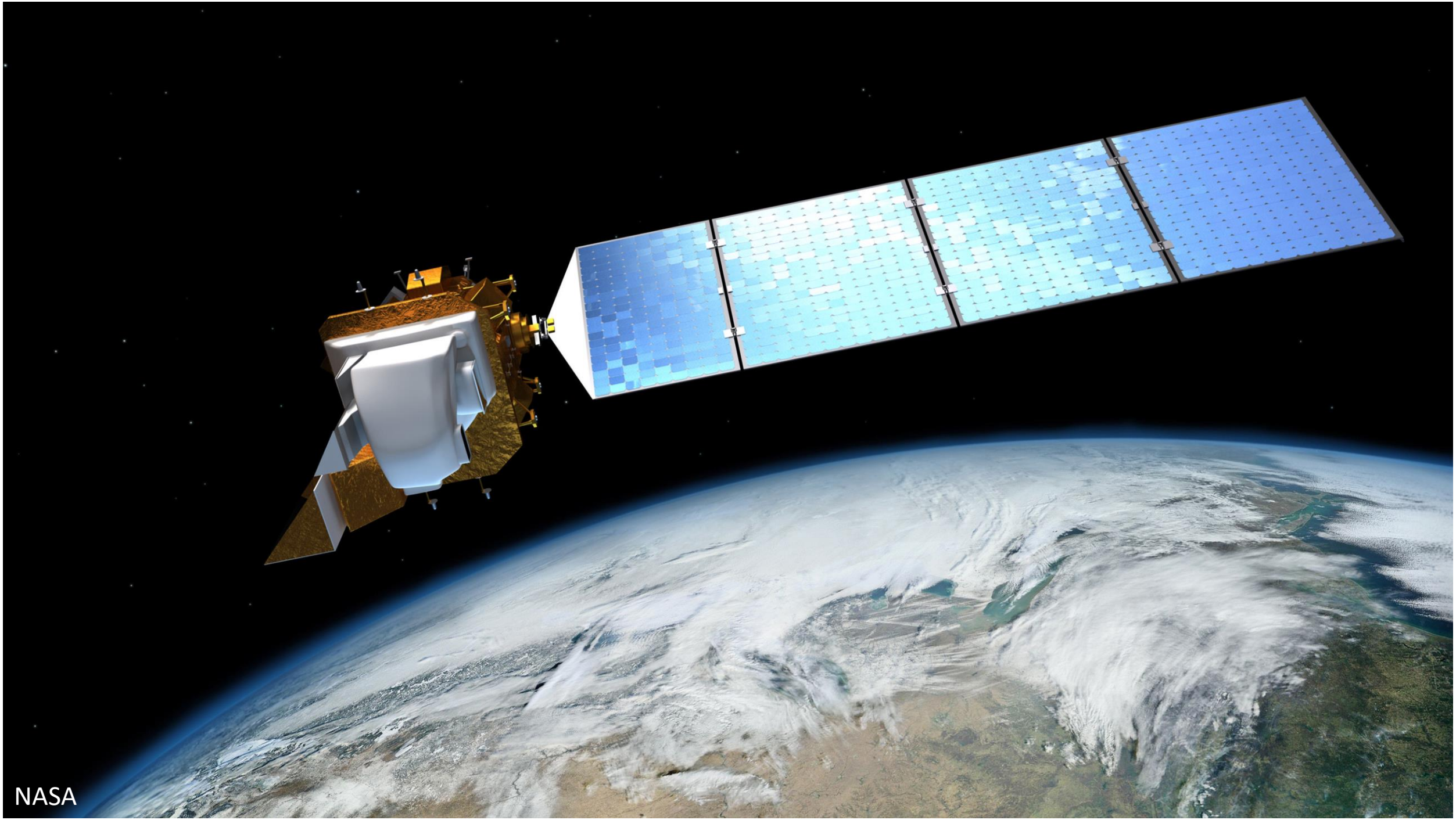
Science Museum of Virginia

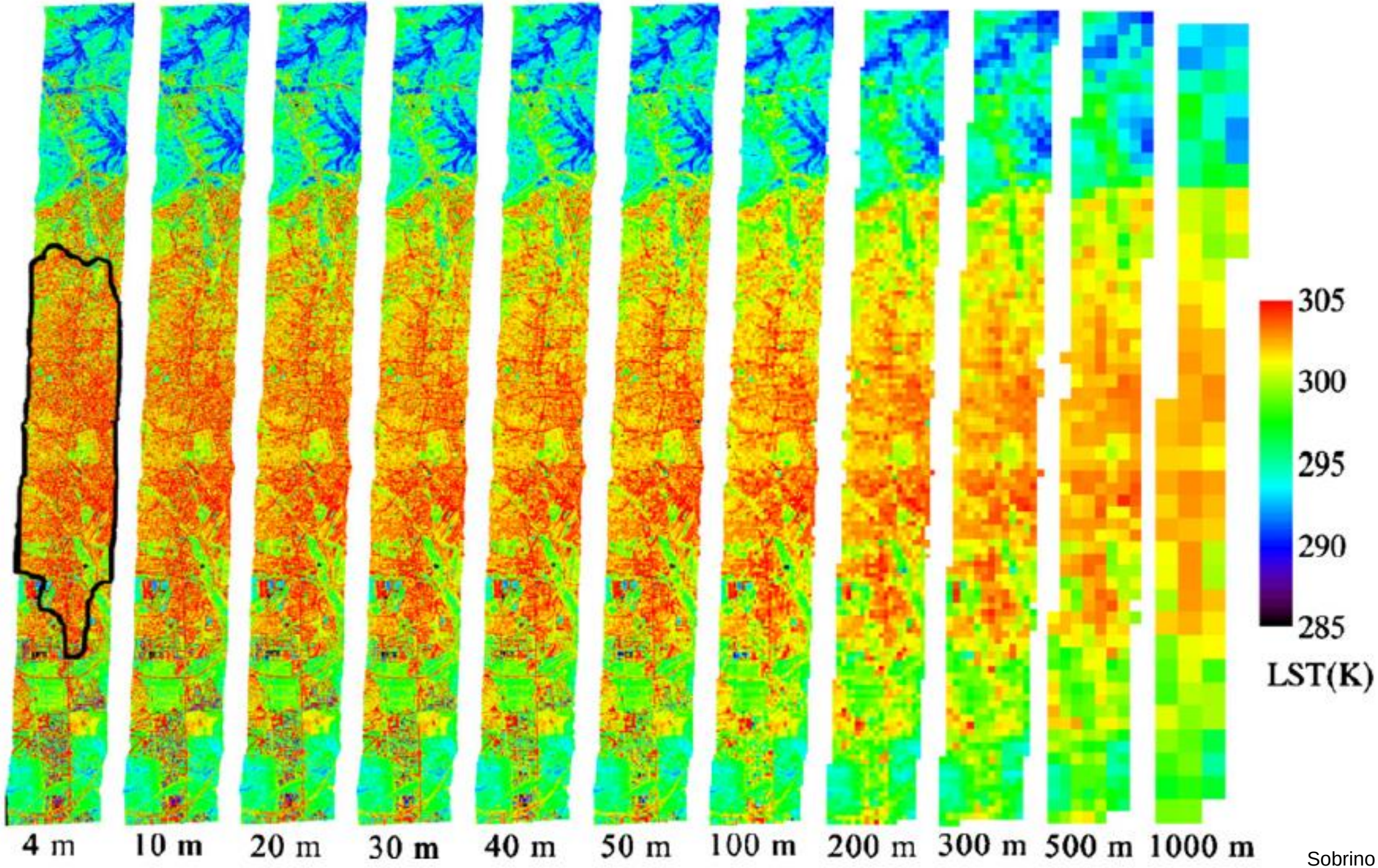

FLIR

Urban Heat Islands

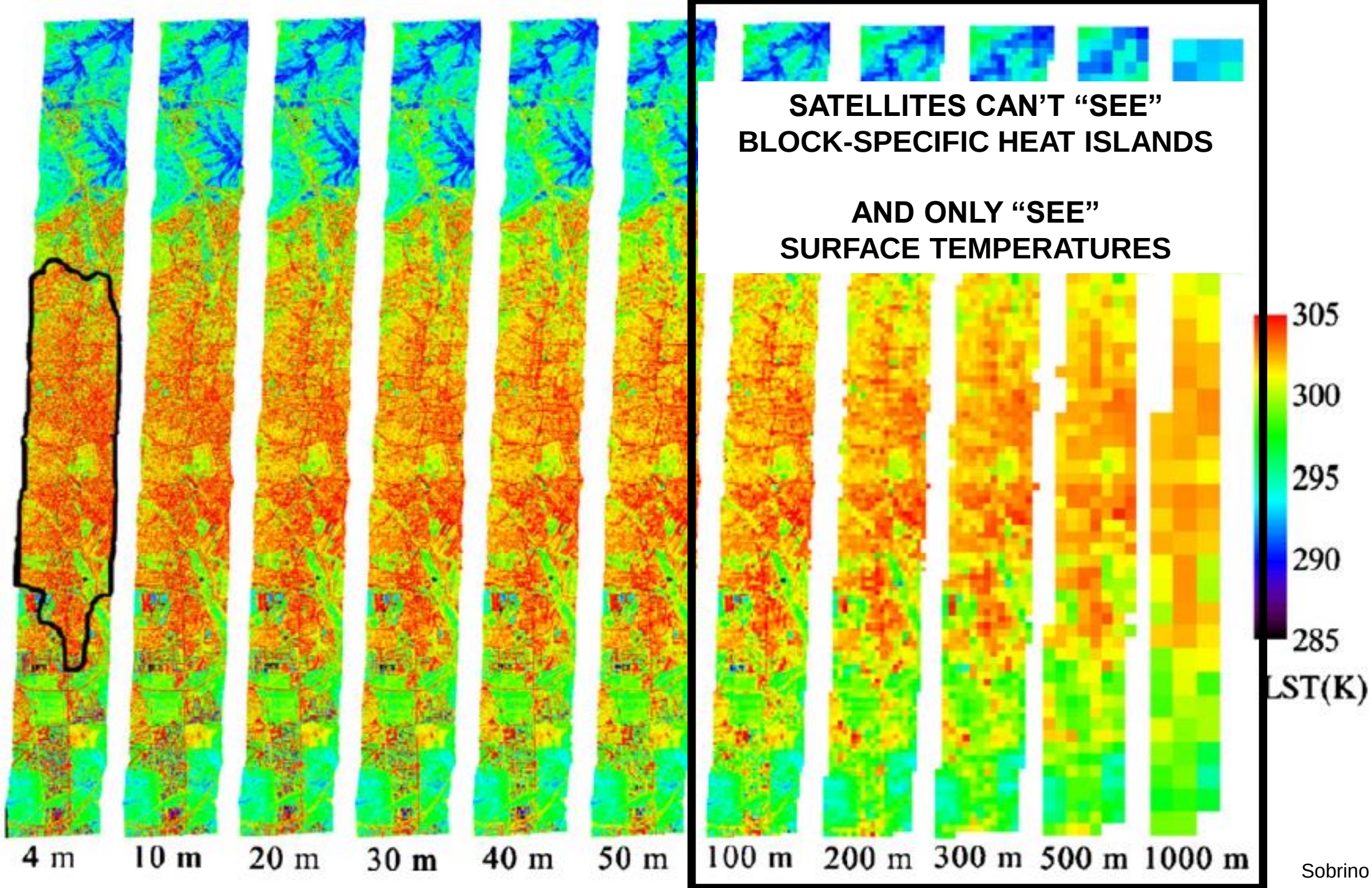


Stephanie Uz, NASA

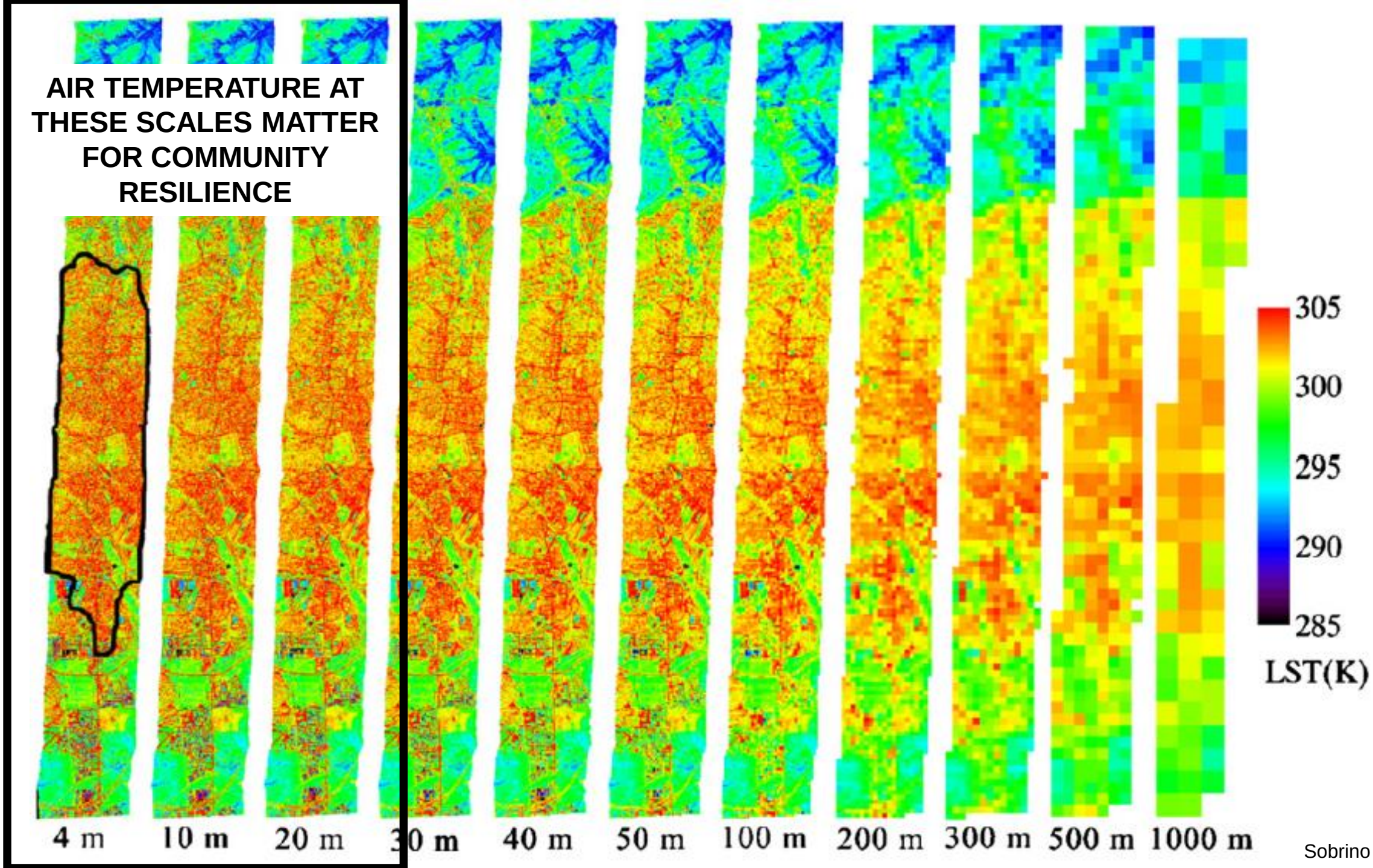

NASA



Sobrino et al., 2012



Sobrino et al., 2012



Sobrino et al., 2012

Clear need for understanding urban heat extremes within US cities…and acting on it

RICHMOND URBAN HEAT ISLAND COLLECTIVE

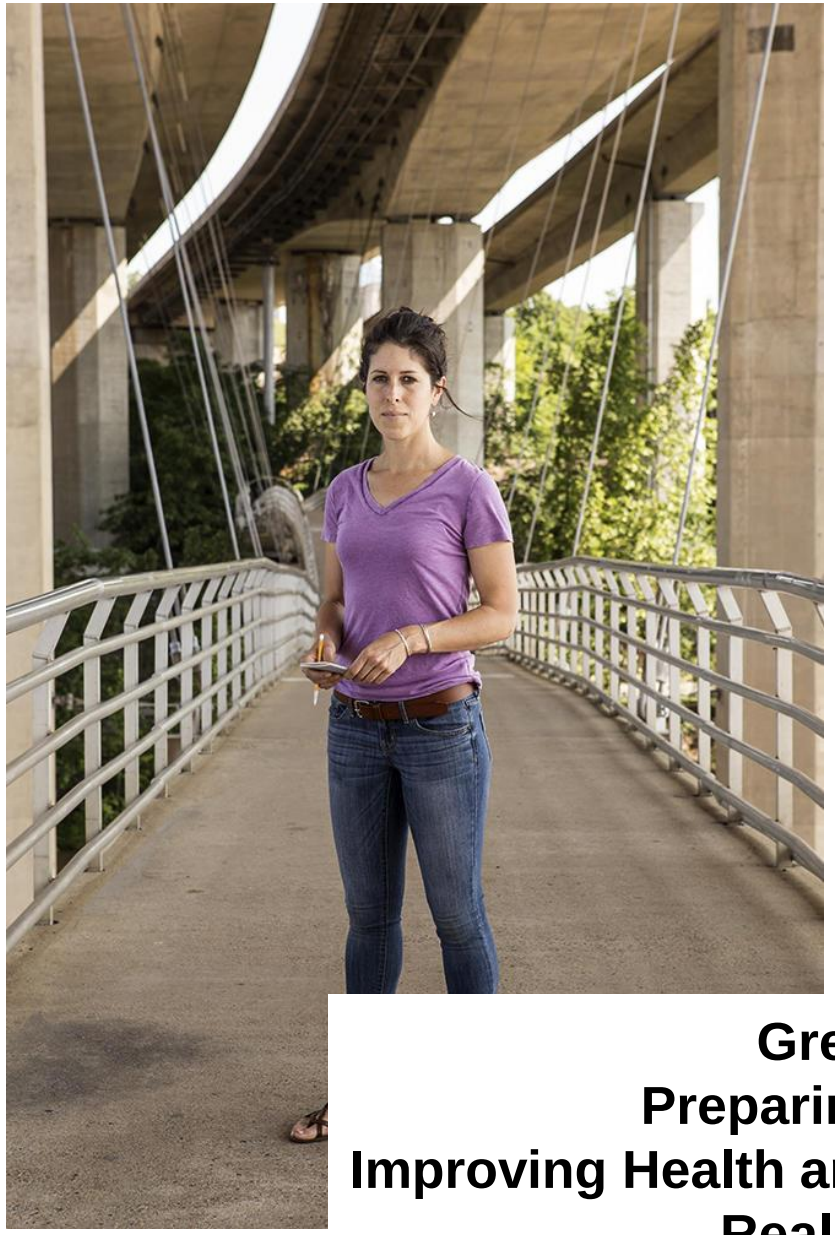

City of Richmond
RVA green
2050
RICHMOND
VIRGINIA

RICHMOND URBAN HEAT ISLAND COLLECTIVE

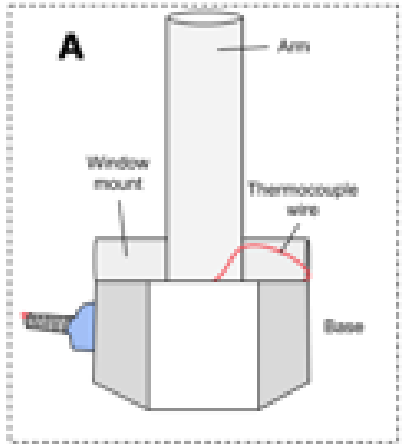
VCU

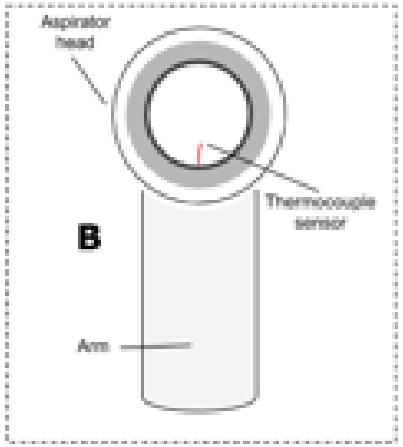
Richmond Times-Dispatch

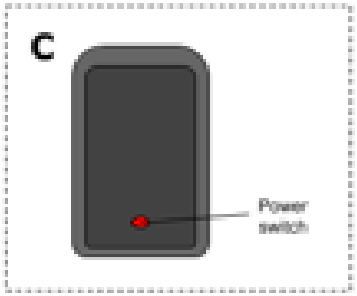
City of Richmond
RVAgreen
2050

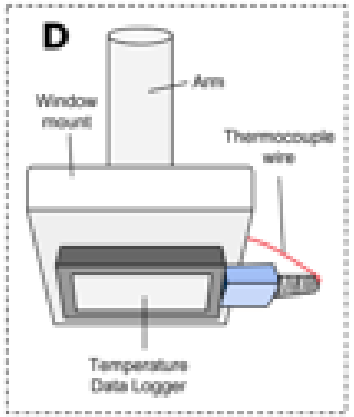


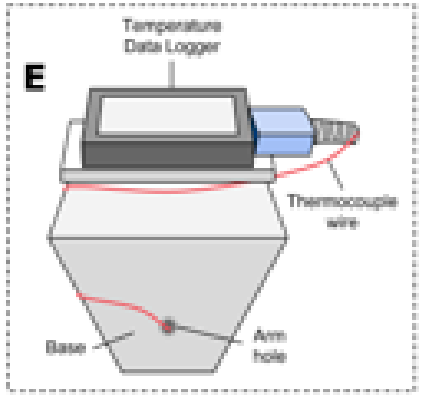
Greening Richmond
Preparing Youth for Success
Improving Health and Quality of Life of all Residents
Realizing Racial Equity

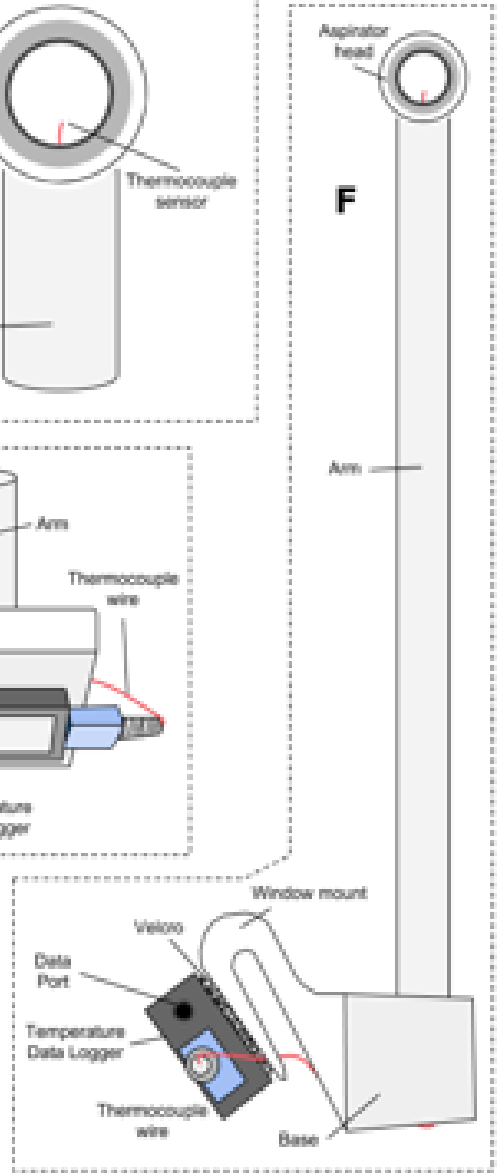


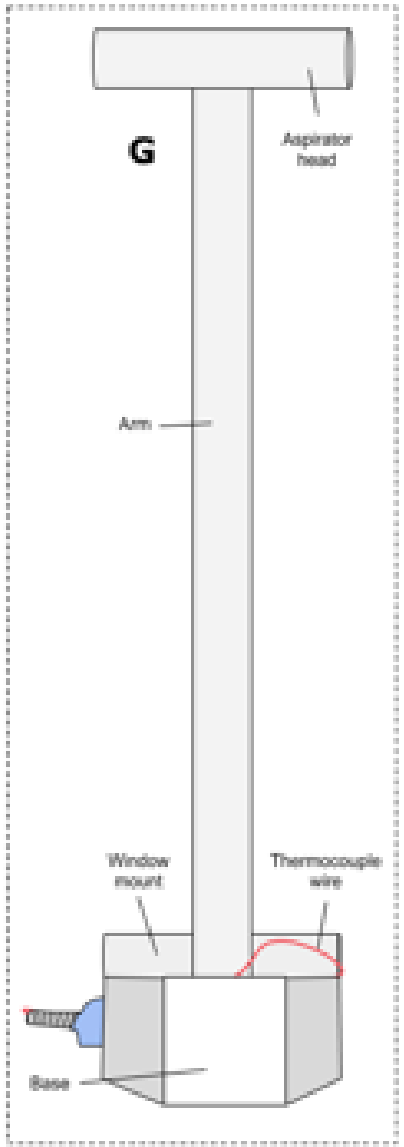


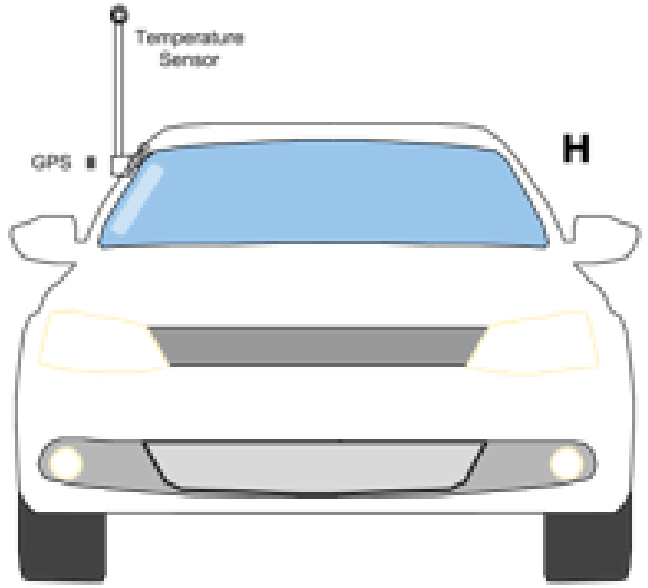












Jackson Voelkel, PSU

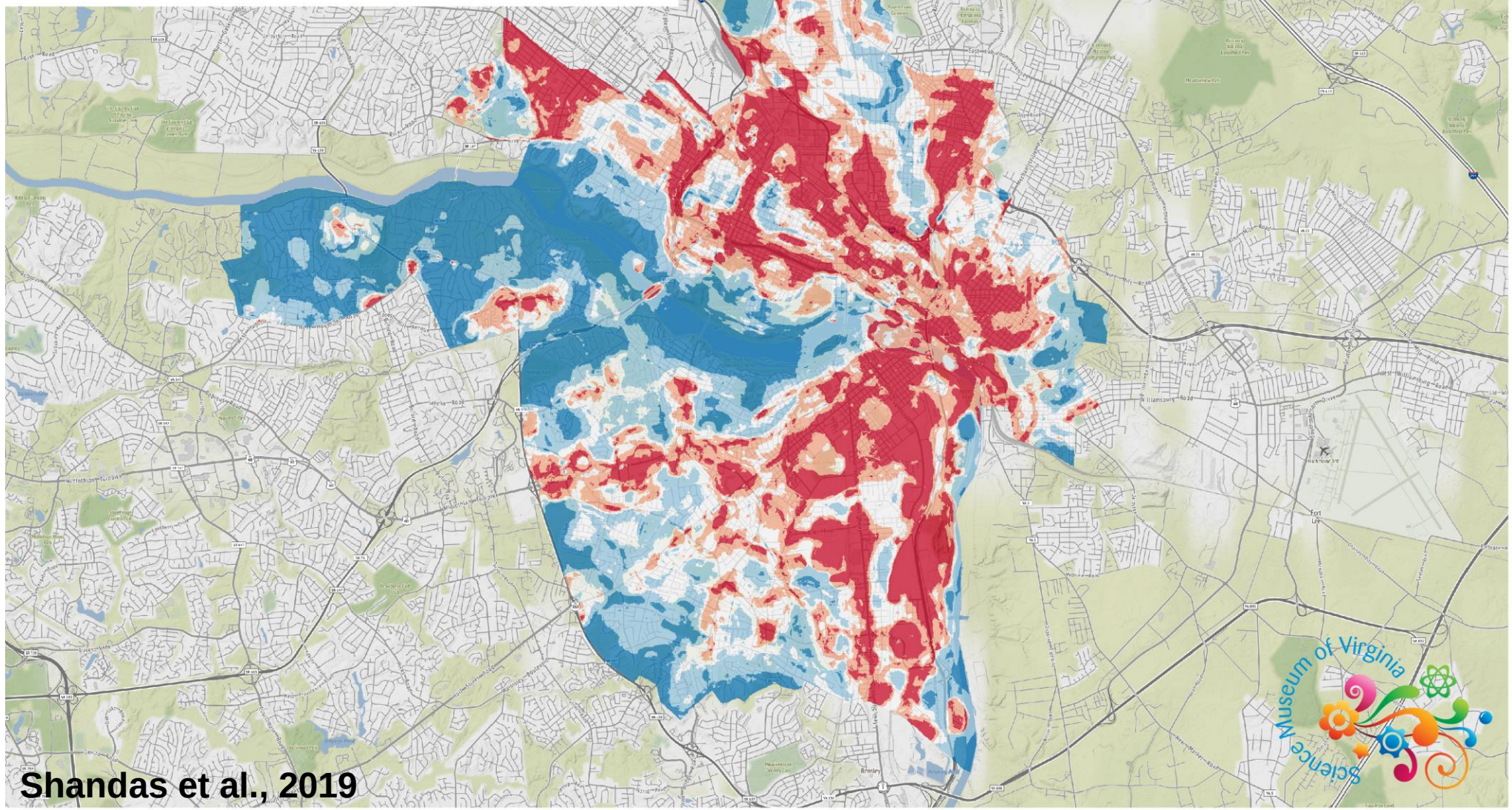
Shelby Lum, RTD


CODERS

Richmond's Urban Heat Islands

Afternoon (3PM) Temperatures on July 13, 2017

- < 94°F
- 94-95°F
- 95-95.5°F
- 95.5-96.2°F
- > 96.2°F



Shandas et al., 2019

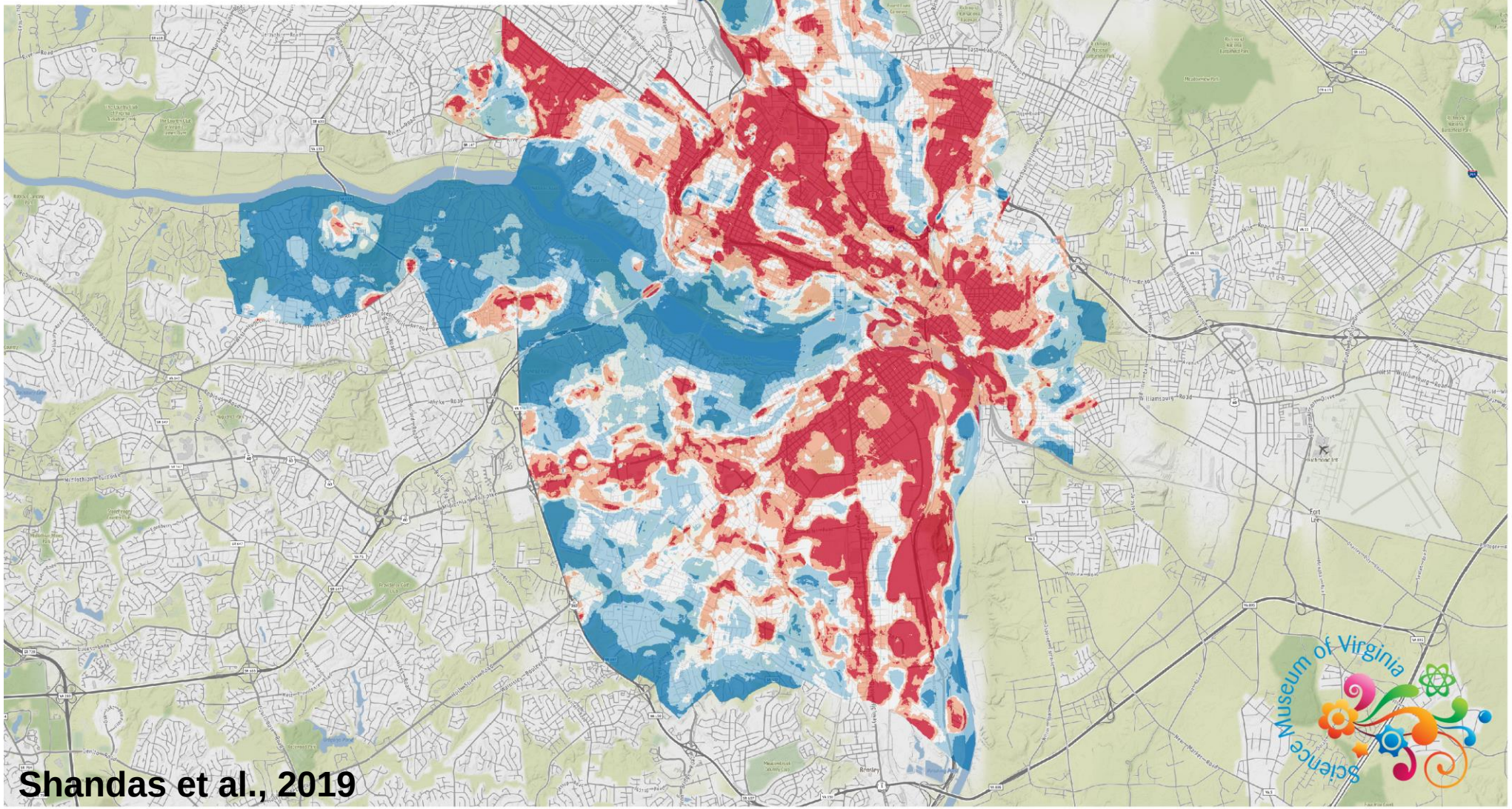
Museum of Virginia Science

Richmond's Urban Heat Islands

Afternoon (3PM) Temperatures on July 13, 2017

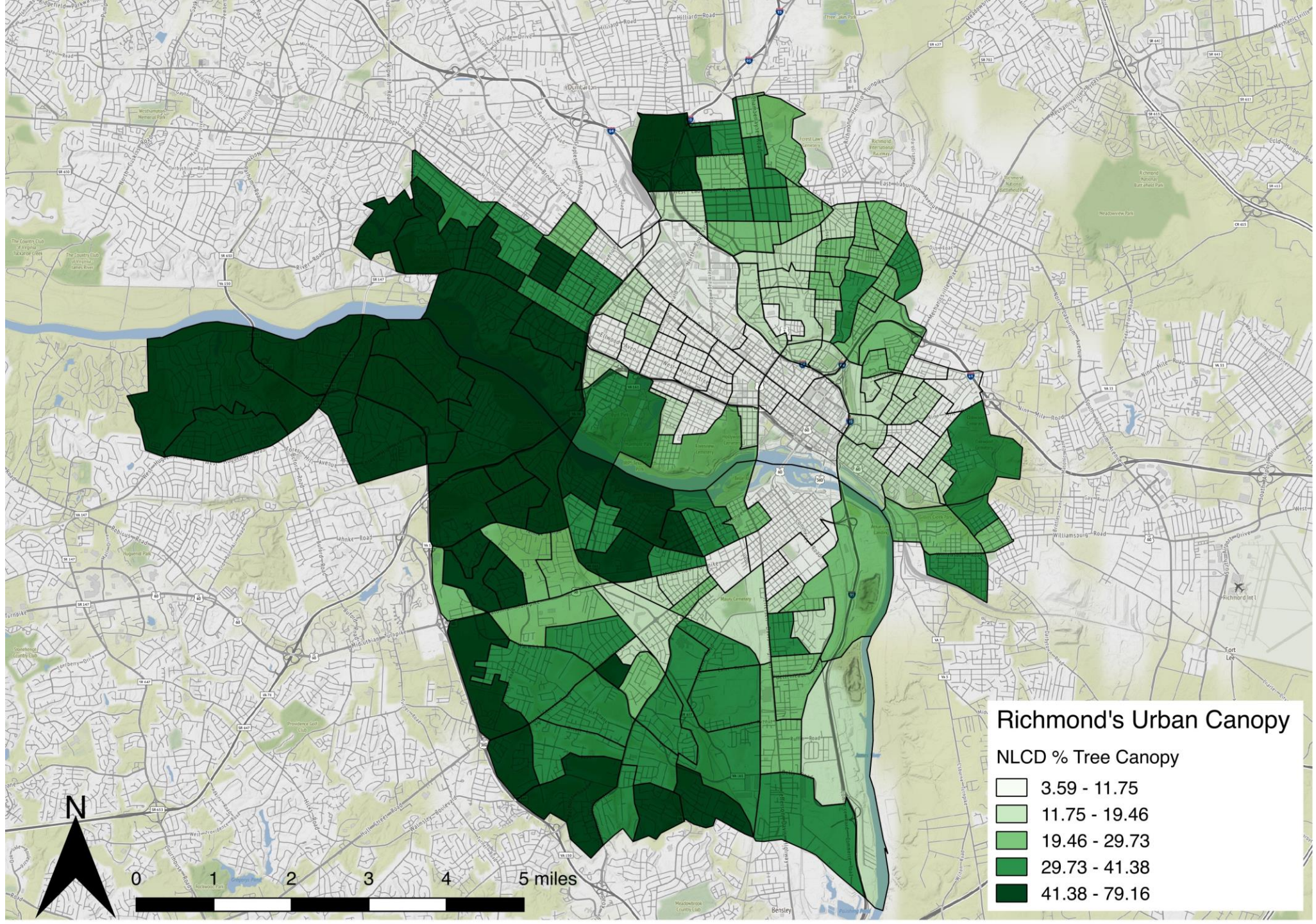
- < 94°F
- 94-95°F
- 95-95.5°F
- 95.5-96.2°F
- > 96.2°F

EXPOSURE

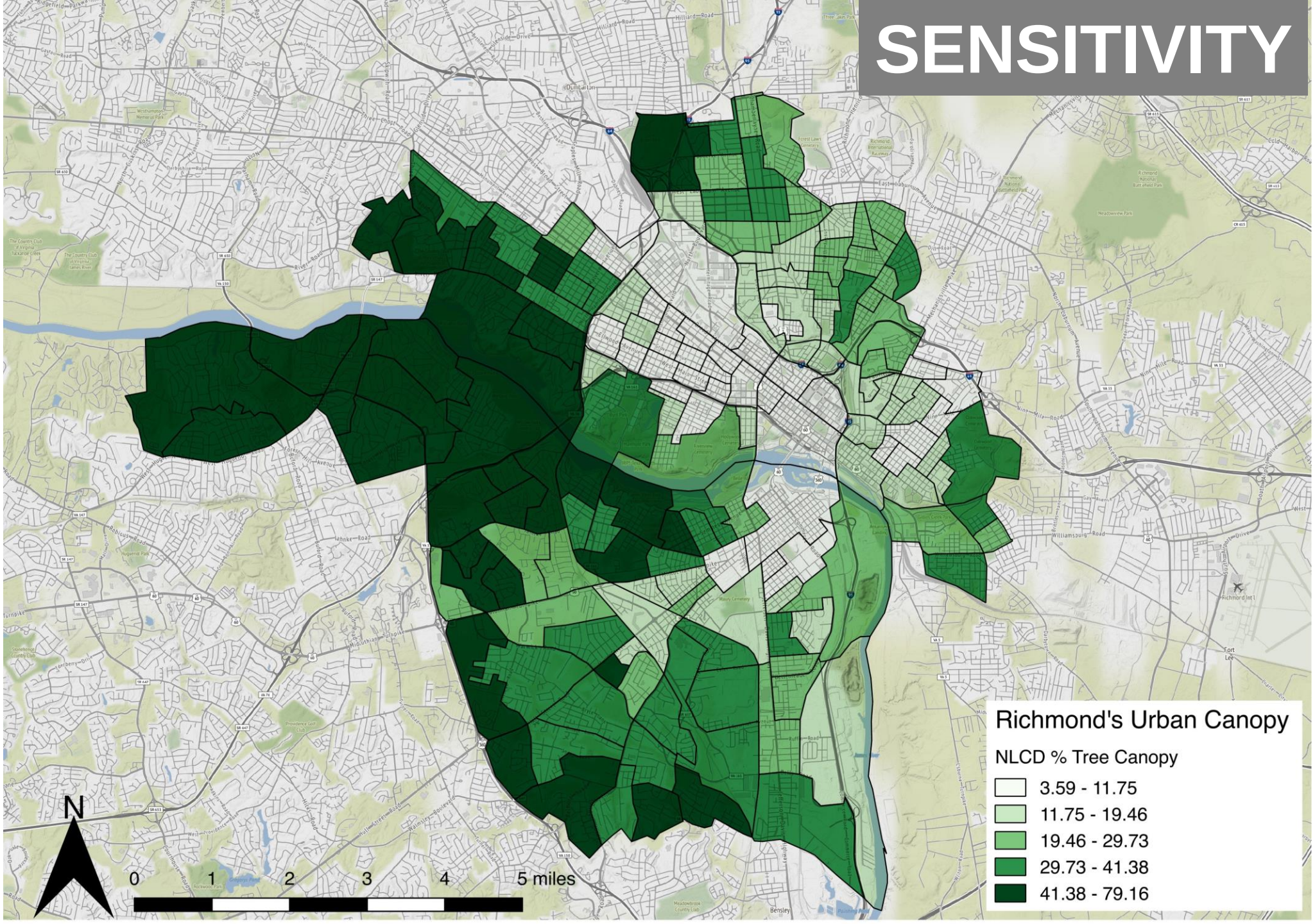


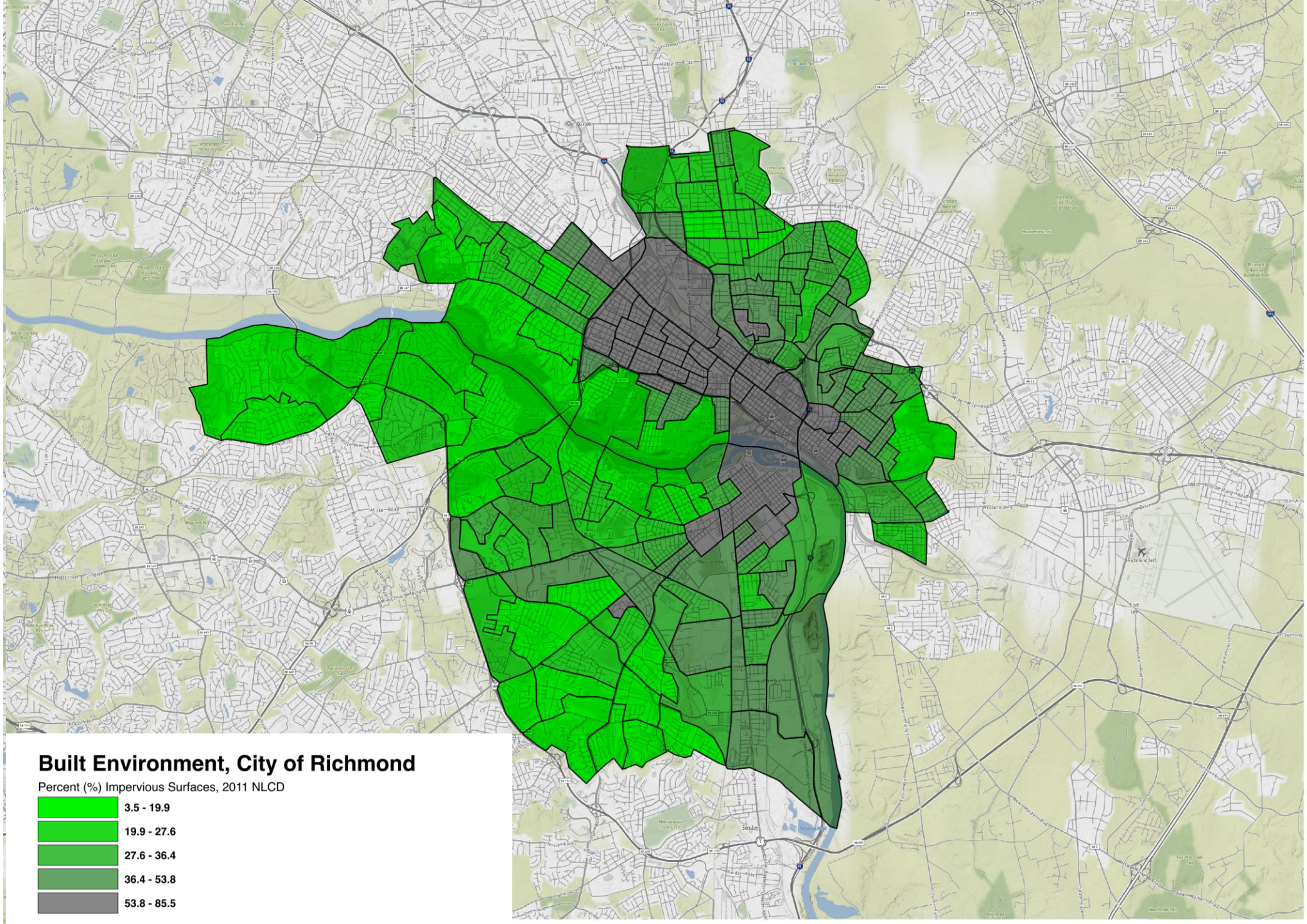
Shandas et al., 2019

Museum of Virginia Science

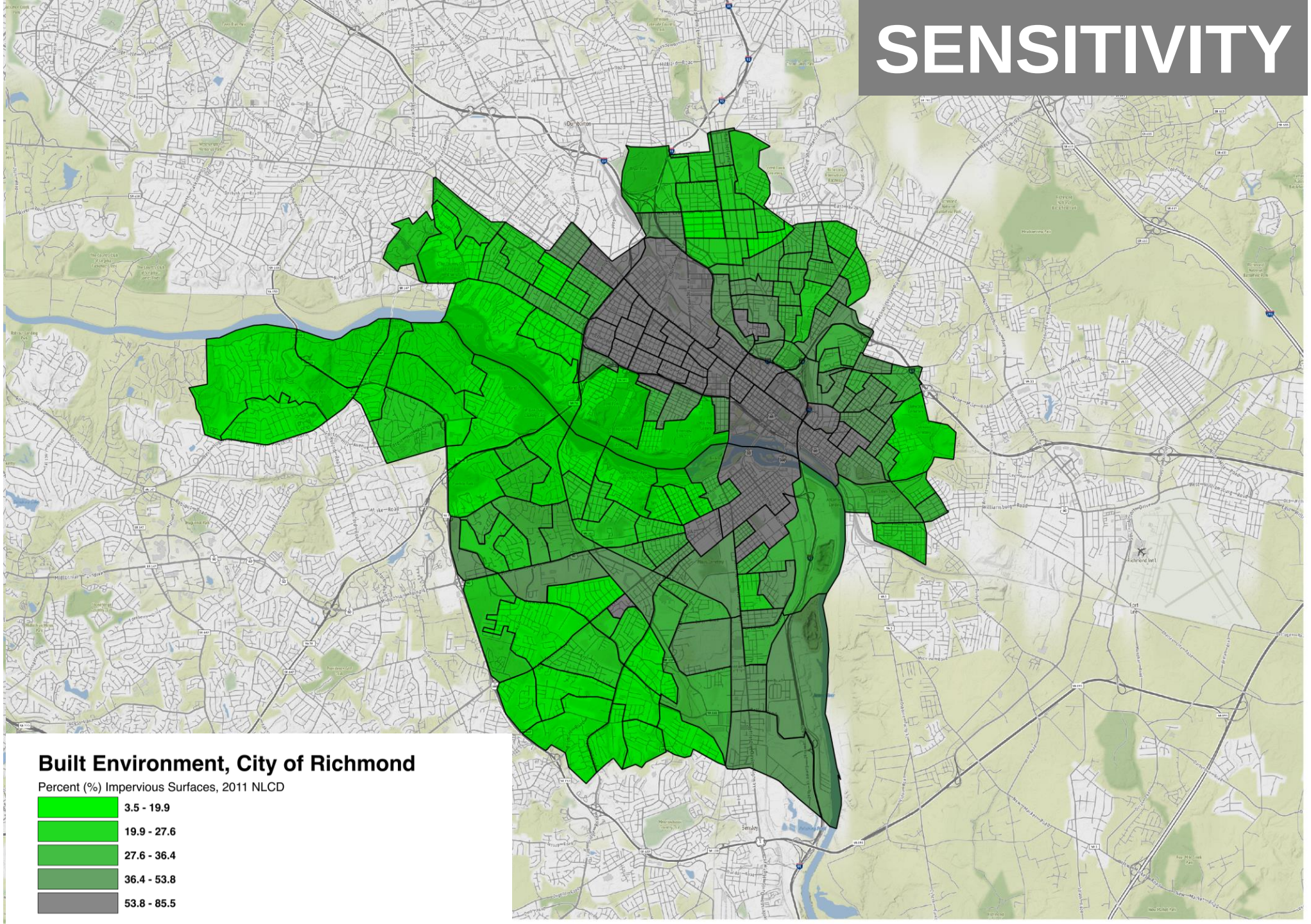

Richmond's Urban Canopy
NLCD % Tree Canopy
3.59 - 11.75
11.75 - 19.46
19.46 - 29.73
29.73 - 41.38
41.38 - 79.16
N
0
1
2
3
4
5 miles

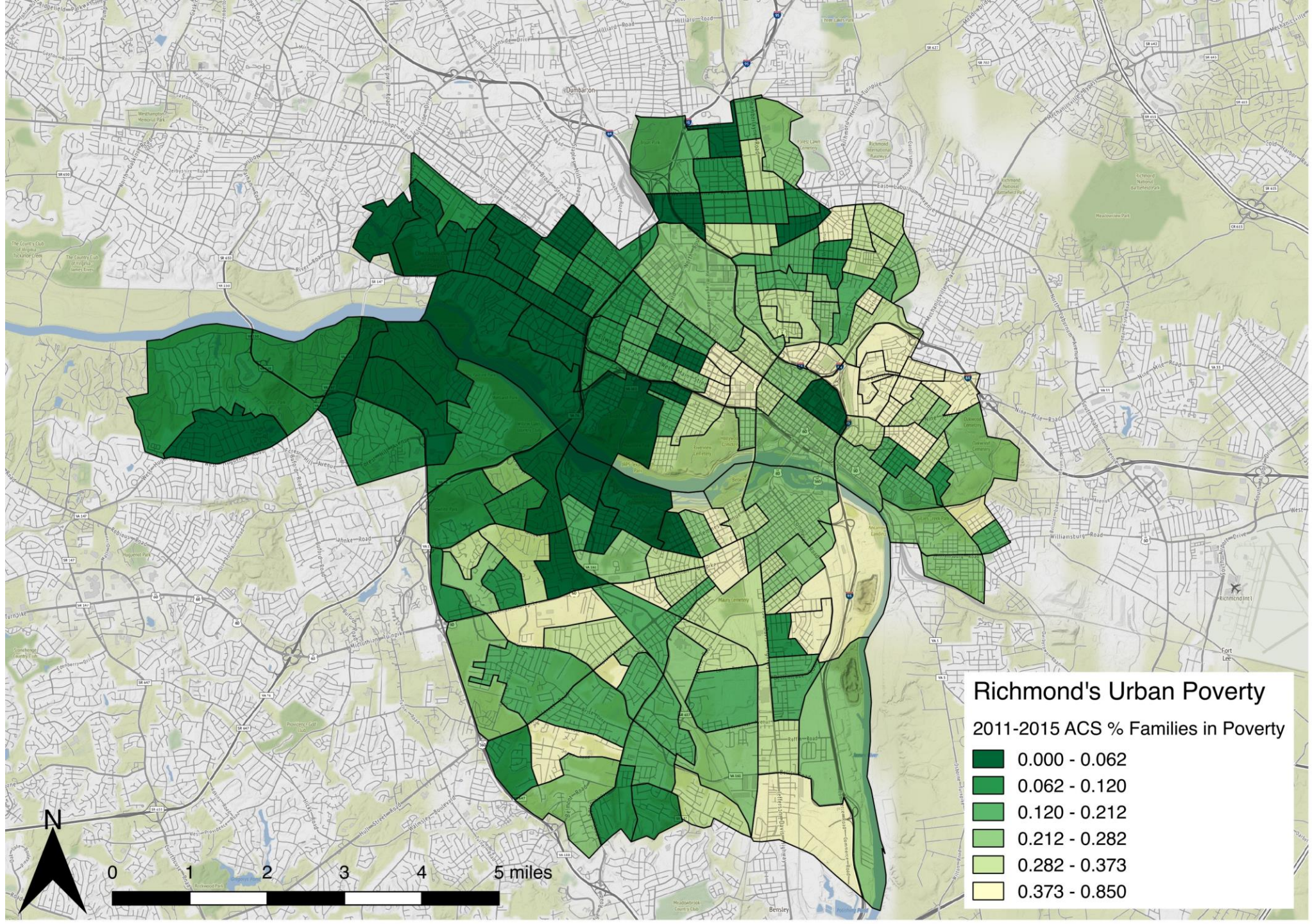
SENSITIVITY



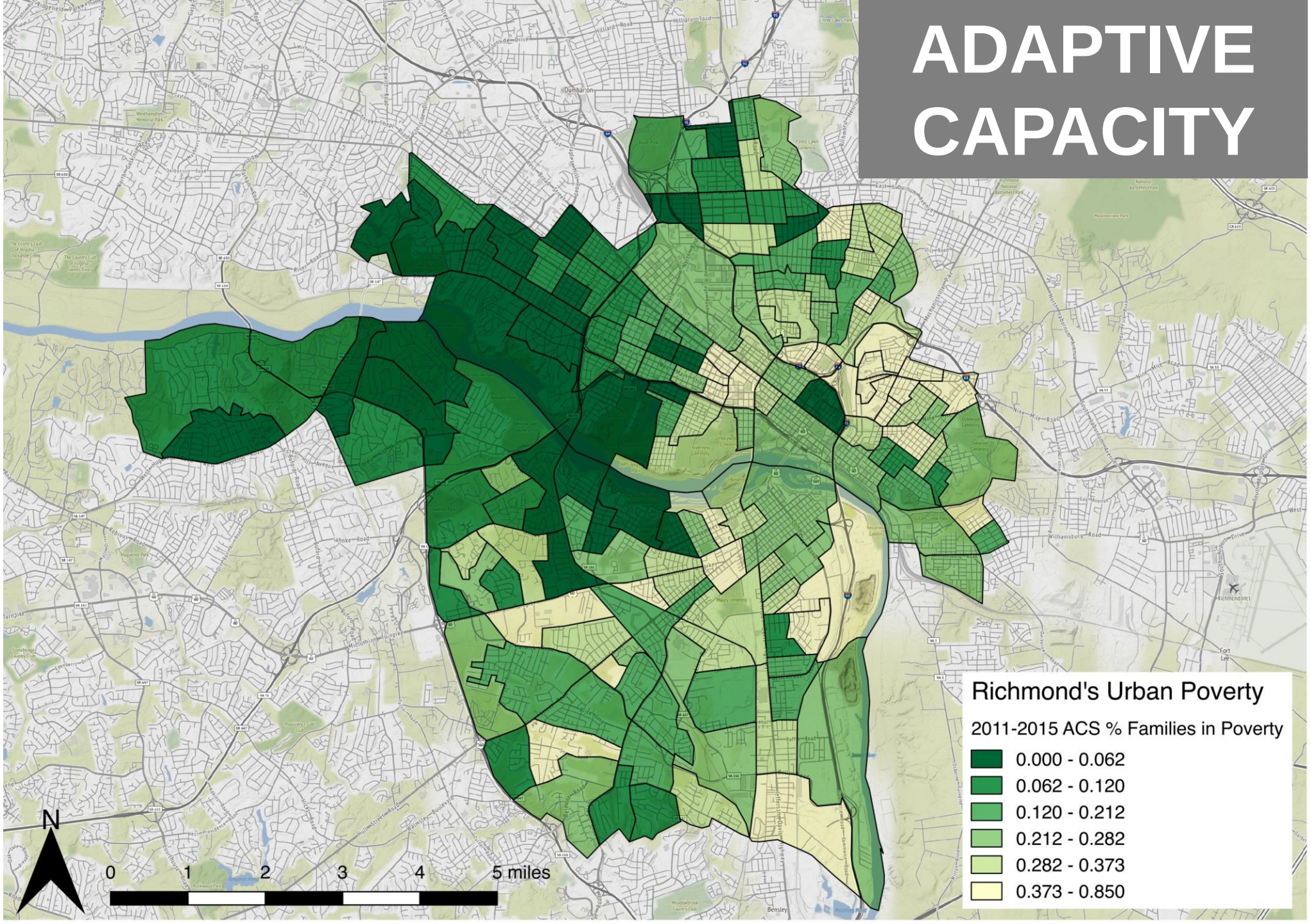

Built Environment, City of Richmond
Percent (%) Impervious Surfaces, 2011 NLCD
3.5 - 19.9
19.9 - 27.6
27.6 - 36.4
36.4 - 53.8
53.8 - 85.5

SENSITIVITY

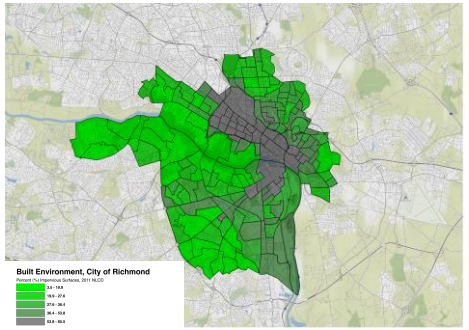



Richmond's Urban Poverty
2011-2015 ACS % Families in Poverty
0.000 - 0.062
0.062 - 0.120
0.120 - 0.212
0.212 - 0.282
0.282 - 0.373
0.373 - 0.850
N
0
1
2
3
4
5 miles

ADAPTIVE CAPACITY



Urban Heat Vulnerability =



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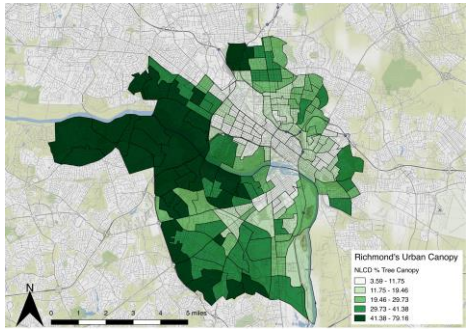

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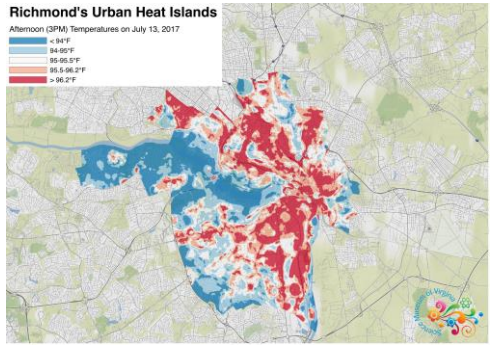

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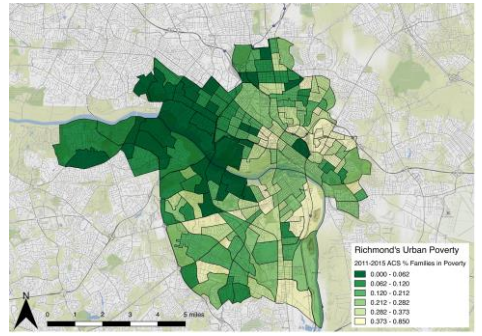
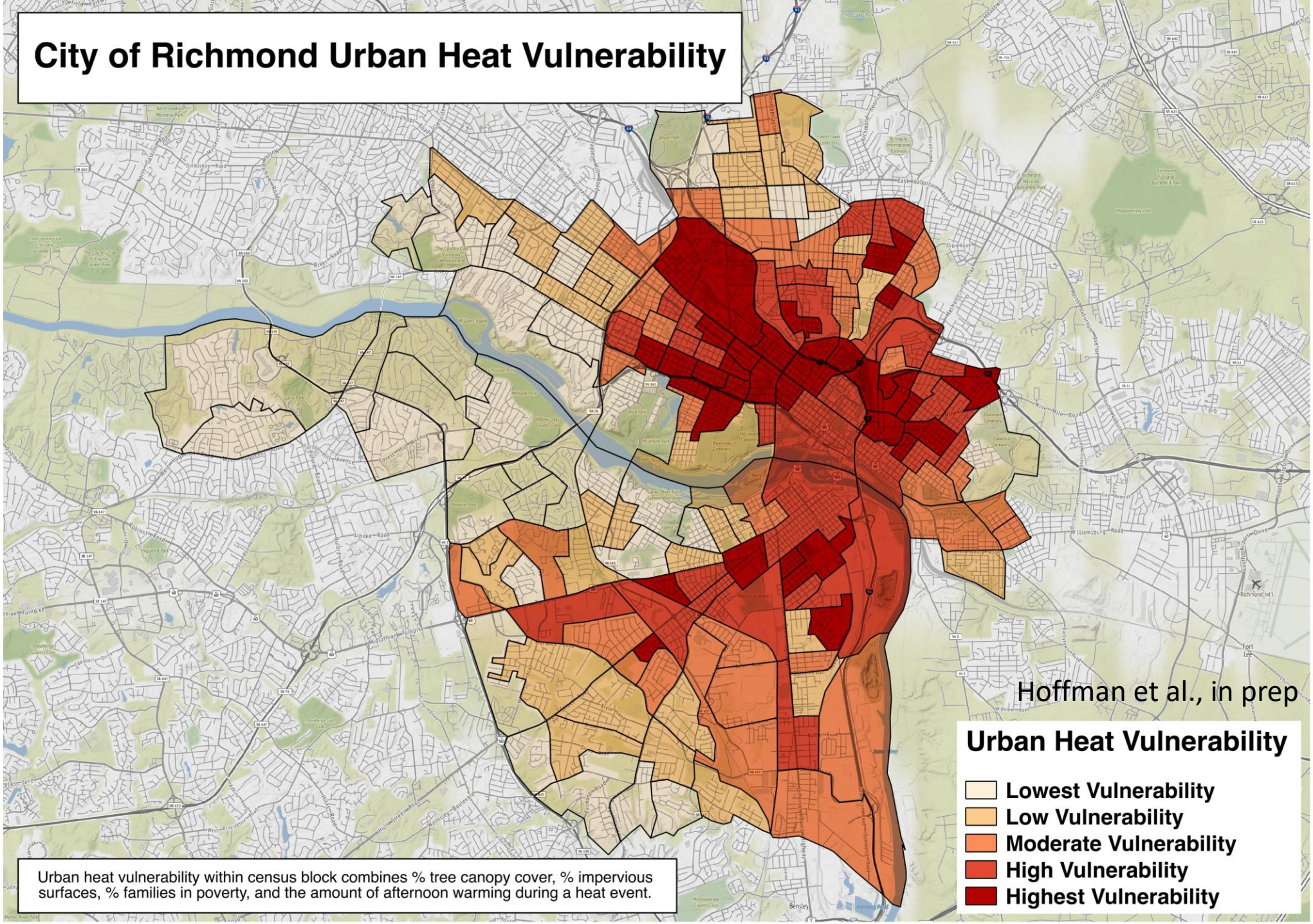


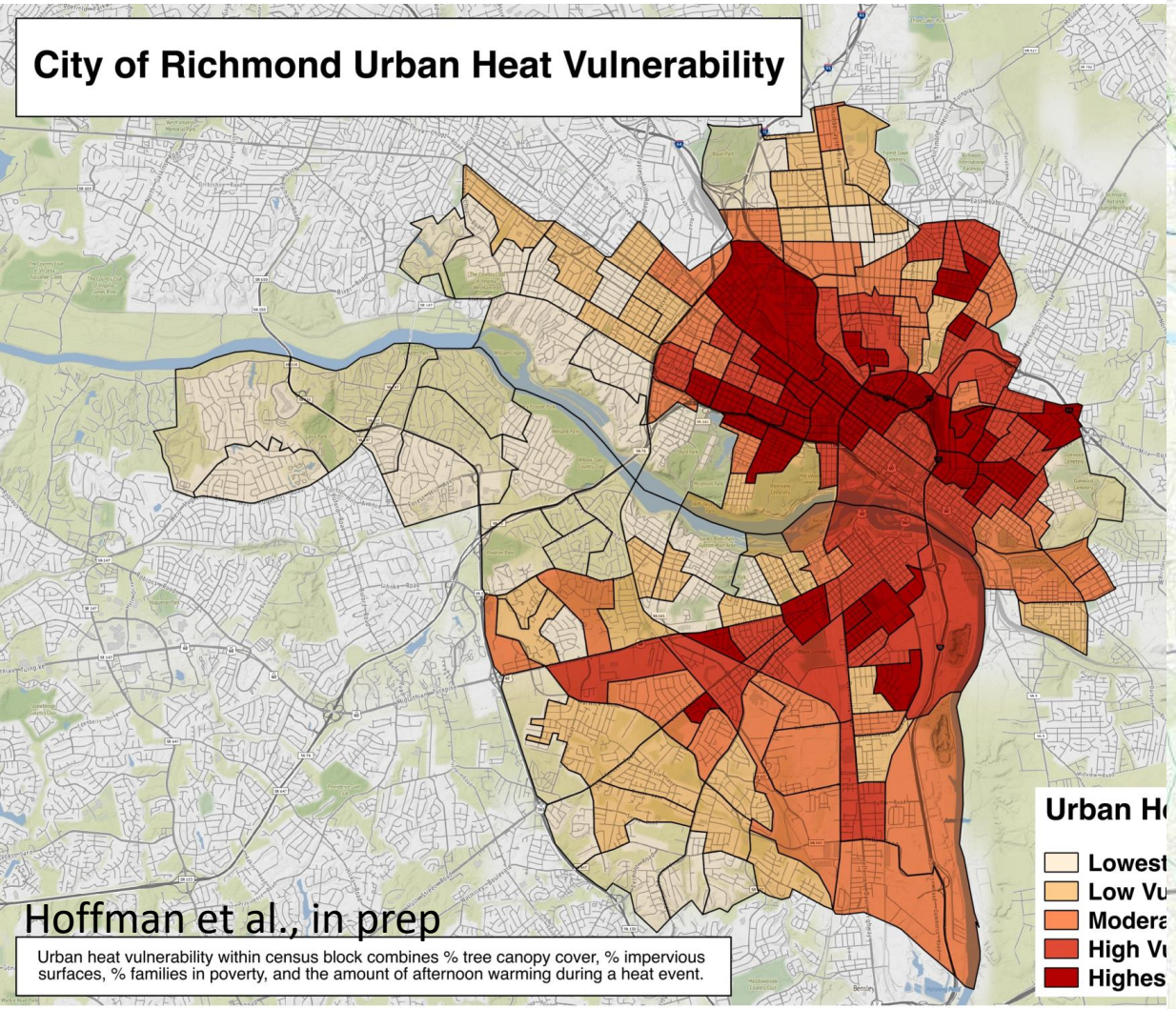
=

ASPHALT **TREES** **HEAT** **POVERTY**

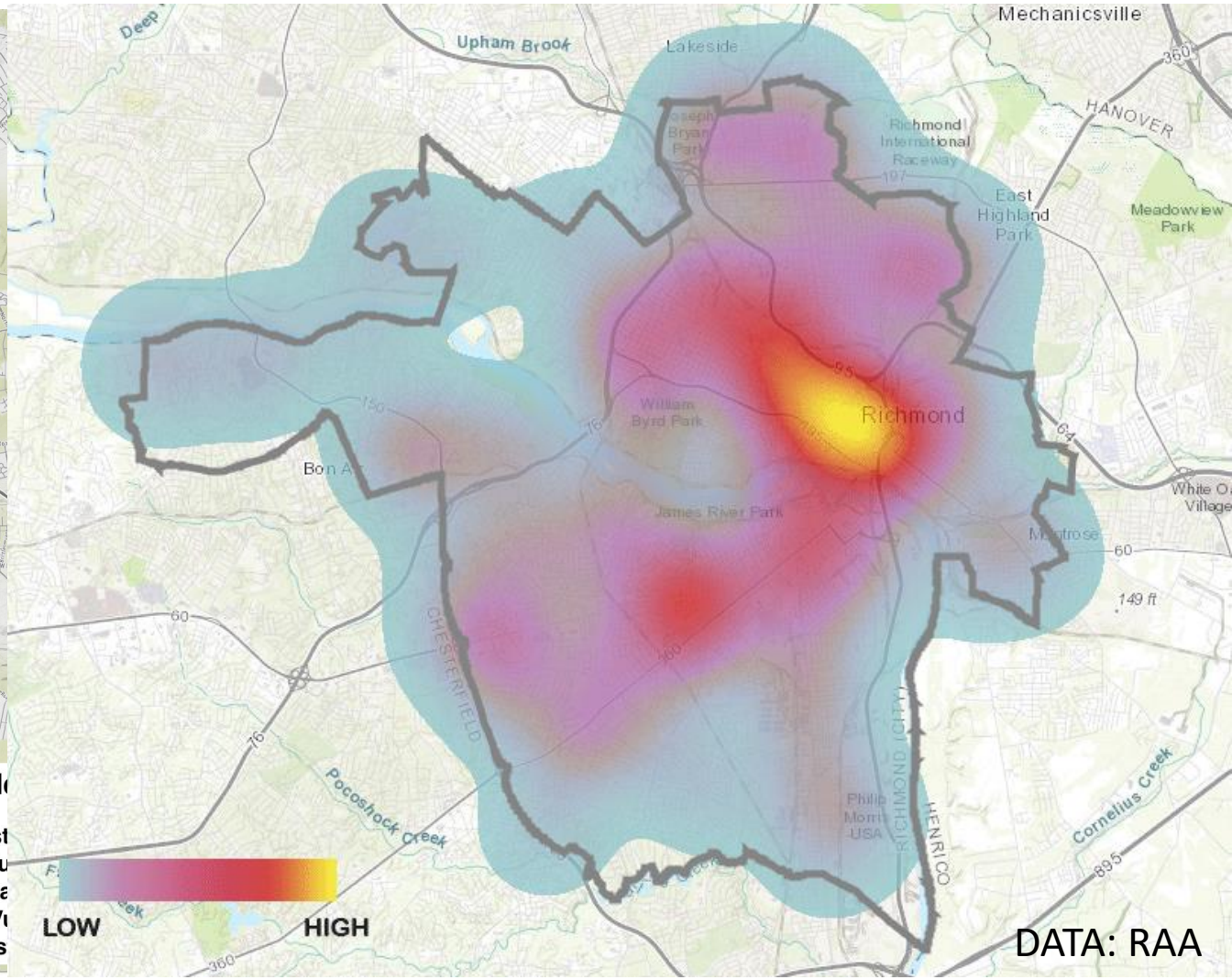
City of Richmond Urban Heat Vulnerability

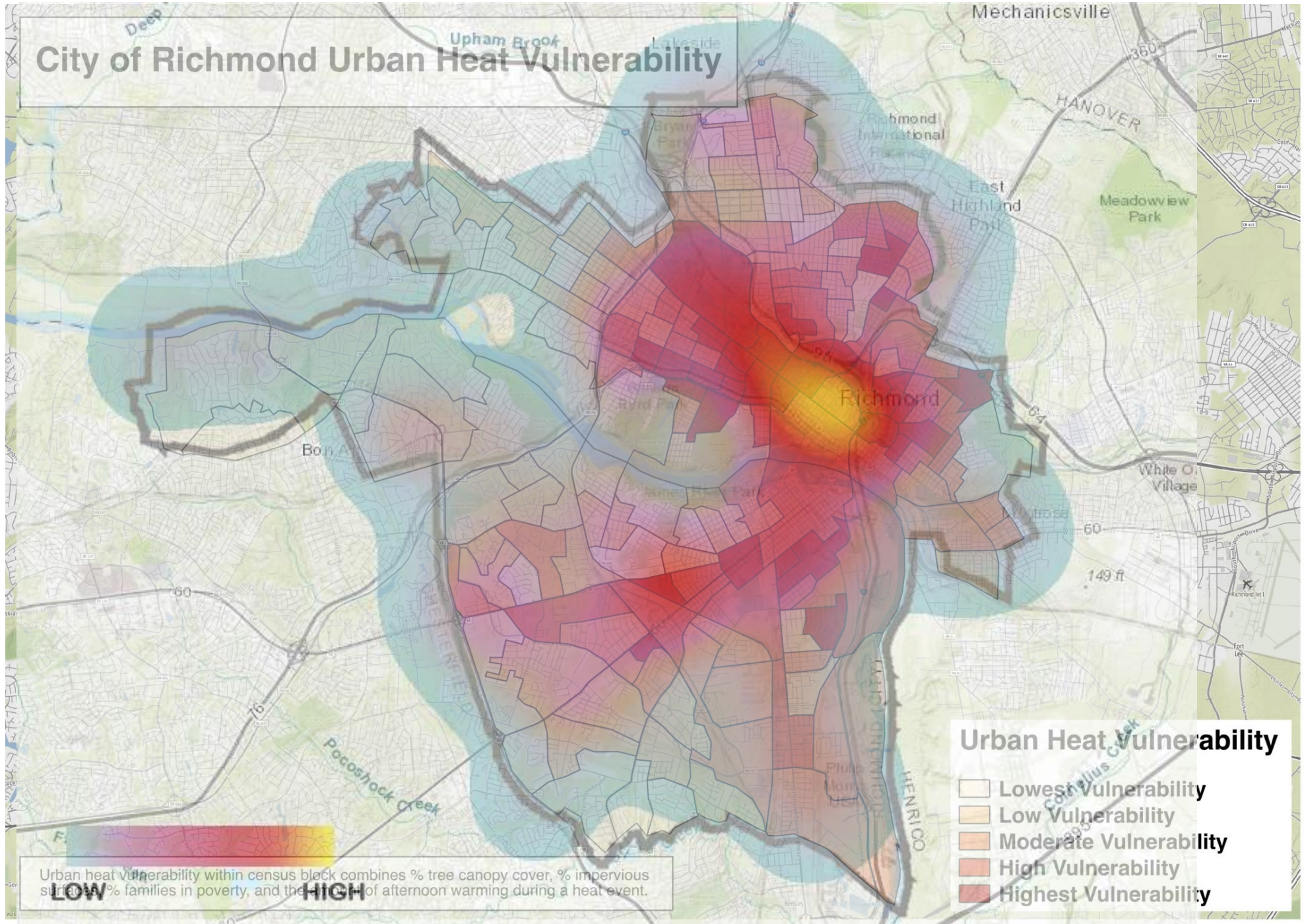


VULNERABILITY



RAA AMBULANCE RESPONSES



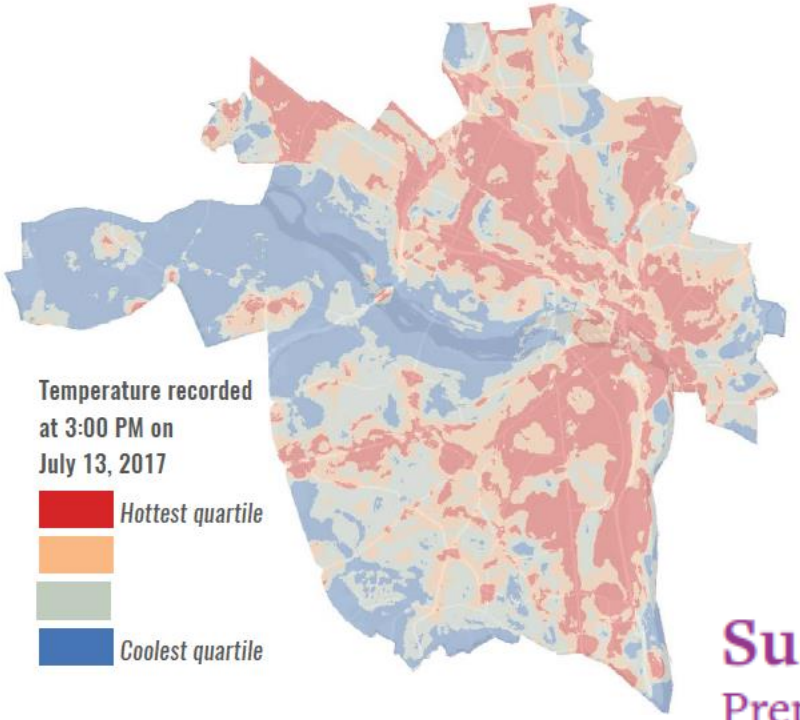

City of Richmond Urban Heat Vulnerability
Urban heat vulnerability within census block combines % tree canopy cover, % impervious surfaces, % families in poverty, and the strength of afternoon warming during a heat event.
LOW
HIGH
Urban Heat Vulnerability
Lowest Vulnerability
Low Vulnerability
Moderate Vulnerability
High Vulnerability
Highest Vulnerability
Richmond
Mechanicsville
HANOVER
Meadowview Park
East Highland Park
Upham Brook
Pocoshock Creek
Cattail Creek
HENRICO
149 ft

The Richmond Land Bank

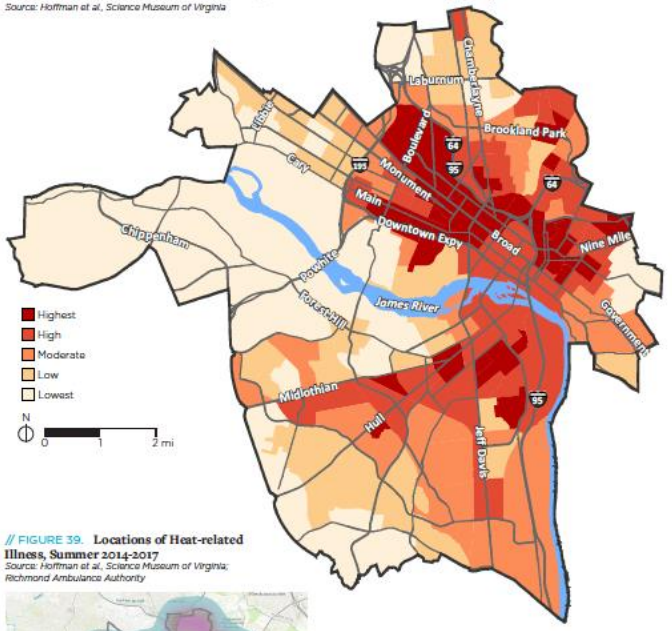
Annual Plan July 2018 – June 2019

c. Community health:

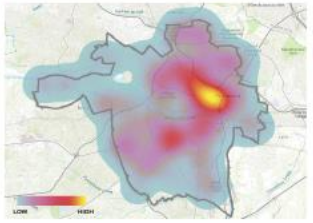
1. ***High ambient temperature relative to average.***[17] Different land use and ground cover patterns create "urban heat islands" in Richmond. Because higher temperatures are associated with greater health risks, identifying "hot spots" across the City may help determine where vacant, undevelopable land in those areas can be prioritized for green interventions.



// FIGURE 38. **Urban Heat Vulnerability, 2017**
Urban heat vulnerability is a term used to describe an area's conditions that make it heat sensitive using a combination of % tree canopy, % impervious surfaces, % families in poverty, and the amount of afternoon warming during a heat event.
Source: Hoffman et al., Science Museum of Virginia



// FIGURE 39. **Locations of Heat-related Illness, Summer 2014-2017**
Source: Hoffman et al., Science Museum of Virginia; Richmond Ambulance Authority



Consider this:
- How can we prepare for the effects of climate change?
- How do we ensure the most vulnerable populations are included in creating solutions to mitigate the effects of climate change?

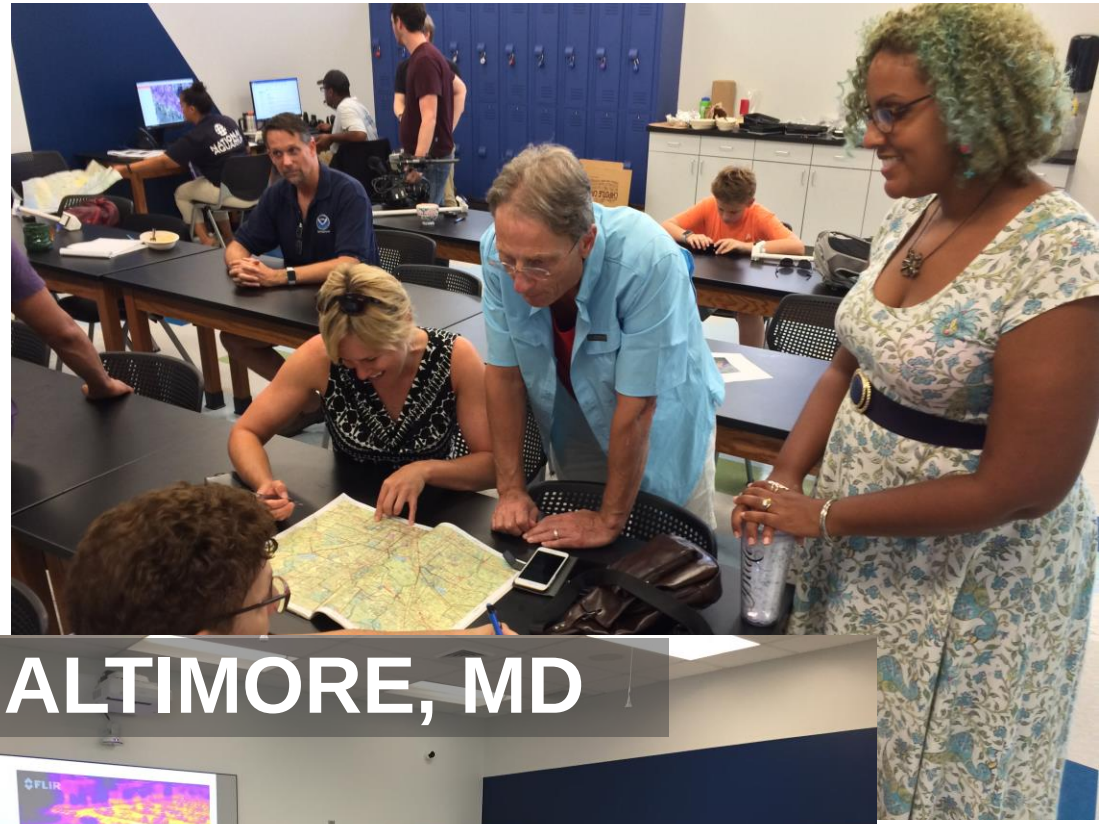
Sustainability & Resiliency

Preparing and responding to a changing climate

Decision-relevant science!

RICHMOND 300 A GUIDE FOR GROWTH | RICHMOND PLANNING & DEVELOPMENT REVIEW PDR

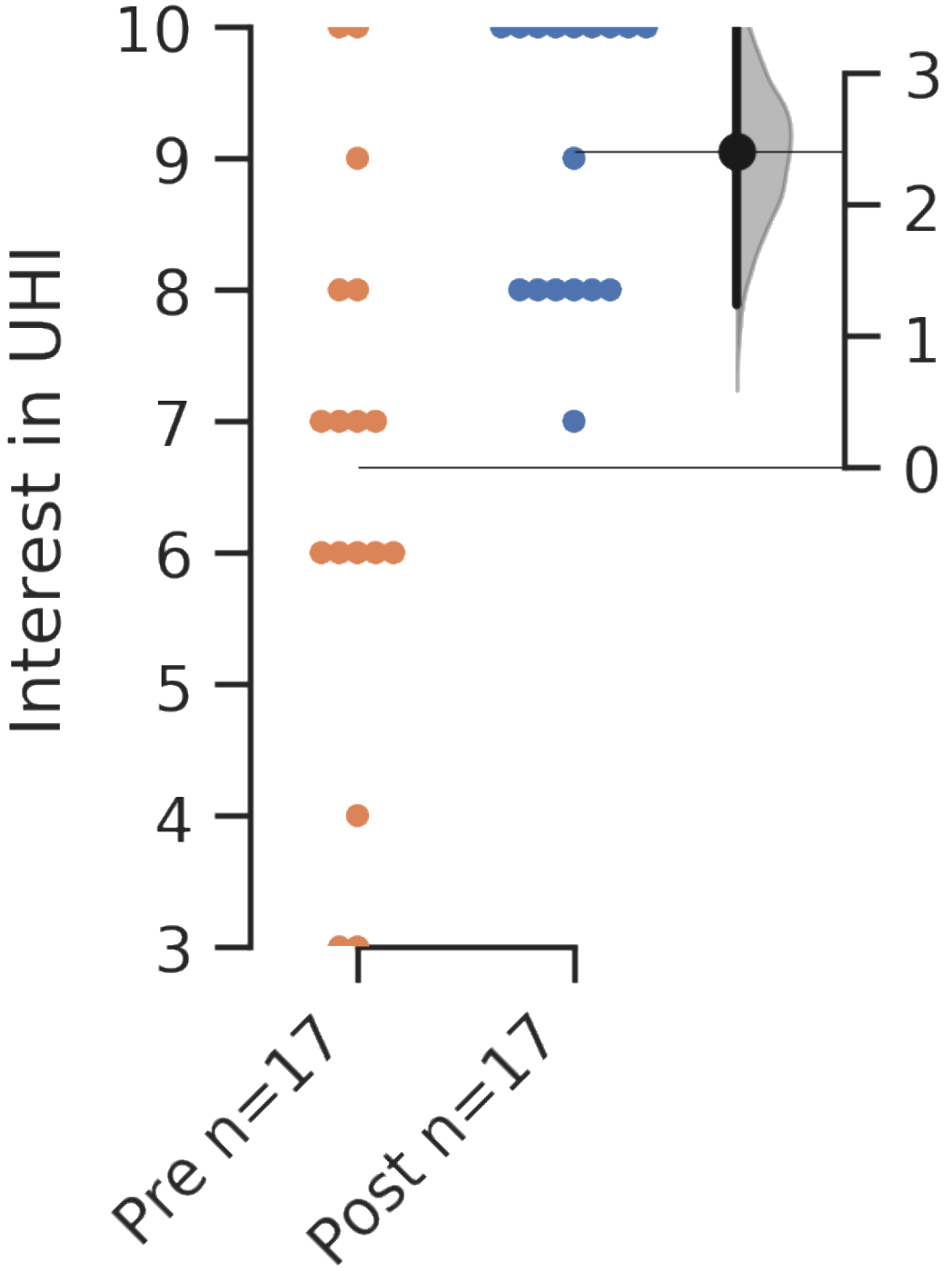

BOSTON, MA
MUSEUM OF SCIENCE




WASHINGTON, D.C.


BALTIMORE, MD
FLIR

Members of DC/Baltimore collectives expressed increased interest in using science for policy change to build UHI resilience!

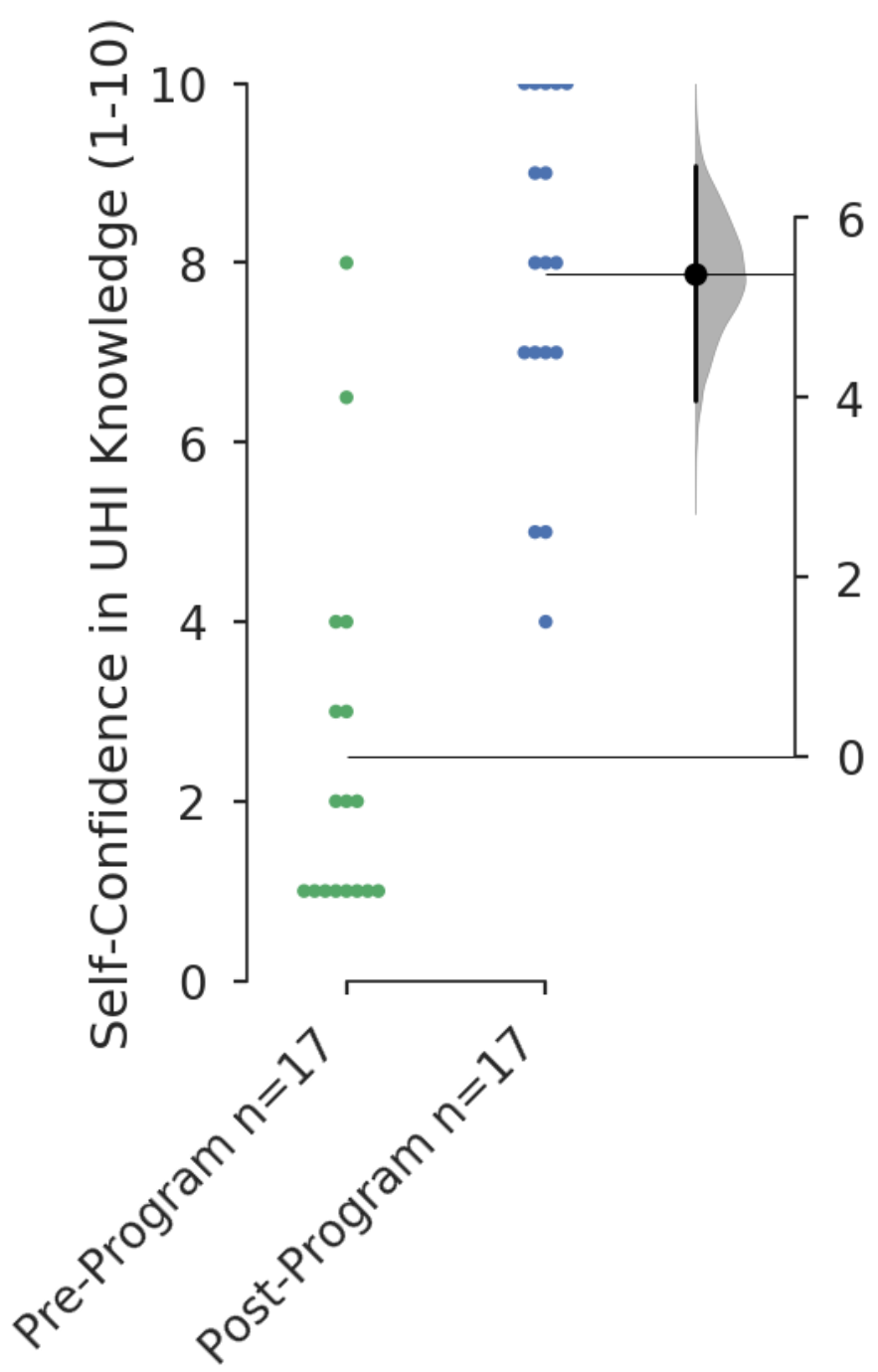


“Throwing Shade in RVA”

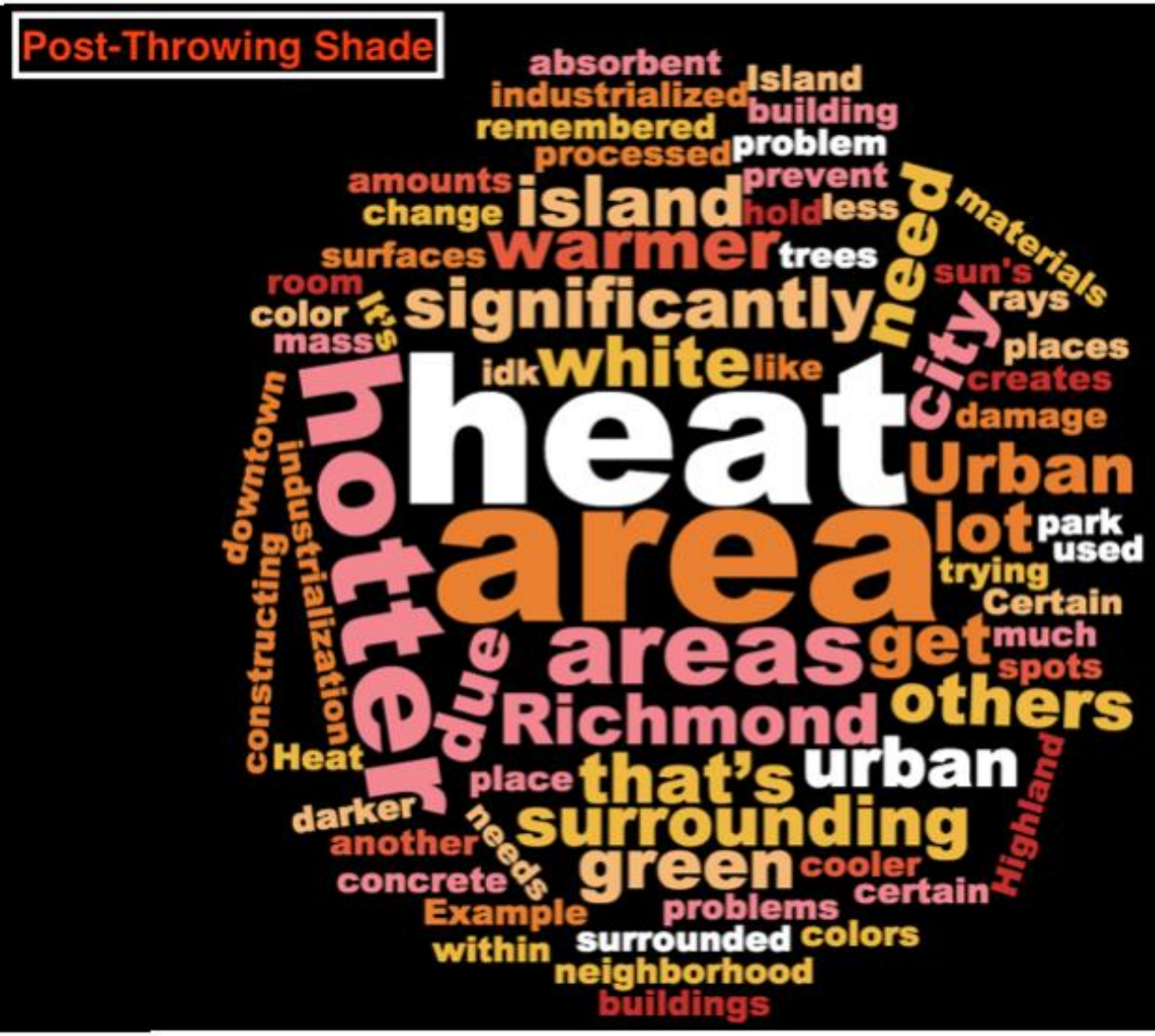
- https://toolkit.climate.gov/case-studies/where-do-we-need-shade-mapping-urban-heat-islands-richmond-virginia

Students use model homes to investigate differential heating in various surfaces.

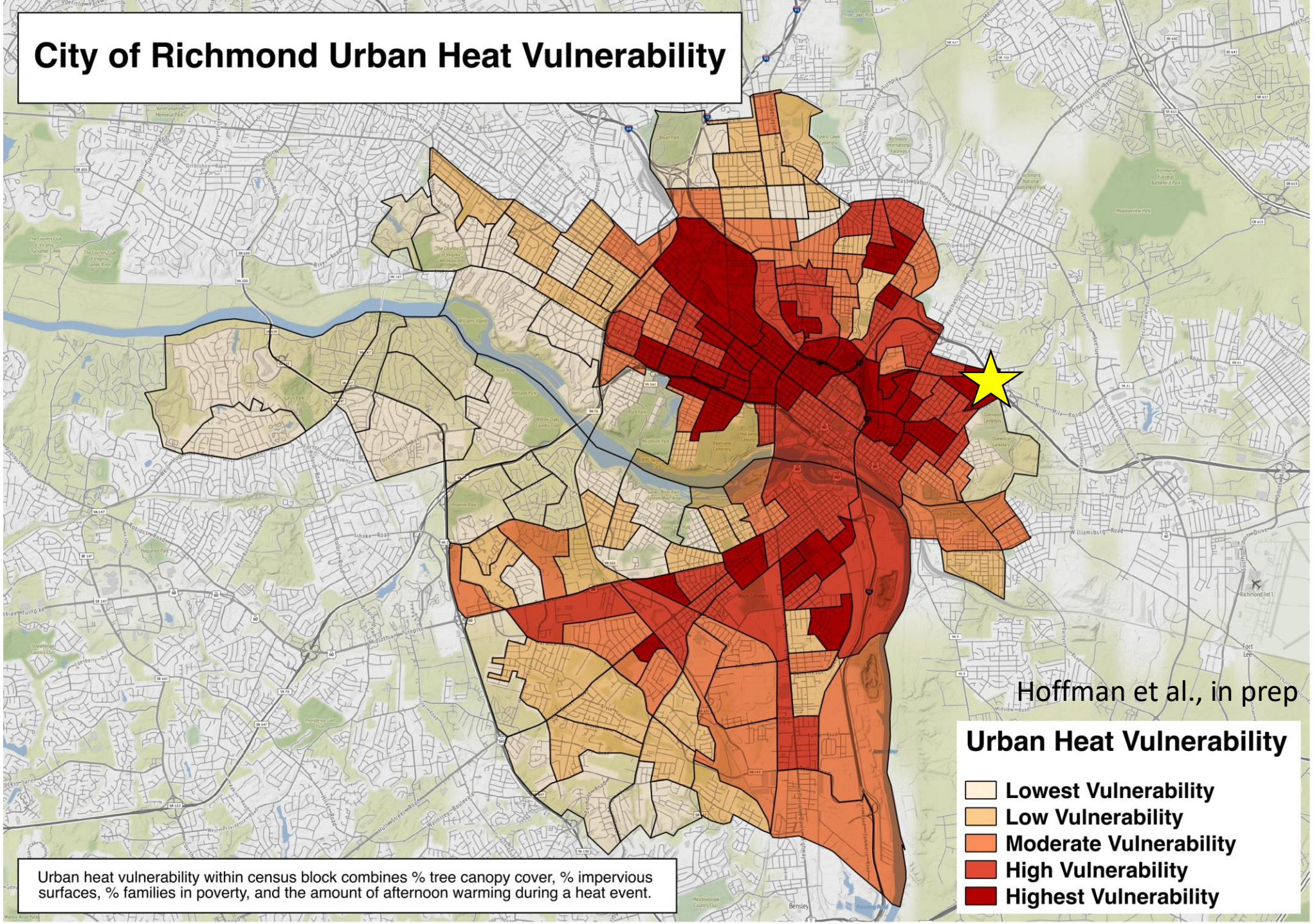
We saw significant change in our participants



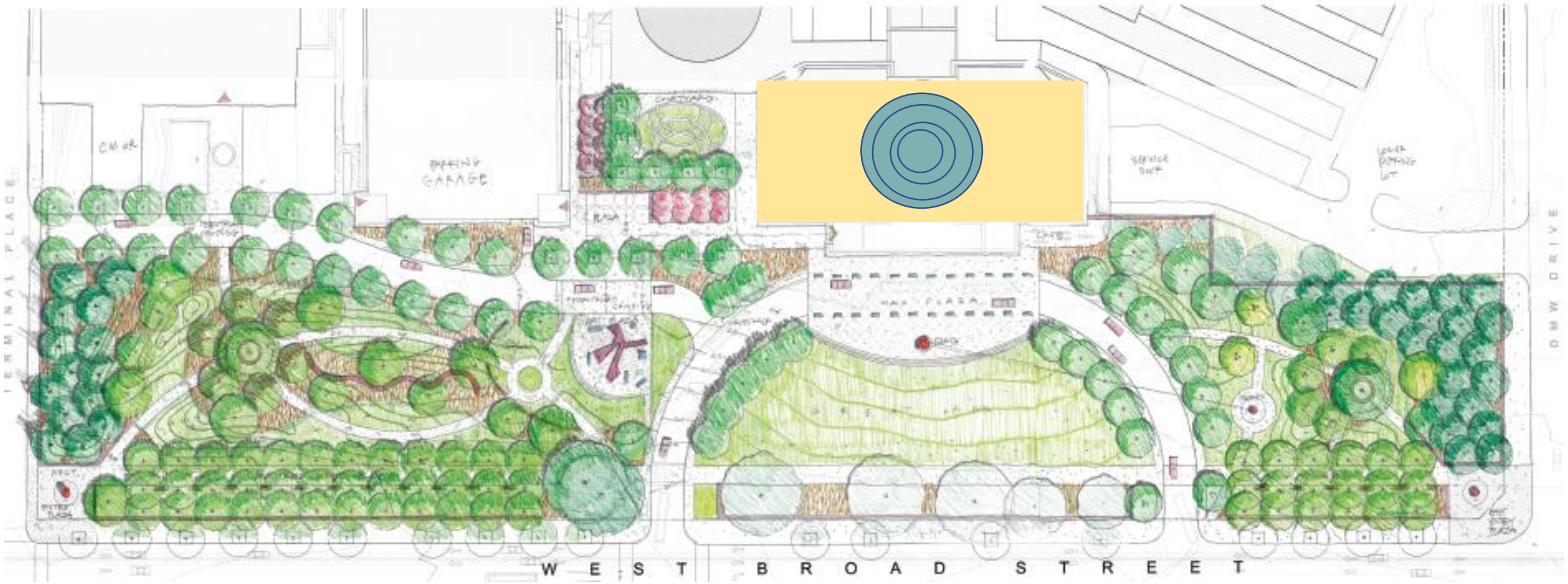

Pre-Throwing Shade
stays
places
lostways
heat
idea
idk
know
trap
keep
spot
cool
man
one
hot
people
hotter

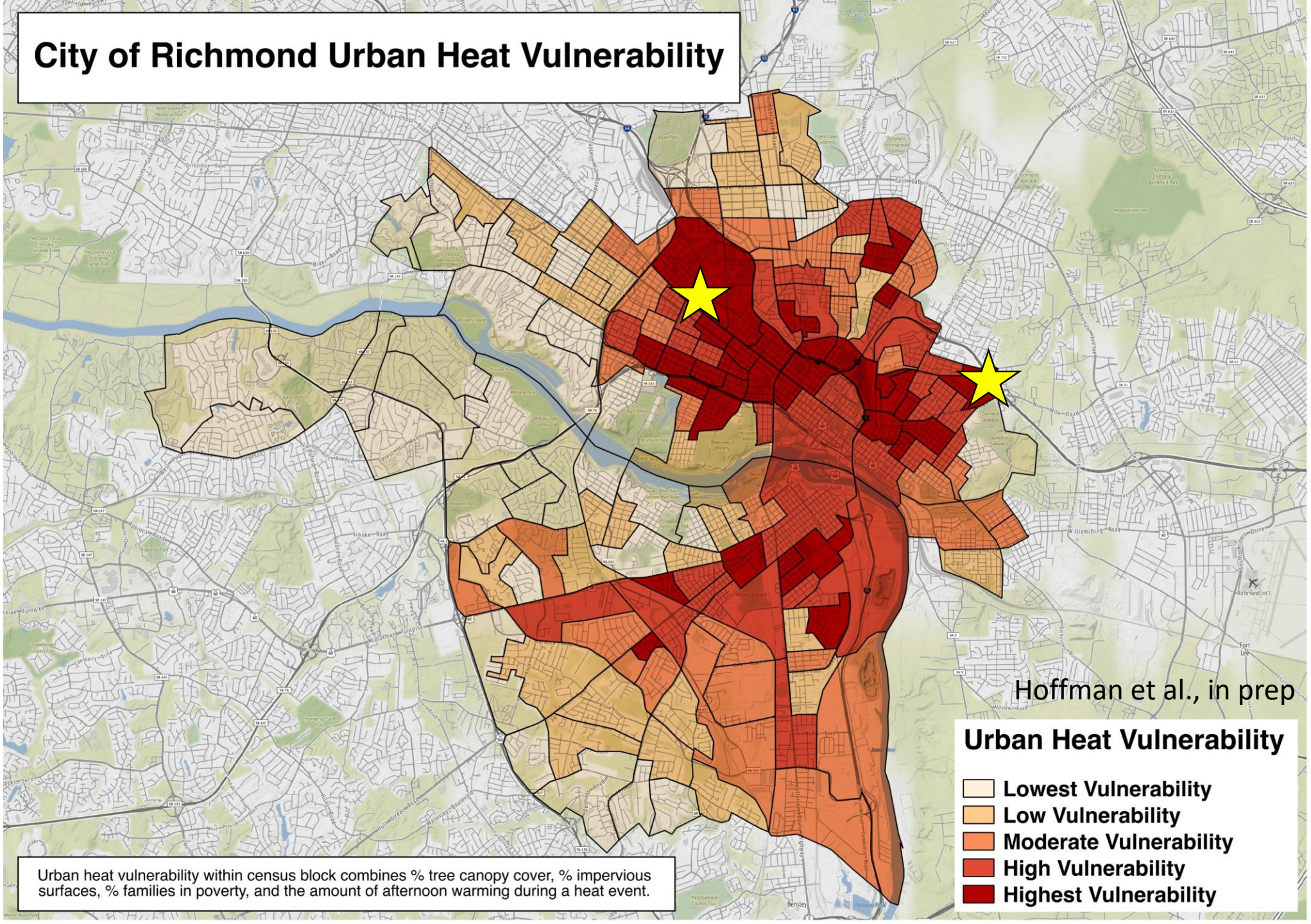

Post-Throwing Shade
absorbent
industrialized
Island
building
remembered
problem
processed
prevent
amounts
change
island
hold
less
need
materials
surfaces
warmer
trees
sun's
room
color
mass
significantly
rays
city
places
idk
white
like
creates
heat
damage
Urban
hotter
area
lot
park
used
trying
Certain
areas
get
much
spots
others
due
Richmond
Heat
place
that's
urban
darker
another
surrounding
needs
green
cooler
concrete
certain
Highland
Example
problems
within
surrounded
colors
neighborhood
buildings

City of Richmond Urban Heat Vulnerability



Science Museum's Civic Green Space




City of Richmond Urban Heat Vulnerability
Hoffman et al., in prep
Urban Heat Vulnerability
Lowest Vulnerability
Low Vulnerability
Moderate Vulnerability
High Vulnerability
Highest Vulnerability
Urban heat vulnerability within census block combines % tree canopy cover, % impervious surfaces, % families in poverty, and the amount of afternoon warming during a heat event.

Next: MORE Community Science!

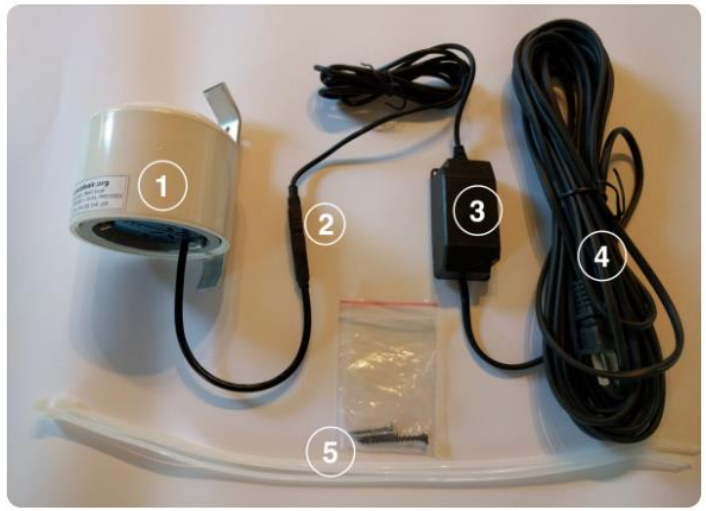
PocketLab by Myriad Sensors

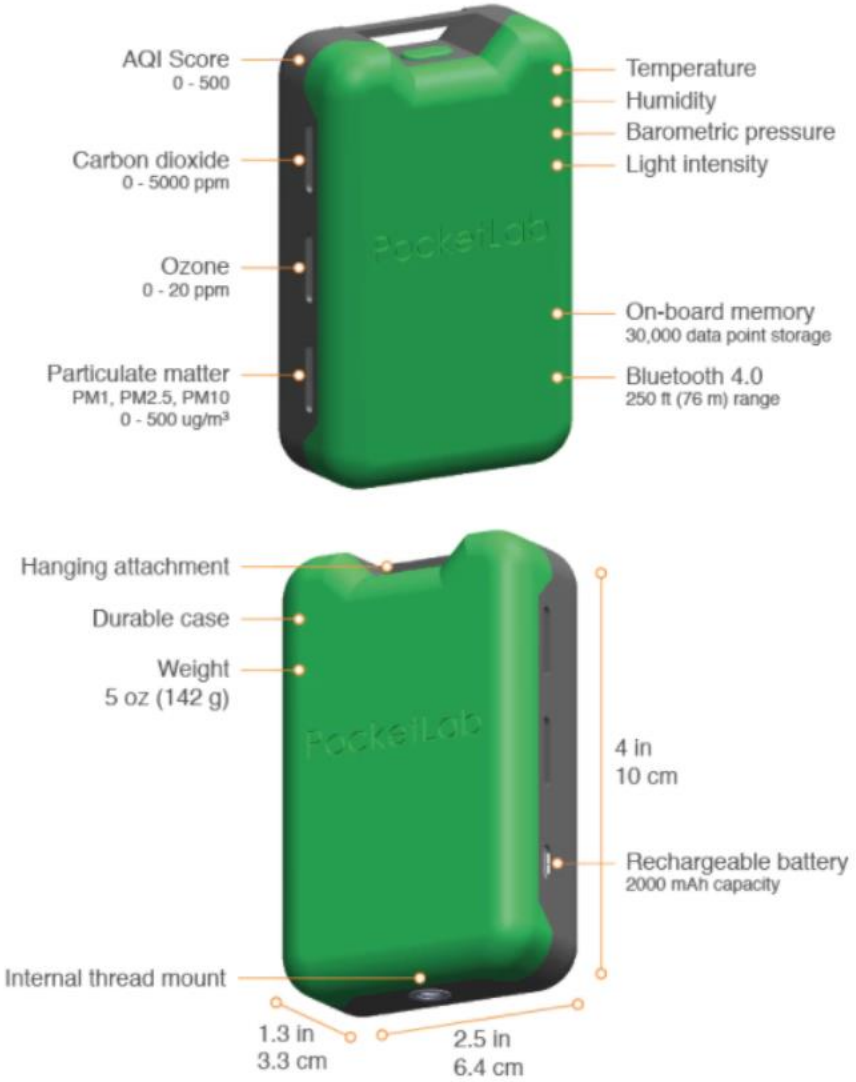
PurpleAir

PA-II: Dual Laser Air Sensor

1) Built in WiFi for logging to "the cloud".
2) Dual laser counters provide reliable particulate readings.
3) BME280 temperature, humidity and pressure sensor.
4) Automatic updates: Your sensor will update over WiFi when new firmware is available.

In The Box





RICHMOND URBAN LIVABILITY COLLECTIVE

VCU

RICHMOND
300
A GUIDE FOR GROWTH

GROUNDWORK
CHANGING PLACES
CHANGING LIVES
GROUNDWORK
RVA

DEQ
VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

City of Richmond
RVAgreen
2050

INSTITUTE of
Museum and Library
SERVICES


City of Richmond TOD-1 Zoning
Proposed Study/Interest Area
Science Museum Urban Campus
Bus Rapid Transit PULSE Line


LEVEL
Asian Fusion Sushi & Taphouse
ups

Thanks!

@jer_science

jhoffman@smv.org

https://capastrategies.com/capa-heat-watch/

Mapping and Understanding Heat Health Vulnerability

Dr. Jeremy Hoffman

Chief Scientist, Science Museum of Virginia and Affiliate Faculty, Center for Environmental Studies, Virginia Commonwealth University

Dr. Jaime Madrigano

Policy Researcher, RAND Corporation and Affiliate Faculty, Pardee RAND Graduate School

WEATHERING CHANGE

U.S. Climate Resilience Toolkit

AU | ANTIOCH UNIVERSITY NEW ENGLAND
Center for Climate Preparedness and Community Resilience

NOAA helps NYC identify neighborhoods at greatest risk from extreme heat

April 11, 2019

RISA
Regional Integrated Sciences and Assessments

CPO
CLIMATE PROGRAM OFFICE

ADVANCING SCIENTIFIC UNDERSTANDING OF CLIMATE, IMPROVING SOCIETY'S ABILITY TO PLAN AND RESPOND

https://www.climate.gov/heatNYC

Heat Vulnerability in NYC *Analysis to Inform Policy*

Jaime Madrigano, ScD, MPH

RAND CORPORATION

Rikard Linjer via Adobe Stock

Acknowledgements

Funding

- NOAA NA04OAR4310185
- Columbia University Earth Institute Postdoctoral Fellowship
- Columbia University Earth Institute Cross-Cutting Initiative
- Centers for Disease Control and Prevention 5 NUE1EH001325-02

Collaborators

- NYC DOHMH Bureau of Environmental Surveillance and Policy
  - Thomas Matte (now Vital Strategies), Kazuhiko Ito, Sarah Johnson, Kathryn Lane, Munerah Ahmed
- Columbia University
  - Patrick Kinney (now BU), Nada Petrovic (now US AID)

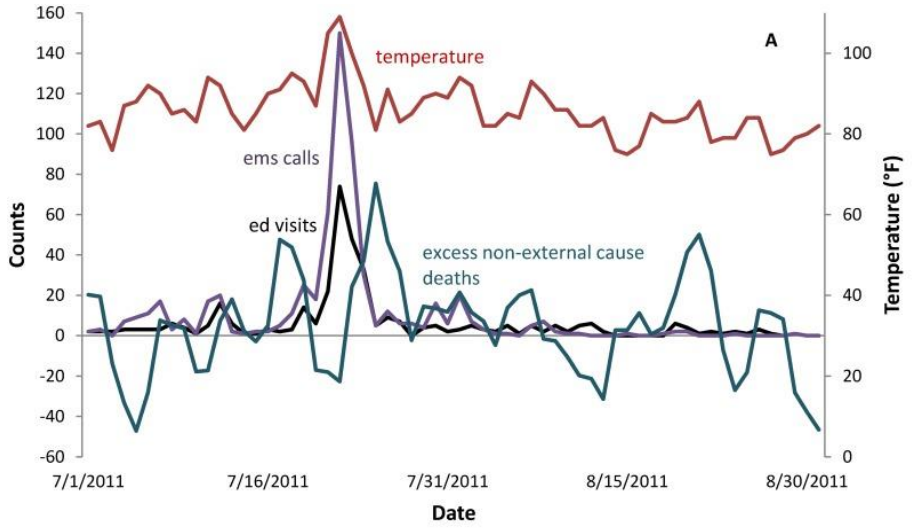
The Steps to Resilience

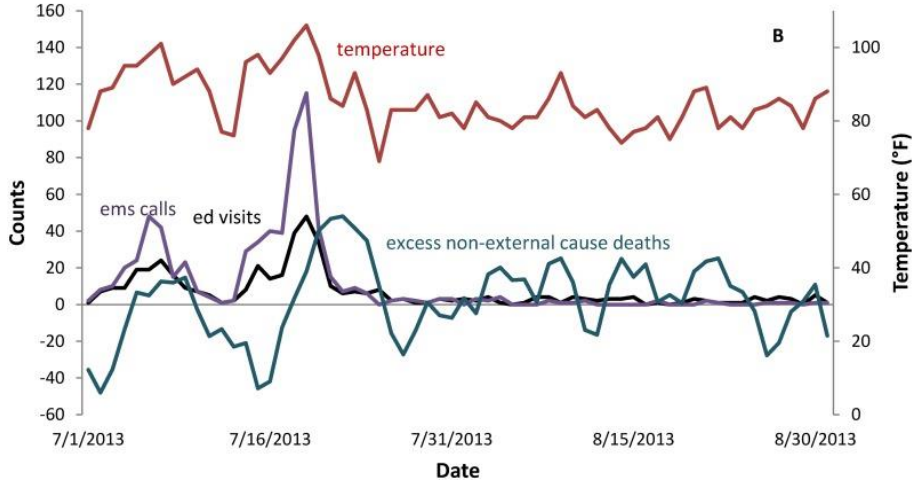
1. Explore Hazards
2. Assess Vulnerability & Risks
3. Investigate Options
4. Prioritize & Plan
5. Take Action

Explore Hazards

Public health burden of heat in NYC

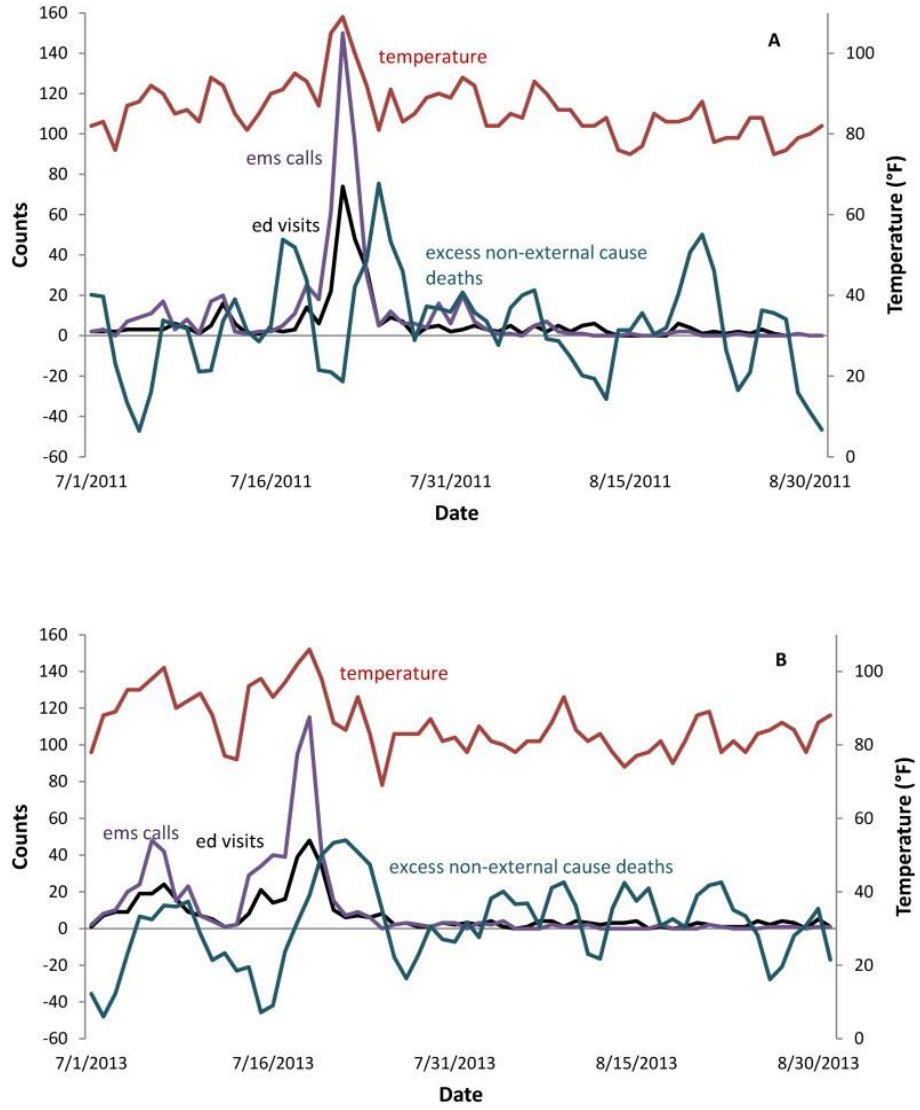
Public health burden of heat in NYC

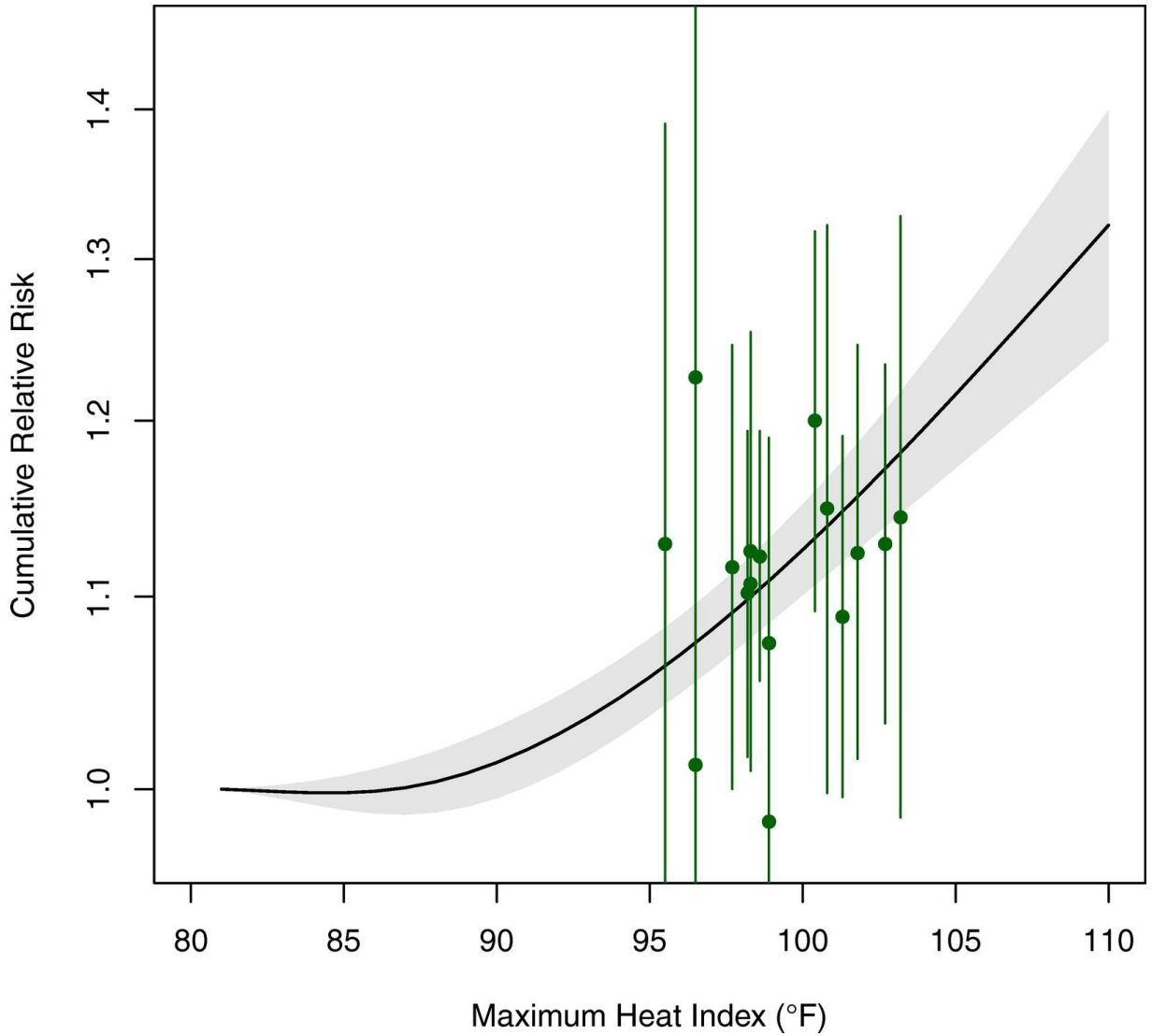




Mathes, R.W., Ito, K., Lane, K. and Matte, T.D., 2017. Real-time surveillance of heat-related morbidity: Relation to excess mortality associated with extreme heat. PLoS one, 12(9), p.e0184364.

Public health burden of heat in NYC





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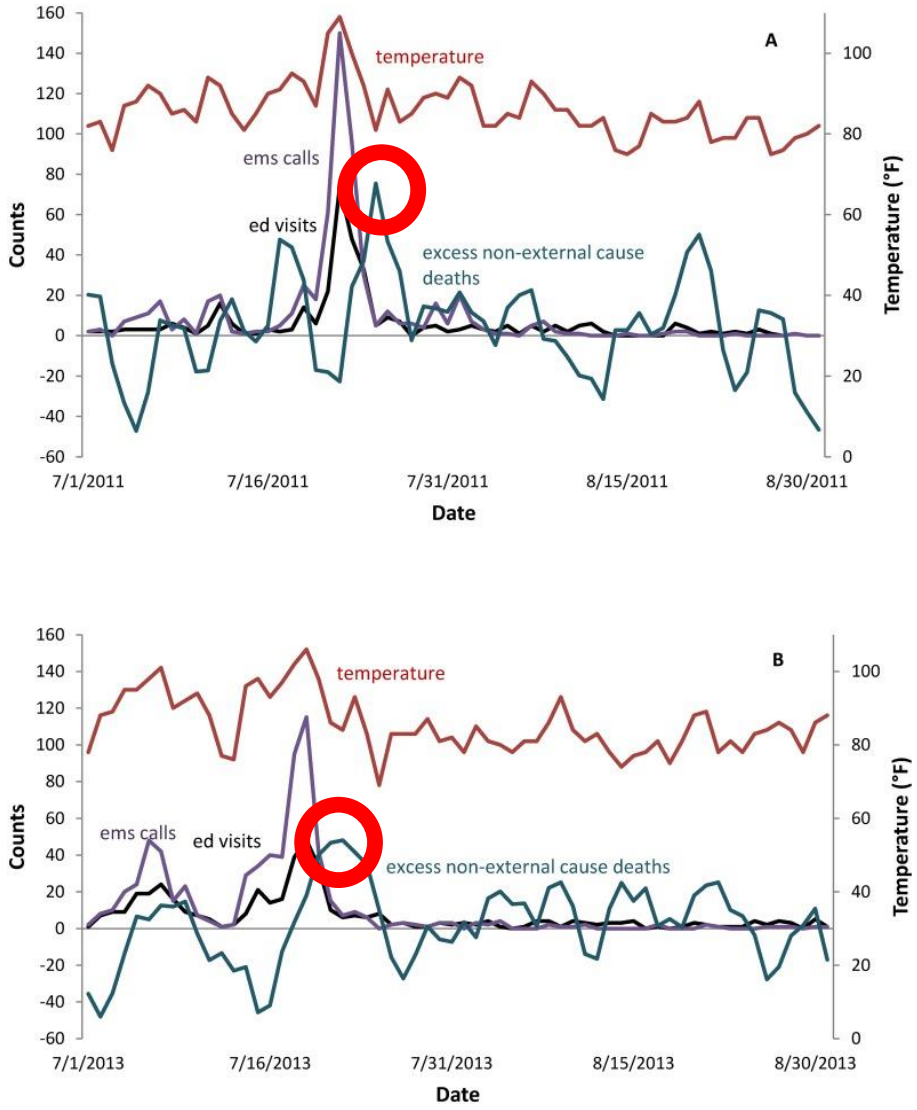
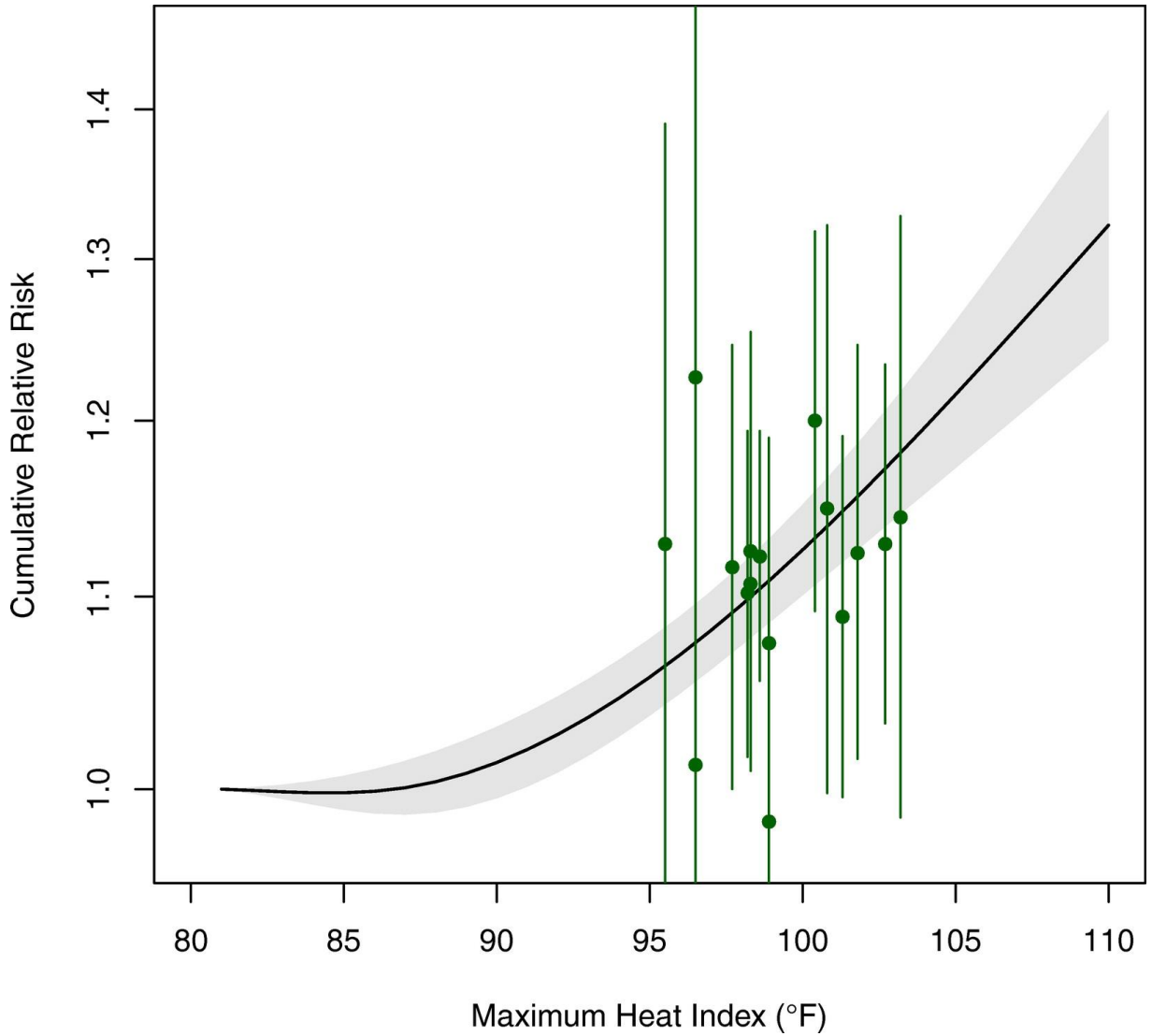
Public health burden of heat in NYC





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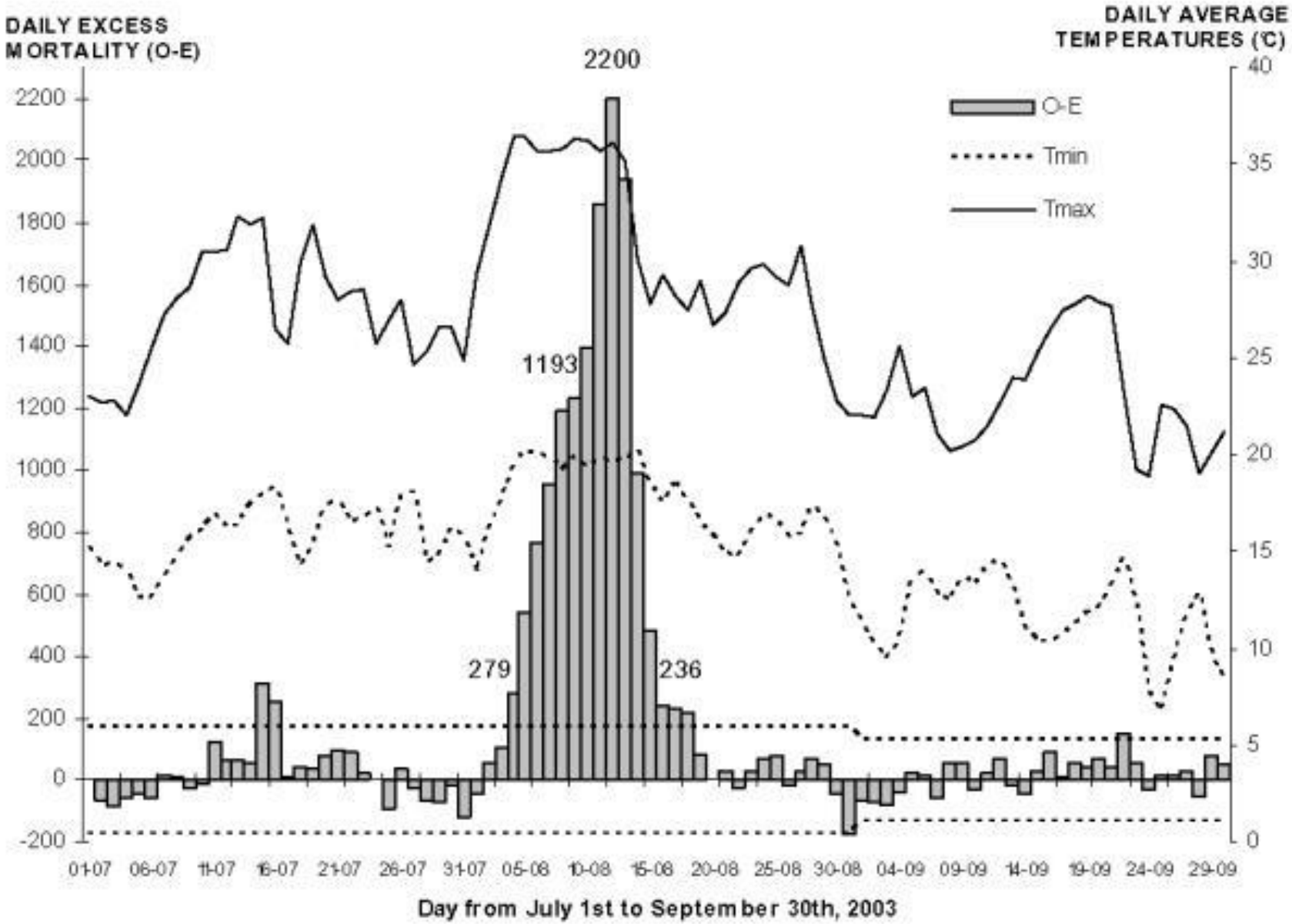
Matte, T.D., Lane, K. and Ito, K., 2016. Excess mortality attributable to extreme heat in New York City, 1997-2013. Health security, 14(2), pp.64-70.

Why don’t these numbers add up?

13 heat stroke
115 heat-related excess deaths
NYC DOHMH

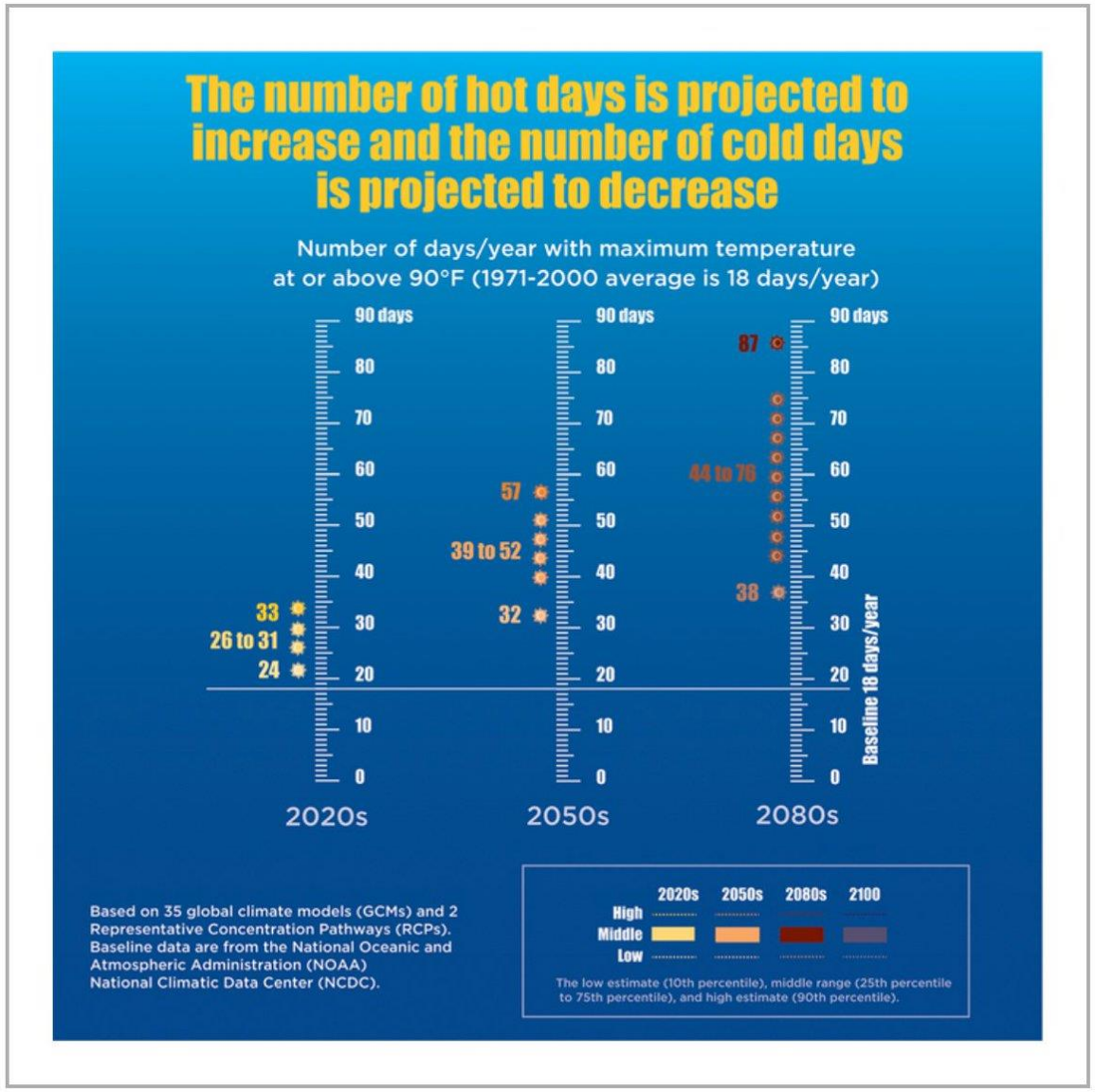
- Hyperthermia deaths do not provide a full picture of total burden of heat-related mortality
  - Difficult to recognize and assess
  - Ascertainment can vary by place and time
- Excess deaths from exacerbation of chronic disease
- How can we identify excess deaths?



Fouillet, A., Rey, G., Laurent, F., Pavillon, G., Bellec, S., Guihenneuc-Jouyaux, C., Clavel, J., Jougla, E. and Hémon, D., 2006. Excess mortality related to the August 2003 heat wave in France. International archives of occupational and environmental health, 80(1), pp.16-24.

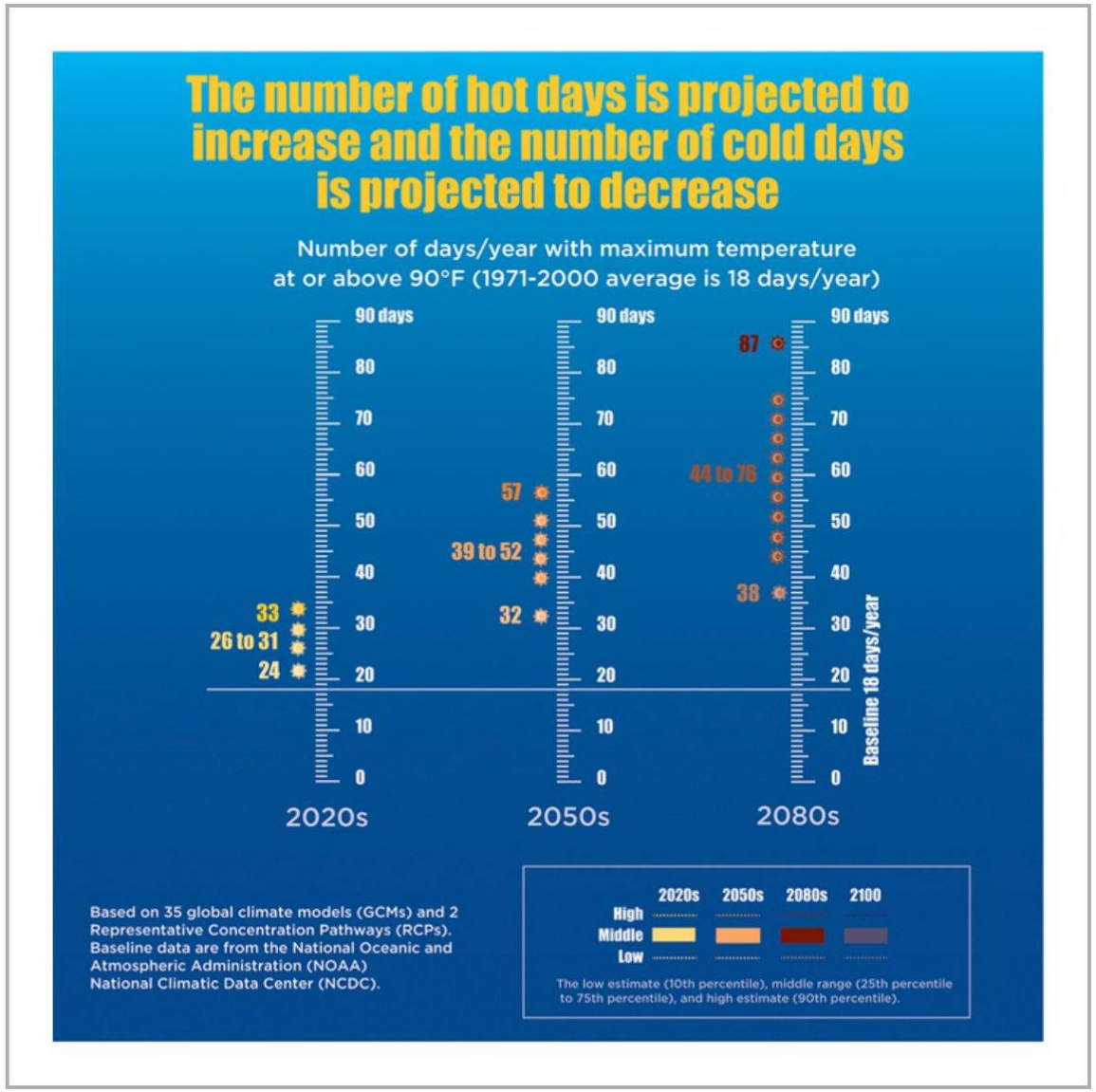
Public health burden of heat will increase in NYC

Public health burden of heat will increase in NYC



NYC Panel on Climate Change, *Advancing Tools and Methods for Flexible Adaptation Pathways and Science Policy Integration*, 2019

Public health burden of heat will increase in NYC

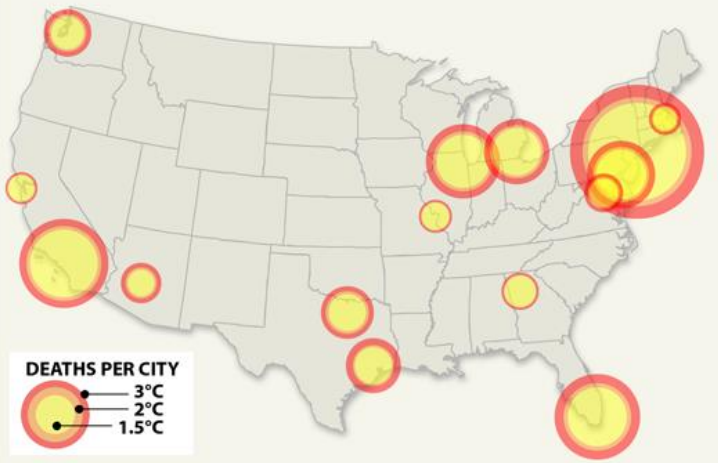


NYC Panel on Climate Change, *Advancing Tools and Methods for Flexible Adaptation Pathways and Science Policy Integration*, 2019

Extreme Heat Risks Rise in U.S. Cities

Global warming is putting more lives in danger during extreme heat waves, and even half a degree Celsius can make a big difference. A new study used past heat wave health data to project death tolls in 15 big cities if global temperatures rise 3°C (5.4°F) compared to meeting the Paris climate goals of an increase under 2°C.

DEATHS PER 1-IN-30-YEAR EXTREME HEAT EVENT



CITY	3°C INCREASE	2°C INCREASE	1.5°C INCREASE
New York	5,798 deaths	3,818 deaths	3,082 deaths
Los Angeles	2,561	1,802	1,476
Miami	2,359	1,465	1,124
Chicago	1,781	1,145	906
Philadelphia	1,484	984	800
Detroit	1,372	910	732
Dallas	901	595	446
Houston	792	538	440
Seattle	725	446	341
Phoenix	526	310	226
Washington, DC	486	312	251
Atlanta	446	346	312
St. Louis	351	269	234
Boston	330	215	172
San Francisco	328	253	214

SOURCE: Union of Concerned Scientists; Lo et al., 2019

PAUL HORN / InsideClimate News

Assess Vulnerability & Risks

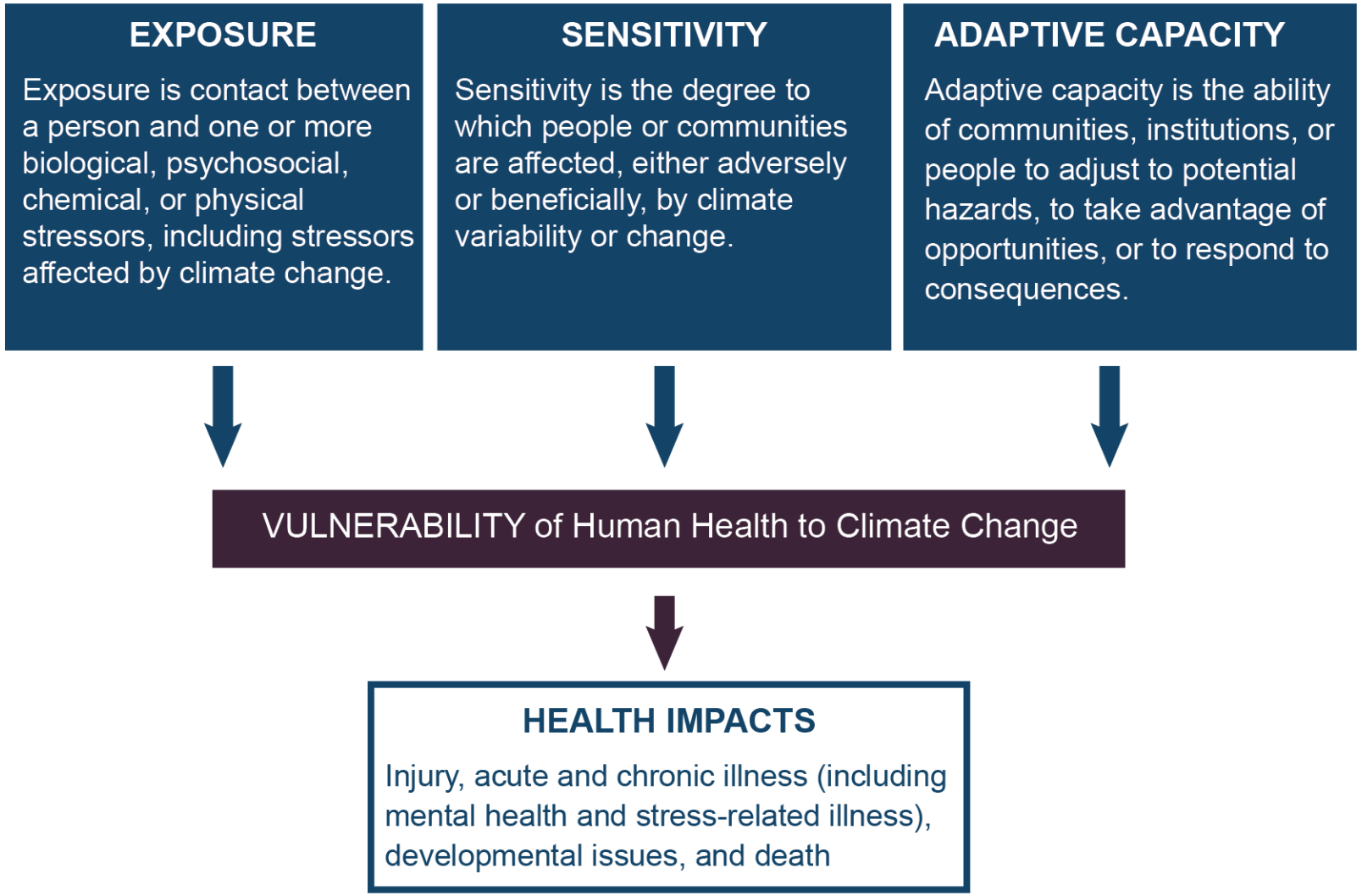
Development of Heat Vulnerability Index (HVI) for NYC

- Methods
  - Case-Only Design
  - A way to assess how a characteristic that does not vary over time modifies the effect of a time-varying exposure
  - If a characteristic increases the risk of dying on hotter days, the proportion of deaths with that characteristic will be higher on hotter days
- Study Population
  - All adult decedents (cases) who are residents of New York City, 2000 – 2011 (n = 234,042)
- Exposure (heat wave days)
  - Days when either the maximum temperature or heat index > 95°F (32°C) for at least two consecutive days (National Climatic Data Center)
- Outcome
  - All-cause mortality (May – September)

Image via Michael D Brown 2014/Fotolia

Madrigano, J., Ito, K., Johnson, S., Kinney, P.L. and Matte, T., 2015. A case-only study of vulnerability to heat wave–related mortality in new york city (2000–2011). *Environmental health perspectives*, *123*(7), p.672.

Determinants of Vulnerability



USGCRP, 2016: *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtanj, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC, 312 pp. http://dx.doi.org/10.7930/J0R49NQX

Vulnerability factors of interest

Individual

Gender

Race/ethnicity

Age

Place of death

Neighborhood

Built space

Green space

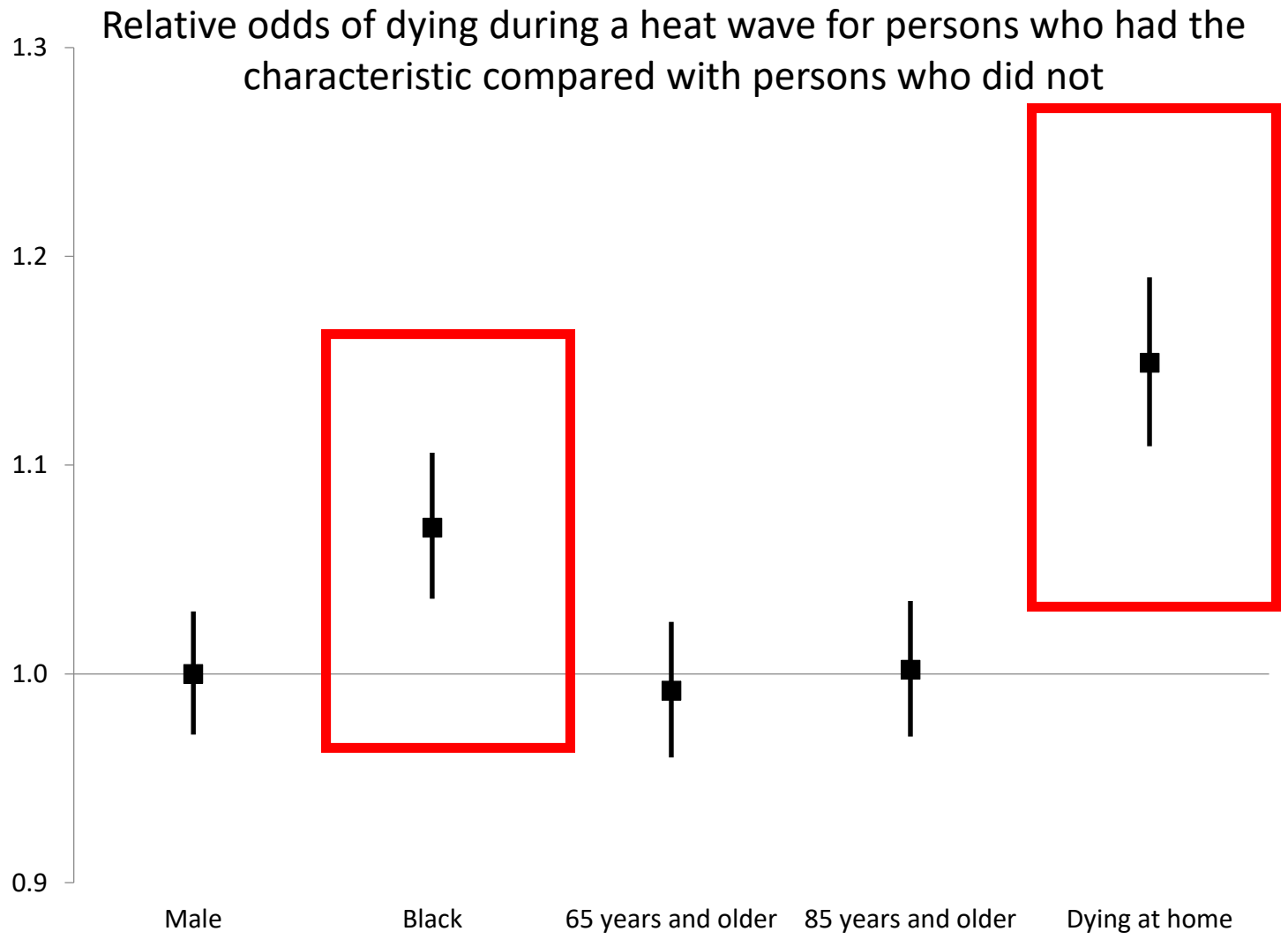
Public assistance

Temperature

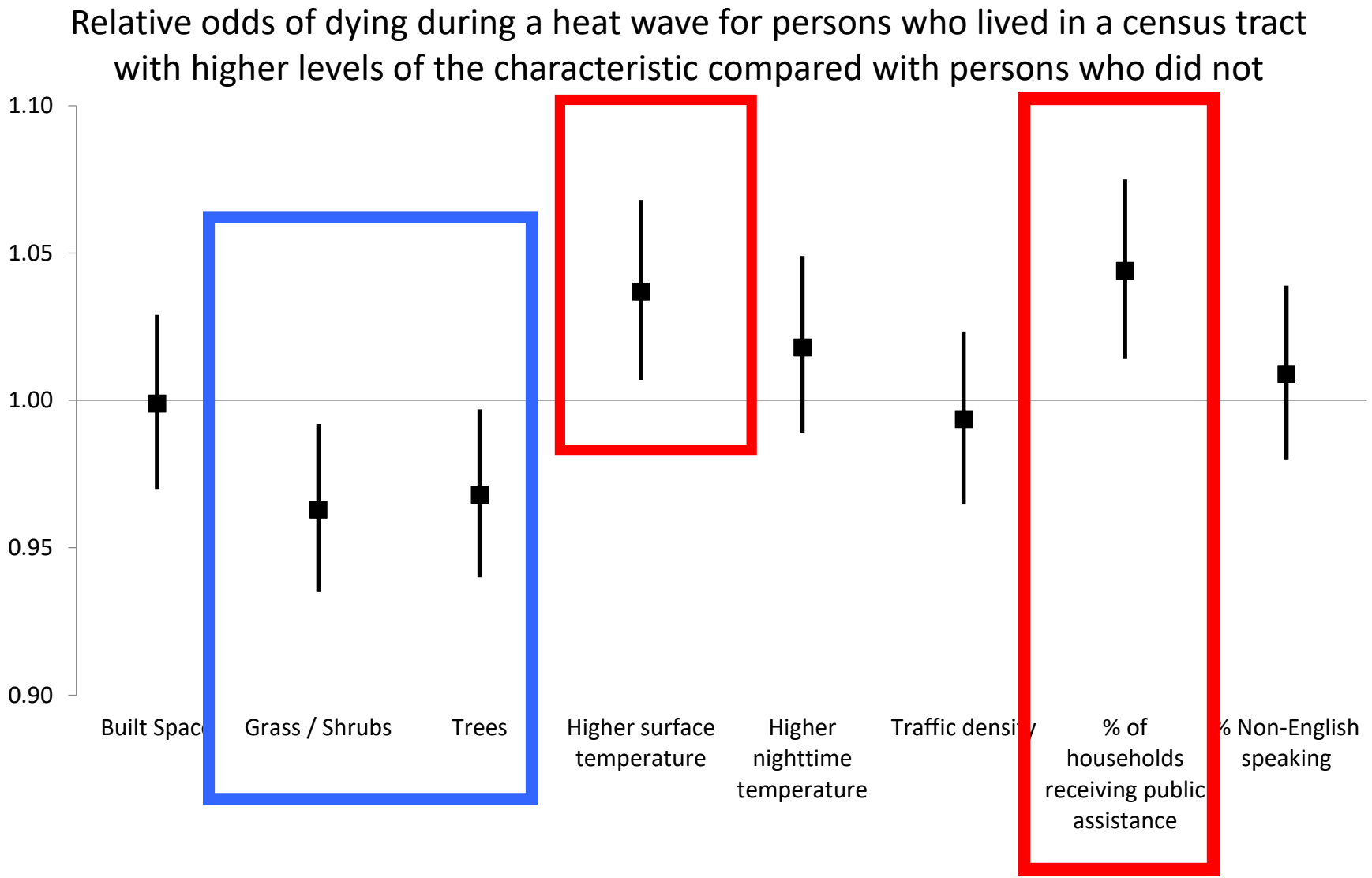
Traffic density

English-speaking

Results


Relative odds of dying during a heat wave for persons who had the characteristic compared with persons who did not
1.3
1.2
1.1
1.0
0.9
Male
Black
65 years and older
85 years and older
Dying at home

Results


Relative odds of dying during a heat wave for persons who lived in a census tract with higher levels of the characteristic compared with persons who did not
1.10
1.05
1.00
0.95
0.90
Built Spac
Grass / Shrubs
Trees
Higher surface temperature
Higher nighttime temperature
Traffic densi
% of households receiving public assistance
% Non-English speaking

Vulnerability to Heat-Related Mortality in NYC

- Heat Vulnerability Index
  - Z-scores
    - (+) proportion of homes receiving public assistance
    - (+) proportion of Black residents
    - (+) proportion of deaths occurring at home
    - (+) relative surface temperature
    - (-) proportion of trees

Vulnerability to Heat-Related Mortality in NYC

- Heat Vulnerability Index
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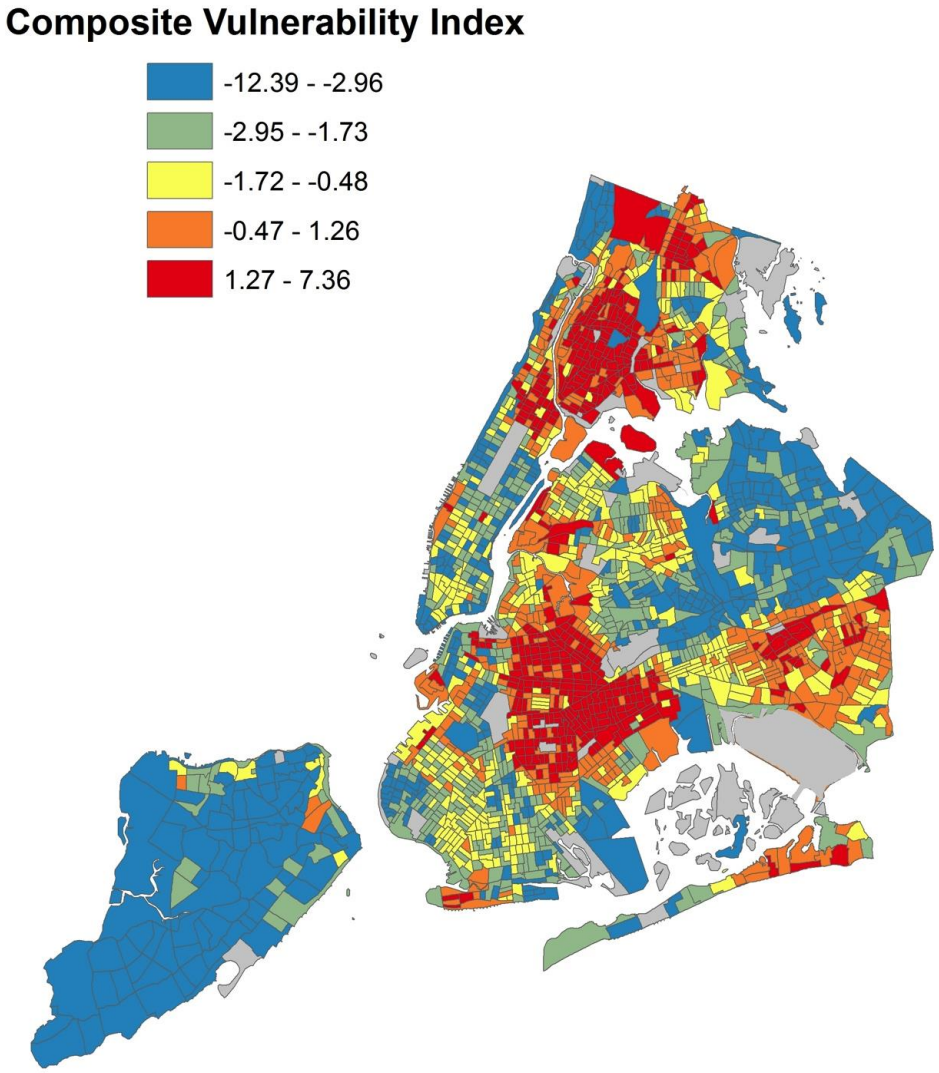
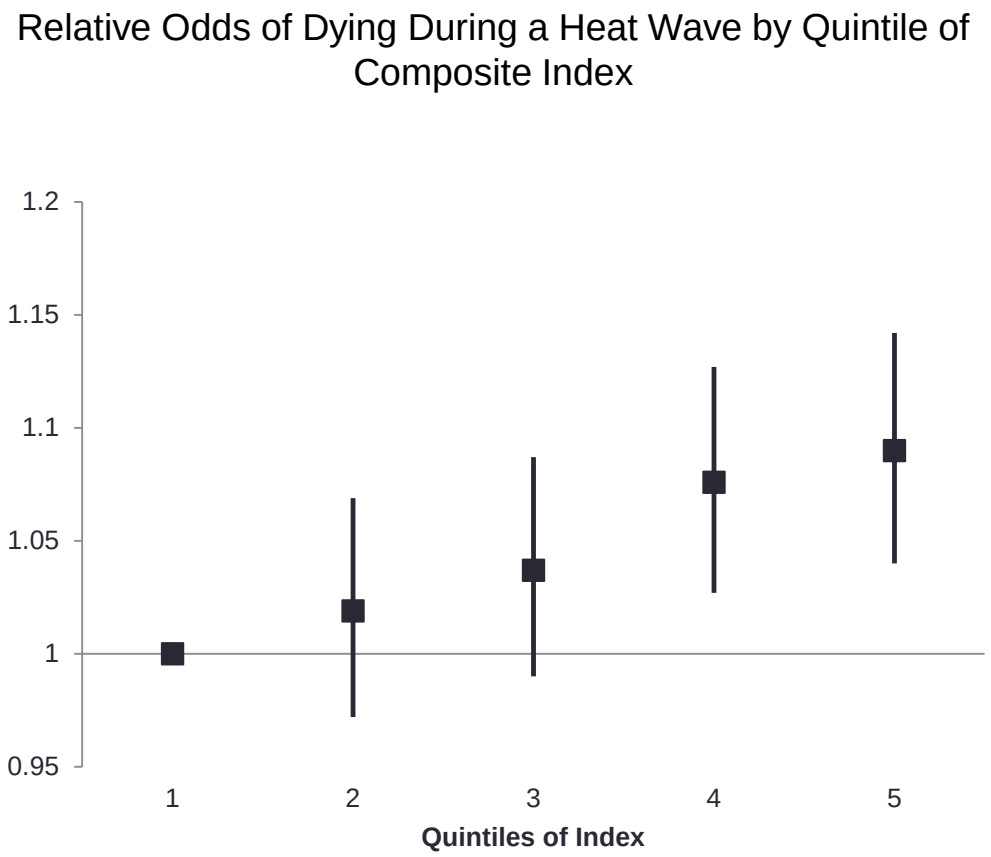
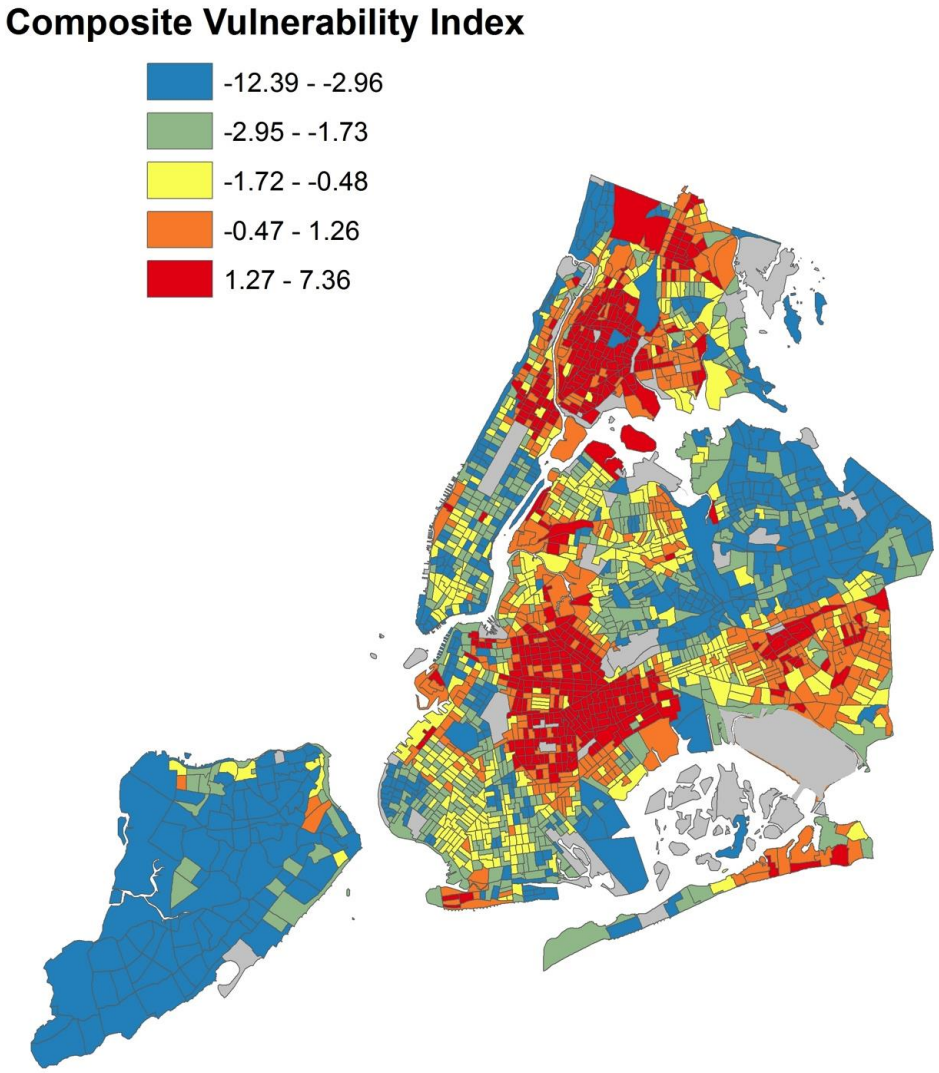


Vulnerability to Heat-Related Mortality in NYC

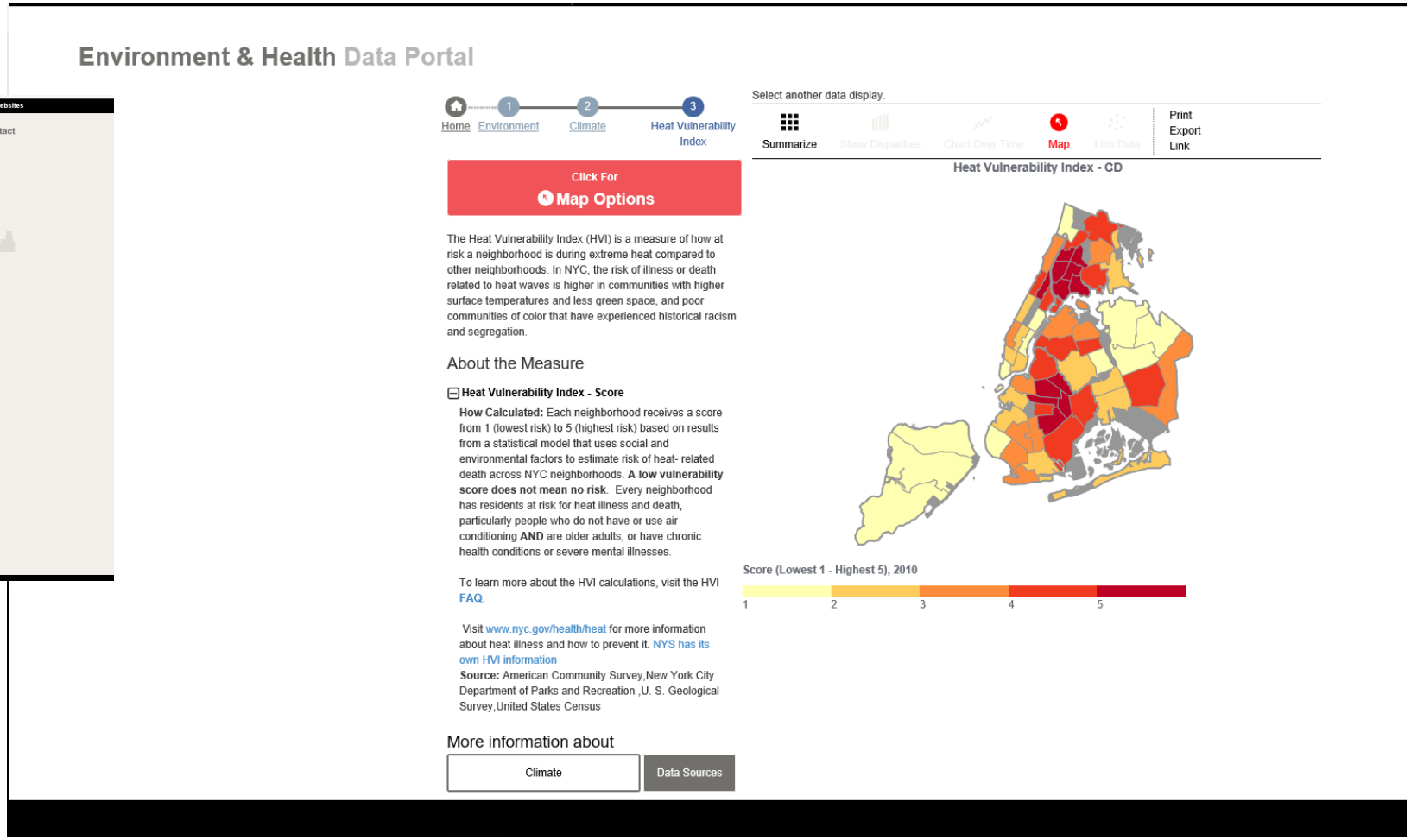




HVI Featured on NYC Health Data Portal

http://www1.nyc.gov/site/doh/data/health-tools/environmental-public-health-tracking-program.page

HVI Featured on NYC Health Data Portal



http://www1.nyc.gov/site/doh/data/health-tools/environmental-public-health-tracking-program.page

Investigate Options

Questions remain….

- What leads to barriers to taking preventive action during heat waves?
  - Income
  - Heat health awareness
  - Risk perception
- Do barriers contribute to disparities in heat-related mortality in NYC?

Image via Oleksii Sergieiev /Fotolia

Methods

- Follow-up telephone survey, 9/22/15 – 10/1/15
- Conducted by Baruch College Survey Research
- Random digit dial landline sample plus randomly selected cell phone sample
- 18 questions
- Questions asked in English and Spanish
- Descriptive statistics and multivariate logistic regression analyses using SAS 9.4

Image via Gajus/Fotolia

Survey Categories	Number of Questions
Air conditioning	4
Other behaviors to keep cool during extreme heat	2
Awareness of heat warnings	1
Health status	1
Social cohesion	2
Risk perception	2
Demographics / geography	6

Madrigano, Jaime, Kathryn Lane, Nada Petrovic, Munerah Ahmed, Micheline Blum, and Thomas Matte. "Awareness, risk perception, and protective behaviors for extreme heat and climate change in New York City." *International journal of environmental research and public health* 15, no. 7 (2018): 1433.

Survey Results

- Survey cooperation rate = 51%; overall response rate = 22%
- 717 interviews conducted in English; 84 interviews conducted in Spanish
- Landline interviews (n=560); cell phone interviews (n=241)
- Data weighted to US 2010 Census population for NYC for age, sex, race, Hispanic origin and borough

Image via Fotolia

		Unweighted (N)	Weighted (%)
Total		801	100
Sex	Male	311	47
Age	18-29	140	24
	30-49	233	37
	50-64	202	23
	65+	212	16
	Missing/Refused	14	
Household Income	<$30,000	212	25
	$30,000 - <$50,000	126	16
	$50,000 - <$100,000	151	28
	>=$100,000	136	31
	Missing/Refused	176	

Disparities in AC Access

- Over ¼ of New Yorkers did not have access to functioning AC or used it less than half of the time during very hot weather.
- Non-Hispanic blacks were less likely to own AC even when adjusting for household income, suggesting lack of financial resources is not the only cause of lower AC among this group.
  - More qualitative research to better understand disparities and sharpen interventions to address root causes.
- Racial and socioeconomic disparities in heat illness and death may be partially explained by AC access.
  - Some suggestion that there is an opportunity to increase knowledge on heat-health

Image via Monkey business/Fotolia

Social Cohesion

- A majority of the population reported checking in on a family member, friend, or neighbor to make sure they were OK during very hot weather, 59% (95% CI: 55%, 62%)
- But…
  - When participants were asked what they do when they cannot keep cool at home, the most frequently reported response was “stay home even though hot”, 47% (95% CI: 41%, 53%)
    - Similar to 2011, but probed on why..
  - Among those who choose not to leave their home
    - “Don’t think heat is dangerous”, 30% (95% CI: 22%, 38%)
    - Personal preference (volunteered), 28% (95% CI: 21%, 36%)
    - “Would rather not spend time with people you don’t know”, 12% (95% CI: 7%, 18%)

Image via freshidea/Fotolia

Prioritize & Plan

Cool Neighborhoods NYC

THE CITY OF NEW YORK
OFFICE OF THE MAYOR
NEW YORK, NY 10007

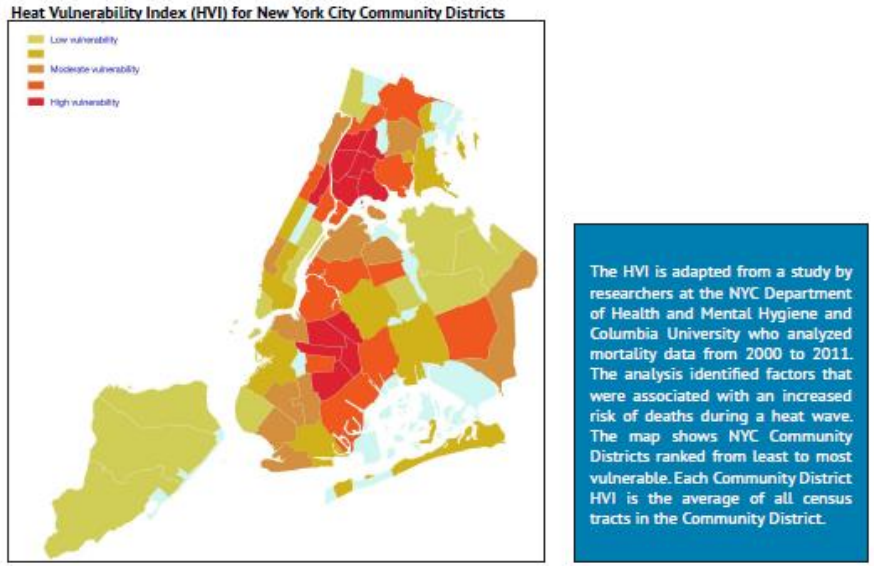
FOR IMMEDIATE RELEASE, June 14, 2017
CONTACT: pressoffice@cityhall.nyc.gov, (212) 788-2958

MAYOR ANNOUNCES PROGRAM TO HELP CURB EFFECTS OF EXTREME SUMMER HEAT

Launches new $106 million Cool Neighborhoods NYC program, expanding the Administration's aggressive climate resiliency agenda

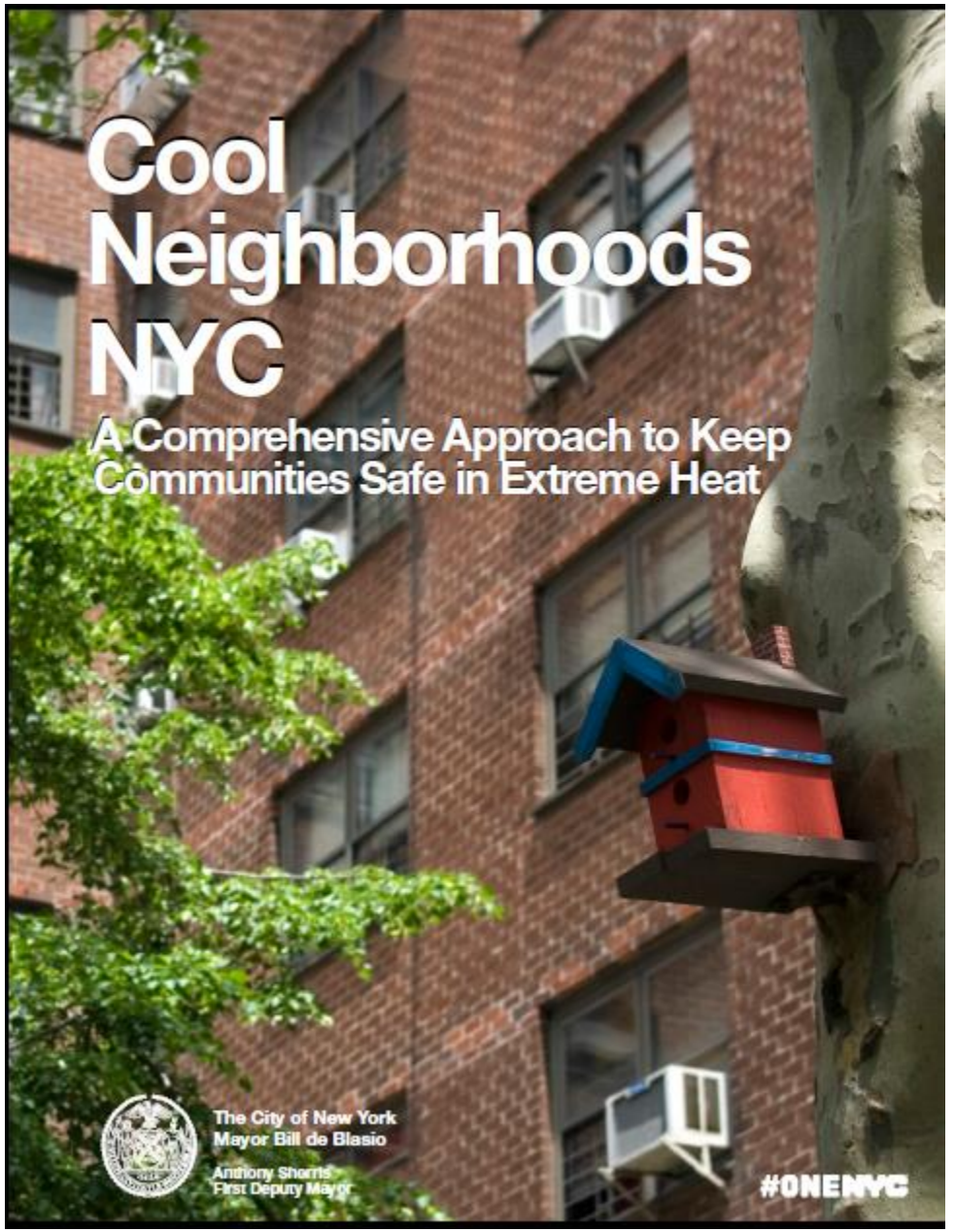
As part of *Cool Neighborhoods NYC*, the City announced an $82 million commitment to fund street tree plantings in neighborhoods in the South Bronx, Northern Manhattan, and Central Brooklyn. These areas have been identified as disproportionately vulnerable to heat-health risks, according to the City's Heat Vulnerability Index, which combines metrics proven to be strong indicators of heat risk. The City will also invest $16 million to support planting trees in parks and an additional $7 million to support forest restoration across the five boroughs. The City has identified a priority list of 2.7 million square feet of private- and public- roofs in the heat-vulnerable areas of the South Bronx, Central Brooklyn, and Northern Manhattan to conduct strategic outreach to owners and target the successful *NYC °CoolRoofs* program over the coming years.

Cool Neighborhoods NYC



The HVI is adapted from a study by researchers at the NYC Department of Health and Mental Hygiene and Columbia University who analyzed mortality data from 2000 to 2011. The analysis identified factors that were associated with an increased risk of deaths during a heat wave. The map shows NYC Community Districts ranked from least to most vulnerable. Each Community District HVI is the average of all census tracts in the Community District.

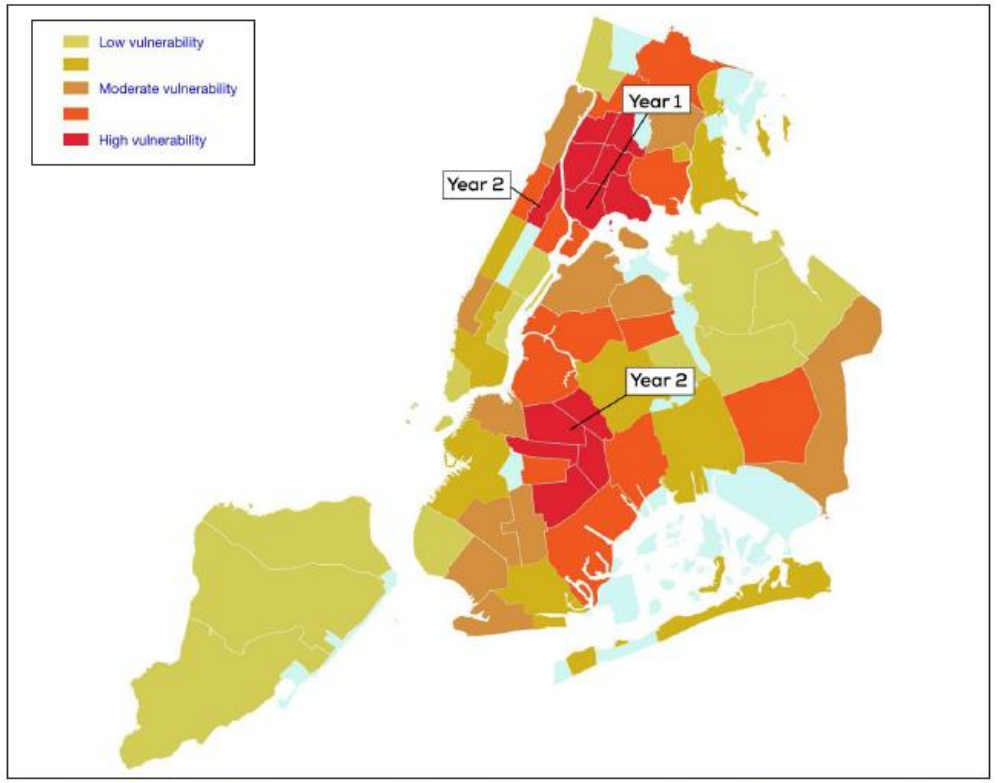
Page 9, Cool Neighborhoods NYC



http://www1.nyc.gov/assets/orr/pdf/Cool_Neighborhoods_NYC_Report_FINAL.pdf

Cool Neighborhoods NYC

Encouraging New Yorkers to Check on At-Risk Neighbors through Be a Buddy NYC



The City is investing $930,000 to launch Be a Buddy NYC to create a community-led preparedness model that promotes social cohesion. This health-based initiative is a two-year pilot that will promote community resiliency to extreme heat and other weather emergencies in key heat-vulnerable communities (See Figure 16). South Bronx

http://www1.nyc.gov/assets/orr/pdf/Cool_Neighborhoods_NYC_Report_FINAL.pdf

Take Action

NYC°CoolRoofs

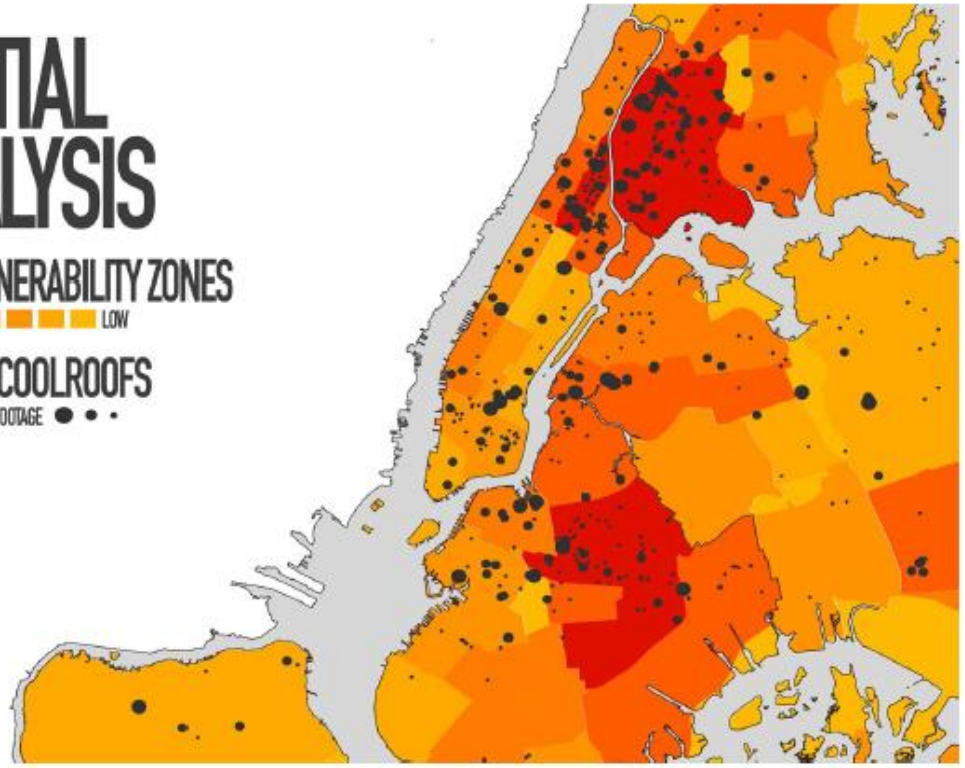
SPATIAL ANALYSIS

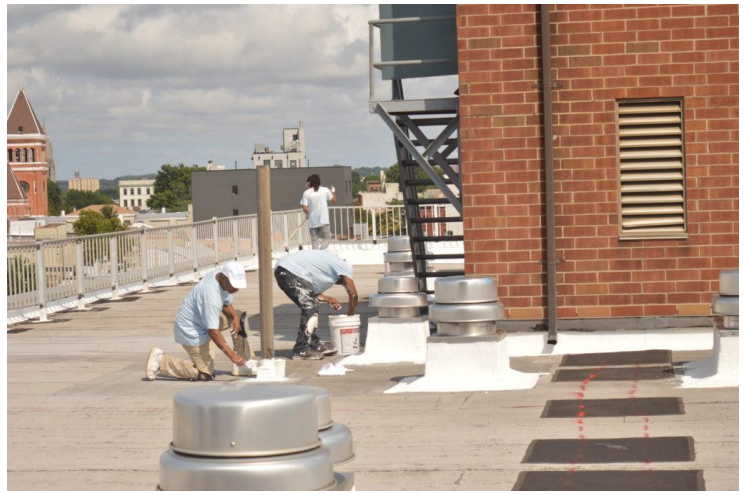
HEAT VULNERABILITY ZONES

HIGH LOW

EXISTING COOLROOFS

RANKED BY SQUARE FOOTAGE



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Launching Climate Risk Training for Home Health Aides

Launching Climate Risk Training for Home Health Aides

HOW BAB CAN HELP/BENEFITS

- Establish a network of local volunteers reaching out and helping local community members most at-risk to climate-related emergencies like heat waves, coastal storms or extreme cold.
- Provide and guide at-risk community members to useful resources and services related to climate and community preparedness.
- Better prepare the community for future climate events and emergencies through education and awareness.
- Creates local, social connections among community members.

Be A Buddy!

How to Get Involved?

- Register to our network if you are an at-risk community member through our online or paper application.
- Volunteer as a Be A Buddy to conduct outreach for the program
- Share this flyer or information with another community member
- Follow us on social media to stay informed and aware of climate-related events
- Contact: Fernando Ortiz, M.Des, Climate Preparedness and Resiliency Organizer (CPR)

fortiz@thepoint.org

1-718-542-4139 x156

940 Garrison Ave,
Bronx, NY 10474

THE POINT CDC

thepointcdc

FOR MORE INFO:
www.thepoint.org
www.huntspoint.nyc

BE A BUDDY

COMMUNITY PREPAREDNESS AND RESILIENCY

HUNTS POINT - LONGWOOD

BE A BUDDY
COMMUNITY PREPAREDNESS AND RESILIENCY
HUNTS POINT - LONGWOOD

THE POINT
WHERE COMMUNITY AND CREATIVITY CONNECT

The Steps to Resilience

1. Explore Hazards
2. Assess Vulnerability & Risks
3. Investigate Options
4. Prioritize & Plan
5. Take Action

Thank you!

jmadriga@rand.org

jmadrigano

Q&A

WEATHERING CHANGE

If you have a question, please write it in the Q&A section (not Chat) and select to All Panelists, so we can see the questions.

If you are having technical difficulty, please use Chat and send to Host, so we can address the issue with you directly.

The presentation will be recorded and posted to the Antioch website within a week www.communityresilience-center.org

Save the Date!

Join us for the next webinar in the series…

WEATHERING CHANGE

Climate Communications

October 31, 2019 12:00-1:15 PM EDT

Registration is open! https://attendee.gotowebinar.com/register/8264146398956762380