“Throwing Shade in RVA” – community science and projects for heat resilience

Jeremy S. Hoffman, Ph.D.
Science Museum of Virginia
And many, many other people

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

Habeeb et al., 2015
RICHMOND URBAN HEAT ISLAND COLLECTIVE
RICHMOND URBAN HEAT ISLAND COLLECTIVE
UPDATE MAP
Urban Heat Vulnerability =

ASPHALT + TREES + HEAT + POVERTY =
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.

Hoffman et al., in prep

Legend:
- Lowest Vulnerability
- Low Vulnerability
- Moderate Vulnerability
- High Vulnerability
- Highest Vulnerability

City of Richmond Urban Heat Vulnerability
VULNERABILITY

City of Richmond Urban Heat 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.

RAA AMBULANCE RESPONSES

DATA: RAA
c. Community health:

1. **High ambient temperature relative to average.** 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.

2. **Low food security.** Neighborhoods with...
LST (°C) in August 2018

Neighborhood "Grade"

Data: Landsat 8, UR Digital Scholarship Lab @jer_science
“Throwing Shade in RVA”

- Need to merge Groundwork RVA’s mission focus areas with building climate resilience
  - Greening Richmond
  - Preparing Youth for Success
  - Improving Health and Quality of Life of all Residents
  - Realizing Racial Equity – HOLC Redlining map history

- Program outline based on NOAA’s Climate Program Office Steps to Resilience in the US Climate Resilience Toolkit
STEPS TO RESILIENCE

Use this framework to discover and document climate hazards, then develop workable solutions to lower climate-related risks. Watch the overview video or click any step to learn more.

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

• Check past weather events and future climate trends.

2) Assess Vulnerability

• *Determine which of your assets are exposed to harm.*
1) Explore Hazards

• Check past weather events and future climate trends.

2) Assess Vulnerability

• Determine which of your assets are exposed to harm.
3) Investigate Options

- Consider possible solutions for your highest risks.
3) Investigate Options

- Consider possible solutions for your highest risks.

Randi Korn & Associates, unpublished
3) Investigate Options

• Consider possible solutions for your highest risks.

PROGRAM STRENGTHS REGARDING CLIMATE SCIENCE AND RESILIENCY

CLIMATE SCIENCE

Weak

Strong

RESILIENCY BEHAVIORS

Strong

Weak

SCIENCE ON A SPHERE
DIGITAL DOME
COSMIC CLIMATE
COOKBOOK
Lecture Series
READY ROWHOMES
EXTREME EVENT CHALLENGE

Randi Korn & Associates, unpublished
4) Prioritize & Plan

- Integrate the highest-value actions into a stepwise plan.

5) Take Action

- Move forward with the stakeholders who accept responsibility and bring resources to take action.
We saw significant change in our participants
Locations of Kresge Environment-funded Groundwork teams working to build climate resilience through understanding extreme

2 views
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Groundwork Cities
- Denver
- Elizabeth
- Providence
- Richmond

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Thank you

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