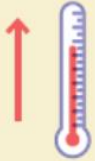




Rhode Island's Public Health Under a Changing Climate

May 19
EERMC

Key Climate Challenges



Rhode Island's average temperature has increased about three degrees since 1900. The rest of the continental United States has had an average temperature increase of about 1.5 degrees.



Rhode Island has seen a 76% increase in the number of heavy downpours since 1950 and has had the nation's largest increase of extreme precipitation events since the 1950s.



Spring is arriving earlier and bringing more precipitation, and summers are hotter and drier.



Heavy rainstorms are more frequent. Severe storms cause more floods that damage homes, businesses, and utilities.



Warmer weather could increase the risk of insect-borne diseases.



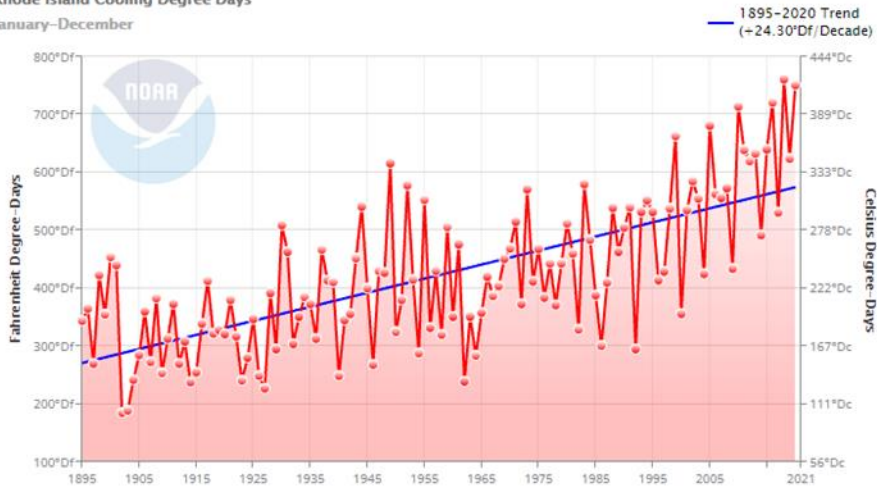
Ticks that transmit Lyme disease and other diseases are active when temperatures are higher than 45 degrees.

According to a 2014 survey, 6 in 10 Americans have given little or no thought to the issue of how climate change might affect people's health.

Heating vs. Cooling

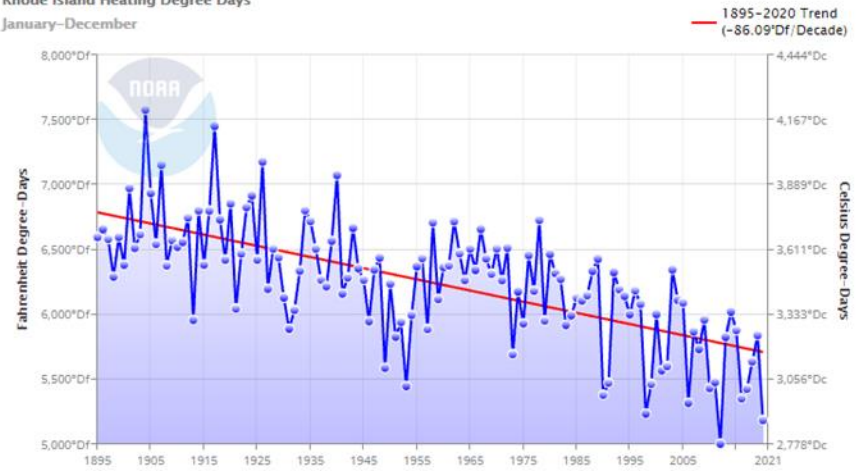


Rhode Island Cooling Degree Days
January-December



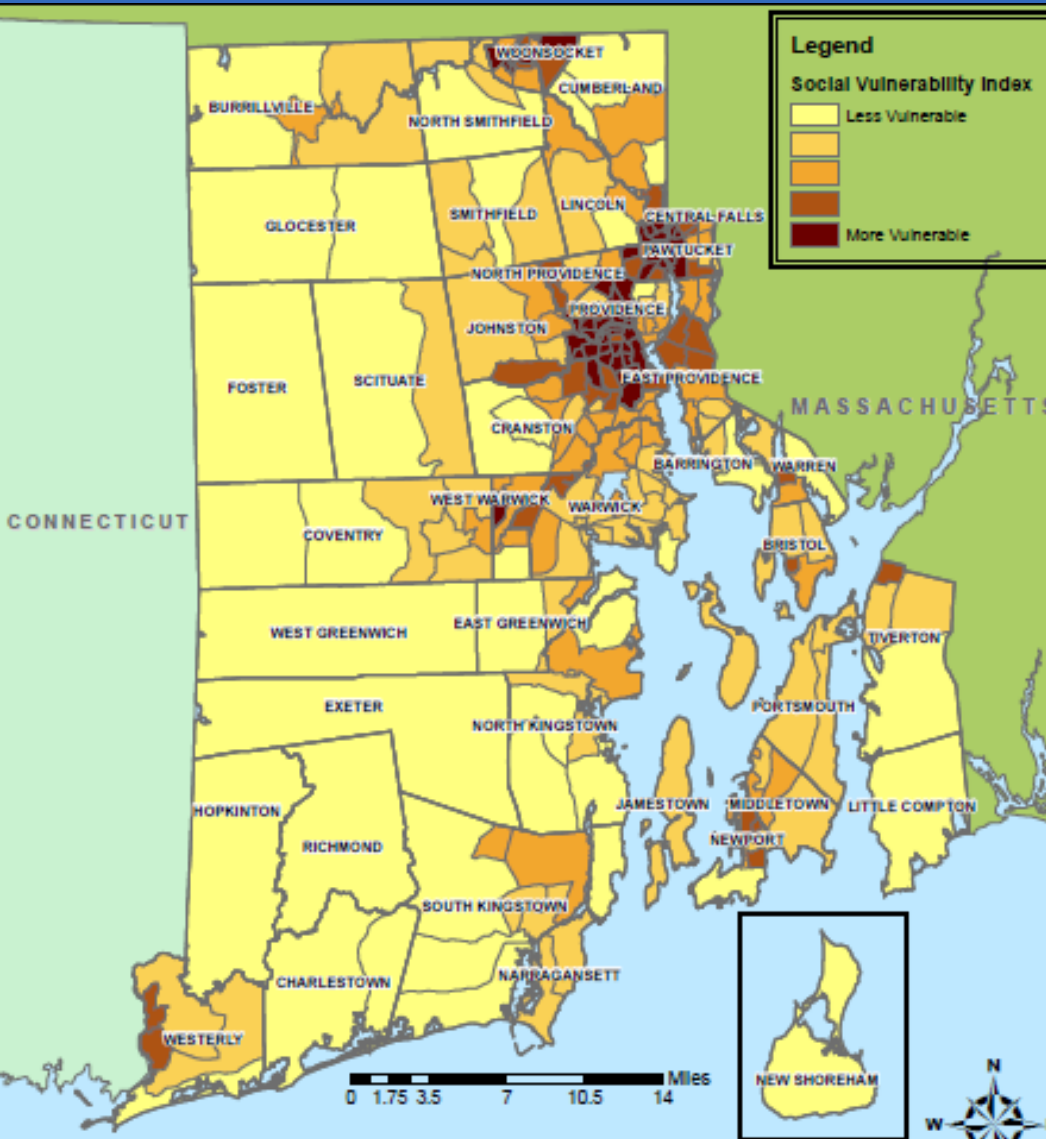
Powered by ZingChart

Rhode Island Heating Degree Days
January-December

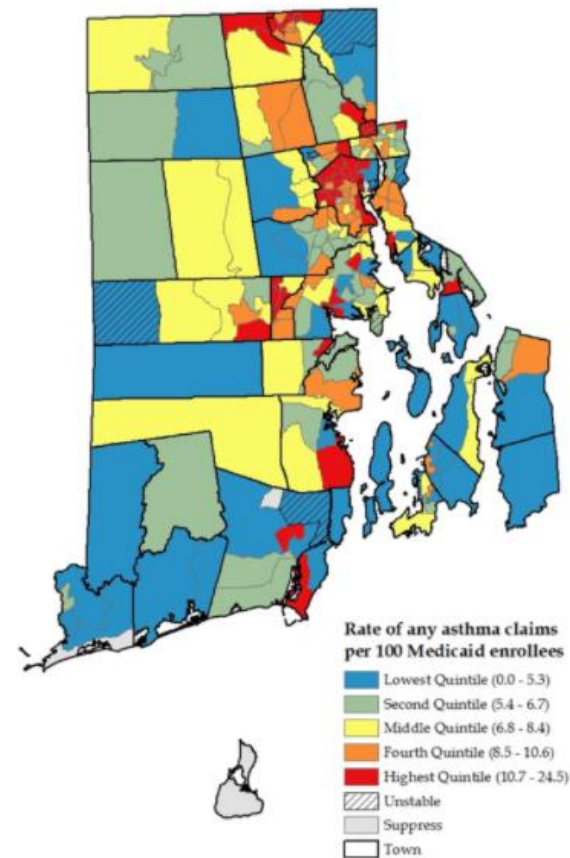


Powered by ZingChart

Climate Change is a *Risk Amplifier*

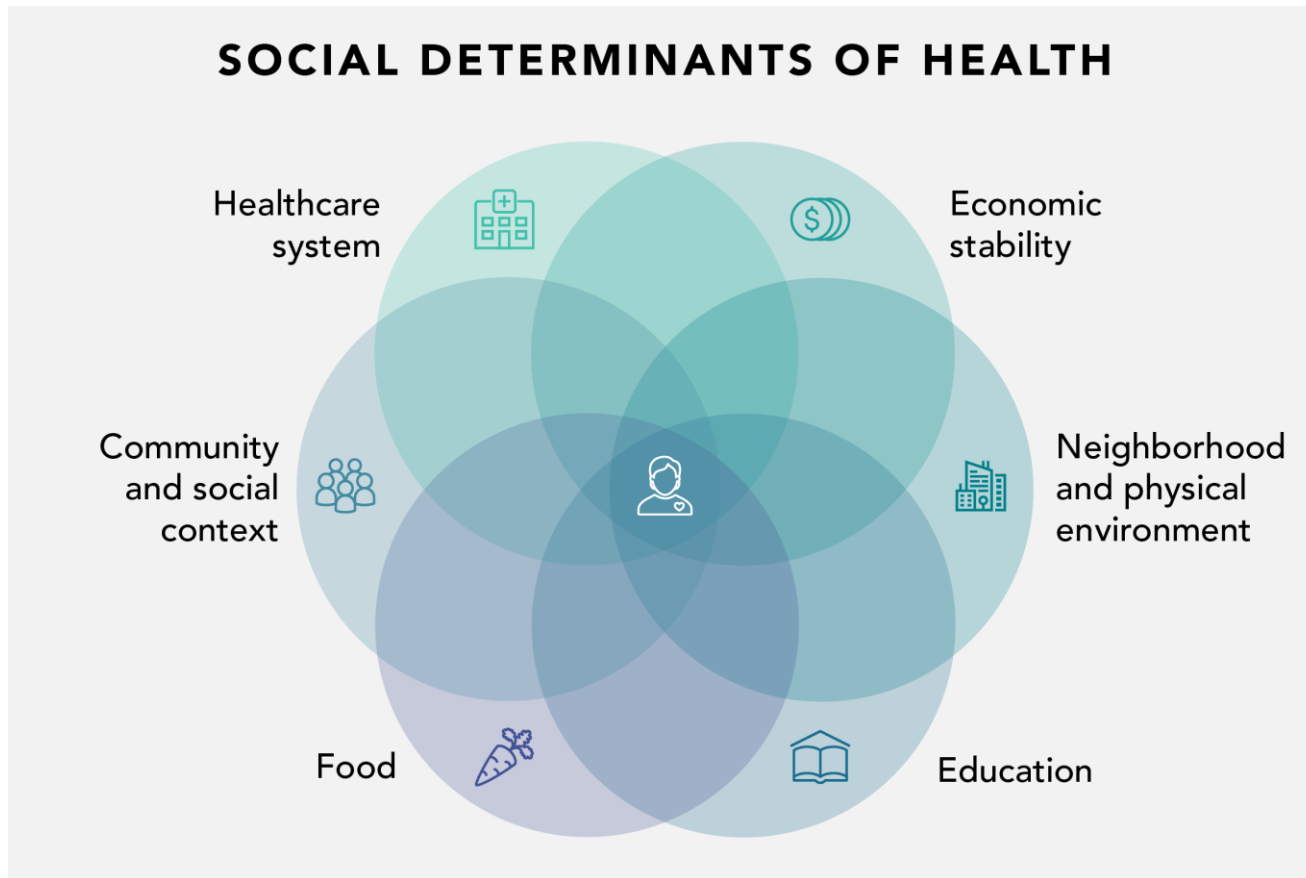


Asthma Claims Among Children on Medicaid, 2013-2017 (asthma prevalence)



* Additive Index of percentile ranks across 8 dimensions of social vulnerability: elderly, children, poverty, income, vehicle access, educational attainment, immigrant populations, and linguistic isolation.

Social Determinants of Health

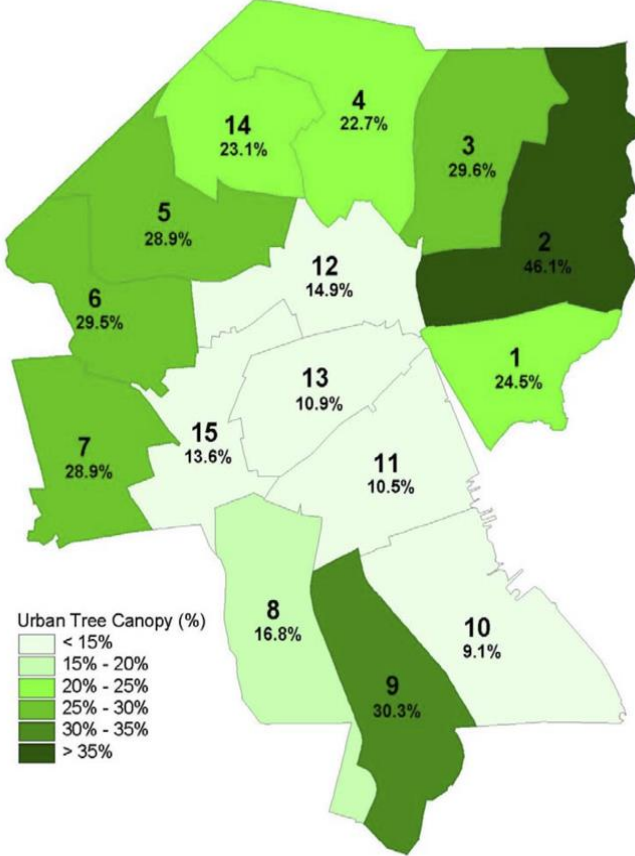


If you want to learn about the health of a population, look at the air they breathe, the water they drink, and the places where they live.

-Hippocrates, in the 5th century B.C.

Providence, Rhode Island

2007 Tree Canopy



Historic Redlining Map

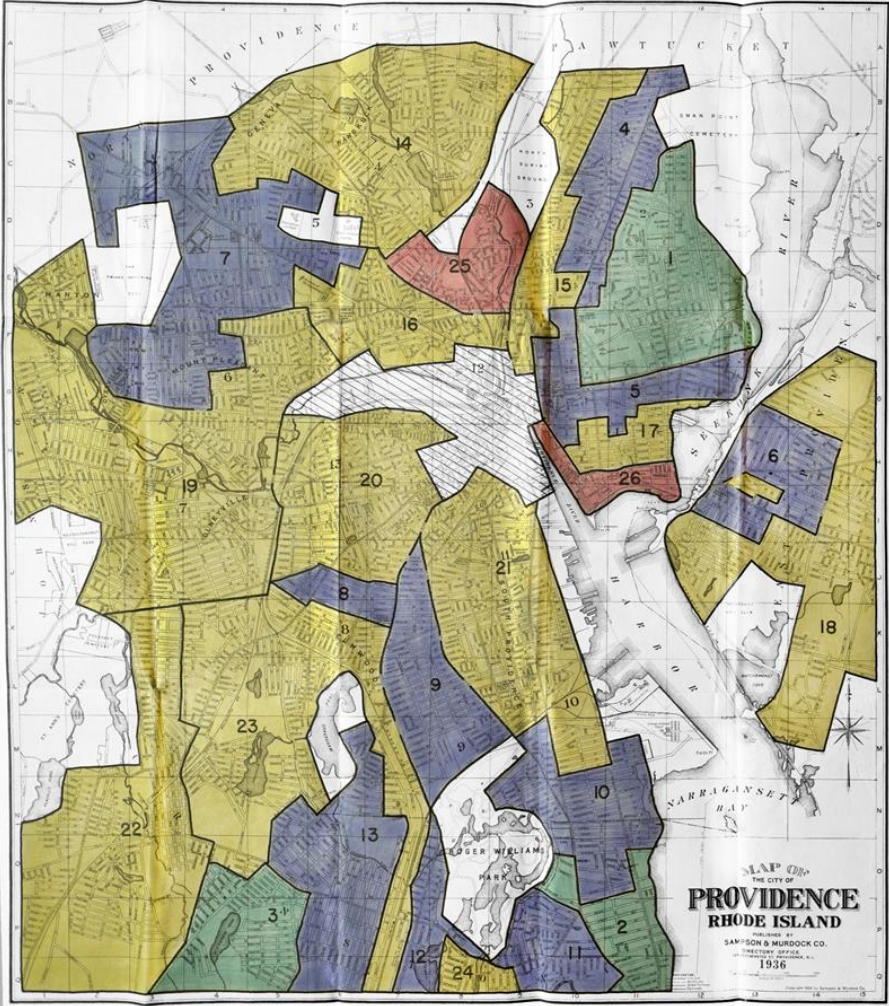


Figure 16. UTC by Ward (provided by Provstat, City of Providence)

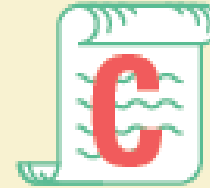
Air Quality



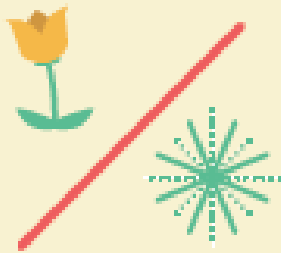
One in 10 Rhode Islanders has asthma.



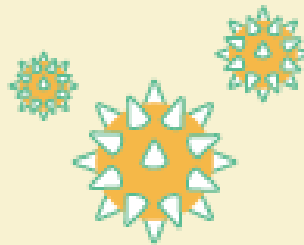
Smoke from more and larger wildfires, even in other parts of the country, impacts local air quality.



American Lung Association air quality rating for Rhode Island.



The onset of spring bloom is occurring earlier, and the first frost is occurring later.



An extended growing season means longer periods of exposure to pollen and mold.

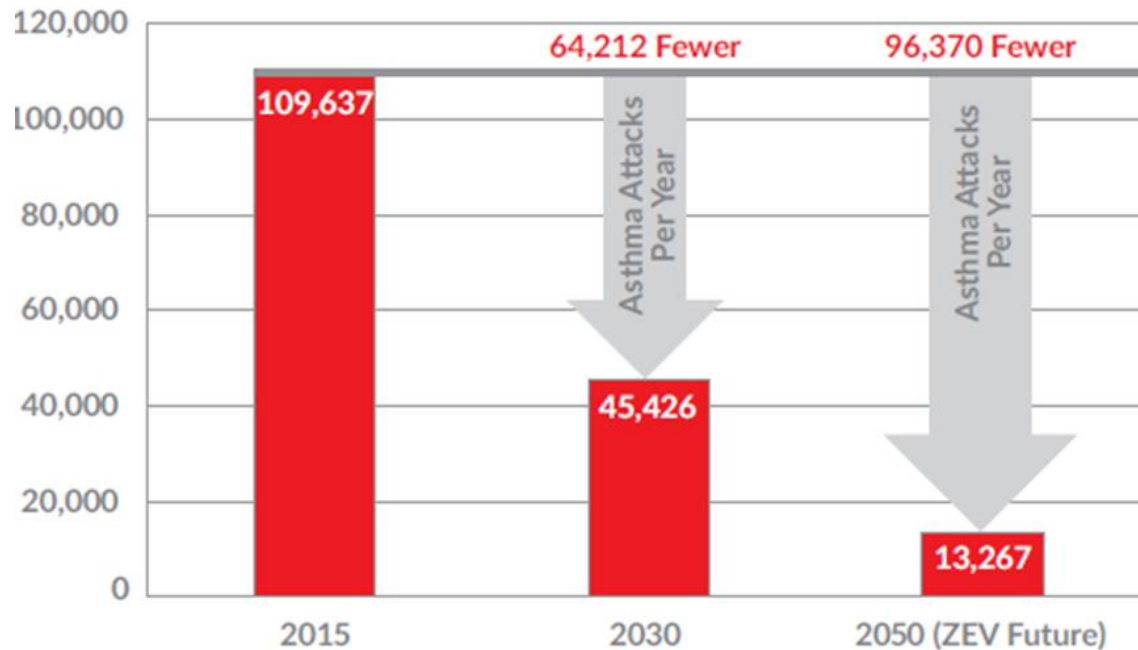


Increased exposure to allergens and air pollutants can cause more severe allergic reactions.

Electric Vehicles



Asthma Attacks Due to Vehicle Pollution



For Rhode Island this transition could mean significant public health benefits, including:

\$3.8 Billion in public health benefits

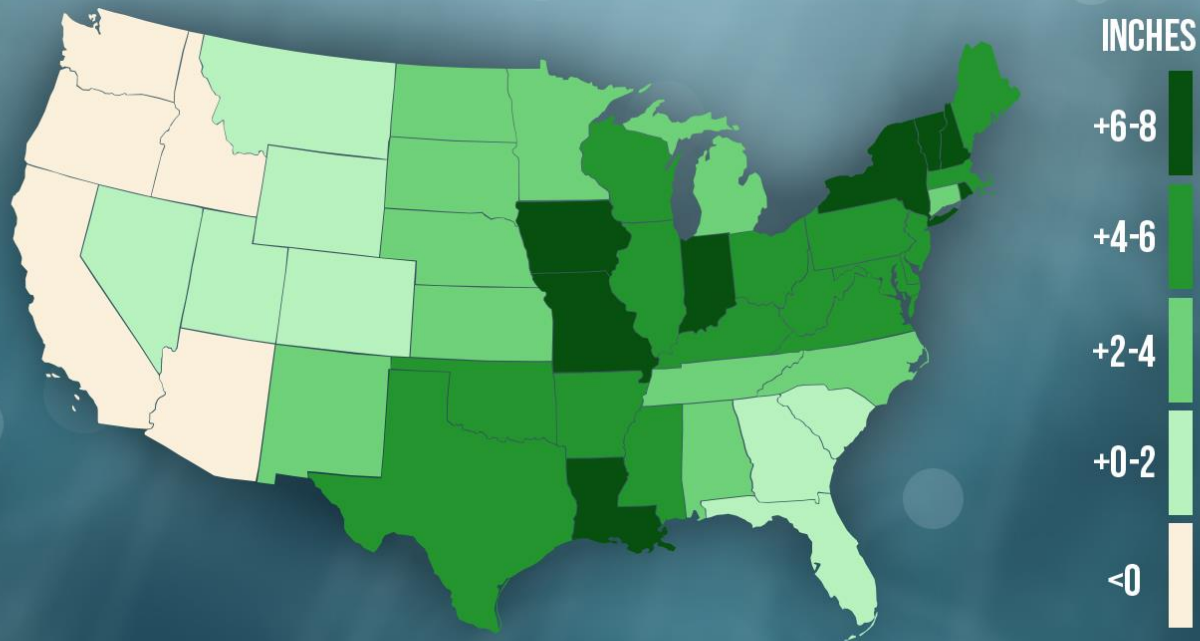
348 avoided deaths

6,570 avoided asthma attacks

35,600 avoided lost work days

More Rain

WET GETTING WETTER CHANGE IN ANNUAL RAINFALL SINCE 1950



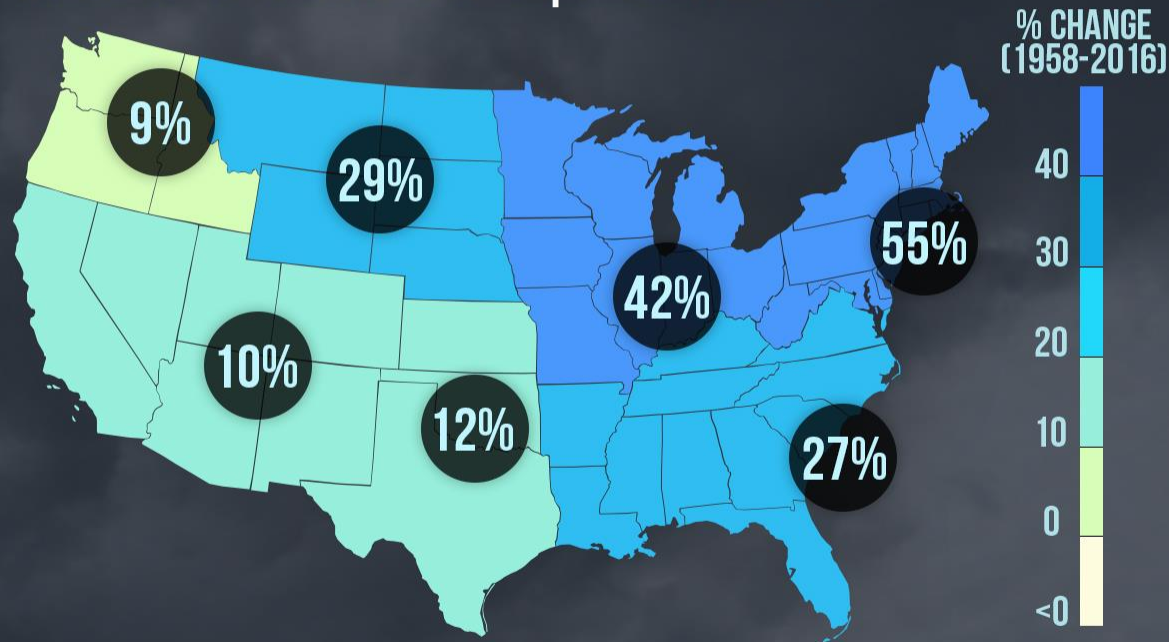
Statewide averages from NOAA NCEI Climate at a Glance. Produced 5/22/2019
Source: NOAA/NCEI Climate at a Glance

More Heavy Rain Events



MORE DOWNPOURS

Increase in Heaviest Precipitation Events



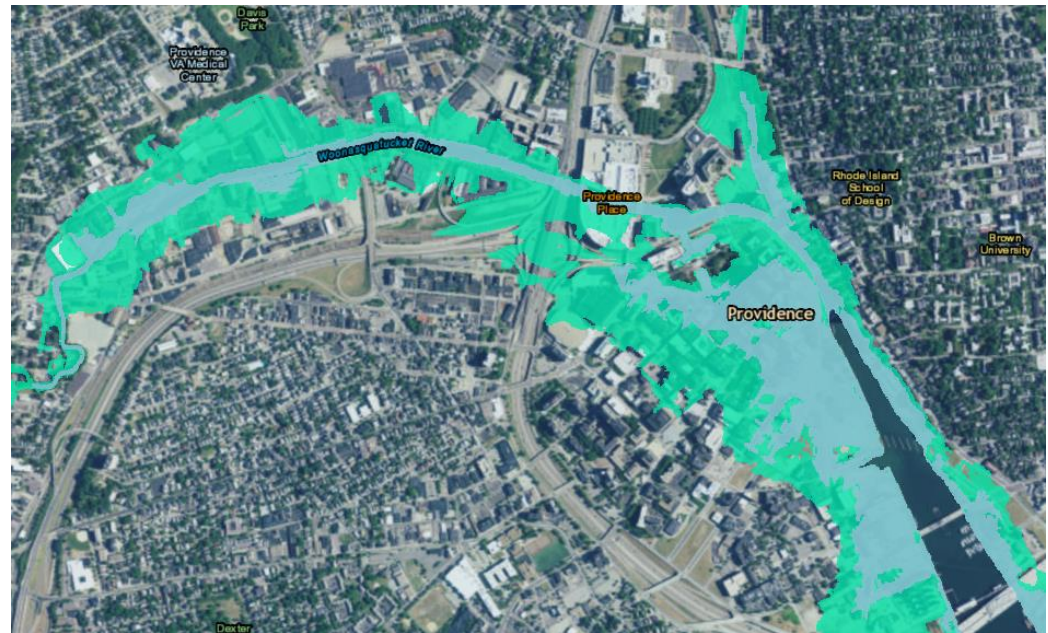
Heaviest events defined as top 1% of events
Source: USGCRP Climate Science Special Report 2017

Sea Level Rise



Health Impacts

- Storm- related injuries
- Water quantity & quality issues
- Food system impacts
- Ecosystem & economic disruption
- Mental health stresses

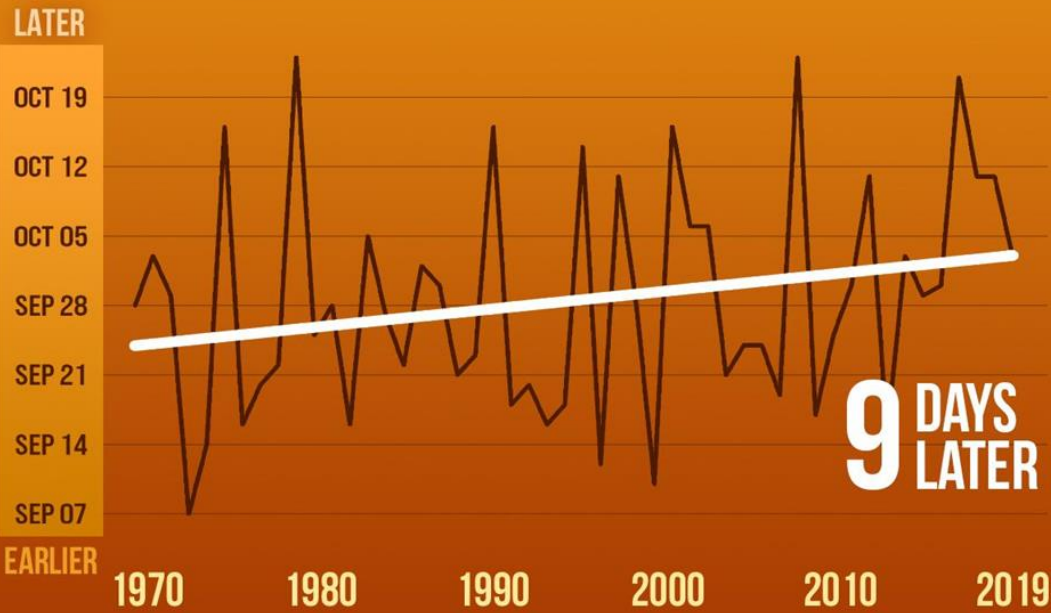


STORMTOOLS: <http://www.beachsamp.org/stormtools>

Extreme heat in Rhode Island



PROVIDENCE LAST 80°+ DAY



9 DAYS LATER

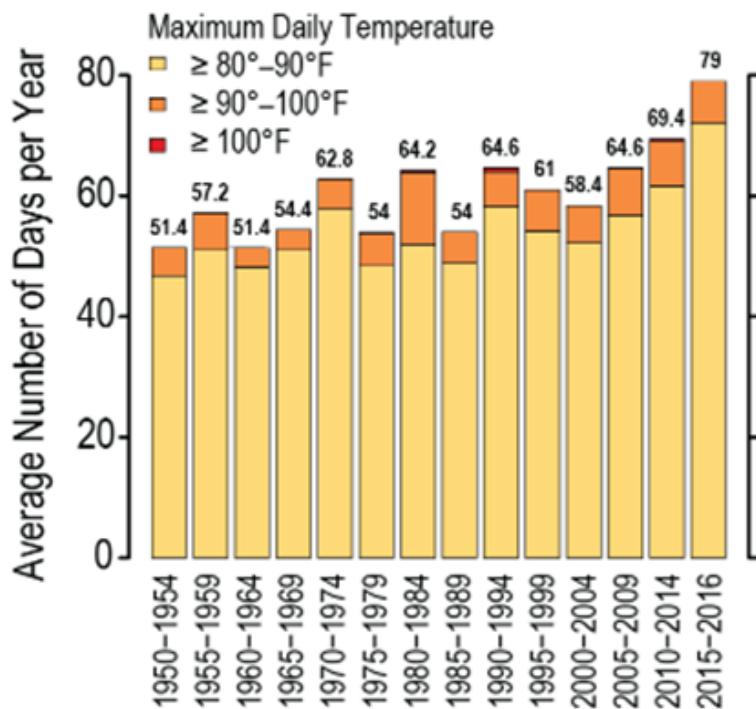
Source: RCC-ACIS.org

CLIMATE  CENTRAL

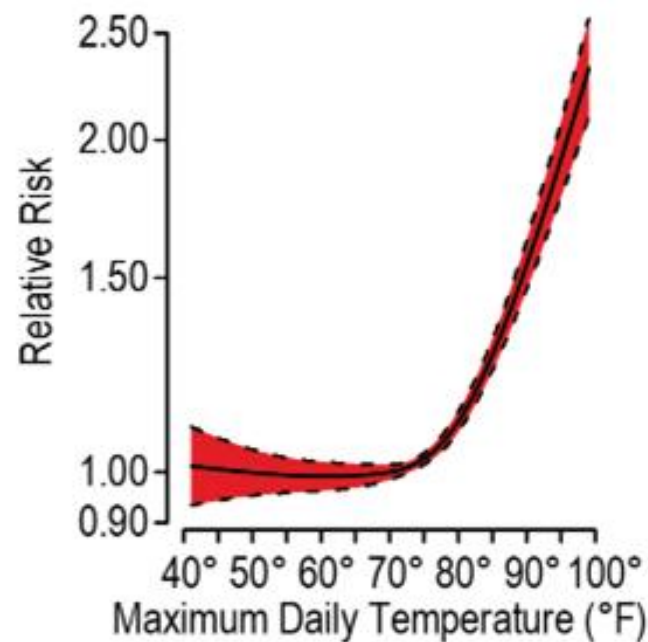
Extreme heat is a health risk



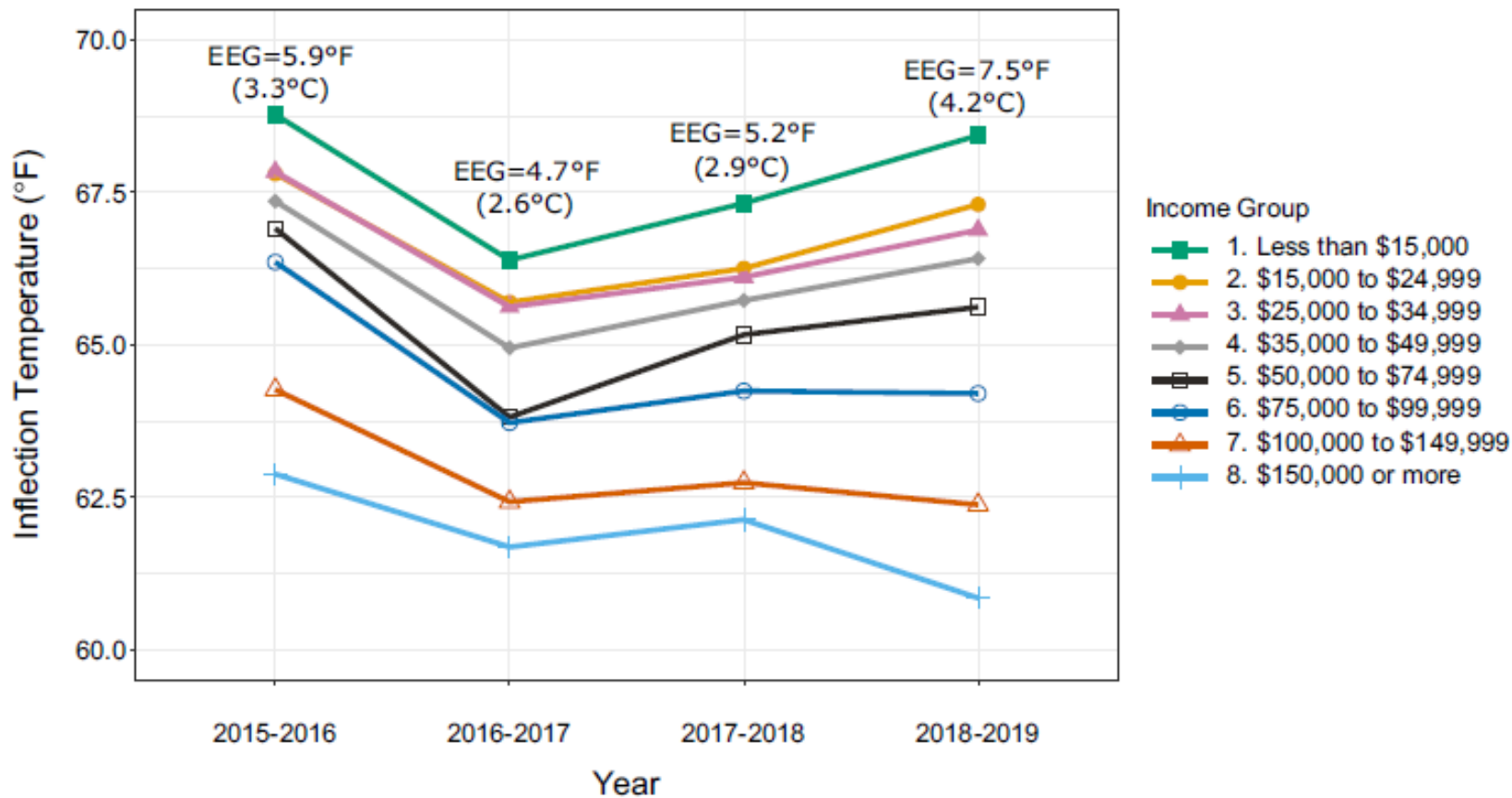
Number of Days per Year with Extreme Heat in RI



Association Between Maximum Daily Temperature and Heat-Related Emergency Room Visits



Extreme heat is a health risk



Unveiling hidden energy poverty using the energy equity gap

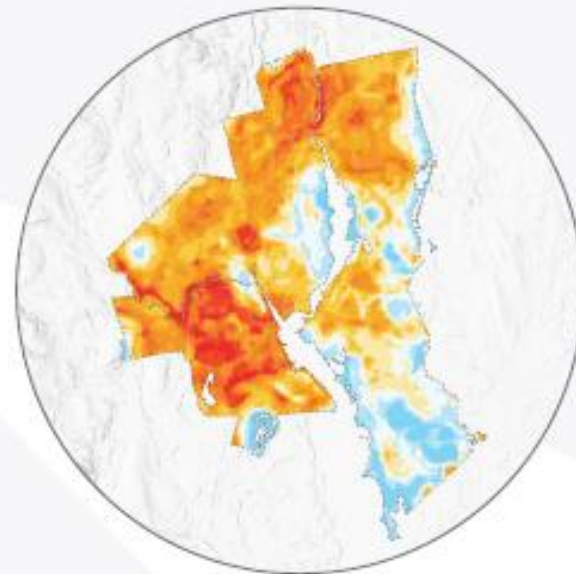
Shuchen Cong, Destenie Nock, Yueming Lucy Qiu & Bo Xing⁴

Nature Communications (2022) 13:2456

CAPA Heat Watch



Point temperature
traverse period



Area-wide heat maps, displaying either the modeled temperature or heat index across the entire study area at each traverse period.

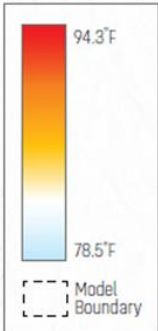
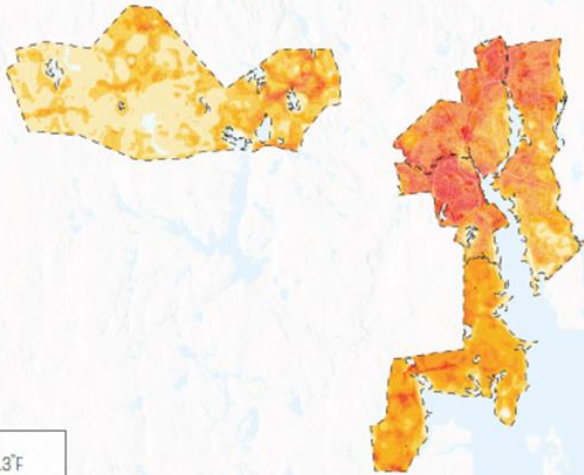


Extreme Heat



Afternoon Area-Wide Predictions

Temperature (3 - 4 pm)



DATA AND PROJECTIONS



CURRENT:
90° FOR
10 DAYS

During an average Rhode Island summer, the heat index reaches 90°F for 10 days.



PROJECTED:
ABOVE 90° FOR
13-44 DAYS

Between 2020-2099, Rhode Island may experience 13-44 more days each summer that are above 90°F.



Rhode Island's average temperature has increased by more than 3°F in the past century.



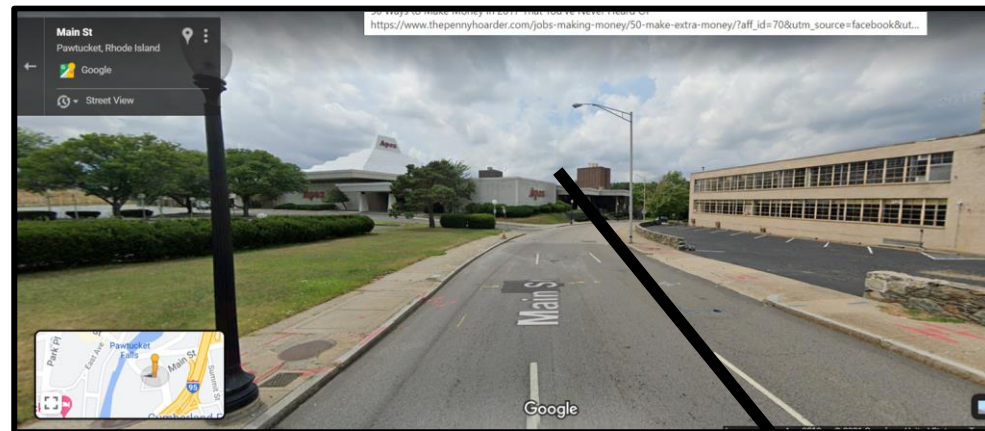
Many Rhode Islanders do not have air conditioning, including at-risk groups.

DAYS ABOVE 90°

3 MORE DAYS

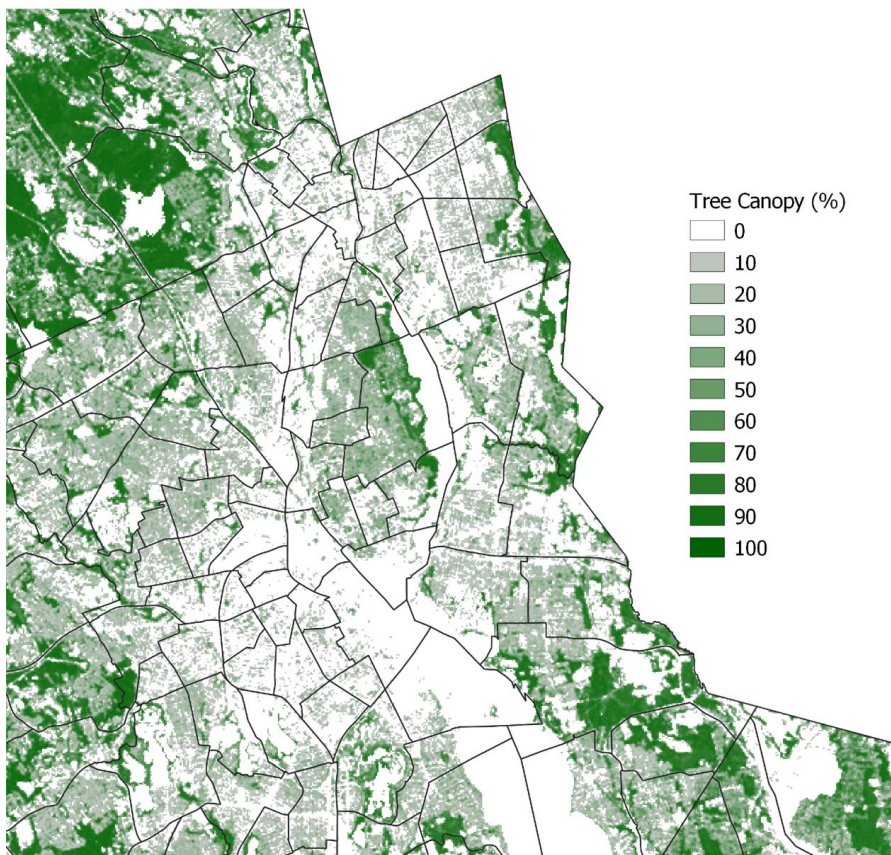


Looking closer at hot and cold spots

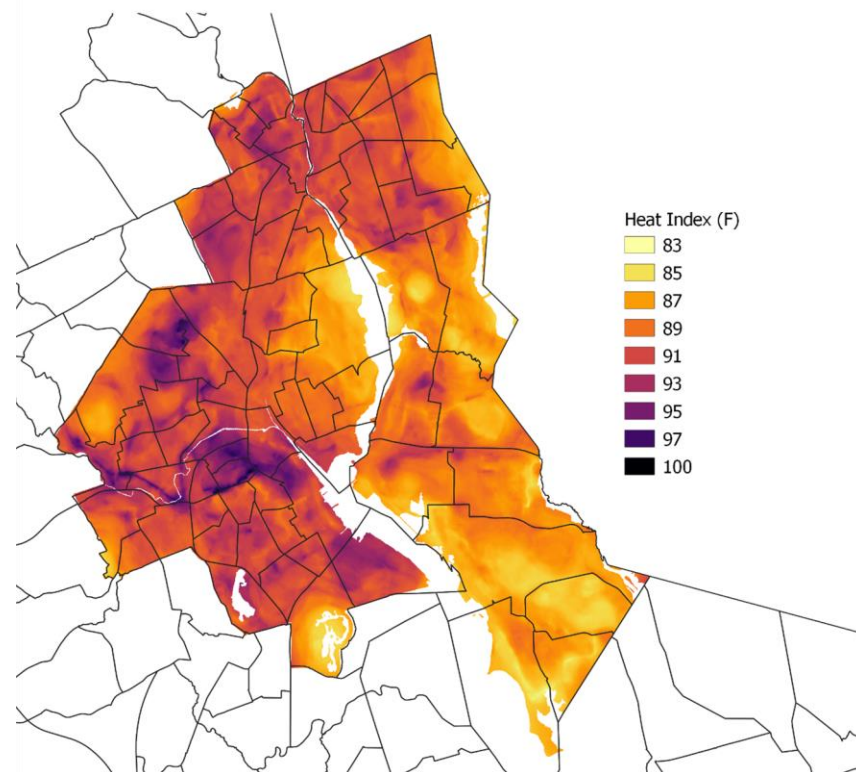


Tree canopy and the heat index

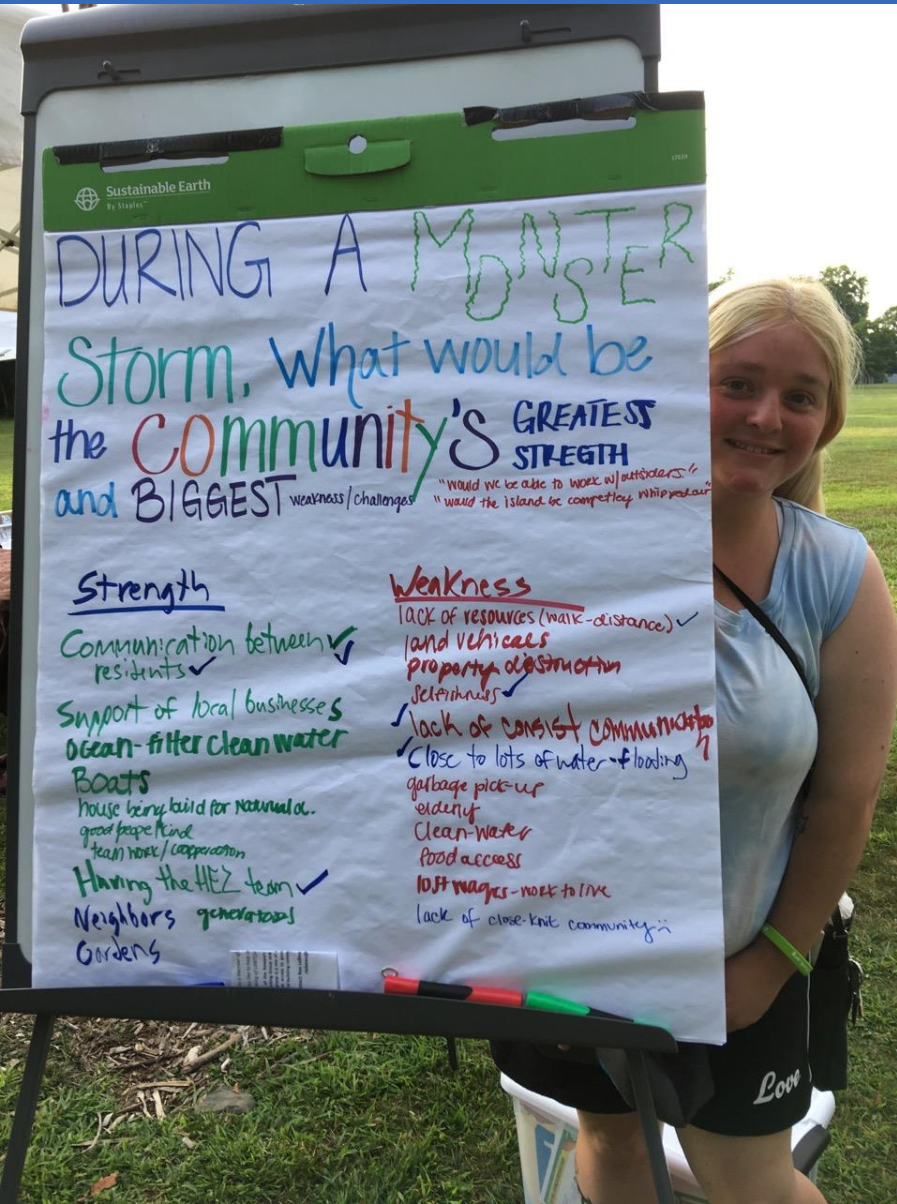
Percent Tree Canopy



Average Afternoon Heat Index



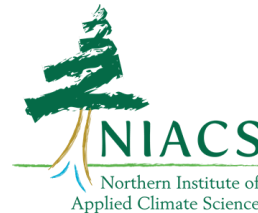
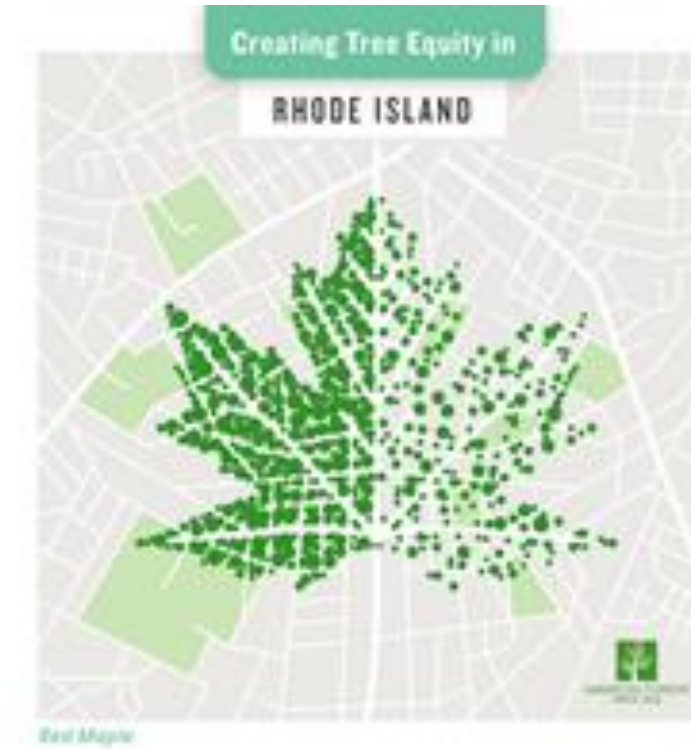
Health Equity Zone Community Resiliency



Health Equity Zone Community Resiliency



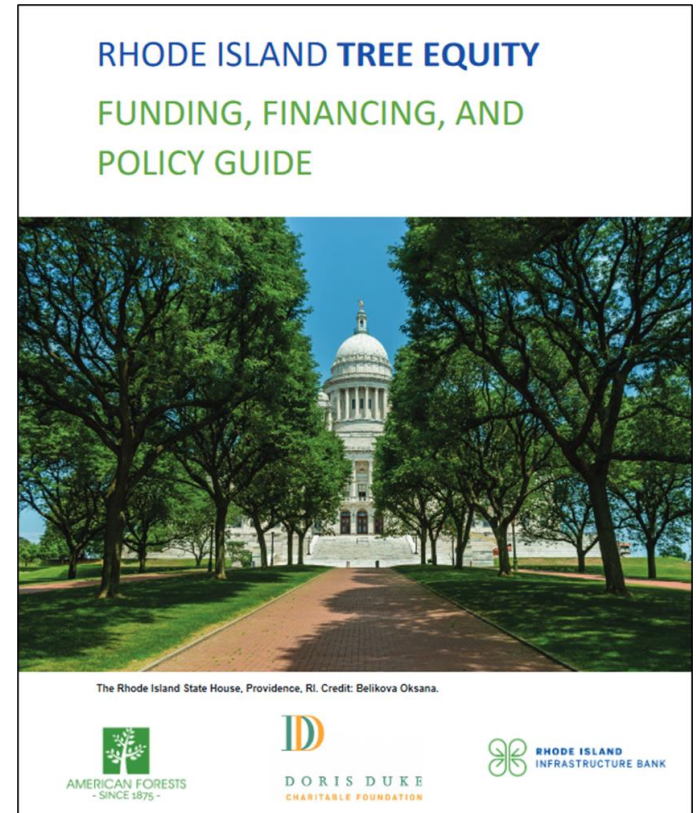
Urban Forests for Climate and Health



Urban Forests for Climate and Health



1. Tree Equity Score
2. Species List for RI Urban Forests
3. Climate & Health Action Guide
4. Policy
5. City Forest Credits
6. Community Engagement



<https://www.treeequityscore.org/>

How we're using the data

