SPRING 2025

Mapping Extreme Heat

UrbanHeatATL

What are Urban Heat Islands?

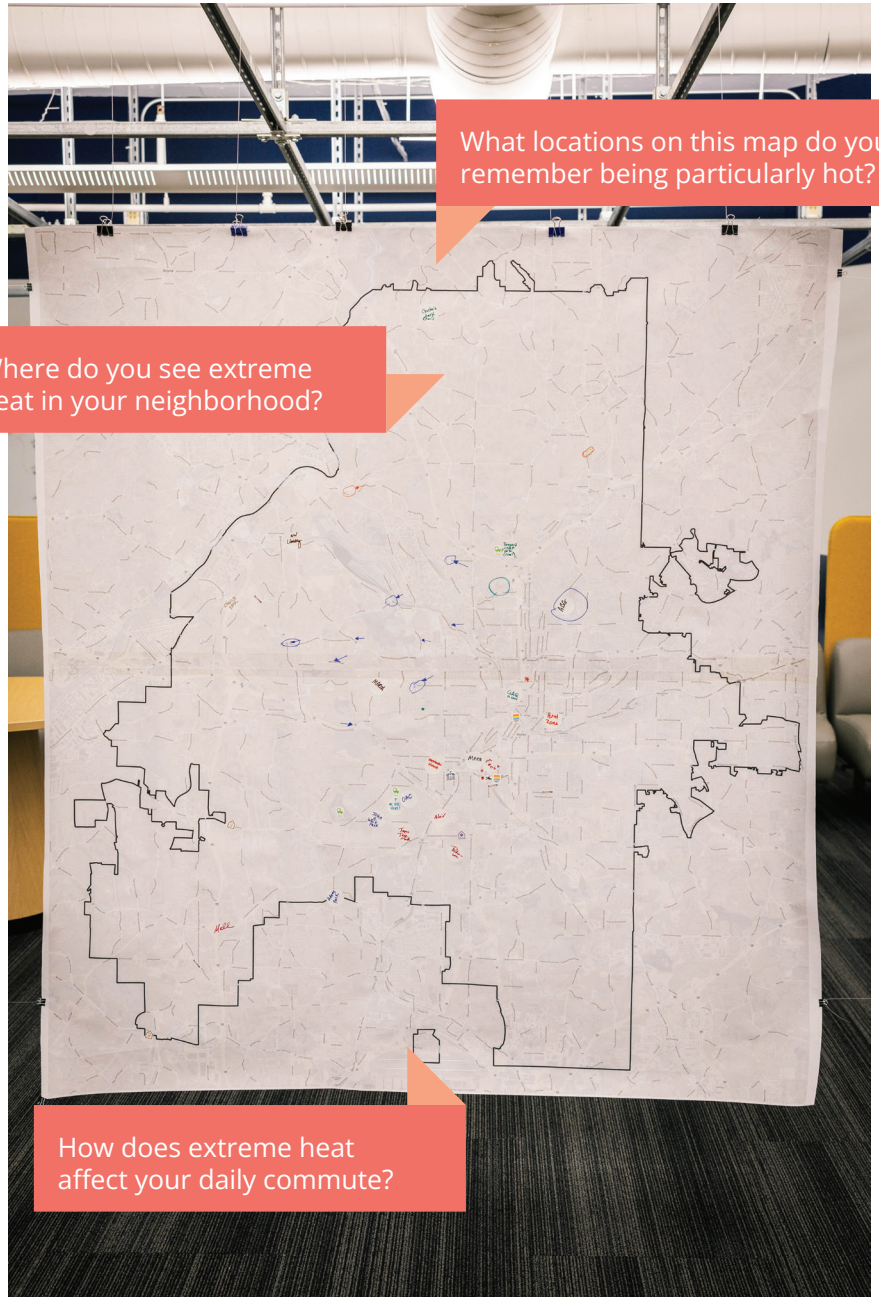
Urban Heat Islands are **urban areas that are hotter than surrounding rural landscapes.** Urban Heat Islands disproportionately harm low- income and under-resourced communities.

Mapping Extreme Heat

UrbanHeatATL is a cross-disciplinary collaboration empowering students and the Atlanta community through mapping extreme heat in underserved communities. Our team of community scientists carry handheld temperature sensors around the city. Ultimately we aim to use this data, collected by community members, to further environmental and climate justice in Atlanta.

To share the data submitted by community scientists from 2021 to 2024, we hosted two workshop sessions to explore the data together. In total, 41 community members attended.

Here, we share the maps we created together.



Can you think of any public spaces that might be cooler on a hot day?

Experiencing Atlanta Heat

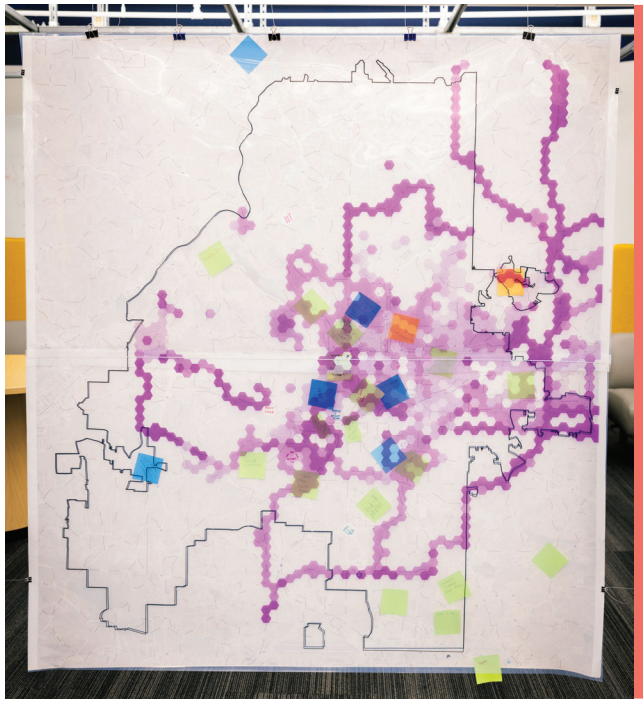
The experience of heat is much more than a number on a thermostat. We kicked off the workshop by discussing our lived experiences of heat in Atlanta. We used these questions to annotate a group map:

- Where do you experience heat in Atlanta?
- What are locations on this map that you (or others) used to stay cool on hot days?

Working with Heat Data

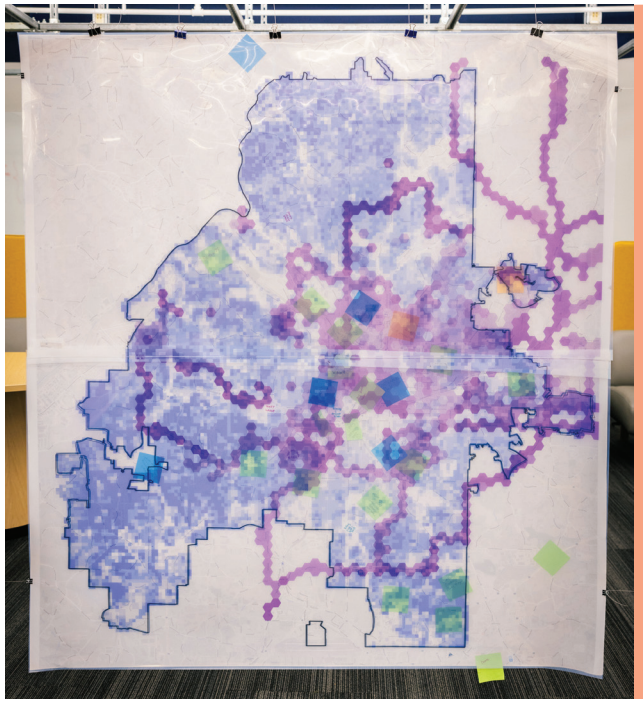
Map Collective Heat Experiences

As a group, we mapped extreme heat experiences and cooling resources in the community.



Add UrbanHeatATL Data

Next, we added a map layer including data collected by UrbanHeat-ATL Volunteers. The map shows mean tempera-tures collected between noon and 6pm.



Connect Related Data

Finally, we added a map layer showing the urban tree canopy coverage and discussed the relationship between temperatures and green infrastructures.

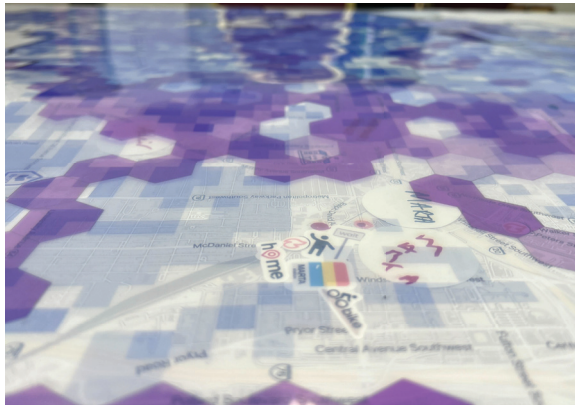
Community Mapping

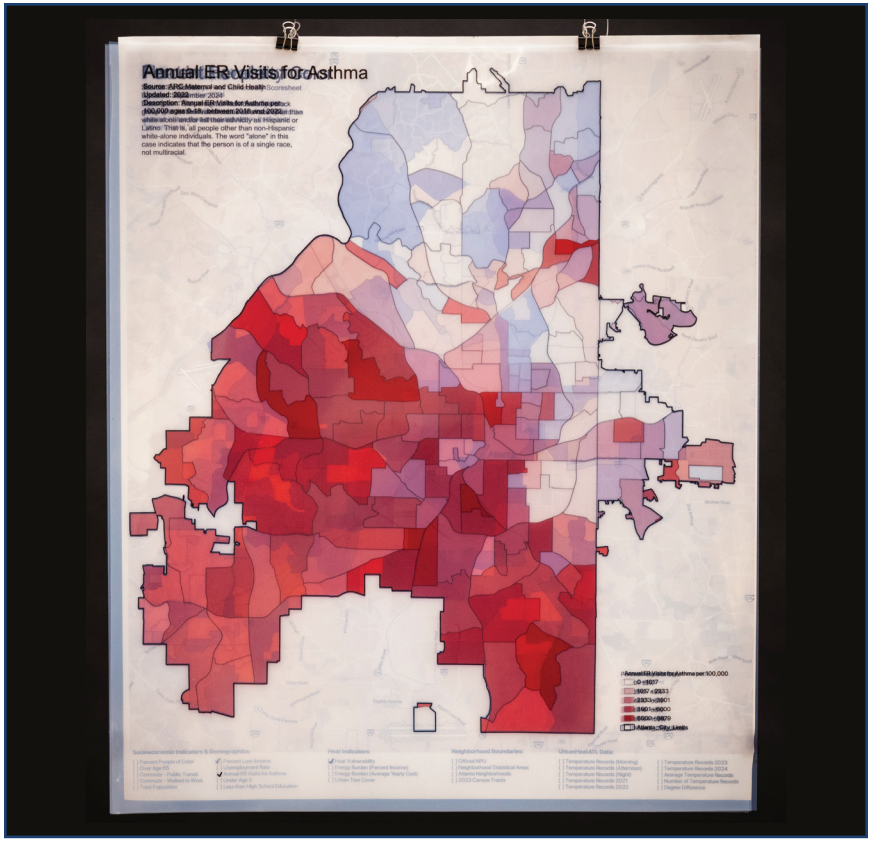
After we discussed lived experience of heat in our full group mapping activity, we broke into smaller groups. The goal of this activity was to use data to tell stories about the experience and impacts of extreme heat in Atlanta.

To tell stories effectively, we wanted to be aware of potential audiences for our maps. For this reason, we organized the activity by stakeholder audiences relevant to community action around extreme heat: environmental scientists, emergency planners, NPU meeting attendees, City Council members, and K-12 students. Each small group focused on one of these stakeholder audiences. They worked together to layer heat data to create maps for their chosen audience.

We provided a base layer map of the city and had dozens of maps printed on transparent acetate. The transparent layers represented a wide variety of data related to heat indicators, Atlanta city geography, sociodemographic indicators, and data submitted by UrbanHeatATL sensors.

For a full list of data available at the workshop along with sources and legends, visit the QR code:

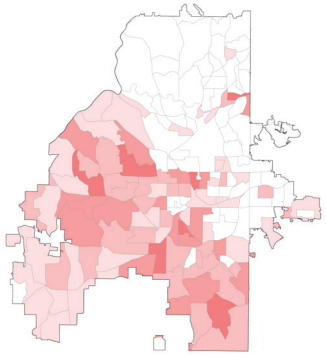




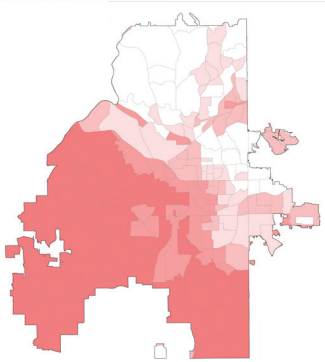
Heat is a problem that affects the most vulnerable people the most. This map connects sociodemographic factors around income and race with higher rates of asthma and higher energy burden. There is a real need to address vulnerable populations' relationship with the heat index, recognizing that income disparities play a major role in these communities. We need more investment in green spaces, particularly in low-income areas and communities where people of color live. This investment requires more education on the value of trees, proper tree placement, and planting the right kinds of trees.

Environmental Scientists

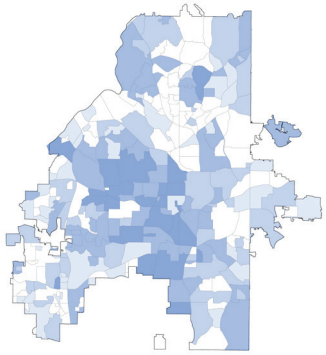
November Workshop



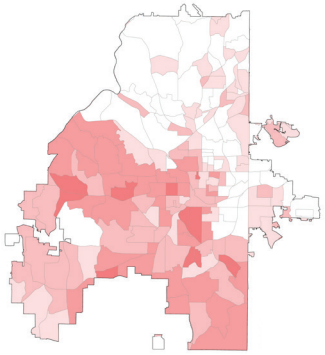
Annual ER Visits For Asthma



Percent People of Color



Heat Vulnerability



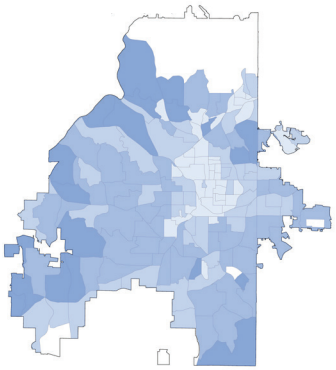
Percent Low Income

WE SHOULD INVEST IN GREEN SPACES, PARTICULARLY IN LOW-INCOME AREAS AND COMMUNITIES WHERE PEOPLE OF COLOR LIVE

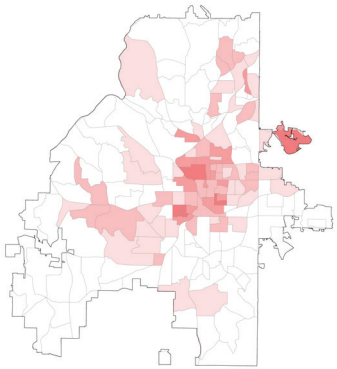
Emergency Planners

November Workshop

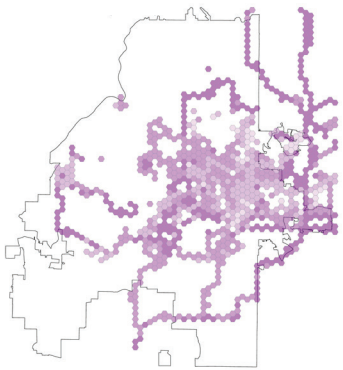
Emergency planners should know the socio-economic impact that extreme heat has on communities of color. This map connects average afternoon temperatures with the yearly household cost of energy. Emergency planners can work to identify and build resources within the community to support responses to extreme heat. **How might we use existing community spaces like parks, churches, and cooling centers for extreme heat resilience?** The group suggested forming an emergency planner task force, a collaboration between community residents and city officials that would help support communities to respond to extreme heat emergencies on their own.



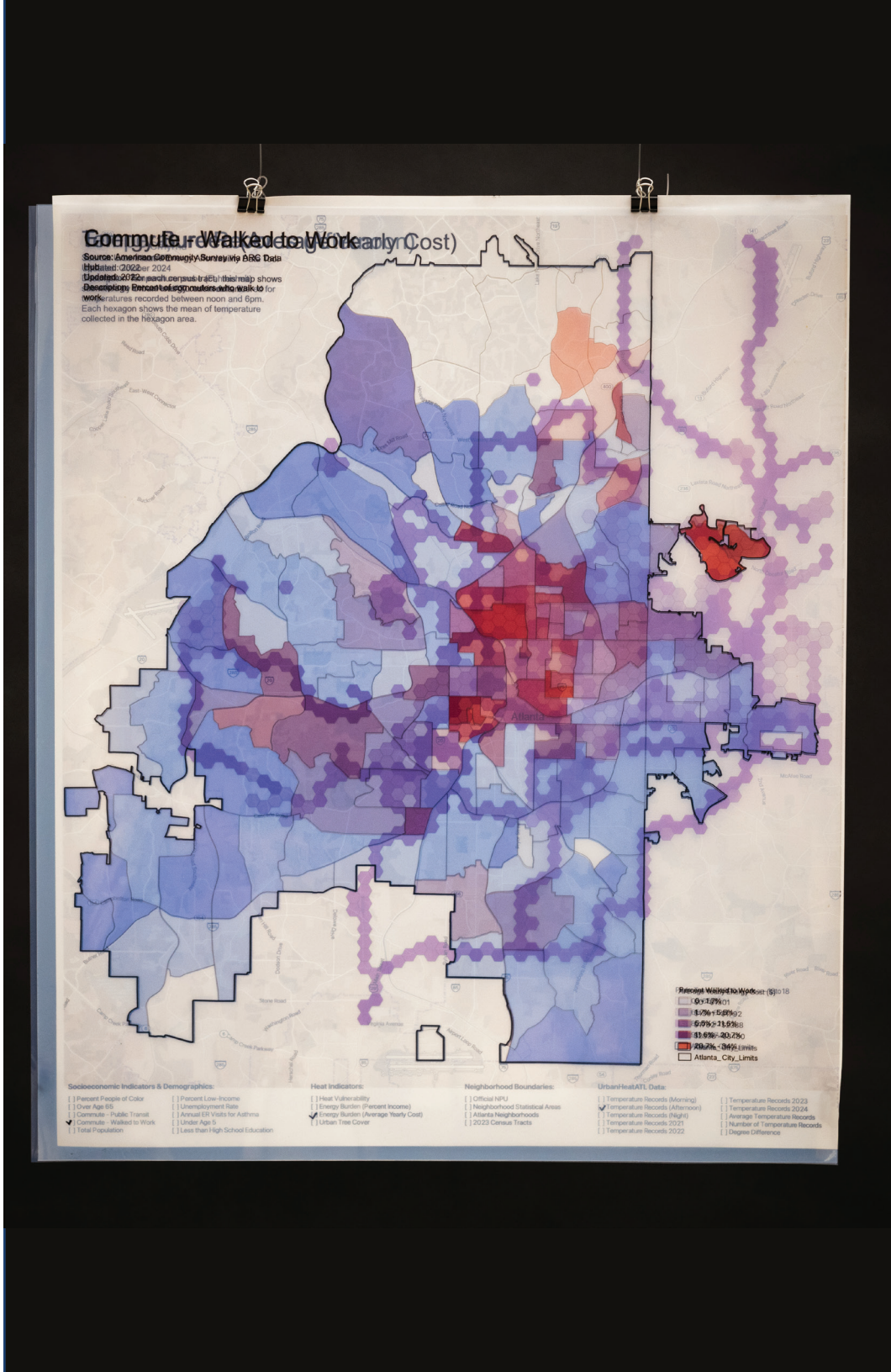
Energy Burden (Yearly Cost)



Commute -Walked to Work



Temp. Records (Afternoon)

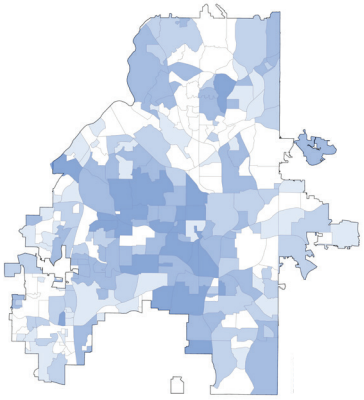


WE NEED LOCAL EMERGENCY RESPONSE TEAMS AND RESILIENT INFRASTRUCTURE

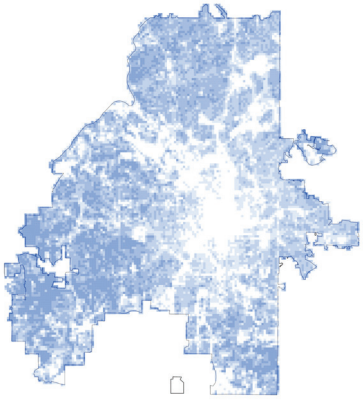
Emergency Planners

January Workshop

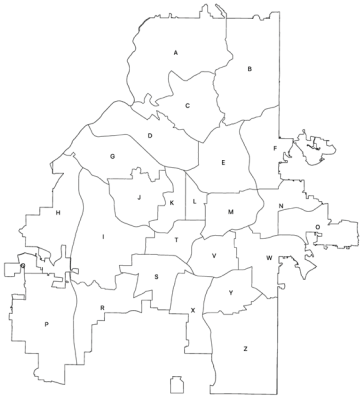
Emergency planners should be aware of energy costs and heat disparities in extreme weather. We need local emergency response teams and infrastructure to address these harms. Each NPU should have a resiliency hub and a community-led emergency response team connected to community resources such as firestations, hospitals, and gardens. There is also a need for Community Health Hubs, which could organize mental health, doulas, and diabetic health resources. This map stresses the importance of attending to our elders in emergency planning, highlighting areas of the city where people over the age of 65 live.



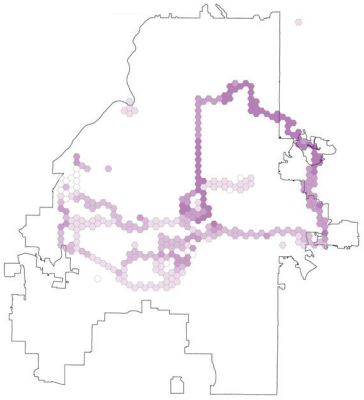
Heat Vulnerability



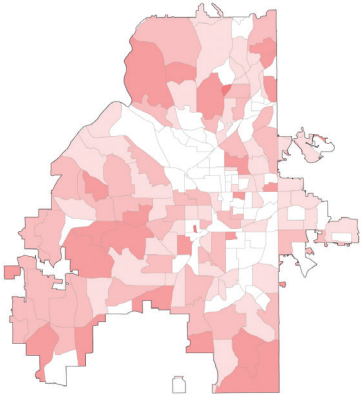
Urban Tree Cover



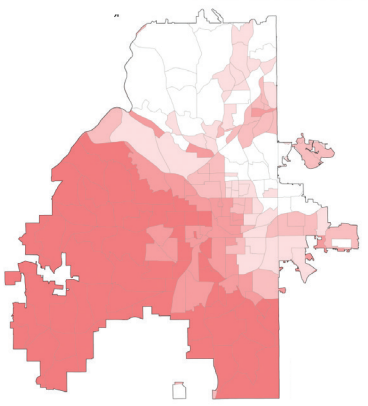
Official NPU



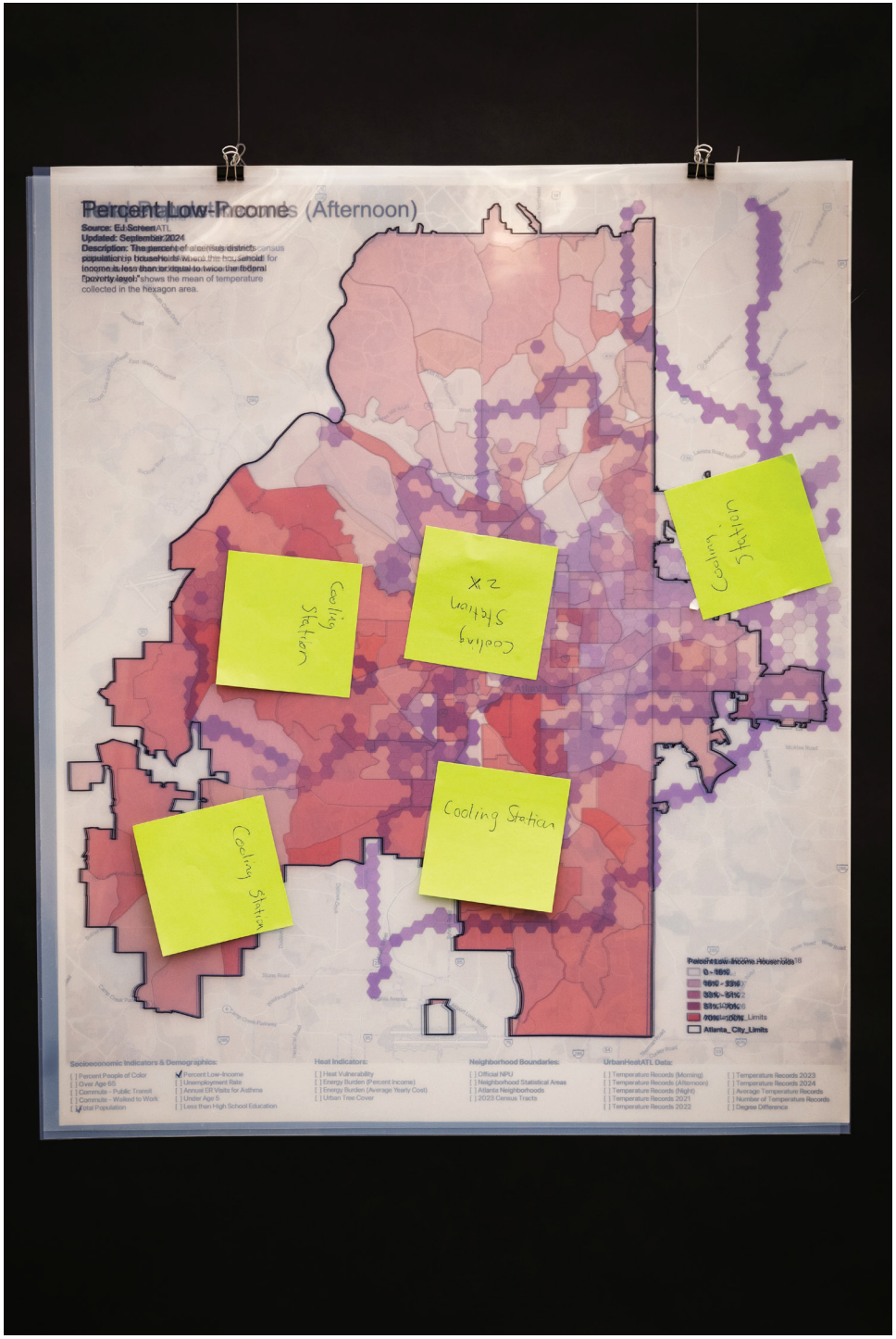
Temperature Records 2024



Over Age 65



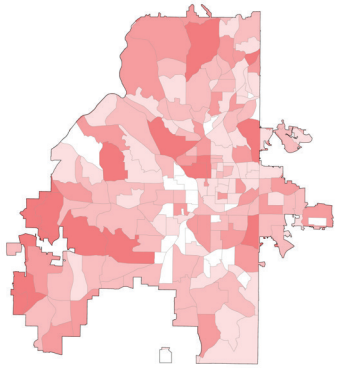
Percent People of Color



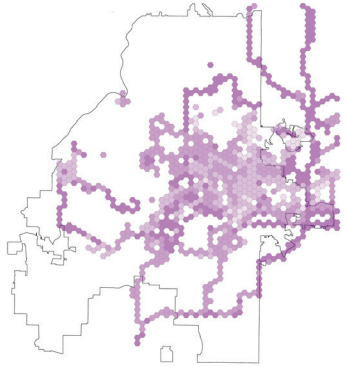
City Council Members

January Workshop

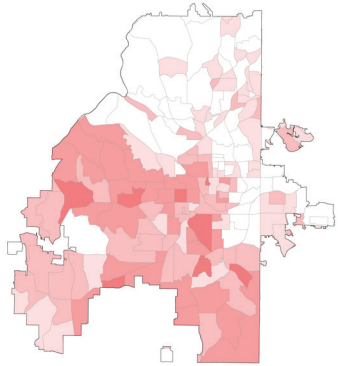
There is a greater need for cooling centers distributed across the city. A single cooling center will not be accessible to many in the city and is not sufficient to support communities harmed by extreme heat. Cooling centers should be accessible by public transit and should be placed where they will benefit people who are disproportionately harmed by extreme heat. The group was particularly concerned about the outdoor laborers, homeowners and renters with high energy burden, and homeless populations in our communities. City Council Members should understand that cooling centers are needed to improve the quality of life of many in Atlanta and to protect the most vulnerable populations in the city.



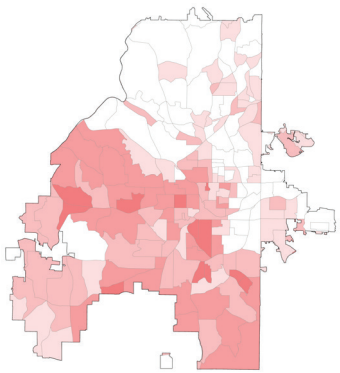
Total Population



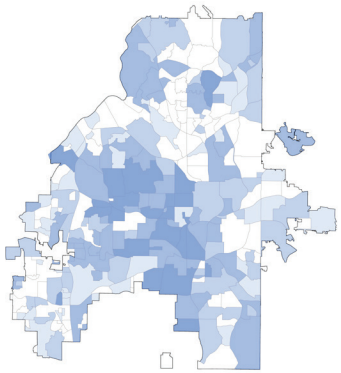
Temp. Records (Afternoon)



Percent Low-Income



Percent Low-Income



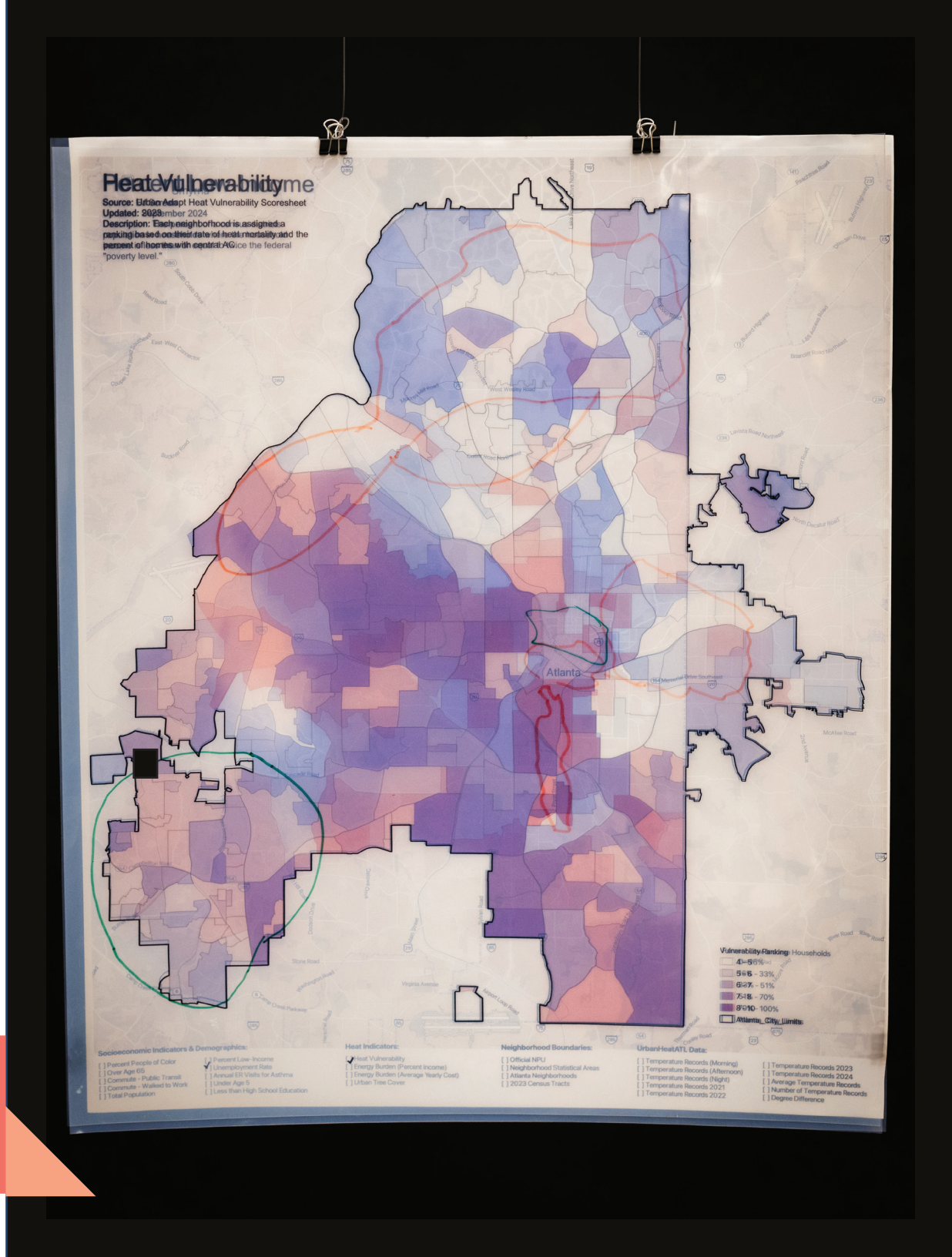
Heat Vulnerability

City Council Members

November Workshop

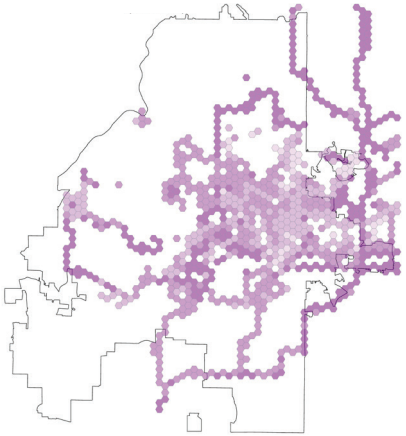
We can and should develop Atlanta in an intentional bold way that preserves our tree canopy. Developers often fail to consider the lives of the people impacted by development projects, so city council members need to support climate resilience by limiting clear cutting, maintaining existing tree canopy, and promoting tree coverage for parks. The opportunity to maintain the tree canopy is important because climate resilience is needed to break the connection between heat vulnerability and historically redlined communities in the city.

PRESERVE, MAINTAIN, AND EXPAND ATLANTA'S TREE CANOPY

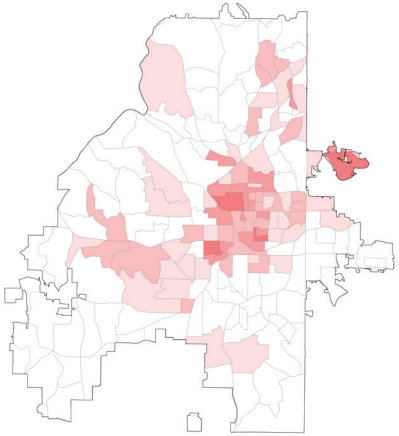


NPU Meeting

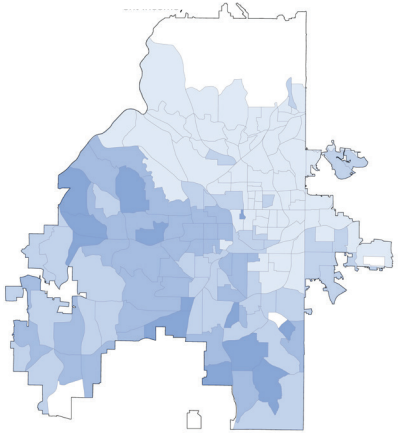
November Workshop



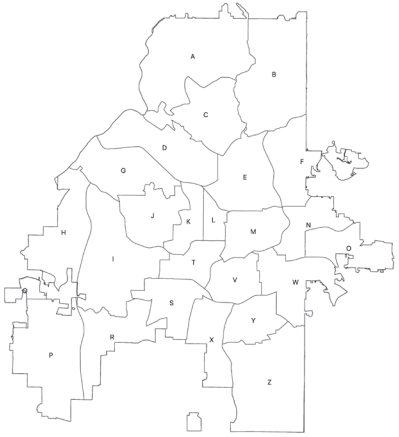
Temp. Records (Afternoon)



Commute - Walked to Work

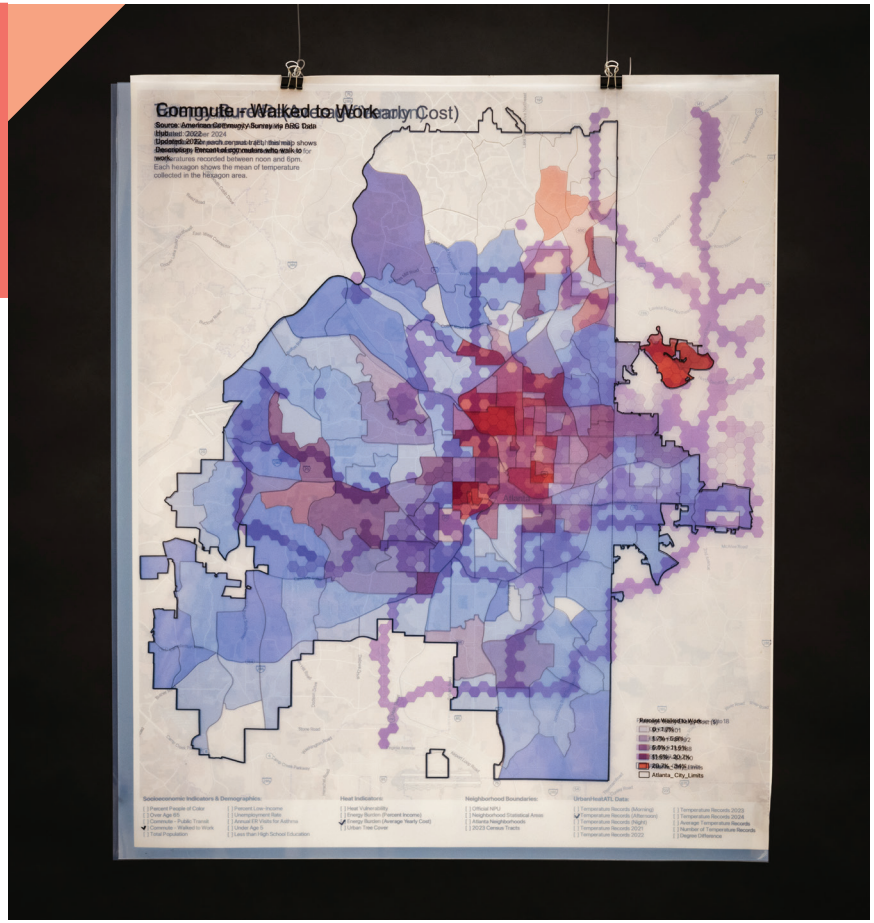


Energy Burden (Percent Income)

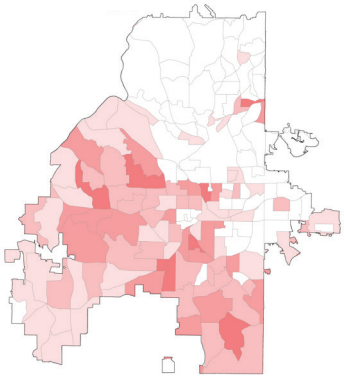


Official NPU

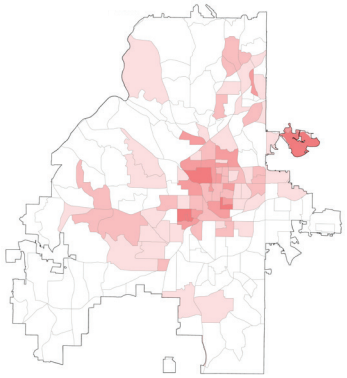
CONSIDER EXTREME HEAT AND WALKABILITY WHEN ZONING FOR NEW DEVELOPMENTS



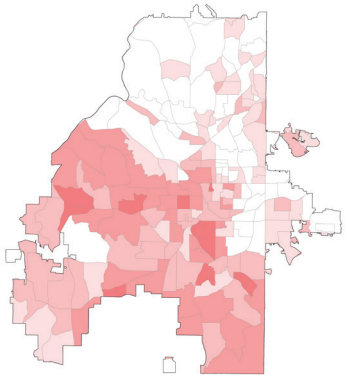
This map informs how to better structure neighborhoods for walkability considering extreme heat. The percent of commuters walking to work indicates where businesses are located, highlighting the uneven distribution of commercial spaces throughout the city. For NPU Meeting attendees, the resulting map speaks to the distribution of power and wealth in Atlanta. Ideally, the city could encourage mixed-use hubs and should consider factors like extreme heat and walkability when zoning for new developments.



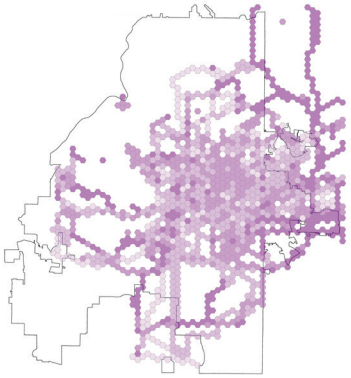
Annual ER Visits for Asthma



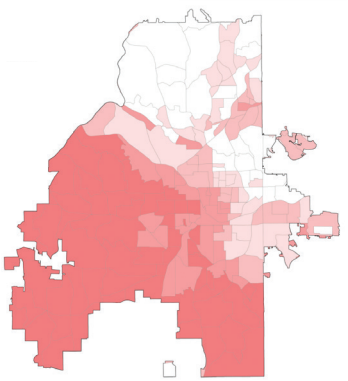
Commute - Walked to Work



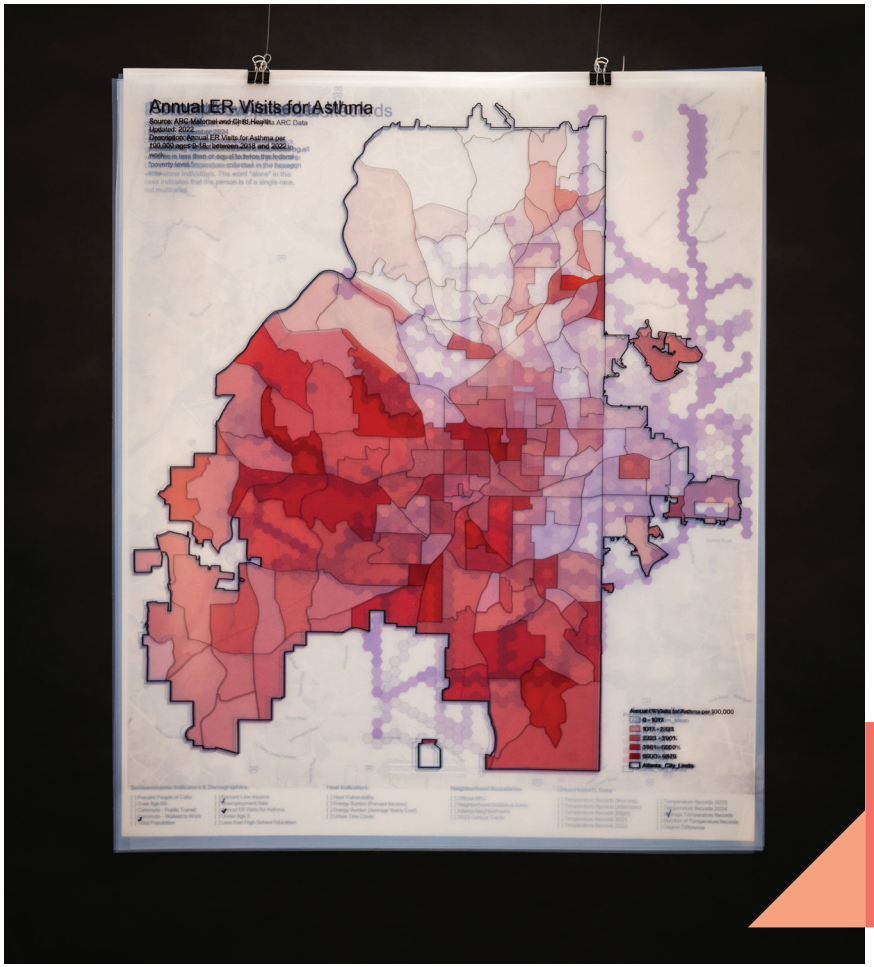
Percent Low-Income



Average Temp. Records



Percent People of Color



NPU Meeting

January Workshop

Heat islands disproportionately harm working class and low-income communities. Sharing maps like these at NPU meetings could help inform the public about possible steps to mitigate urban heat islands and help get funding for measures mitigating extreme heat. This group suggested that NPUs could take action around the effects of heat in their community by mapping and developing a network of community assets like cooling stations, health centers, gardens, and faith-based organizations to mobilize them towards mitigating extreme heat.

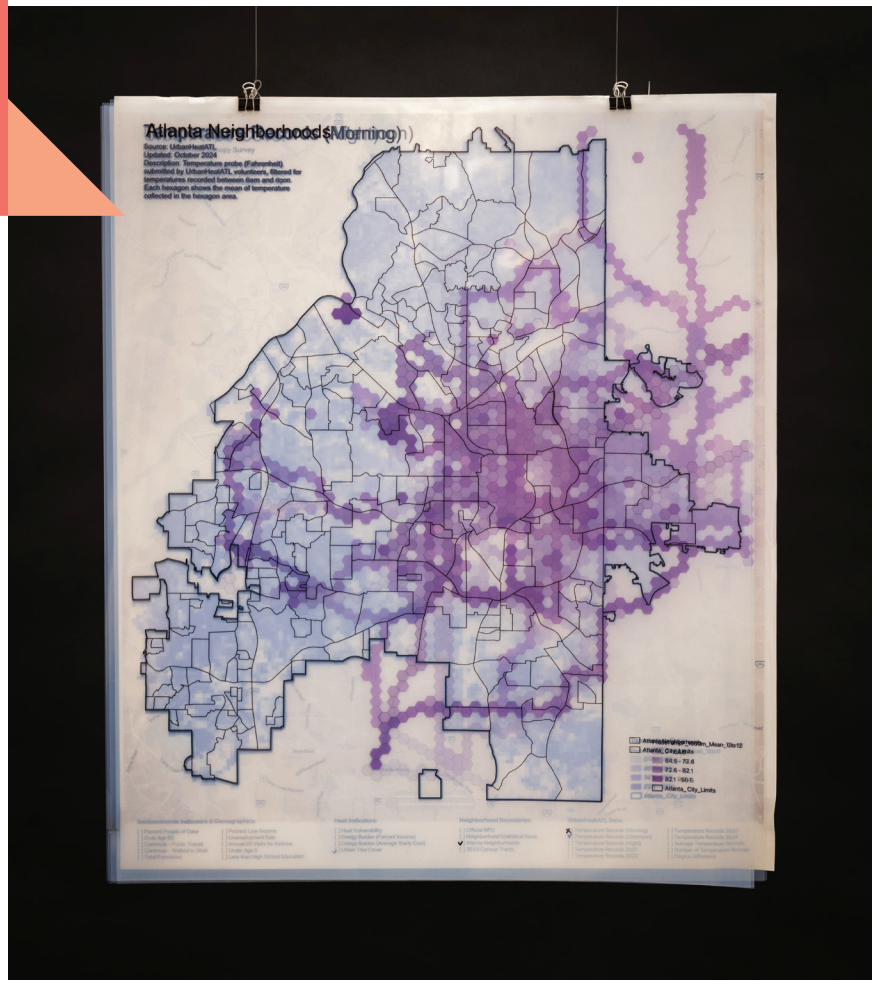
HEAT ISLANDS DISPROPORTIONATELY HARM WORKING CLASS AND LOW-INCOME COMMUNITIES

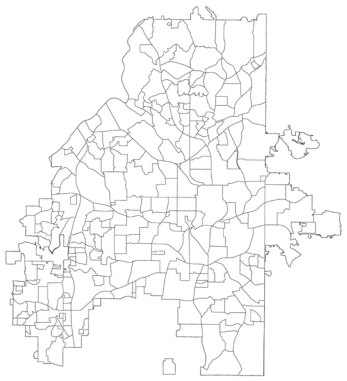
K-12 Students

November Workshop

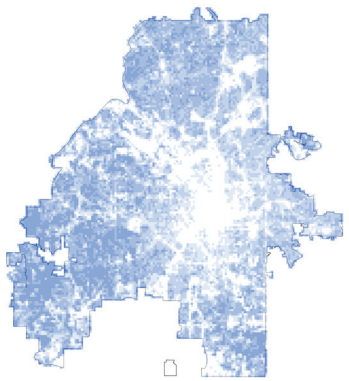
"THEY WOULD BE ABLE TO SEE THE INEQUITIES FOR THEMSELVES"

K-12 students could engage with environmental justice concepts by locating places they can play in their neighborhoods and comparing those spaces to the rest of Atlanta. This map uses urban tree canopy to identify greenspaces available for children to play in the day. In addition, night time temperatures affect sleep quality, impacting children's ability to rest and recover at night. For K-12 students, these maps offer an opportunity to introduce environmental justice concepts by comparing the availability of green spaces in student neighborhoods to those in the rest of ATL. By understanding extreme heat, students would be able to see inequalities for themselves and begin advocating.

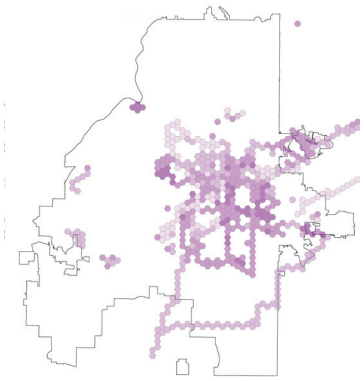




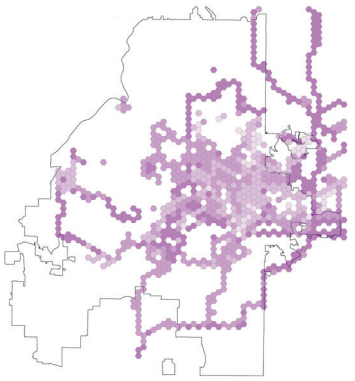
Atlanta Neighborhoods



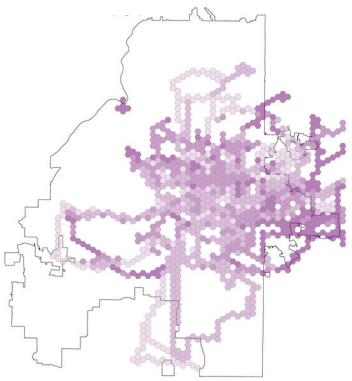
Urban Tree Cover



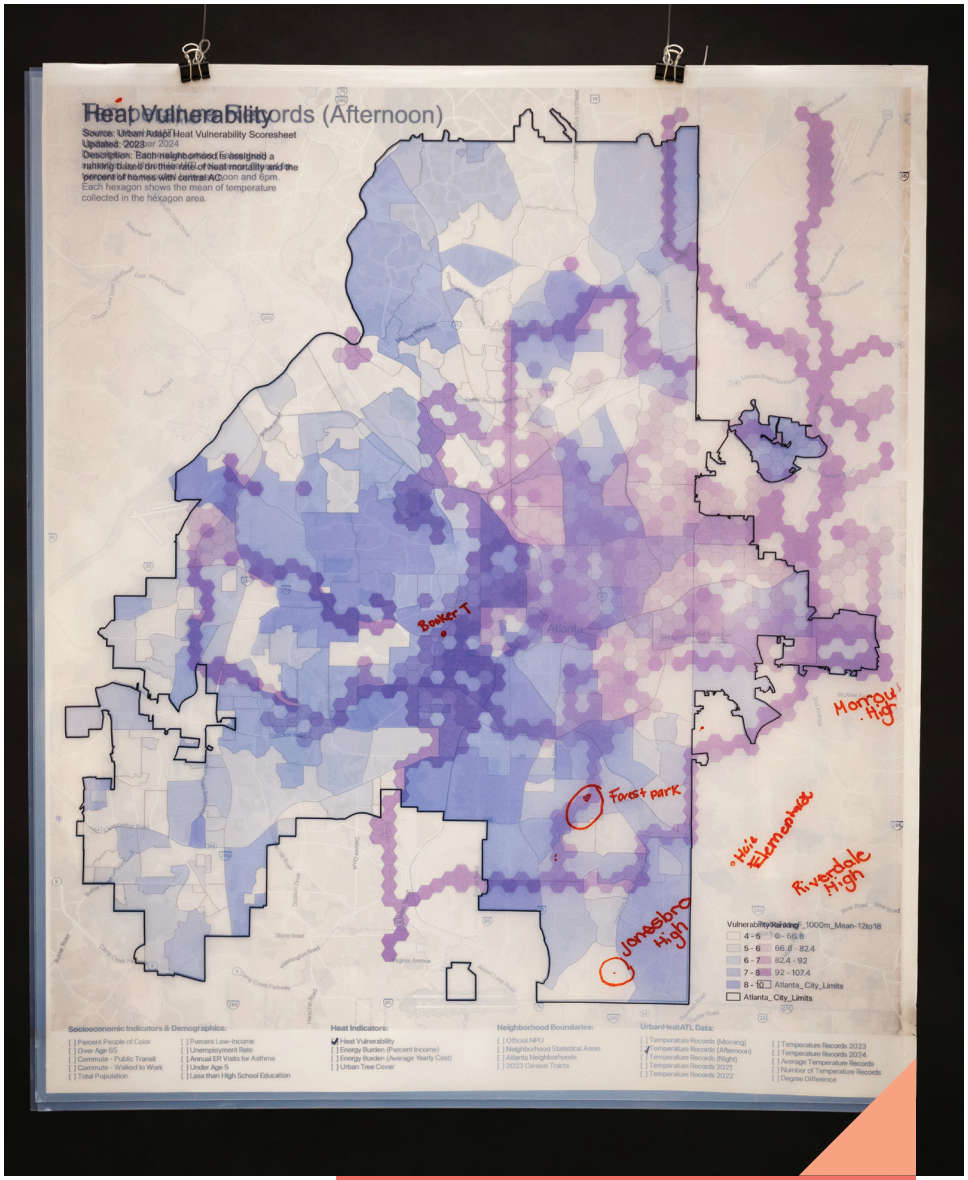
Temp. Records (Morning)



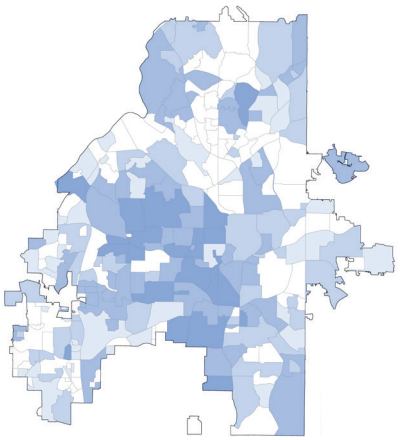
Temp. Records (Afternoon)



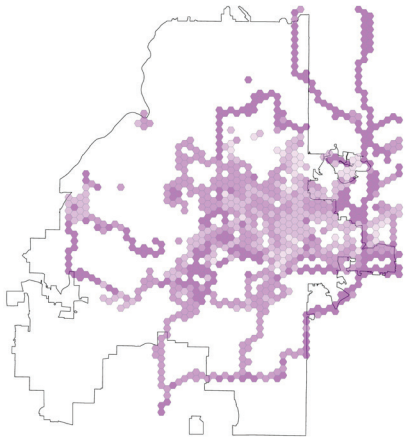
Temp. Records (Night)



HEAT LIMITS THE AMOUNT OF TIME THAT STUDENTS CAN SPEND OUTSIDE



Heat Vulnerability



Temp. Records (Afternoon)

K-12 Students

January Workshop

Heat impacts schools and students in multiple ways: it might limit the amount of time spent outdoors at recess, sports practice, or other extra-curricular activities, alter local food production, and worsen various health conditions. K-12 students should be aware of and reflect on how heat can affect the body - for example through heat strokes, asthma, sunburn, eye problems, or passing out. This map highlights afternoon temperature records because these are times when children might be outside at recess, waiting for the bus, walking home, or playing outside. This group wanted young students to know that less trees would increase urban heat islands, leading to more health problems.

Recommendations

Cooling Centers & Resilience Hubs

Atlanta needs more cooling centers and resilience hubs to meet the needs of residents. These spaces should be spread throughout the city and accessible by public transit. Clear and consistent communication is needed to increase public awareness of these resources. Spaces that already serve as critical community infrastructure are well-suited to convert into cooling centers when needed.

Energy Burden

Even in areas of Atlanta with healthy tree canopy, energy burdens can pose a significant challenge to resident well-being. Programs that support energy efficient upgrades and energy bill assistance should be expanded so that they are more accessible and better publicized. In order to address community needs, these programs must be accessible to renters and address both heating and cooling needs. Expanding programs that reduce energy burdens is a critical step for reducing the economic burdens that accompany urban heat islands.

Trees & Green Infrastructure

Green infrastructure such as trees, parks, and community gardens plays a vital role in cooling our communities. We need to invest in protecting, maintaining, and expanding these resources, particularly in underserved and underresourced communities that are the most impacted by extreme heat.

Community Heat Response

While the burden of responding to extreme heat should not fall to community members, there are some steps that local communities can take to manage the impacts of urban heat islands and prepare for extreme heat events. Concerned citizens can organize community emergency planning teams or working groups to collaborate on building up green infrastructure and preparing for extreme heat events.

Extreme Heat Resources

Reduce Your Energy Bill

Apply for Energy Bill Assistance:
- Low Income Home Energy Assistance Program (LIHEAP), runs November-March.

Housing Retrofit Programs:
- WeateRISE ATL www.100atl.com/weatherise-atl
- U.S. Department of Energy Weatherization Assistance Program

Tree Planting

Apply for a free tree planted on your property:
- Trees Atlanta Yard Tree Program www.treesatlanta.org/yardtree/

Local organizations maintaining and improving Atlanta's green spaces:
- West Atlanta Watershed Alliance
- Park Pride
- Trees Atlanta

Cooling Centers

- City of Atlanta hosts a cooling center at Selena Butler Park and Recreation Center (98 WM Holmes Borders Dr SE, Atlanta, GA 30312)
- Announcements from the City of Atlanta for information on when the cooling centers open.

Thank You!

www.urbanheatatl.org
www.wawa-online.org

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Leveraging data collected over four years by UrbanHeatATL, community members gathered to make sense of extreme heat temperatures in Atlanta. Pairing community-science data with a variety of public data, the group created a series of maps that tell the story of extreme heat in Atlanta.

UrbanHeatATL

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