

West Chester University

Digital Commons @ West Chester University

Sustainability Research & Practice Seminar
Presentations

Sustainability Research & Creative Activities @
WCU

2-16-2022

Planning for Resilience and Equity through Accessible Community Technology: A Research Agenda

Christina Rosan

Megan Heckert

Follow this and additional works at: https://digitalcommons.wcupa.edu/src_a_sp



Part of the [Sustainability Commons](#)

PReact:

Planning for Resilience and Equity through Accessible Community Technology

Megan Heckert, Ph.D.

Associate Professor

**Department of Geography and Planning
West Chester University**

Christina Rosan, Ph.D.

Associate Professor

Geography and Urban Studies

Center for Sustainable Communities

LCDSS Fellow (2021-2022)

Temple University

Acknowledgement: “This material is based upon work supported by the National Science Foundation under Grant DGE-2125375.”

Disclaimer: “Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.”

- (1) What data and technology needs do communities have and want to access for planning for current concerns and future needs?***
- (2) How can real-time fine-scale data be collected to enable community-based planning?***
- (3) How can qualitative experiential data from communities be collected, shared, and quantified for integration into planning technologies and design solutions that promote more just outcomes?***
- (4) How can we integrate environmental exposures with demographics and data on social conditions to more effectively model the intersectional nature of vulnerability and how it is expected to change in the future?***
- (5) What integrated planning tools exist for collaborative decision making and how can we learn from the use of those tools to develop a decision-making tool for the climate crisis?***
- (6) How can we design planning software that analyzes and visualizes relationships between community variables to facilitate climate planning?***
- (7) How can planning software be designed to address barriers to use by community members and other non-experts?***

Intersectional and community informed **policy tools** and **processes** are urgently needed to identify the most vulnerable communities for targeted interventions.

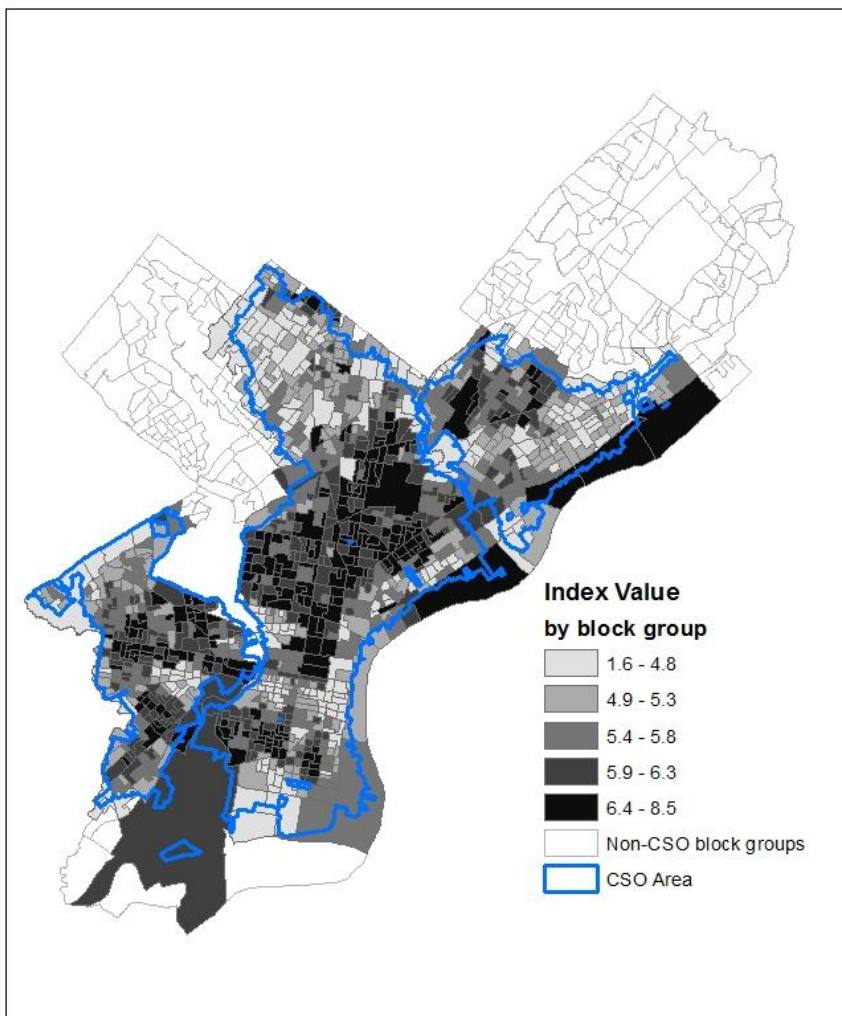
Green Infrastructure Equity Index

Acknowledgment statement:

This research has been supported by a grant from the U.S. Environmental Protection Agency's Science to Achieve Results (STAR) program.

Disclaimer statement:

This research was developed under Assistance Agreement **No.R935555** awarded by the U.S. Environmental Protection Agency. It has not been formally reviewed by EPA. The views expressed in this document are solely those of Christina Rosan and Megan Heckert and do not necessarily reflect those of the Agency. EPA does not endorse any products or commercial services mentioned in this publication.



**Goal: convert 9,500
impervious acres to “greened
acres”**

Decentralized strategy

**Numerous city agencies,
community partners, and
citizens**

**PW invests and leverages
private investment in green
infrastructure investment
over the next 25 years**

Green City, Clean Waters



Given that PWD is spending \$\$\$ to install GI and incentivize GI installation, how can this money be spent in an equitable fashion that realizes necessary stormwater benefits without exacerbating inequalities (and possibly even addresses them)?

Greening Lea Elementary School

\$242,000

PWD

Stormwater
Management
Improvement
(SMIP) Grant



Photos: West Philly Coalition for Neighborhood Schools

Neighborhood Typologies Matter

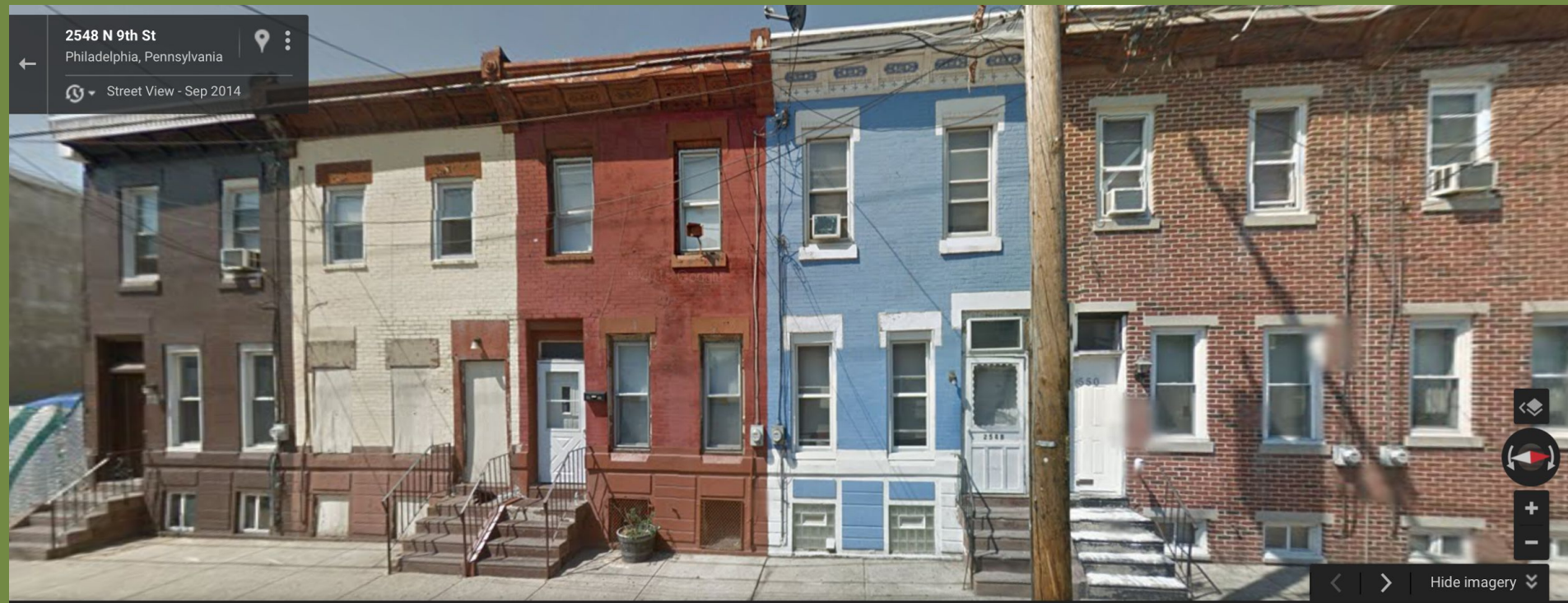


Source: Google Streetview

2548 N 9th St

Philadelphia, Pennsylvania

Street View - Sep 2014



Hide imagery

Context Matters: Different Communities View GI Differently



Classifying Need and Connecting to GI Possibilities

1. Areas of environmental need

Traffic, ozone, impervious surfaces, particulate matter

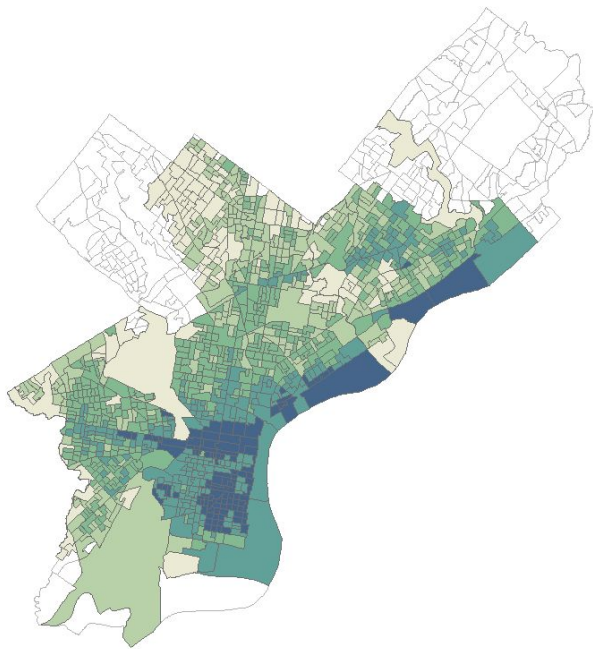
2. Areas lacking amenities

Playground density, parks access, tree canopy cover

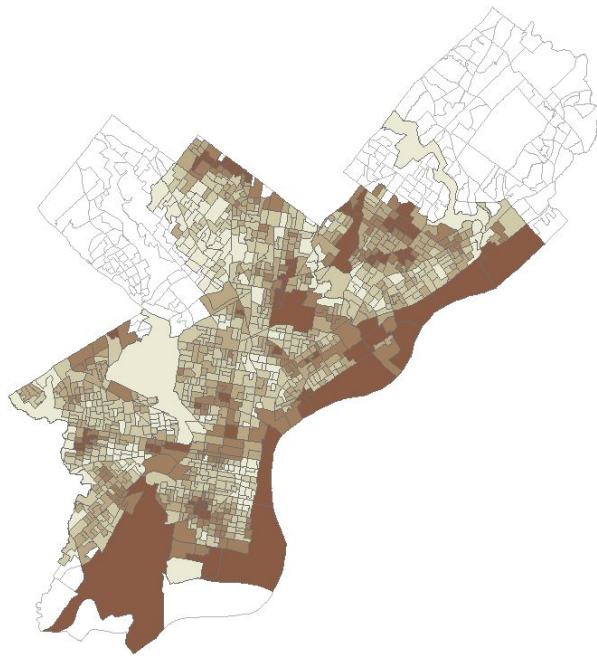
3. Areas of socio-economic disadvantage

Percent minority, low-income, low-educational attainment, under 5, over 64, owner-occupied, vacant land density

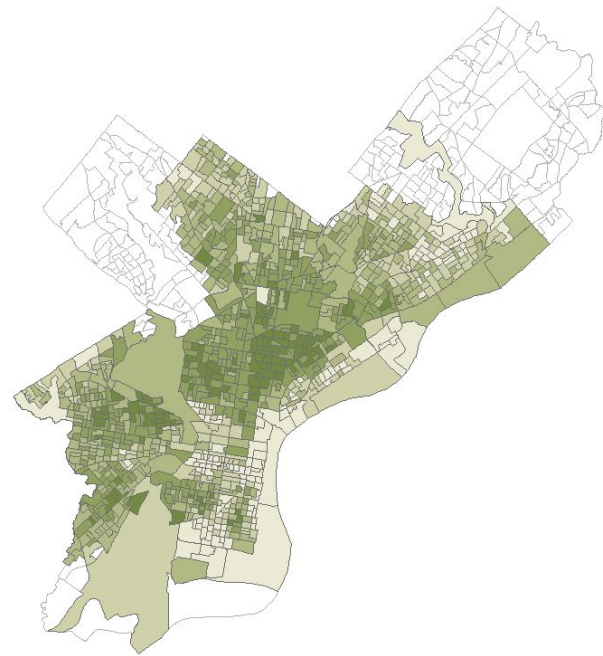
environmental need



amenity need

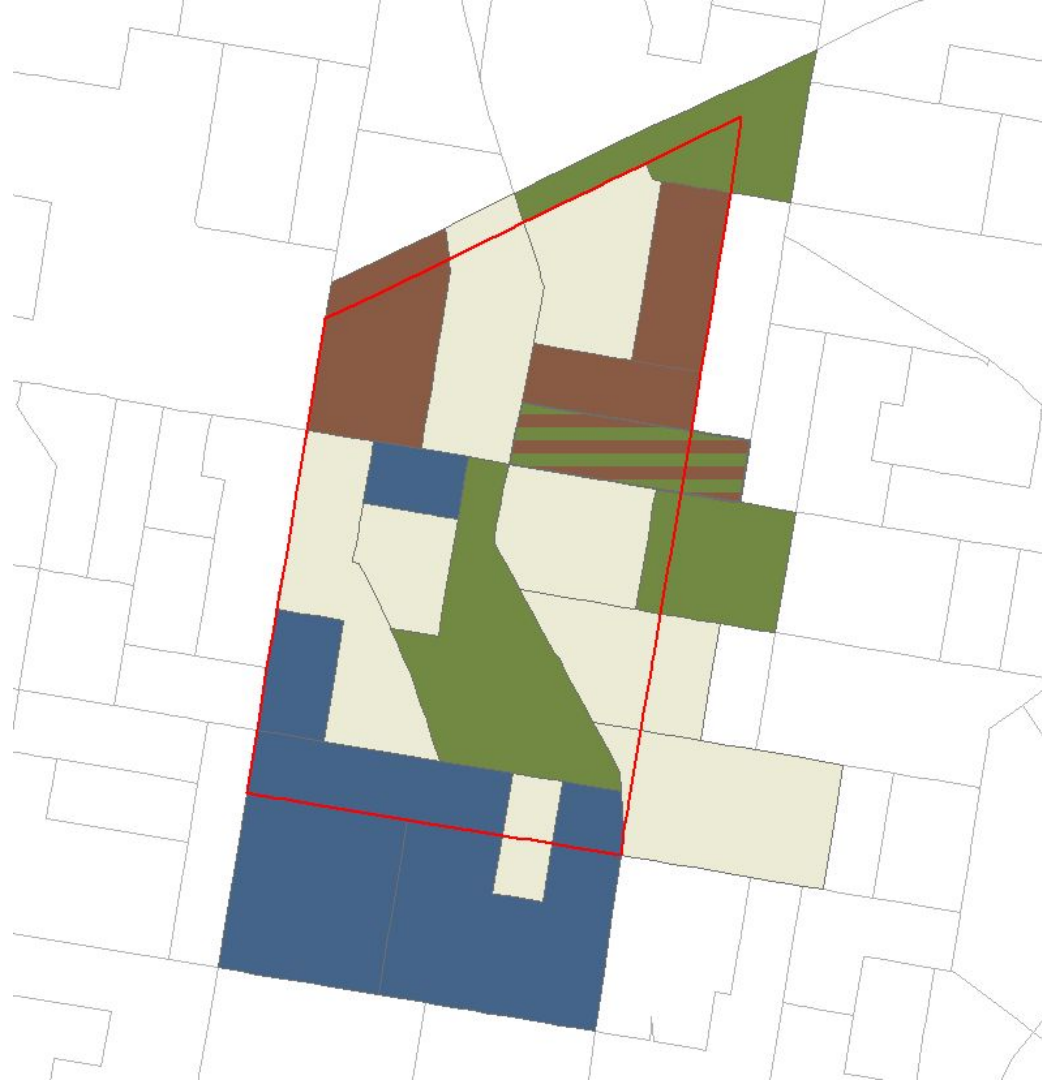


disadvantage



Equity Index

neighborhood overview



Opportunities for Community Reimagining

Street View - Sep 2014



7,971 parcels:

5,125 rowhomes

2,386 vacant lots

Areas of high amenity need



Schools in high amenity need area

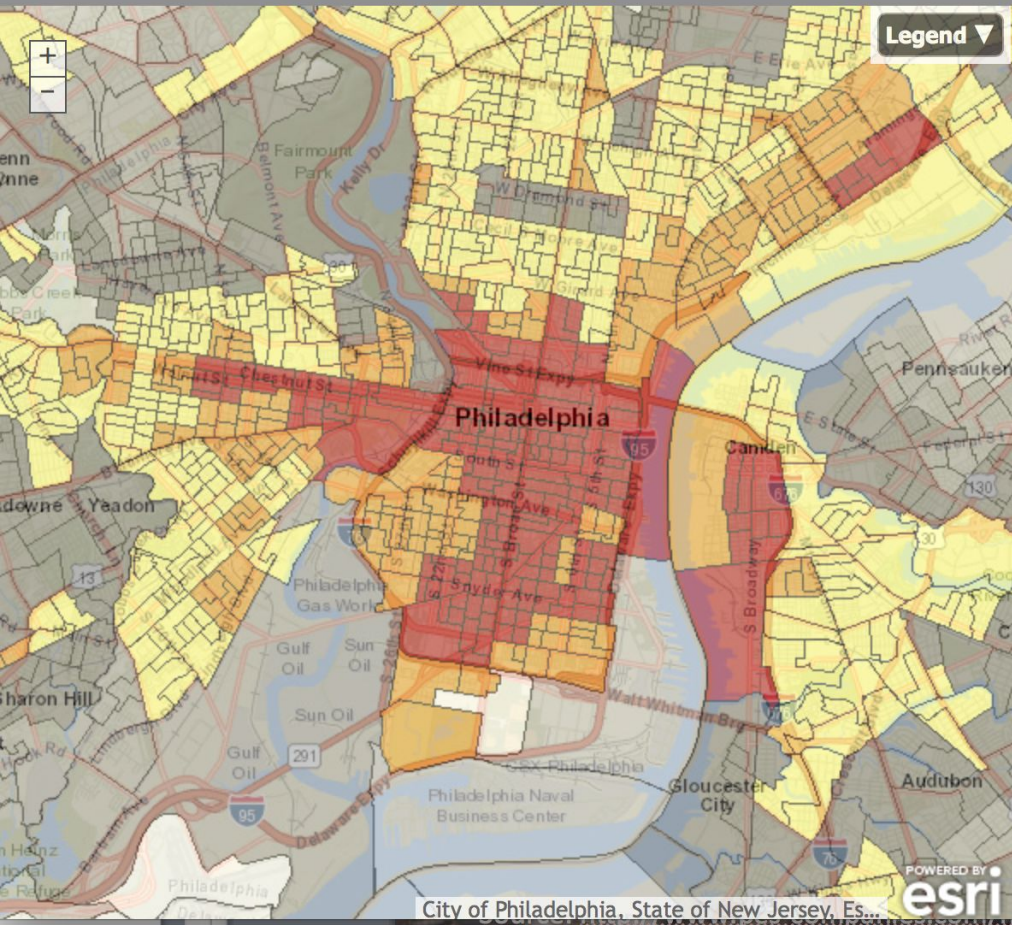


Vacant parcels in high amenity need area (461)





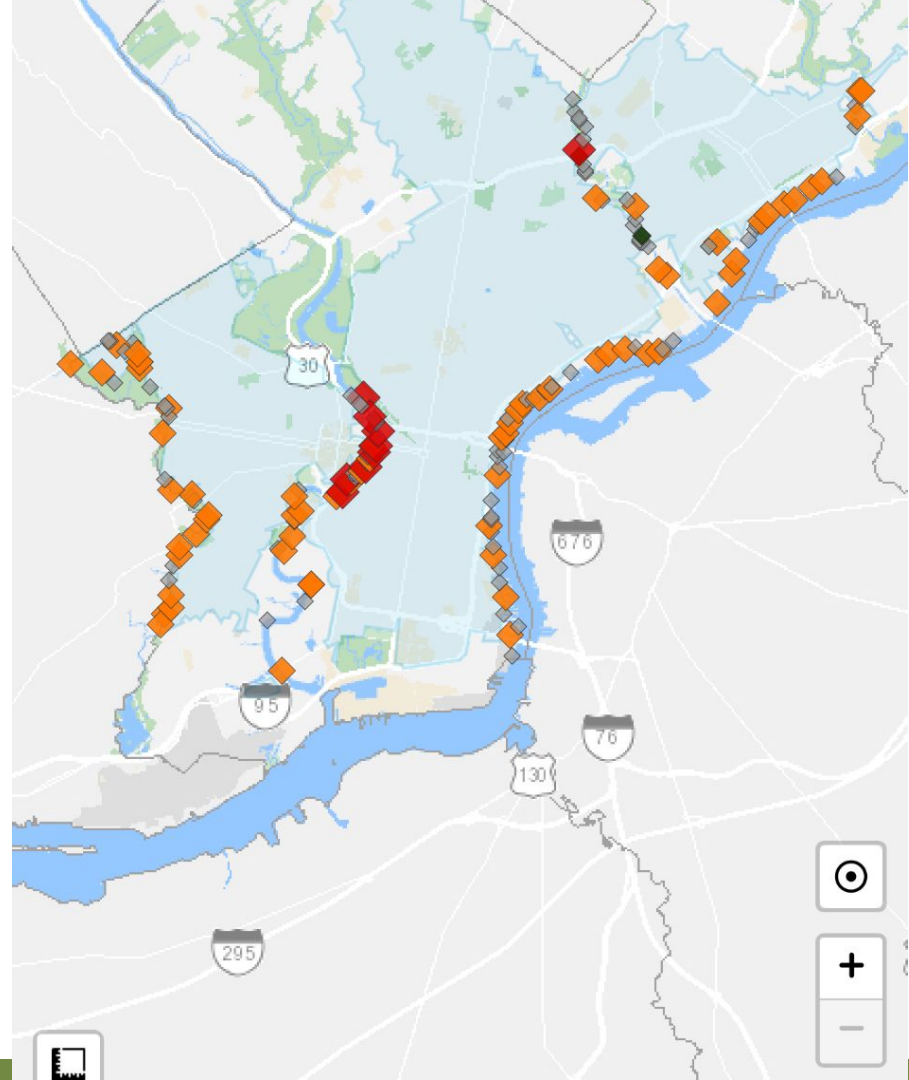
NATA* Air Toxics Cancer Risk (risk per MM) National Percentiles



City of Philadelphia—in “2010, nearly a quarter of children in Philadelphia County, had asthma, among the highest rates in the nation” (City of Philadelphia, Climate-Ready Philadelphia, p. 13).

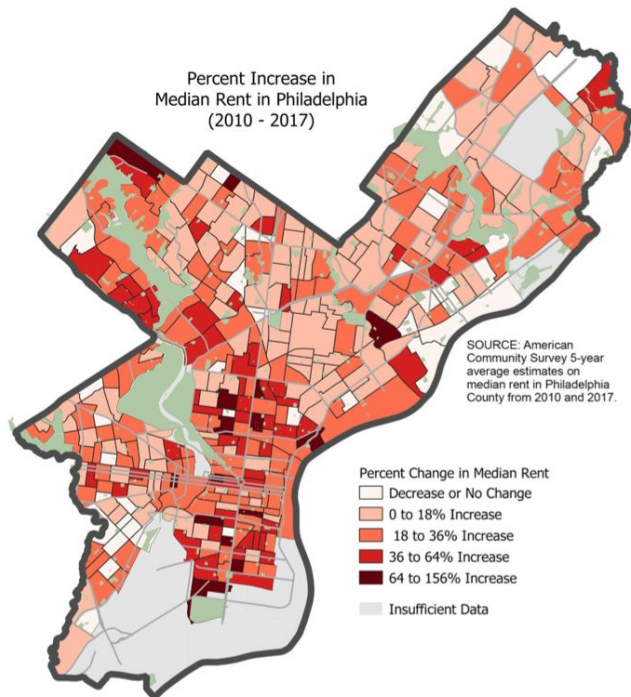
Source: EJ Screen







A CRISIS FOR RENTERS



Philadelphia Eviction Lab Data

The Freedom to Stay: Philly is Our Home



⚡ CITIZEN ⚡

WHAT HAPPENED, WHAT IT MEANS, AND WHAT YOU CAN DO ABOUT IT.



Menu



Events



Ideas We Should Steal Festival



Do Something Guides



About



Search



REALITY CHECK:

WHY THE PHILADELPHIA TIRE FIRE SHOULD SCARE YOU

The plume of black smoke that erupted over Philly last week was another sign, WURD's midday host and a Temple professor say, of the carelessness with which the City addresses real environmental concerns for mostly Black residents

BY CHARLES D. ELLISON AND CHRISTINA D. ROSAN NOV. 16, 2021



Tweet

Share

As billows of black, toxic smoke rose into crisp autumn air in Philadelphia last week, many of us, especially throughout Southwest Philly, could actually smell that something was not quite right in the air (you could literally taste the tires), and many of us—especially those with chronic respiratory ailments—were choking and coughing to the reality of *another* mass pollutant catastrophe unfolding in Philadelphia.

Yet the City of Philadelphia (whom we presume could smell that same putrid scent) didn't bother **to tell the majority of its residents** that they were breathing in the dangerously toxic fumes of burning tires or how to protect themselves and their families.

DO SOMETHING

Demand action

MONITOR AIR QUALITY

Get PurpleAir

**PREORDER ROSAN'S
BOOK***Reimagining Sustainable Cities*

BE A CITIZEN EDITOR

SUGGEST A STORY

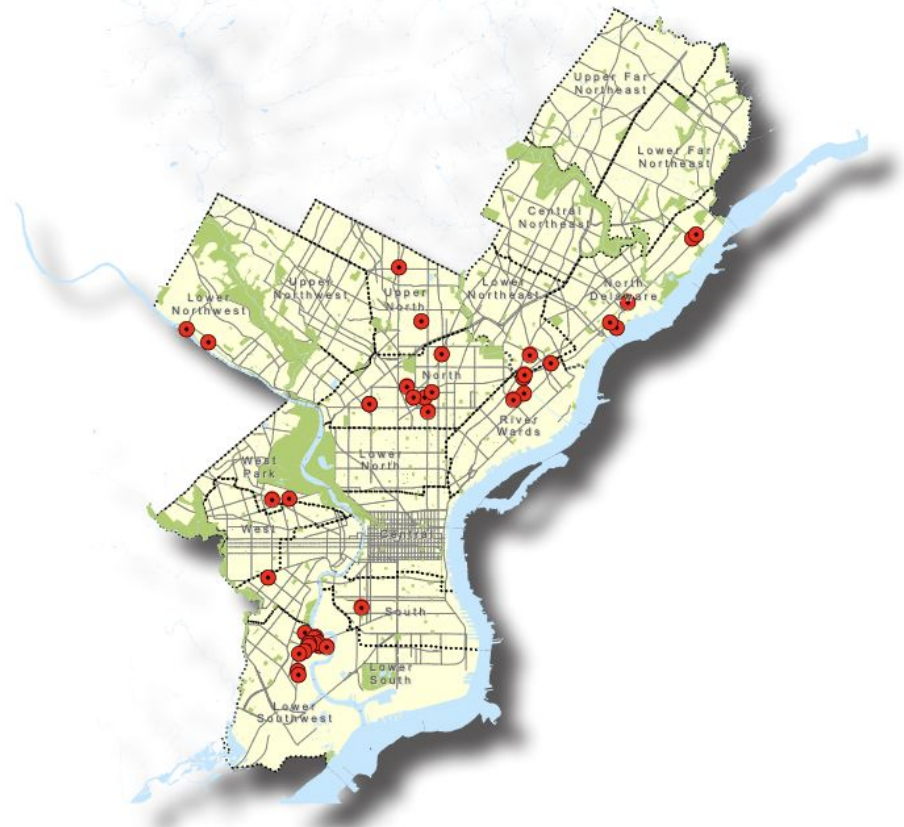
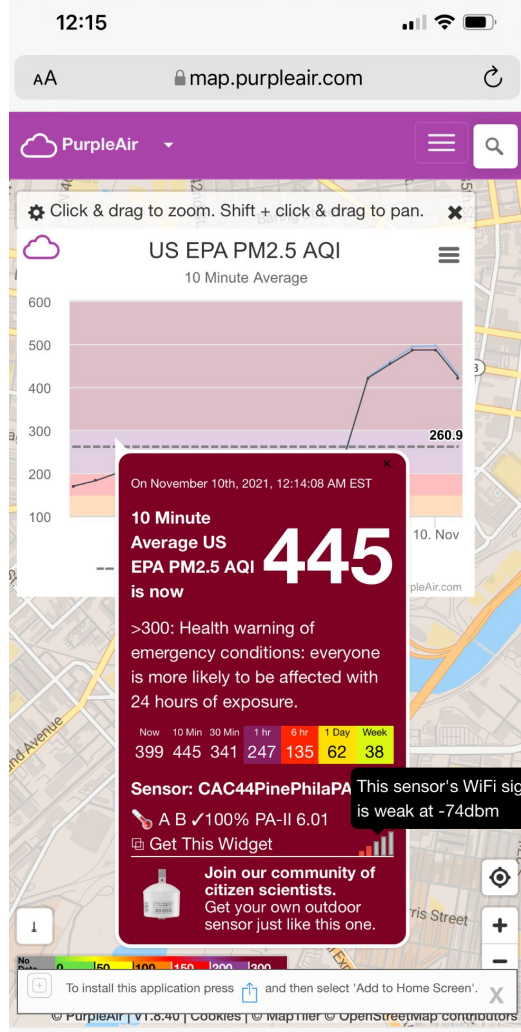
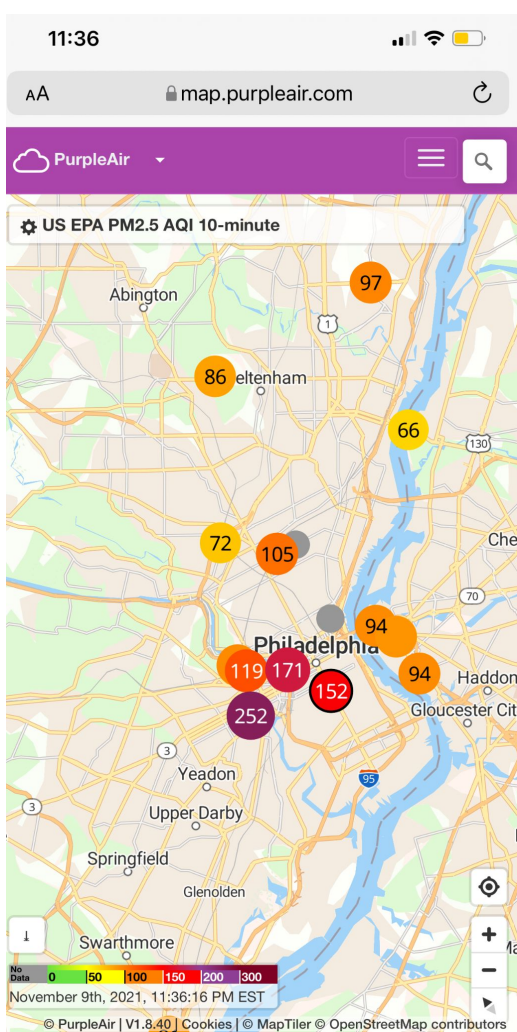


Figure 1 – Active Auto Wrecking and Junkyard Licenses, L&I 2017.
Note: This is a snapshot of Active Licenses from January 2017, and may
not capture all current Auto/Junkyard licenses.



PlanPhilly @PlanPhilly · 30m

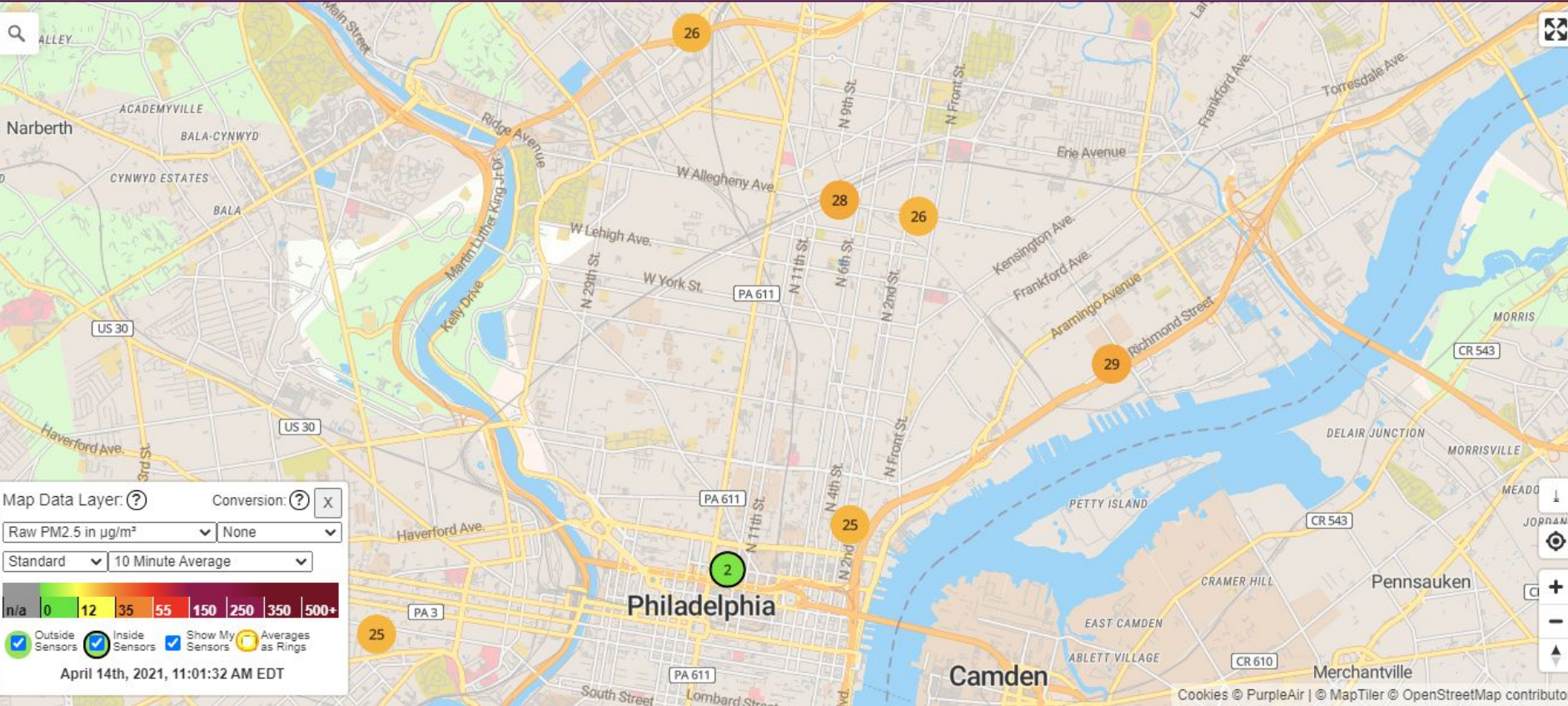
After a junkyard fire, Philly sent an emergency alert. Less than 2% of affected residents got it. dlvr.it/SCRnXM



3

4





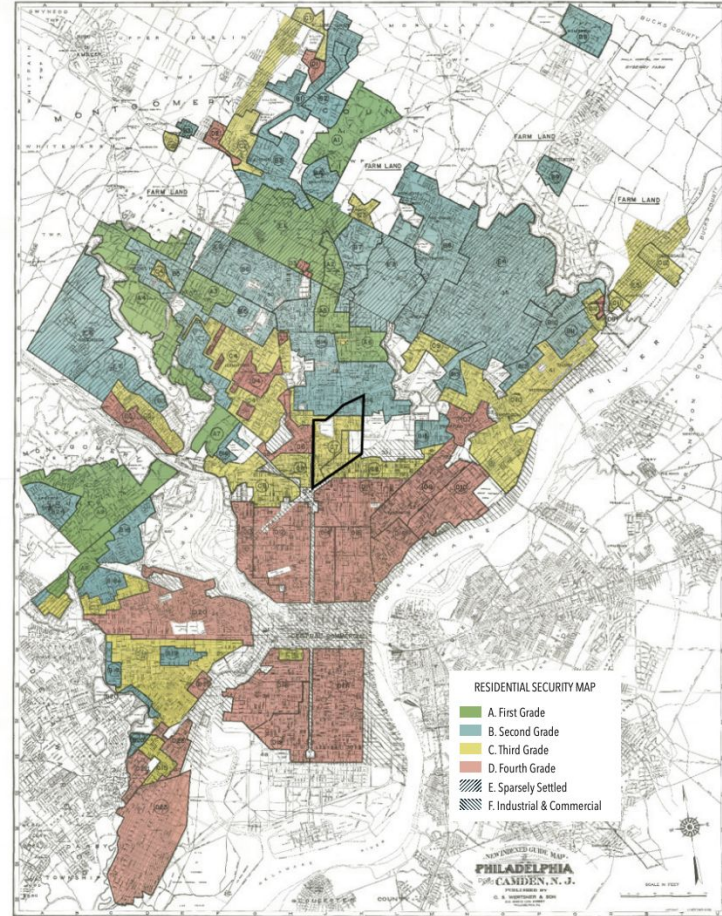
Planning for climate adaptation may be long-term, but *reimagining* can make the connection between long-term concerns, present, and future needs.

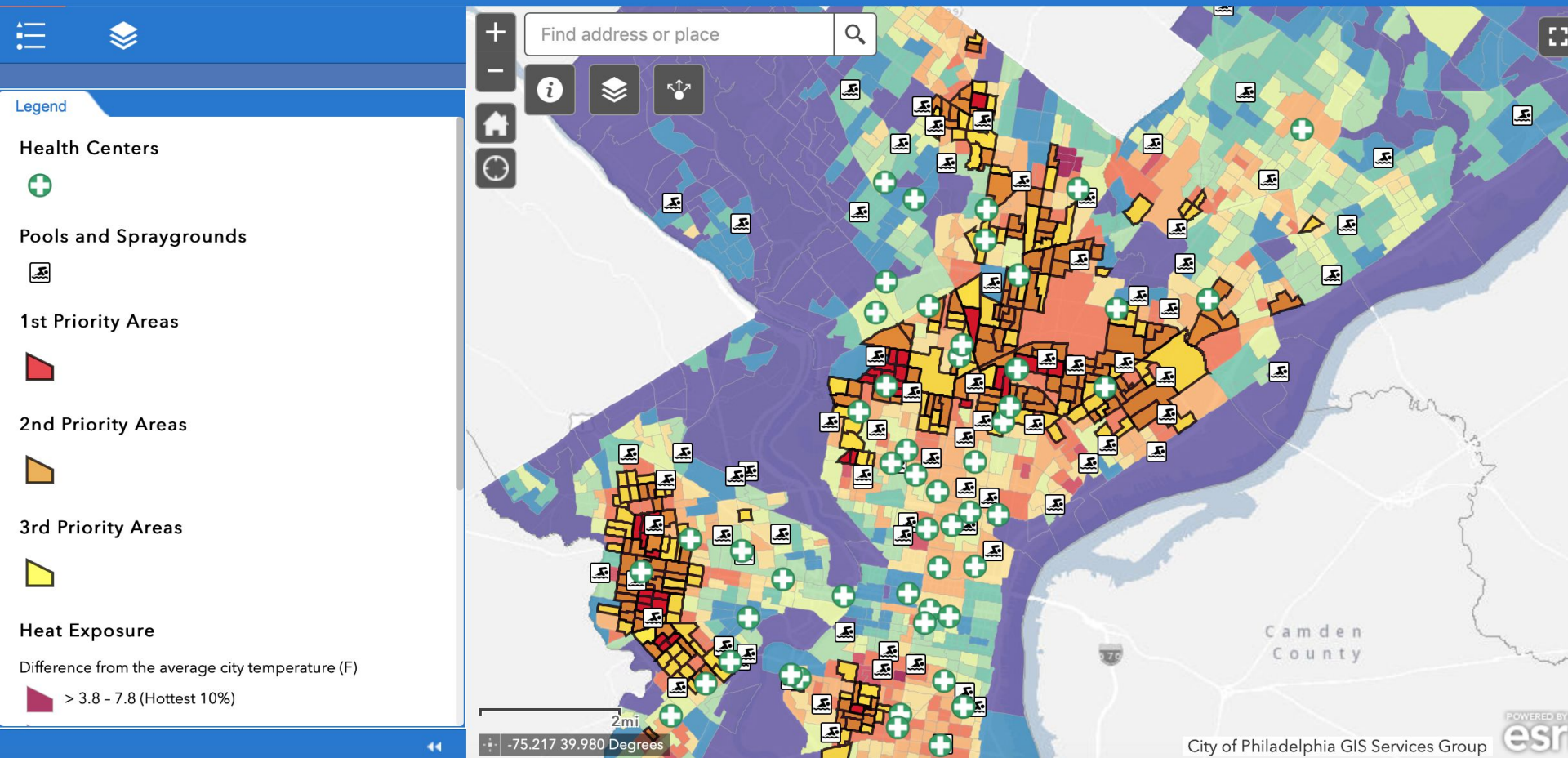
Redlining, Tree Canopy, and Urban Heat Islands

Some parts of the City are 22 degrees hotter!

Map from City of Philadelphia Beat the Heat Plan

FIG. 9 REDLINING MAP OF PHILADELPHIA WITH HUNTING PARK OUTLINED

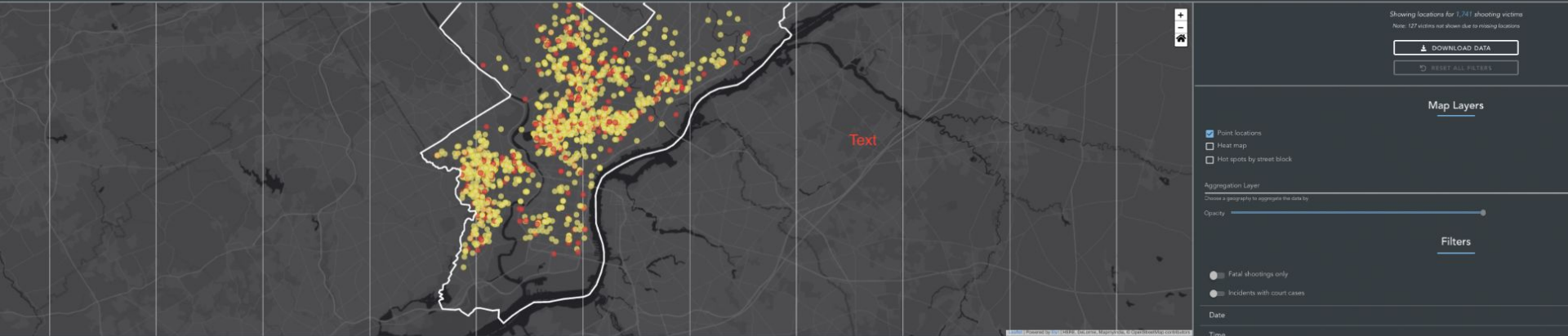




Mapping Philadelphia's Gun Violence Crisis

To date, there have been **435 homicides**
in 2021, a 14% increase from 2020.

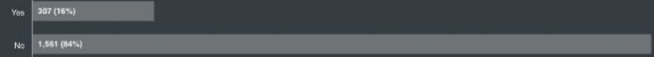
This app maps the victims of gun
violence: **1,490 nonfatal** and **378 fatal**
shooting victims as of Oct 17, 2021



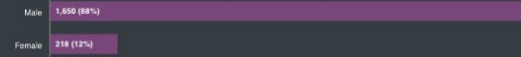
Outcome



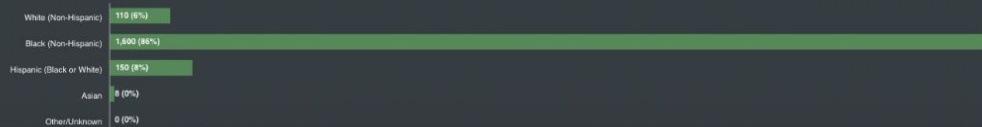
Associated Court Cases



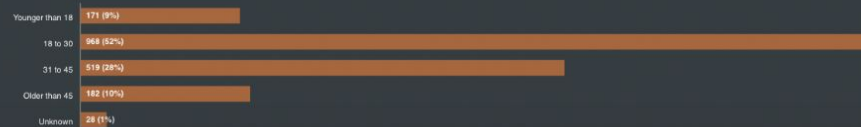
Gender



Race/Ethnicity



Age



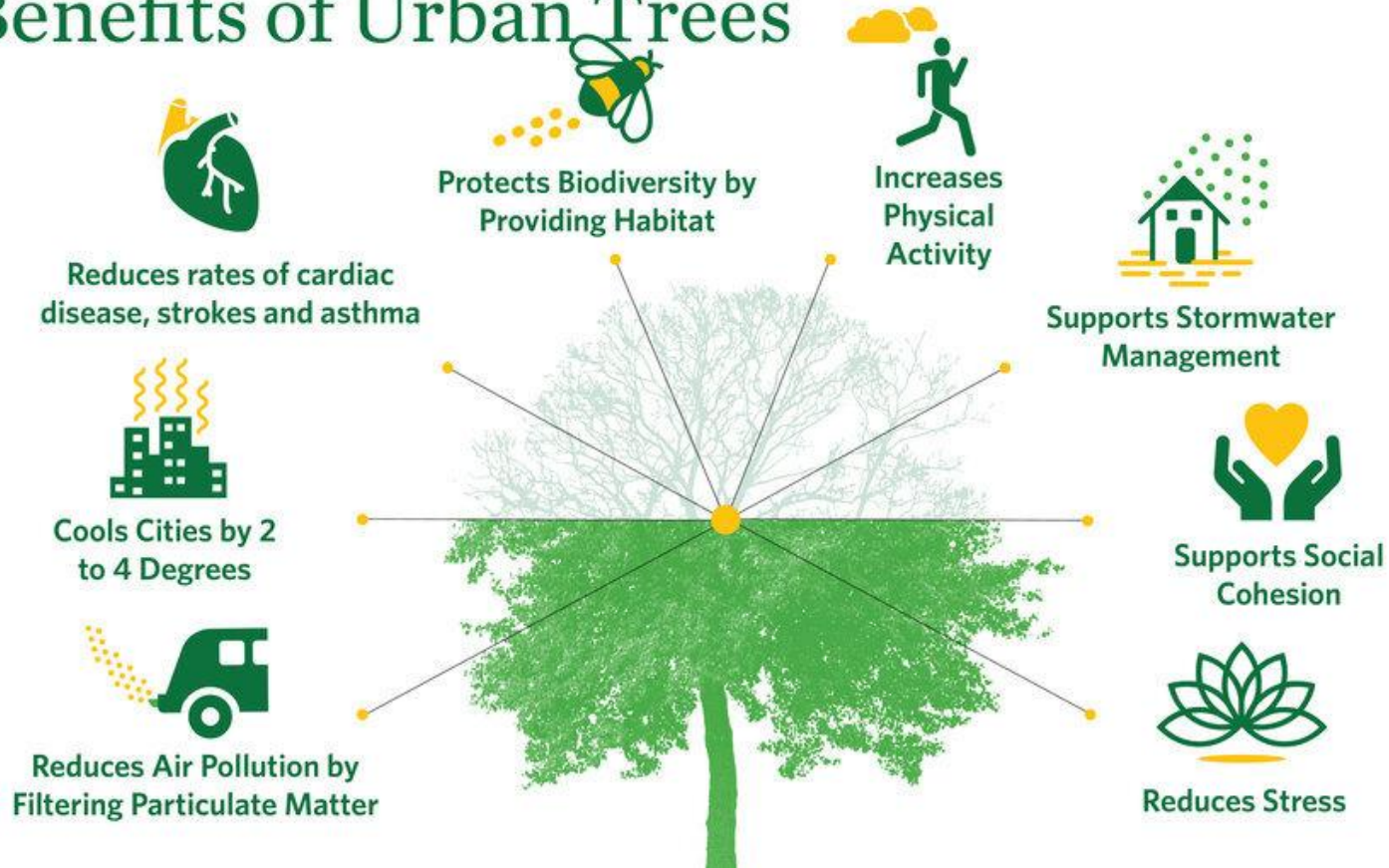
Reimagine: Connect Urban Heat Adaptation With Need



Source:

<https://www.phila.gov/2021-05-26-parks-recs-free-sprinklers-splash-pads-and-spraygrounds/>

Benefits of Urban Trees



Source: <https://www.washingtonnature.org/fieldnotes/advocacy-urban-trees-puget-sound>

We Need Trees BUT...

Who is responsible for them?

Who requests, chooses, pays for them?

What happens when:

- they break the sidewalks?
- people trip on roots and broken sidewalks?
- they break sewer lines?
- fall on cars?
- need water?
- need maintenance?
- need to be removed?
- contribute to “green gentrification”?



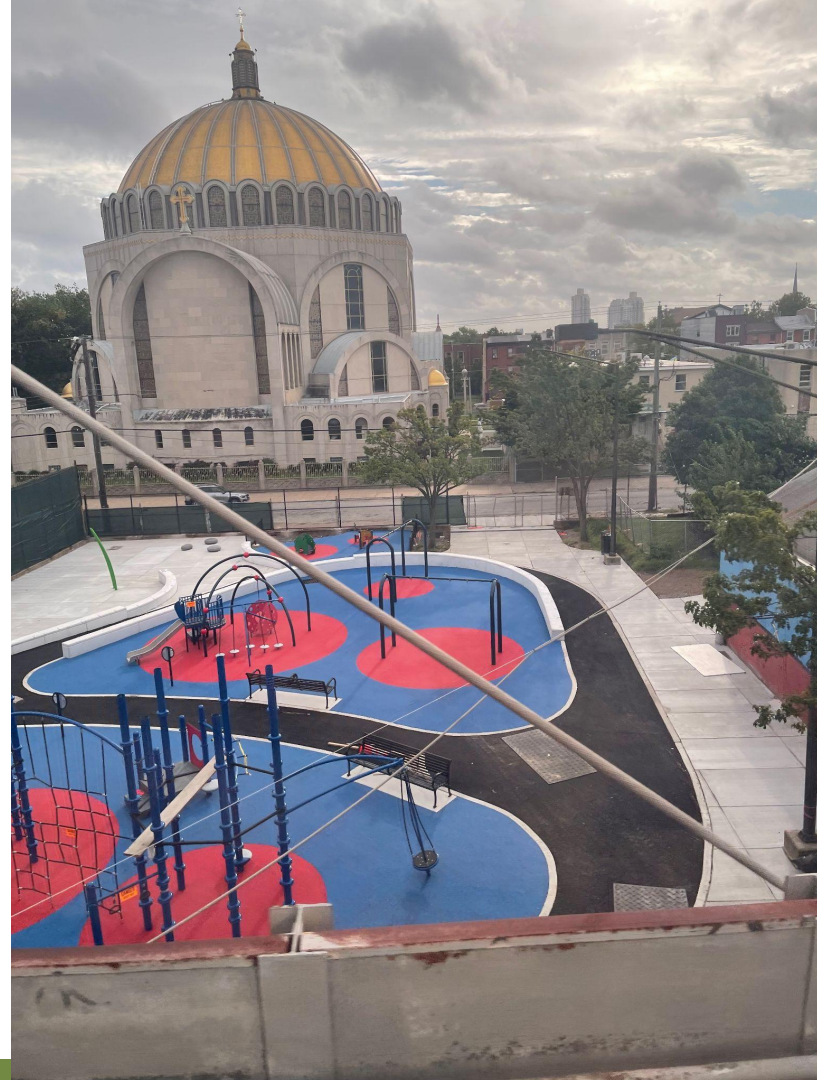
<https://whyy.org/articles/not-in-my-sidewalk-debunking-philly-tree-myths/>

Intersectional Planning Across Agencies

**Reusing Vacant/Disinvested
Land**

Identifying Co-Benefits

**Using Climate Investments for
Public, Community Amenities**



Reimagine:

**Community
Land Trust**

**Protecting
Green Space**

**(NOT all
vacant lots =
construction)**



Reimagine:

**Community Land
Trust**

**Promoting urban
agriculture**



- (1) What data and technology needs do communities have and want to access for planning for current concerns and future needs?***
- (2) How can real-time fine-scale data be collected to enable community-based planning?***
- (3) How can qualitative experiential data from communities be collected, shared, and quantified for integration into planning technologies and design solutions that promote more just outcomes?***
- (4) How can we integrate environmental exposures with demographics and data on social conditions to more effectively model the intersectional nature of vulnerability and how it is expected to change in the future?***
- (5) What integrated planning tools exist for collaborative decision making and how can we learn from the use of those tools to develop a decision-making tool for the climate crisis?***
- (6) How can we design planning software that analyzes and visualizes relationships between community variables to facilitate climate planning?***
- (7) How can planning software be designed to address barriers to use by community members and other non-experts?***



Megan Heckert, Ph.D.
Associate Professor
Department of Geography and Planning
West Chester University
MHeckert@wcupa.edu

Christina Rosan, Ph.D.
Associate Professor
Geography and Urban Studies
Center for Sustainable Communities Fellow
LCDSS Fellow (2021-2022)
christina.rosan@temple.edu
<https://linktr.ee/tinarosan>