



Climate Mitigation and Adaptation in Chicago: KEY FINDINGS

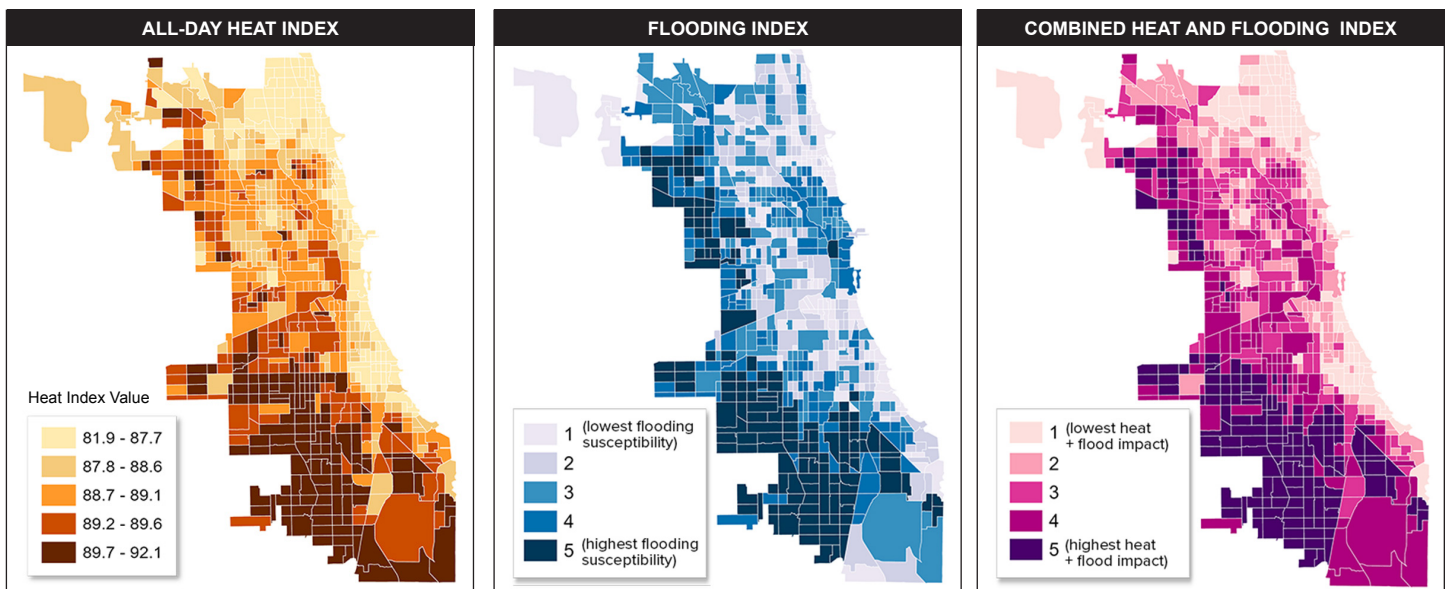
Which places and people in Chicago are most affected by climate change impacts? What connections exist between climate change impacts and zoning and land use?

In an analysis led by MPC researcher Kris Tionson, two of Chicago's most significant climate change risks were examined: heat and flooding. The analysis found that susceptibility to combined heat and flood impacts is greatest in neighborhoods located on the Far South and Southwest sides, as well as pockets of the Northwest side. The data also showed that Black and Latinx residents are overrepresented in the areas most susceptible to heat and flooding. The most heat- and flood-susceptible areas of the city are largely zoned for low-density residential uses, while the least susceptible areas are more likely to be zoned for parks and open space.

A note on data sources: For flooding, we looked at a flood susceptibility index compiled by CMAP and at flooding complaints reported to the City via 311, combining both into a single flood susceptibility index. For heat, we used data from the City's 2023 Heat Watch campaign, focusing on the "heat index," a measure of felt heat that accounts for both all-day temperature and humidity.

Key data takeaways from our research

- **Susceptibility to combined heat and flood impacts is greatest for the Far South, Southwest, and Northwest sides of the city.** These include West Lawn, Auburn Gresham, Calumet Heights, Belmont Cragin, and several other neighborhoods with majority Black or majority Latinx populations.
- **Different neighborhoods face different types and levels of climate challenges, which require different solutions.** Some neighborhoods face urban heat challenges, others experience urban flooding challenges, and some face both. Multipronged mitigation and adaptation strategies are required to adequately address climate challenges. Neighborhoods also have different types and availabilities of land for implementing mitigation and adaptation strategies, such as vacant land, City-owned properties, and land uses with a large amount of pavement (like industrial land and heavy arterials).



Source: City of Chicago 2023 Cool Chi/Heat Watch, Chicago Metropolitan Agency for Planning (CMAP), City of Chicago data portal

- **The majority of high-susceptibility tracts are zoned for single family homes.** More than 60% of land in the top fifth of heat-susceptible and flood-susceptible tracts is zoned RS (Residential Single-Unit), which is the lowest-density residential zoning district. On the flip side, areas zoned Parks and Open Space, particularly along Lake Michigan, are least susceptible to both urban heat and flooding.

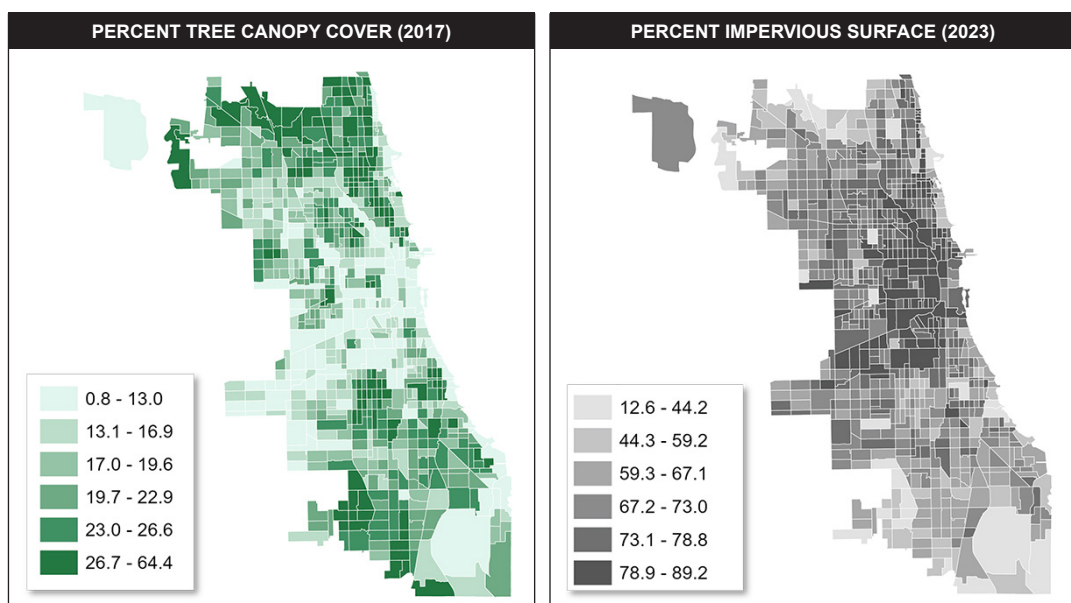
➤ **Black and Latinx residents are overrepresented in the areas more likely to see climate impacts.** In the top fifth of tracts for heat and flood susceptibility, Black and Latinx Chicagoans comprise 83% of the population, despite comprising 57% of the city's total population. Meanwhile, white Chicagoans are underrepresented in those same tracts. While white residents make up 33% of the city's total population, they make up only 14% of the population in those high heat and flood susceptibility tracts.

RACIAL AND ETHNIC COMPOSITION BY COMBINED HEAT + FLOOD INDEX					
Heat + Flood Susceptibility Quintiles	Percent Black	Percent Latinx	Percent White	Percent Asian	Percent Other
Above the 80th Percentile of Tracts (Greatest Susceptibility)	50%	33%	14%	1%	2%
60th to 80th Percentile	27%	43%	22%	6%	2%
40th to 60th Percentile	20%	33%	38%	6%	3%
20th to 40th Percentile	20%	20%	45%	11%	4%
Below the 20th Percentile (Lowest Susceptibility)	22%	15%	47%	11%	5%
City of Chicago	28%	29%	33%	7%	3%

Source: Census ACS

➤ **Certain land use factors can be protective against climate challenges, and others can worsen susceptibility—but climate patterns are complex, not straightforward.** In general, tree canopy, green stormwater infrastructure, and energy-efficient buildings function as protective factors against heat and flooding susceptibility. Impervious surfaces, older housing stock, and heavy traffic patterns can worsen susceptibility to climate challenges. These factors are not determinant—they don't automatically translate to risk levels at a citywide level—but we can see impacts at a neighborhood level, particularly looking at tree coverage as a cooling factor that helps with heat events.

Source: Chicago Region Trees Initiative (CRTI) 2017, U.S. Geological Survey National Land Cover Database 2023



Why does this data matter? Why should I care about these findings?

This research matters because climate change is [impacting Chicago and Illinois today](#): rising temperatures have heightened the urban heat island effect in many neighborhoods, while increasingly severe and frequent rainfall has led to worsening flooding. A [major public health risk](#), heat can exacerbate other underlying medical conditions, and is the leading cause of weather-related deaths; [flooding](#) can lead to costly property damage and air quality damage, such as mold. Our research points to the need for zoning and land use reform to be part of the larger climate action agenda for Chicago. Updated zoning and land use policies can move us toward a more resilient city as we navigate a changing climate.

Zoning and Land Use Assessment initiative and research

This research is part of a collaborative initiative led by Metropolitan Planning Council (MPC) and the Urban Institute that evaluates Chicago's zoning and land use to understand whether they contribute to equitable, sustainable, and healthy outcomes for communities and residents. The goal is to understand zoning's impact to collectively make changes to create a vibrant and thriving Chicago.

For more information about this project and additional information about this research visit metroplanning.org/projects/zoning-land-use-assessment