



**Neighborhoods in Portland, OR, that were segregated using the government practice of redlining experience hotter temperatures today due to disinvestment and less green spaces and tree canopy to moderate temperatures.**

This map shows how hot different neighborhoods felt to residents on a day when the air temperature was 93 degrees Fahrenheit.

-  Cooler neighborhoods with temperatures below 85 degrees
-  Hotter neighborhoods with temperatures above 85 degrees
-  Historically redlined neighborhoods that experience hotter temperatures today

Source: Vivek Shandas, Portland State University

## How Climate Change is Warming Cities Unevenly and Deepening Health Inequities

The “Heat Dome” that set down on the Pacific Northwest at the end of June 2021 left millions across the region sweltering under record setting temperatures [and hundreds dead](#) in the U.S. and Canada. Portland, Oregon, set a new record high of 116 degrees—14 degrees higher than the previous record.

During the Heat Dome event, the [difference in temperature between neighborhoods varied by 25 degrees](#), according to Portland State University professor Vivek Shandas. One corner of the Lents neighborhood, which has suffered from disinvestment by government and businesses for decades, hit 124 degrees—8 degrees higher than the 116 degree peak reported for the city at large.

### **Climate Change is Worsening the Urban Heat Island Effect and Deepening Health Inequities Across the U.S.**

As a result of systemic racism, the populations who are most likely to live in these hotter neighborhoods—and therefore among those at greater risk of the dangers of increasing heat due to climate change—are disproportionately people of color. [Research in 2013](#), for example, found that people of color are far more likely than Whites to live in neighborhoods where a majority of people

lacked tree cover and over half of the ground was covered by concrete, pavement, and other heat absorbing materials. Specifically:

- Non-Hispanic Blacks were 52% more likely than non-Hispanic Whites to live in these neighborhoods
- Non-Hispanic Asians were 32% more likely more likely than non-Hispanic Whites to live in these neighborhoods
- Hispanics were 21% more likely than non-Hispanic Whites to live in these neighborhoods

## Health Inequities from Climate Change are Rooted in Structural Racism

While temperatures across the region varied, the Heat Dome put in stark relief the health and racial inequities that prevail between Portland's neighborhoods. Cities and urban areas experience greater heat because of the amount of buildings, roads and concrete that absorb heat—a phenomenon known as the “urban heat island effect”—but not all neighborhoods experience heat waves in the same ways.

As a result of historic segregation due to practices like [redlining](#) and [racial covenants](#), and ongoing policies like [exclusionary zoning](#), neighborhoods that are home to people of color, immigrants, and families with low-income often have received fewer investments in infrastructure, including parks and trees, that help to mitigate the worst of the heat. Building and development today can exacerbate these inequities when they limit the development of high-density or affordable housing to certain neighborhoods or override land coverage standards.

These disparities aren't just an issue in a “1,000-year weather event” like the Heat Dome; they are ongoing. Research by Shandas and colleagues shows a 12.8 degree difference between high-income, predominantly white neighborhoods in the west side of Portland and neighborhoods like Overlook, St. Johns and North Lents that have the largest proportion of communities of color. In fact, of the 108 U.S. cities Shandas and colleagues studied, Portland has the largest temperature difference between areas historically redlined and those graded as “best.” This clear pattern of uneven heat impacts that put people of color at greater risk is seen in cities across the country.

Increasing temperatures fueled by climate change already put every person at greater risk of health harms. But as a result of systemic racism and the long legacy of discrimination, it has a greater impact on the health of those who have been made more vulnerable through racist and discriminatory policies and practices that fuel health inequity today. Policies to prevent and adapt to climate change must be equitable to address the long-standing forces of systemic racism.



### Climate Change Driving Record Setting Heat and Harming Health

▶ [Data from NASA](#) reports that 2014-2020 have been the hottest years on record. And 2020 was the 44th year in a row with land and ocean temperatures above the 20th century average.

▶ Extreme heat [harms health](#), by driving heat stroke and heat illness, exacerbating asthma and heart and lung disease, exacerbating chronic kidney disease, and causing higher rates of pre-term births.

▶ Heat-related deaths have increased 74 percent between 1980 and 2016, according to [two recent studies in The Lancet](#).

