

Heat and Health: A Faith Response to Building Stronger Communities



**CREATION
JUSTICE
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Care for God's Planet and People.

Introduction

In Genesis 1:26-28, God entrusted humanity with the sacred duty of caring for creation. However, our actions have strayed from this divine purpose, resulting in significant harm to our planet. The choices we have made and continue to make have contributed to the unfolding climate crisis that confronts us today. As the consequences of climate change escalate, we witness a rise in the frequency and severity of extreme heat events, which cause illness and tragic loss of life. Unfortunately, systemic racism and economic inequalities have compounded the impact of these events, burdening communities of color, particularly Black people, with the greatest hardships. Despite the fact that these communities have contributed the least to the climate crisis.

Churches hold a unique position to confront and address the challenges posed by extreme heat. We can draw inspiration from Joseph's example in Genesis 41:14-36 by using our abundant resources to protect our communities during times of extreme heat. Like Joseph, we must have the courage to speak truth to power and urge our elected leaders to take decisive action in safeguarding vulnerable communities from the effects of climate change.

As global temperatures continue to rise, extreme heat events are becoming more common and severe, leading to an increase in heat-related hospitalizations and mortalities.

Did you know?

Extreme heat varies according to geographical location and season. For instance, temperatures and humidity above 95 degrees Fahrenheit during summer in Washington, D.C., qualify as extreme heat, whereas the threshold for extreme heat in Florida during summertime is above 105 degrees Fahrenheit.

Effects of Extreme Heat

Extreme heat is characterized by temperatures and humidity higher than average during a specific timeframe, typically two to three days.¹ The primary cause of extreme heat is high concentrations of heat-trapping greenhouse gasses, increasing atmospheric temperatures.² This results from activities that use fossil fuels, such as operating vehicles or power plants. Extreme heat can be dangerous. It impairs the body's natural ability to regulate its internal temperature, leading to heat-related illnesses that can cause severe damage to vital organs or even death.³

Since 1895, the average temperature in the United States has continued to increase.⁴ By the 1960s, major cities across the United States began to experience a rise in the frequency and duration of heat waves.⁵ The number of heat waves increased from an average of two per year in 1961 to six per year by 2021 with heat wave seasons lasting 49 days longer.⁶ The increased number and



Did You Know?

The combination of high temperatures and humidity makes our bodies feel hotter than the actual temperature. This is called the Heat Index.

and severity of heat waves have led to deadly consequences.

In 1995, the Midwest experienced one of the most severe heat waves in U.S. history. The heat wave lasted five days with a heat index that reached 126 F.⁷ In Chicago alone, more than 700 people died, most of whom were people of color and low income.^{8 9} Extreme heat is hazardous and is a risk to public health, especially for people of color living in urban areas.

Urban Heat Islands

Urban areas tend to be hotter than neighboring suburban or rural areas.¹⁰ This is due to a phenomenon called the urban heat island effect. It occurs when human-made surfaces, such as buildings and asphalt, absorb and emit heat, making the surrounding air temperature hotter.¹¹

Cities typically have tall buildings that can limit airflow, and more cars, air conditioners, and factories that generate heat and air pollution, also leading to increased temperatures.¹²

Additionally, urban areas often have less green space, resulting in less shade and moisture to keep the air cool. The lack of greenery and poor air quality intensifies the impact of high temperatures on urban residents. Compared with rural and suburban areas, urban areas can be between 1.8 to 5.4 F warmer during the day and up to 22 F warmer at night.¹³

While urban areas are typically more racially diverse than rural areas, different racial groups do not experience the same impacts of the intensified heat. People of color are more vulnerable to the dangers of extreme heat due to systemic racism. This is true regardless of income level.¹⁴ Research indicates that, in almost all major cities, neighborhoods with higher concentrations of people of color experience higher heat island intensity than parts of the city with mostly White residents, where heat island intensity was lower.¹⁵ These disparities can be attributed to racism in housing policies, urban planning, and more.

Systemic Racism & Extreme Heat

Several studies have found a strong correlation between areas impacted by redlining and urban heat islands.¹⁶ Redlining was the federal government's systematic divestment of resources from communities of color, particularly Black communities. Black communities and residents were labeled as high-risk for real estate investors and lenders.¹⁷ This prevented Black people from getting affordable home loans and building wealth through homeownership. It also kept monetary resources out of Black communities. Redlining perpetuated a long history of discrimination, contributing to increased segregation and poverty in Black neighborhoods, further widening the racial wealth gap between Black and White individuals.



Manmade surfaces absorb sunlight during the day then radiate the stored energy at night as heat leading to increased nighttime temperatures and decreasing the potential for cooler nights in urban heat islands.



Although redlining is now illegal, formerly redlined neighborhoods, still home to large populations of Black and Brown residents, are plagued by discrimination in urban planning. Cities are less likely to invest in parks and tree planting in low-income communities and/or communities of color. A recent study found that between 2001 and 2011, predominantly White areas saw increased green spaces while greenery in neighborhoods with mostly people of color decreased.¹⁸ Because of this discrimination, Black and Hispanic residents have the highest and second-highest average exposure to urban heat islands, respectively.¹⁹

The intense exposure to extreme heat has led to higher heat-related illnesses and deaths among Black and Brown people, particularly Black populations. Research indicates that between 2006 and 2010, Black people were 2.5 times more likely to experience heat-related mortality than White people and twice as likely as Hispanic people.²⁰ These outcomes are partly due to heat agitating pre-existing conditions, such as respiratory and cardiovascular illnesses, and Black communities experiencing inadequate access to hydration.

Black residents have higher rates of asthma and chronic conditions such as hypertension, which could lead to cardiovascular complications. For example, Black men are nearly 50 percent more likely to have asthma than White men, and Black women are almost 50 percent more likely to have hypertension than White women.^{21 22} Respiratory or cardiovascular conditions can affect the body's response to heat, making a person more vulnerable to extreme heat.²³ Additionally, taking certain medications for chronic conditions can affect the body's internal thermoregulation, leading to increased hospitalization or death during extreme heat.²⁴

When temperatures are high, it is vital to stay hydrated to stave off heat-related illnesses. However, Black and Hispanic residents are less likely to have access to safe, clean drinking water. A study found that between 2016 to 2019, water systems that consistently violated safe drinking water laws were 40 percent more likely to serve communities of color.²⁵ Without access to safe drinking water, Black and Hispanic residents are at higher risk of dehydration and hospitalizations during extreme heat.

How Churches Can Respond

Heat-related illnesses and deaths are preventable, and there are many ways people of faith can respond to mitigate the impact of extreme heat on their communities. They include preparing and educating communities on how to stay safe and healthy during extreme heat events, increasing access to cooling stations, and increasing the number of trees and green spaces in their communities.

Prepare and Educate

Preparing and educating the community is another way to respond to the effects of extreme heat on vulnerable populations. This can include providing free education on how to stay cool and hydrated during extreme heat and offering information sessions on the signs of heat illness and how to respond. In addition, it is important to research the heat response resources in your area and ensure that your community members are aware of them. Finally, creating and implementing a heat response plan is also crucial. A church can become a designated cooling station, have cases of water on hand to give out to those in need, or email extreme heat warnings to their congregants. By taking these steps, we can work to protect vulnerable populations from the dangers of extreme heat.



Cooling Stations

A cooling station is a designated site or building with air conditioning where individuals can stay cool during days of extreme heat.²⁶ Cooling stations can double as hydration stations where people can access safe drinking water and electrolytes to address dehydration, which occurs during periods of extreme heat. Any air-conditioned space, such as a library, school, or place of worship, can be used as a cooling station. Many churches across the country have opted to serve as cooling stations as temperatures continue to rise to dangerous levels. Places of worship are great locations for cooling stations as they are usually more accessible to communities with limited access to public transportation. Major cities such as St. Louis and Chicago have incorporated cooling stations into their heat response plans, and it has proven to save lives.²⁷

Tree Planting

Planting trees can also be an effective strategy for mitigating the effects of extreme heat. Trees and greenery help to reduce temperatures by transferring water from soil and plants to the atmosphere, which has a cooling effect, and by providing shade.²⁸ However, the effectiveness of tree planting in cooling the environment depends on strategic planting locations.²⁹ For example, it is best to plant trees so the shade covers windows and roofs – lowering the temperature of a building.³⁰ Trees and other greenery can reduce summertime temperatures by up to 9 F and improve air quality by removing carbon dioxide and other pollutants from the air.³¹ Moreover, planting trees can help save on energy costs and reduce air pollution by reducing the need for air conditioning.³²

Conclusion

In the short term, the initiatives put forth can provide lifesaving relief during times of extreme heat. However, it is crucial to recognize that the disproportionate impact on communities of color living in heat islands stems from systemic injustices. Our national leaders must take decisive action to address this discrimination and foster systemic change. This includes addressing the water crisis, disparities in land coverage and access to green spaces, and enacting policies that combat the urban heat island effect and safeguard vulnerable communities during extreme heat events.

The A. Donald McEachin Environmental Justice For All Act, for instance, presents an opportunity to address the issue of heat islands. Additionally, climate mitigation actions are crucial in ensuring a sustainable future for all. As people of faith, we must embrace the courage to hold our leaders accountable for bringing about positive change. Together, we can faithfully fulfill our sacred responsibility to care for creation and protect those most affected by injustice. Let us strive for a more just and equitable world where no community is left behind.

Endnotes

1. United States Environmental Protection Agency. "Extreme Heat." Ready.gov, August 1, 2022. <https://www.ready.gov/heat>.
2. United States Environmental Protection Agency. "Climate Change and Extreme Heat: What You Can Do to Prepare," October 2016, 5.
3. Sarofim, M.C., S. Saha, M.D. Hawkins, D.M. Mills., J. Hess, R. Horton, P. Kinney, J. Schwartz, and A. St. Juliana. "Chapter 2: Temperature-Related Death and Illness." The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment, n.d., 54-56. Accessed May 11, 2023. <https://doi.org/http://dx.doi.org/10.7930/JOMG7MDX>.
4. Ibid.
5. United States Environmental Protection Agency. "Climate Change Indicators: Heat Waves." EPA, February 4, 2021. <https://www.epa.gov/climate-indicators/climate-change-indicators-heat-waves>.
6. Ibid.
7. United States Environmental Protection Agency. "Heat-Related Mortality -- Chicago, July 1995." EPA, September 19, 1998. <https://www.cdc.gov/mmwr/preview/mmwrhtml/00038443.htm>.
8. United States Environmental Protection Agency. "Chicago, IL Adapts to Improve Extreme Heat Preparedness." EPA, April 14, 2016. <https://www.epa.gov/arc-x/chicago-il-adapts-improve-extreme-heat-preparedness>.
9. Center for Disease Control and Prevention. "Heat-Related Mortality -- Chicago, July 1995." CDC, September 19, 1998. <https://www.cdc.gov/mmwr/preview/mmwrhtml/00038443.htm>.
10. United States Environmental Protection Agency. "Heat Islands and Equity." EPA, November 6, 2019. <https://www.epa.gov/heatislands/heat-islands-and-equity>.
11. Earthdata. "Urban Heat Island." Accessed May 11, 2023. <https://www.earthdata.nasa.gov/topics/human-dimensions/public-health/environmental-health-factors/urban-heat-island>.
12. United States Environmental Protection Agency. "Climate Change and Extreme Heat: What You Can Do to Prepare," October 2016, 14.
13. Ibid.
14. Hsu, Angel, Glenn Sheriff, Tirthankar Chakraborty, and Diego Manya. "Disproportionate Exposure to Urban Heat Island Intensity across Major US Cities." Nature Communications 12, no. 1 (May 25, 2021): 1-11. <https://doi.org/10.1038/s41467-021-22799-5>.
15. Ibid.
16. United States Environmental Protection Agency. "Heat Islands and Equity." EPA, November 6, 2019. <https://www.epa.gov/heatislands/heat-islands-and-equity>.
17. Ibid.
18. Casey, Joan A., Peter James, Lara Cushing, Bill M. Jesdale, and Rachel Morello-Frosch. "Race, Ethnicity, Income Concentration and 10-Year Change in Urban Greenness in the United States." International Journal of Environmental Research and Public Health 14, no. 12 (December 1, 2017). <https://doi.org/10.3390/ijerph14121546>.
19. Hsu, Angel, Glenn Sheriff, Tirthankar Chakraborty, and Diego Manya. "Disproportionate Exposure to Urban Heat Island Intensity across Major US Cities." Nature Communications 12, no. 1 (May 25, 2021): 1-11. <https://doi.org/10.1038/s41467-021-22799-5>.

20. Berko, Jeffrey, Deborah D Ingram Ph.D., Shubhayu Saha Ph.D., and Jennifer D. Parker Ph.D. "Deaths Attributed to Heat, Cold, and Other Weather Events in the United States, 2006–2010 ." National Health Statistics Reports, no. 76 (July 30, 2014).
21. United States Department of Health and Human Services The Office of Minority Health. "Asthma and African Americans." HHS, February 17, 2023. <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=15>.
22. Ibid.
23. Center for Disease Control and Prevention. "Heat and People with Chronic Medical Conditions," April 15, 2020. <https://www.cdc.gov/disasters/extremeheat/medical.html>.
24. Sarofim, M.C., S. Saha, M.D. Hawkins, D.M. Mills., J. Hess, R. Horton, P. Kinney, J. Schwartz, and A. St. Juliana. "Chapter 2: Temperature-Related Death and Illness." The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment, n.d., 43–68. Accessed May 11, 2023. <https://doi.org/http://dx.doi.org/10.7930/JOMG7MDX>.
25. Fedinick, Kristi P., Steve Taylor, and Michele Roberts. "NRDC: Watered Down Justice (PDF)," September 2019. <https://www.nrdc.org/sites/default/files/watered-down-justice-report.pdf>.
26. Widerynski, Stasia, Paul Schramm, Kathryn Conlon, Rebecca Noe, Elena Grossman, Michelle Hawkins, Seema Nayak, Matthew Roach, and Asante S. Hilt. "The Use of Cooling Centers to Prevent Heat-Related Illness: Summary of Evidence and Strategies for Implementation." Accessed May 11, 2023. <https://www.cdc.gov/climateandhealth/docs/UseOfCoolingCenters.pdf>.
27. Ibid.
28. United States Environmental Protection Agency. "Using Trees and Vegetation to Reduce Heat Islands." EPA, June 17, 2014. <https://www.epa.gov/heatislands/using-trees-and-vegetation-reduce-heat-islands>.
29. Ibid.
30. Ibid.
31. Ibid.
32. Ibid.

