SOLUTIONS SPOTLIGHT

Extreme Heat Affects Early Childhood Development and Health

Personal experience, common sense, and scientific research all confirm that temperatures are rising across the U.S. and around the world. Record-setting heat waves are occurring more often and lasting longer than ever before. The dangers of excessive heat to older people and those with heart and lung conditions are becoming well known, but the effects of heat during pregnancy, infancy, and early childhood get less attention. These effects are significant, including low birth weight and prematurity, learning loss during the school years, heat-related illness, and even death. **Excessive heat can impact young children's development and health both in the moment and across the lifespan, which means that implementing strategies to reduce exposure to extreme heat benefits children, caregivers, and communities both now and into the future.**

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Practical, actionable solutions exist to prevent or minimize the effects of heat on children. Many communities, organizations, and nations have already begun to implement these solutions to good effect. All children should have the opportunity to thrive, and the examples that follow provide insight on how policymakers and community leaders can navigate rising temperatures to promote healthy development and lifelong health for all children.

POLICY IN ACTION

Preventing and Minimizing the Impacts of Heat on Young Children

Reducing the Impacts of Heat in the Places Where Children Learn

The Los Angeles Living Schoolyards Coalition, a group of non-profit organizations and academic researchers, helps create and advocate for green schoolyards across the Los Angeles Unified School District (LAUSD). The coalition recognizes that an unequal distribution of green space has been created across LAUSD as the result of historic policies. This includes the practice of redlining, a federally backed program that for nearly 40 years denied mortgage loans and other financial services for residents of areas that were marked on maps as "hazardous" for investment based on residents' race or ethnicity.

Today, the coalition works to reverse historic environmental injustices in low-income communities of color by changing asphalt-heavy schoolyards into park-like green spaces complete with trees and nature-based play areas. The impacts of this strategy can be significant: on a hot sunny day, shaded surfaces remain close to air temperature, while paved surfaces can be 50–90°F hotter. **Adding green space helps to ensure that children have cool, shady places to learn and play, and it reduces ambient air temperatures overall.**

The importance of reducing temperatures at school

- High temperatures are linked to slower cognitive function and reduced ability to concentrate. In New York City, for example, learning losses increased by up to 50% when school-day temperatures went above 100°F compared to days with temperatures above 90°F.
- Learning in a hot classroom can lead to both students and teachers feeling unmotivated, distracted, or irritable. And, if schools are uncomfortably hot, students or teachers may intentionally miss or avoid school.
- By reducing temperatures in school environments, including through adding cool, shady green spaces, we can help minimize the negative impacts of heat on learning.

Strategies for greening schoolyards

- **Integrate the addition of green space into planned school projects.** LAUSD has implemented a policy that whenever it repaves a schoolyard or removes a portable classroom, the amount of schoolyard asphalt must be reduced. Through strategies such as this, LAUSD aims for 30% of each schoolyard in the district to be green by 2035.
- **Prioritize equity.** Greening should start at schools recording the highest temperatures, which in Los Angeles, due to historic inequities, are predominately low-income schools and schools with a high percentage of students of color.
- **Allocate state and district funding.** Lawmakers in California and Los Angeles have allocated funding for building and/or maintaining green schoolyards.
- **Encourage student involvement.** The LA Living Schoolyards Coalition encourages student involvement in the creation of green spaces to foster a sense of belonging and uplift solutions that matter to students and their community.

Combatting Heat Islands

On a hot day, black asphalt roofs in New York City can reach 190°F, significantly hotter than the air. This fuels the heat island effect, where neighborhoods with a high concentration of asphalt and a lack of shade can experience significantly higher temperatures than surrounding areas. NYC CoolRoofs is a government–non-profit partnership working to combat this issue by painting roofs across the city with an energy-saving reflective coating. This initiative also comes with economic benefits. Job seekers are paid to install these roofs, earning experience and construction credentials as they do so, thanks to The HOPE Program, a non-profit that provides job training and career services. The effort significantly decreases the temperature of the roofs, reduces the internal temperatures of buildings by up to 30°F, and lowers the surrounding ambient air temperature. By reducing heat inside and outside, this program helps protect children from adverse exposure to heat and, by providing employment, it has the added benefit of boosting economic security across a community.

Community-Based Approaches to Navigating Heat in Rural Areas

Rural communities often have less access to cooling centers and medical care than urban areas, and many caregivers and children in rural settings have limited access to cooling systems in times of extreme heat. In the Sandhills region of North Carolina, The North Carolina Department of Health and Human Services (NCDHHS) Climate and Health Program partners with local health departments, community organizations, and others to reach populations most susceptible to the health effects of extreme heat, including children. For example, NCDHHS administers a heat health alert system in the Sandhills, alerting their partners when the heat index reaches dangerous levels. Community partners then share alerts through social media, e-mail distribution lists, and other known ways to reach their communities. NCDHHS also provides water bottles, fans, and cooling towels to partners in the Sandhills, which they distribute to communities where they are most needed. These materials include information about signs, symptoms, and prevention of heat-related illness. With a flexible, community-driven approach, this group is finding ways to mitigate the effects of heat on young children in rural North Carolina.

Prescribing Solar Energy Credits

During pregnancy and early childhood, high temperatures at home can impact development and lifelong health. But, for many families, paying utility bills to keep a home cool in hotter weather can be a challenge. In Massachusetts, medical professionals can write to a patient's utility company stating that utilities must remain on due to a medical condition. Utility companies also cannot turn off electricity, gas, or water if a child under one year of age lives in the home. Now, leveraging both federal and state incentives for using solar energy, Boston Medical Center (BMC), a hospital that predominately serves underserved communities – including low-income families – is piloting a program that re-distributes solar energy credits from BMC's power grid to patients, with patients receiving up to $50 off their energy bills per month ($600 per year). Eventually, the goal is to get other businesses in Boston to donate their energy credits to low-income communities as well. This program can provide short-term support to caregivers and children in Boston, while community leaders, researchers, and government officials examine long-term strategies for mitigating heat.

→ Read the full paper

For the full paper on which this Solutions Spotlight is based, see Extreme Heat Affects Early Childhood Development and Health here.

Additional sources consulted in the creation of this Solutions Spotlight include:

Green schoolyards for Los Angeles: The Smart Policy Solution For Equity, Health, And Climate Resilience – The Trust for Public Land

Community Schoolyards Projects: A Game-Changing Solution to America's Park Equity Problem – The Trust for Public Land

Reducing Urban Heat Islands: Compendium of Strategies – U.S. Environmental Protection Agency

NYC CoolRoofs – City of New York

Developing an Early Warning System to Prevent Heat Illness – U.S. Climate Resilience Toolkit

"This Is Not My Grandmother's Summer": Rural Populations Are Uniquely Vulnerable to the Health Impacts of Extreme Heat – Rural Health Information Hub

Rural Interventions – Heat Policy Innovation Hub, Nicholas Institute for Energy, Environment, and Sustainability at Duke University

Sandhills Community Readiness – North Carolina Department of Health and Human Services (NCDHHS) & North Carolina Public Health

Climate and Health Program – North Carolina Department of Health and Human Services (NCDHHS)