Community Data Health Initiative

A STARTER GUIDE FOR MAYORS - ADDRESSING EXTREME HEAT IN YOUR CITIES

THE PROBLEM: Record-breaking temperatures and sustained high-heat days are impacting more cities than ever, with over a third of the U.S. population under a heat warning in July 2024. While extreme heat has widespread effects—disrupting labor, damaging infrastructure, and overwhelming public services—the impact on public health is particularly critical and demands immediate attention. It exacerbates chronic conditions, increases mortality, and strains healthcare systems, especially in densely populated, low-income neighborhoods, Black and Brown communities, and other at-risk groups. As mayors, you're in a unique position to tackle these challenges head-on to keep residents safe and reduce health disparities.

HOW IT IMPACTS OUR CITY:

- **Extreme heat kills.** It is the leading cause of weather-related deaths, despite the fact that most heat-related illnesses and deaths are preventable. Heat also exacerbates cardiovascular and respiratory issues, increases premature and low weight births, and increases healthcare utilization, which then slows responses to non-heat cases.
- **Heat disrupts learning, sleep, and development.** Data show a 1% learning loss for every 1°F beyond optimal temperature. Paired with poor sleep, a critical part of mental and physical development, this can have lifelong opportunity costs and simultaneously increase the risk of health complications like hypertension and diabetes.
- **Heat is associated with increased crime.** It activates the body's stress response system, leading to disruptions in emotional regulation, especially in children. For adults, we see increases in violent crime, conflict, and suicide during heat events.
- **Heat burden is unequal.** It falls on (1) high-risk groups like the elderly, pregnant people, young children, and those with pre-existing conditions, (2) high-exposure groups like outdoor workers, the unhoused, and the prison population, and (3) residents of under-resourced, often historically redlined, low-income Black and Brown communities.
- **Heat strains infrastructure and can require costly repairs.** It can overload electrical grids, cause outages, require trains to be slowed or transit routes to be halted, and cause roads and bridges to expand and buckle. Repairs and delays are incredibly costly, with research out of California estimating $7.7 billion in cumulative costs.
- **Heat disrupts critical services and labor**. It overloads the healthcare system, diverting staff to heat cases. It can also lead to school closures, public transportation delays, and disruptions to outdoor work, social services, and food systems.

WHAT WORKS:

- **Green your city.** Expanding green spaces is one of the most effective ways to mitigate heat. Urban trees can lower temperatures by 2-9°F through shading and evapotranspiration and potentially cut heat-related deaths by up to 33%. Prioritizing historically redlined communities can also enhance equity and address disparities.
- **Build shade structures.** Shade structures can lower temperatures by 11-19°F and are especially effective when combined with other cooling measures like green infrastructure. Installing them in public areas or along school routes provides vital relief from extreme heat and aligns with the new national measures on heat mitigation.
- **Enhance urban design for cooling.** Urban planning can significantly reduce heat retention in cities. For example, orienting buildings to capture airflow and using green corridors to connect urban spaces can reduce local temperatures by up to 7°F. Water features, such as those used in Boston's

City Hall Plaza renovation, have also been shown to create cooling microclimates, reducing surrounding temperatures.

- **Use reflective & cooling surfaces.** Cool roof coatings can decrease building surface temperatures by up to 50°F, reducing energy costs by 10-15%. Cool pavements lower surface temperatures by 10-20°F, helping to mitigate urban heat island effects.
- **Invest in blue-green infrastructure (BGI).** Water features like fountains, ponds, and misting stations can reduce ambient temperatures by 2-9°F through evaporative cooling. BGI uses a range of nature-based solutions for climate change adaptation. Installing solar panels onto blue-green roofs can help offset grid overloads.
- **Promote the use of permeable surfaces.** Permeable pavements and green roofs reduce surface temperatures by 5-7°F. When combined with vegetation, these surfaces amplify cooling effects and manage stormwater efficiently.

WHERE TO BEGIN:

1. **Appoint a lead and build a cross-agency team.** Heat response requires coordinated action across departments like emergency response, health, sustainability, planning, transportation, and parks. A designated point person can drive the vision, secure funding, and unify stakeholders—whether through a distinct Heat Officer role, as in Miami, or part of an existing role in one department, like a Sustainability Director.
2. **Develop a comprehensive plan combining emergency response and long-term mitigation.** These strategies work together, with emergency responses—like enhanced health services, wellness checks, and cooling centers—addressing acute heat events while long-term efforts, discussed in "WHAT WORKS," reduce heat exposure over time.
3. **Map the heat and identify hotspots.** Spatial data can visualize areas with the highest heat burden, sensitive populations, and available resources, helping to inform targeted investments and communications. Additionally, mapping how heat intersects with conditions like air pollution provides insight into cumulative impacts.
4. **Put protections in place for sensitive populations.** This can take the form of regulations like rest and hydration standards for outdoor workers, investments like financial support for residential cooling, or partnerships with community groups like those that conduct wellness checks for isolated and at-risk groups.
5. **Educate the public and city staff.** It is important to communicate the risks of exposure and available assistance. For the public, this can include running awareness campaigns, sharing heat safety toolkits, and training healthcare workers to communicate directly with residents. For internal staff, awareness can help build buy-in for this work and motivate integration of heat with other climate and urban planning initiatives.
6. **Incentivize sustainable investments and lead by example.** For example, offer expedited permits for green building projects and incentives for businesses to make energy efficient upgrades or add green infrastructure. It is also a powerful statement, and most feasible, to start by making city buildings and public spaces heat resilient.
7. **Pursue funds for capital investments.** Many of these strategies require capital investments, including shade structures, cool roofs, green spaces, or new traffic routes. These projects qualify for numerous federal funds, including stimulus and BIL funds.

LEARN MORE: See what the CDHI team learned from cities addressing extreme heat on our website and in our paper, Cooling Urban Heat, that details city-level strategies to mitigate impacts on communities. Other valuable resources to explore include NIHHIS, EPA, and Harvard's Center on the Developing Child.