



Heat Wave Vulnerability and Preparation in Oklahoma City

Lara McLellan, Heather Basara Ph.D., and Jessica Blanchard

University of Oklahoma Department of Geography and Environmental Sustainability



Background

The highest percentages of human mortalities from weather-related incidents arise from heat waves. The frequency of extreme heat wave occurrences has increased since the end of the 20th century and is expected to continue increasing in severity and duration. In many cities, even those with implemented weather warning plans, certain demographics such as the elderly remain highly vulnerable to heat-related illness. By identifying these particularly vulnerable populations, policy can be enacted in order to reduce mortality rates during extreme heat events.

Objective

The purpose of this study is to identify public officials' responses to constituent concerns about heat waves and drought, and to assess the preparedness of Oklahoma City public officials in a heat wave and severe drought situation

Research Process

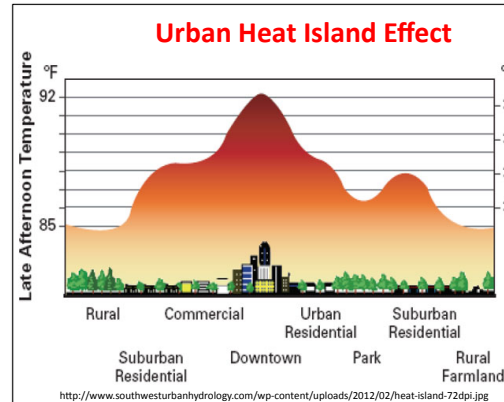
1. Identifying and reviewing existing policies which guide current heat and drought responsiveness.
2. Developing questions to verbally ask public officials about the ways in which they respond to constituent concerns about heat waves, particularly in the context of the summer of 2011 heat wave and drought. Questions will also be designed to assess the relationship between existing policies and perceived effectiveness of those policies during heat and drought situations, specifically summer of 2011.
3. Conducting the interviews with public officials. Appointments will be made and oral interviews conducted asking each public official the same questions.
4. Analyzing the responses to help determine whether current policies are effective in dealing with responsiveness to severe heat and drought cycles.

Conclusions

In OKC, there are not policies regarding heat waves in effect that all public offices and emergency response teams have to follow; there are only response procedures that have been implemented by certain offices such as the fire department, and these procedures are subject to constant modification. Public offices such as the city council do not necessarily communicate with emergency response teams or have much contact with constituents in terms of hearing their heat wave concerns or reducing their vulnerability to these events.

Populations with lower socioeconomic status are impacted most heavily by heat wave events. There are current heat wave response procedures in place, but they do not necessarily address all population groups equally, nor are all departments aware of each other's procedures. Discrepancies exist between public offices and local responders in terms of how heat wave procedures are implemented and followed.

Understanding how local responders and public officials implement procedures and perceive environmental risks is important for protection of vulnerable populations. Communication should be facilitated between public officials and local responders in order to maintain efficient responses to a heat wave situation. Certain districts within a city, and therefore different public officials, can have varying perspectives on the term "vulnerability" and how their constituents are affected by heat waves.

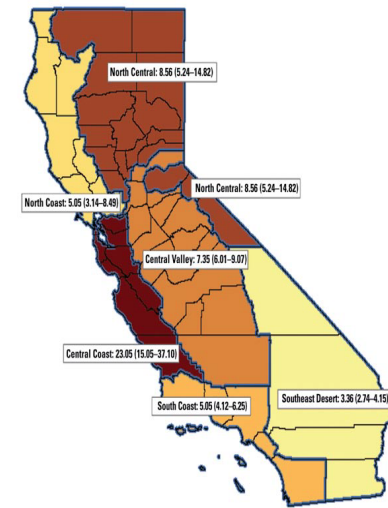


Vulnerability was defined differently by public officials depending on the geography of their districts and how urbanized the districts are. A city council member whose district is composed mainly of urban development views vulnerability to heat wave as depending on factors such as level of poverty, age, and lack of access to air conditioning, while a city council member whose district consists of farmland views vulnerability to heat waves as the potential for wild fires or severe drought destroying crops or forestland. This diagram illustrates why people living in urban areas would be more susceptible to heat-specific illness and hospitalizations, while a rural farmer would be less concerned about health vulnerability and more concerned about consequences resulting from the negative impact a heat wave could have on crops.

Sample Interview Questions

- "Does extreme weather policy exist in your department?"
- "How do you view the effectiveness or limitations of current severe weather responses?"
- "Do you think the current response standards prepare all segments of the population equally?"
- "Do you think there need to be changes to the current procedures?"
- "Were there specific areas of OKC or specific groups of the population that seemed more heavily impacted by heat wave issues?"
- "Are you aware of specific geographic areas within your district that would be more likely to be affected by extreme weather events?"
- "Does your office have any special outreach programs for groups of the population that could be classified as vulnerable?"

Case study: Emergency department visits for heat-related causes during CA 2006 heat wave



Knowlton, Kim, Miriam Rotkin-Ellman, Galatea King, Helene G. Margolis, Daniel Smith, Gina Solomon, Roger Trent, and Paul English. 2008. "The 2006 California Heat Wave: Impacts on Hospitalizations and Emergency Department Visits." *Environmental Health Perspectives* 117.1

This diagram represents a direct correlation between an increase in temperature and an increase in heat-related hospitalizations and emergency department visits.