

Assessing Cooling Shelter Accessibility and Equity: A Case Study of Arizona's Heat Vulnerability

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ABSTRACT:

Extreme heat events pose significant risks to public health, especially among vulnerable populations in urban areas. Research projections indicate that global temperatures might enter a more intense thermal phase caused by unprecedented global climate stress. To address the challenges posed by this natural disaster, local governments have invested significantly in strategic policies, emergency response plans, and hazard mitigation. Cities are prioritizing the establishment of cooling shelters in this context.

These shelters offer respite during peak heat periods, especially for those who may not have personal access to air conditioning. A notable observation in the study period from 2017 to 2020 indicated that, out of the top 100 most populated cities in the U.S. The effectiveness of cooling shelters is highly contingent upon their strategic placement in relation to the populations they are intended to assist. If the locations of these cooling shelters are not meticulously chosen for the specific needs of at-risk populations, their core purpose of providing relief may remain unfulfilled.

This study seeks to evaluate the accessibility and equitable distribution of cooling shelters, focusing on Phoenix, Arizona, as a case study. A heat vulnerability index, based on socio-economic characteristics, is computed at the census block group level. Additionally, the NWS heat risk index is incorporated to identify higher-risk areas. By assessing the efficiency and equity of cooling shelter accessibility, this research aims to shed light on their effectiveness in mitigating heat-related risks and the necessity of equitable distribution to fulfill their fundamental purpose.

KEYWORDS: *climate change, heatwave, heat vulnerability, accessibility, equity*

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