Community Perceptions of Extreme Heat in Maricopa County

Decision Center for a Desert City
Arizona State University

Jessie Davidson – Nature's Cooling Systems Intern
Maggie Messerschmidt – The Nature Conservancy
Eleanor Rauh – Graduate Student Mentor

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NATURE'S COOLING SYSTEMS PROJECT

Project Background and Overview

Metro Phoenix averages 110 days a year with temperatures over 100 degrees F with summers continuing to get longer and hotter. Rising temperatures are amplified by urban heat islands (UHI) and put residents of the Valley are at increased risk of heat stress. However, small changes in the design and structure of a neighborhood can greatly reduce the causes of UHI (Fig. 1) and increase thermal comfort. Through their Nature's Cooling Systems Project The Nature Conservancy (TNC) is working with partners in 3 neighborhoods (Fig. 2) in Phoenix and Mesa to find solutions with residents to create a healthier environment for hot areas across the Valley and to incorporate those strategies into regional planning efforts.

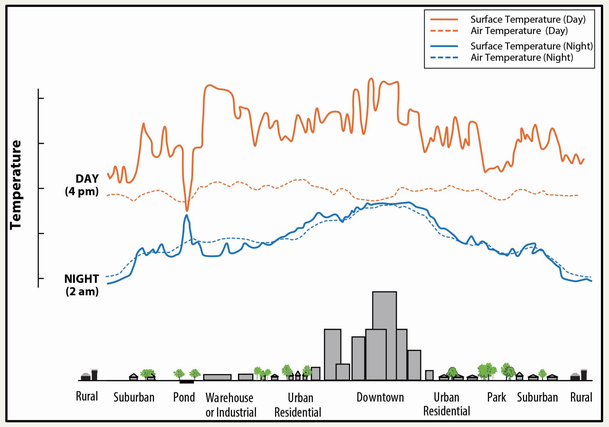
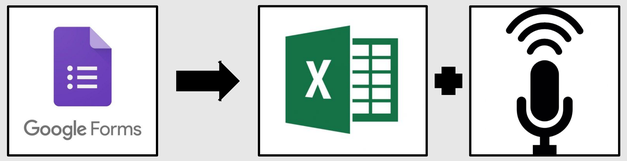


Figure 1. Temperature differences for various landscapes in an urban heat island[1]

Methods of Data Gathering and Analysis



Google Forms: Distribution of extreme heat & heat relief survey
Excel: Compilation and analysis of data
Audio Recording: Collection of first-person accounts of life in UHI

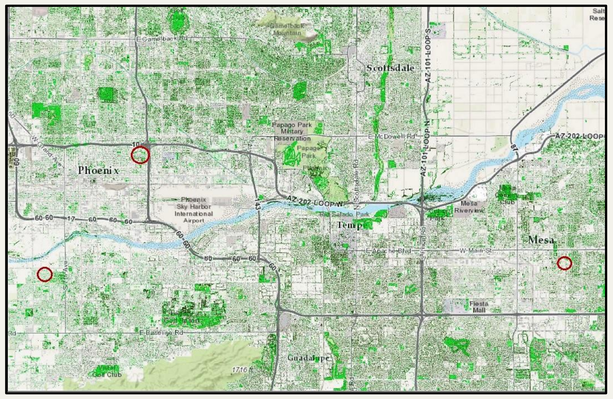
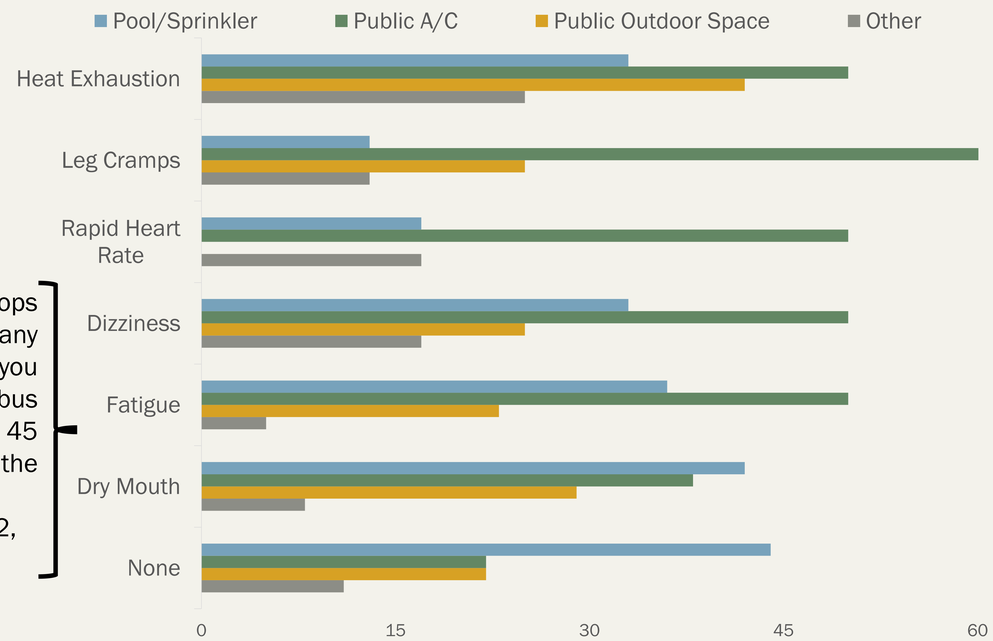


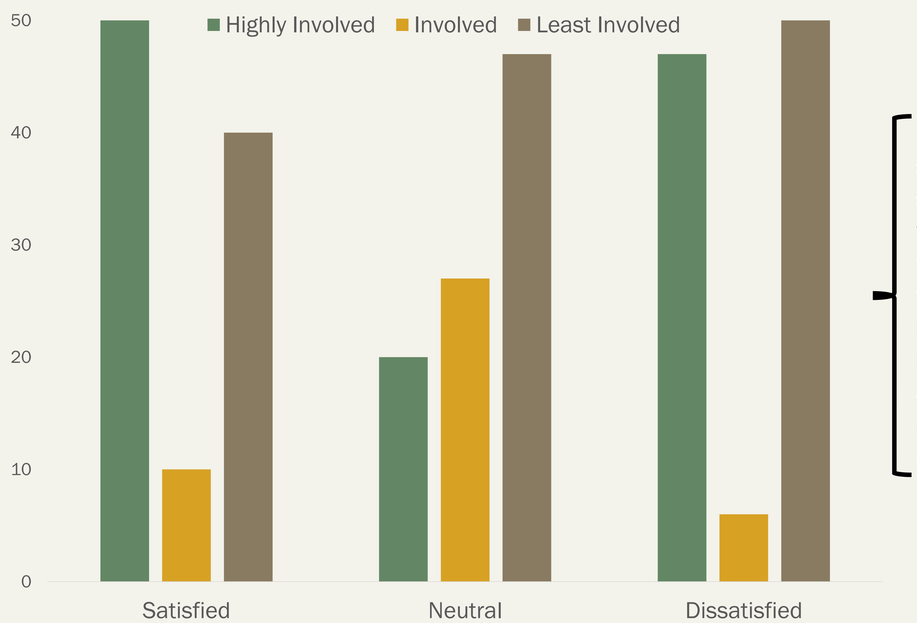
Figure 2. Map of Nature's Cooling System target neighborhoods[2]

How do residents' perceptions and experiences with extreme heat in their neighborhoods influence their involvement in community efforts to improve heat mitigation infrastructure where they live?



"The bus stops don't have any shade. If you miss the bus that's like 45 minutes in the hot sun."
- Mother of 2, Mesa

Figure 3. Percentage of people who had access to heat relief resources that have experienced heat-related illness in the past year



"Personally I wanna see more water and shade. Like, some of these shop owners won't even give you water because of the kinds of people that hang around here and that makes it really hard to go out."
- Resident, Mesa

Figure 4. Participants' satisfaction with current heat relief infrastructure in their neighborhood and categories of improvement efforts they would participate in (%)

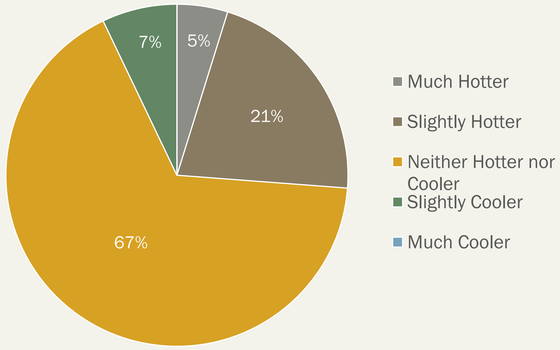


Figure 5. Residents' perceptions of heat in their neighborhood as compared to other neighborhoods in Metro Phoenix.

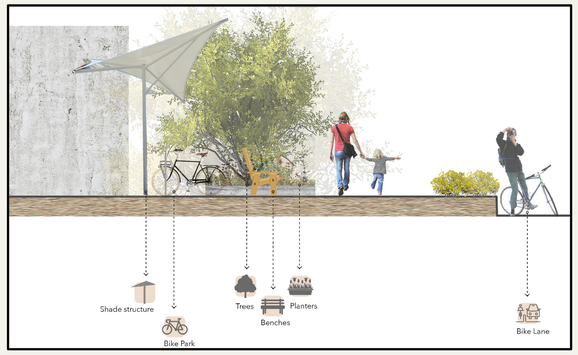


Figure 6. Urban streetscape concept that addresses causes of UHI[3]

Key Findings and Areas of Future Study

1) While all respondents had access to some form of heat-relief only 21% reported no heat-related illness in the summer of 2017 (Fig. 3).
2) Most participants thought their neighborhood was neither hotter nor cooler than other areas of Phoenix (Fig. 5).
3) Residents with a neutral attitude towards heat relief efforts in their neighborhoods were the least likely to get involved with community improvement efforts (Fig. 4).

Future study should include a wider range of demographics. Most participants were white, politically active, full-time students, and those most affected by UHI are citizens with high socio-economic risk. That demographic only constitutes ~30% of respondents. Additionally understanding why neutral parties are unmotivated to participate in community improvement efforts will help organizations like TNC structure campaign efforts and outreach programs to appeal to these hard-to-reach residents.

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