OPPORTUNITY #2: PHOENIX, AZ

TITLE AND NAMES OF SUPERVISORS:

“The relationship of urban design and microclimate in influencing heat perception and behavior to mitigate outdoor heat exposure in Edison Eastlake Neighborhood”

Primary Supervisors: Dr. Charles Redman and Yuliya Dzyuban

ABSTRACT:

This project is a continuation of the work that started in summer 2017 on the exploration of the effects of urban design and microclimate on the perception of heat of public transit riders. In summer 2018 a more detailed exploration will be conducted in the Edison Eastlake Neighborhood on the effects of urban design and public transit access on heat perception and behavior of pedestrians. Edison-Eastlake community in North East Phoenix was awarded Choice Neighborhoods Planning and Action Grant from the U.S. Department of Housing and Urban Development and will undergo major renovation of housing, neighborhood revitalization and support services for residents (Choice Neighborhoods, 2017). Edison Eastlake Neighborhood is a good case study for pedestrian thermal comfort and heat perception, since 40% of residents do not have access to a private vehicle comparing to 9% citywide (Eastlake-Garfield Health Assessment Report, 2015), which means there is a higher percentage of pedestrians and public transit users in the neighborhood that may be exposed to summer heat. This research proposal aims to examine the relationships between urban form, public transit access and sensory experiences that can impact pedestrian’s behavior and perception of heat. The following research questions will be explored:

• How different architectural and natural forms perform for perceived and actual cooling?
• Does perception of space pleasantness influence perception of thermal comfort?
• Are pedestrians willing to change their way to feel cooler?
• Do pedestrians use the coolest routes and spaces available?
• Does quality of urban design affect wellbeing?
• Results of this study will inform planning and design decisions for the neighborhood renovation and for future projects of similar nature.

RELEVANCE TO UREx SRN MISSION, OBJECTIVES, AND RESEARCH:

In summer 2017 Phoenix faced the hottest day in 112 years of 118 °F and five consecutive days above 110 °F (Weather History for KPHX, 2017). Extreme heat events are expected to occur more often and for longer periods in the Southwest (Garfin, 2013). Heat and extreme heat waves are among major themes for UREx SRN network cities. In Phoenix specifically several scenario themes are structures around building resilience to heat. Built infrastructure is a major part of urban environment which drives changes in microclimate
and affects human comfort. Proposed research will explore the effects of urban form on pedestrian perception of heat in Edison Eastlake Neighborhood. This study is a part of a Cooler Phoenix Initiative under UREx SRN aimed to develop heat mitigation plan for the city of Phoenix. Results of this research will provide insights for planning offices on how to optimize design of outdoor spaces to mitigate the effects of heat on pedestrians.

**REU’S RESPONSIBILITIES AND SKILLS TO BE ACQUIRED:**

The REU will acquire a diverse set of skills in conducting field research, geospatial analysis, quantitative and qualitative analysis of collected field data, and will deepen the knowledge of ethnography, behavioral psychology and urban design.

REU Responsibilities:

- Assisting with participant recruiting in Edison Eastlake Neighborhood
- Micro climate measurements using multiple devices (Kestrels, micro-climate cart, infrared thermometers etc.)
- Surveys, observations and interviews of pedestrians in Edison Eastlake Neighborhood
- Data coding and analysis

**BIBLIOGRAPHY**


