Determinants of IET in the Greater Phoenix Area
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Problem Statement & Research Context
Climate change and urbanization exacerbate the risk of heat related illness because of increasing temperatures globally and through the urban heat island effect (Frumkin et al. 2014, Harlan et al. 2006). Heat-related deaths have been observed and recorded on all of the populated continents (Harlan et al. 2014). As a matter of prevention, we need to understand if and how heat affects people differently so as to develop more specialized interventions. The effect of heat on health outcomes vary on levels from individual to community and depends on factors such as physiology, demographics, and the built environment (Kovats and Hajat 2003). Neighborhood is often used to represent many factors such as the ones mentioned above and assess heat health vulnerability (Harlan et al. 2006). However there is sometimes heterogeneity within neighborhoods due to individual differences (Kuras et al. 2015). This study investigated which characteristics related to average daytime IETs; those partaking in outdoor work have an association with IETs (Kuras et al. 2015). This study investigated which characteristics related to average daytime IETs; those partaking in outdoor work have an association with IETs (Kuras et al. 2015). This study investigated which characteristics related to average daytime IETs; those partaking in outdoor work have an association with IETs (Kuras et al. 2015).

Results & Discussion
With an alpha level of 0.05, four different attributes appeared to have an association with IETs:
• Nighttime thermostat settings were found to be positively associated with average nighttime IETs; those partaking in outdoor work or exercise recorded the highest values.
• Thermostat setting (both daytime and nighttime) were positively associated with average nighttime IETs. The relationship was stronger for nighttime thermostat settings.
• No other statistically significant relationships were found for individual-level attributes.
• Home thermostat setting is likely related to a combination of socioeconomic status and individual preferences; future efforts will test for interactive effects of these and other variables.
• Daytime IETs appeared to be affected the most by daytime activities such as physical activity and occupation. It is therefore possible that certain lifestyles are more likely to lead to an individual experiencing higher temperatures.
• Measurement of IETs provides quantitative evidence of differential heat exposure for certain attributes

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Methods
80 Participants were recruited from five Phoenix area neighborhoods in September 2014. Participants were given an air temperature sensor to wear for a week that recorded their IETs. In addition, participants filled out background surveys, daily logs, and activity logs. Occupations were categorized into indoor or outdoor and reported home thermostat temperatures were separated into day and night. ANOVA was used to test for differences in IETs across personal attributes gleaned from surveys.

Bibliography

Table 1: Descriptive Statistics for IET and Background Survey Attributes.

Figure 1-3. Distribution of Individually Experienced Temperatures during all hours, daytime hours, and nighttime hours.

Figure 4-7. Relationships between IETs and four statistically significant individual-level attributes (identified in main table).