Darren Ruddell 1 and Sharon Harlan 2. Phoenix as a Human Habitat in Summer: Exposure and Resources to Cope with Extreme Heat
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Exposure to excessively warm weather is a global threat to human health and well-being, according to assessments of major impact studies on climate change. Extreme summer heat events increasingly cause illness and death in cities that are climatically diverse. As rapid urban development continues, the impacts of temperature extremes on human health and comfort are also expected to increase as threshold temperatures of human tolerance are crossed more frequently and for longer periods of time. Phoenix is an ideal setting for studying human vulnerability to high temperatures. It has a naturally warm climate and over the past 50 years, the average daily temperature has increased by more than 3^{o} C. The Center for Disease Control recently reported that Arizona led the nation in heat-related deaths from 1993 – 2002. A study of the 2001 Phoenix Area Social Survey (PASS) neighborhoods used a temperature/dew point logger system and a human comfort simulation model to estimate spatial variability in summer temperature and human thermal comfort in Phoenix. Findings showed that predominantly lower socioeconomic and minority neighborhoods were warmer, exposed to greater heat stress, and had fewer social and material resources to cope with extreme heat. Using data from the 2006 PASS, this poster will continue this line of inquiry, analyzing respondents' perceptions of and experiences with summer weather in Phoenix. Variation across key social and geographic characteristics will be examined, including typical outdoor activities in the summer, self-reported maximum tolerable temperature, heat-related symptoms and illnesses, and access to resources for coping with high temperatures.

Exposure and Resources to Cope with Extreme Heat: Phoenix as a Human Habitat in Summer

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Extreme Heat as a Human Danger

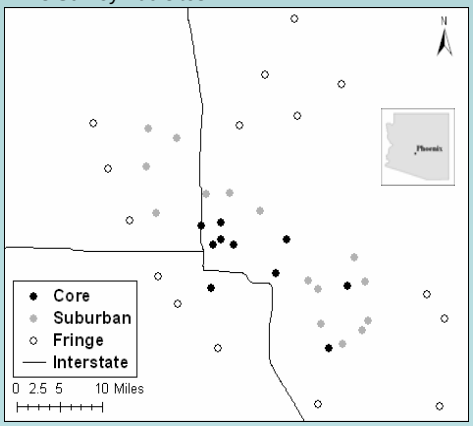
Exposure to excessively warm weather is a global threat to human health and well-being. As rapid urban development continues, the impacts of temperature extremes on human health and comfort are also expected to increase as threshold temperatures of human tolerance are crossed more frequently and for longer periods of time.

Exposure and Resources: Ethnic Trends in Phoenix, AZ

Analyses from eight neighborhoods in the 2001 Phoenix Area Social Survey (PASS) showed that lower socioeconomic and minority neighborhoods were warmer, exposed to greater heat stress, and residents had fewer social and material resources to cope with extreme heat. Using data from PASS 2006, this poster continues this line of inquiry by analyzing perceptions of and experiences with summer weather in Phoenix. Variation across key social and geographic characteristics reveal significant differences among Anglo and Latino respondents. Latinos report greater exposure to heat as well as possessing fewer resources for coping with high temperatures. Respondent demographics include: Ethnicity: 73% White, 19% Latino, 8% Other; Household Income: 36% of households earn <$40K, 29% between $40K and $80K, 36% >$80K; Gender: 56.3% of respondents were female, 43.8 male.

Study Area: PASS 2006 Neighborhoods

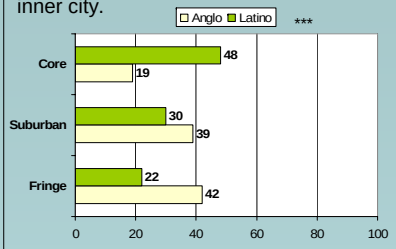
This study surveyed 806 Phoenix residents in 40 neighborhoods located at CAP LTER's Survey 200 sites.



Core neighborhoods are within 5 miles of downtown Phoenix or within 1.5 miles of the 7 other large-city downtowns. Fringe neighborhoods are in urban growth areas developed in 2000-2005 (MAG Regional Report, 2005, Map U-1). Suburban neighborhoods are all others.

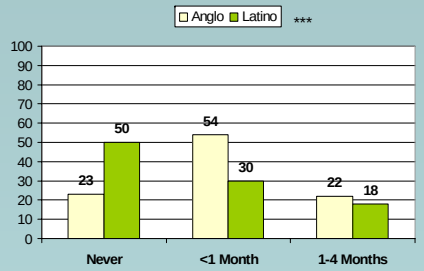
Exposure to High Temperatures, Summer 2005

Human exposure to high temperatures varies widely in the Valley depending on location (Harlan et al. 2006). Neighborhoods on the urban fringe near agricultural or desert lands are likely to be cooler than neighborhoods in the inner city.



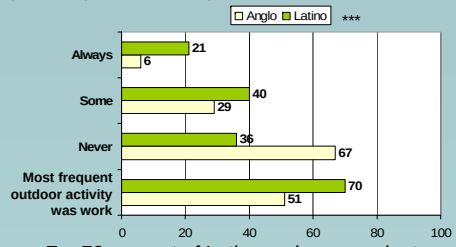
More Latino PASS respondents live in the urban core while a greater percentage of Anglos live on the fringe.

Anglo PASS respondents spent more time away from the Valley in the Summer of 2005. Among the Anglo respondents, 23 percent never left the Valley in contrast to 50 percent of Latino respondents who remained in the Valley for the entire summer.



Chi-Square Test (2-sided): *p<.10; **p<.05; ***p<.01.

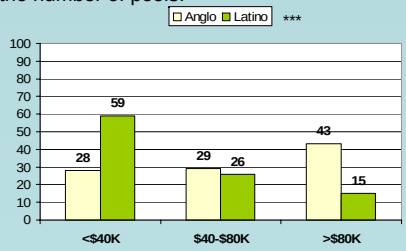
Among male respondents, Latino men reported spending more time working outdoors in the Summer of 2005. 67 percent of Anglos reported never working outside in comparison to 36 percent for Latinos.



For 70 percent of Latino male respondents, work (either a job or yard work around the house) was their most frequent outdoor activity.

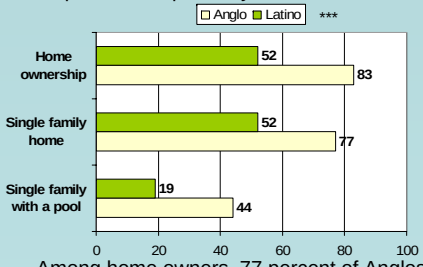
Resources to Cope with Heat

A variety of mechanisms are available for coping with extreme summer outdoor temperatures. For example, Phoenix residents rely on cooling indoor temperatures with resources like air conditioning, vegetation, fans, and pools where Phoenix ranks 3rd nationally for the number of pools.



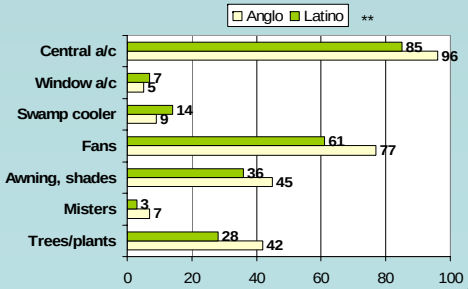
Household income among PASS respondents reveals significant variation along ethnic lines.

Residents who own their own home and live in single family residences have greater control over their indoor environments. Anglos report a much higher percentage of home ownership than Latinos, 83 percent to 52 percent, respectively.



Among home owners, 77 percent of Anglos own a single family home; 44 percent of Anglo homes are equipped with a pool.

A greater percentage of Anglos use central air conditioning, fans, awnings/shades, misters, and trees to combat high temperatures while slightly more Latinos than Anglos rely on window air conditioning units and swamp coolers.



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Acknowledgement

This material is based upon work supported by the National Science Foundation under Grant No. SES-0345945 Decision Center for a Desert City (DCDC). Any opinions, findings and conclusions or recommendation expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation (NSF).

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