

# POWER RANCH LIVING

The official magazine of the Power Ranch Community in Gilbert, Arizona

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# ASU researchers study heat in Power Ranch

By Evan Kuras, ASU Researcher

They say the grass is always greener on the other side, but does that mean the grass *over there* is cooler as well? In Arizona, where extreme heat is as much a feature of the landscape as saguaros and solar panels, the greenness and coolness of urban spaces impact our health, our happiness, and the amount of money we spend on air conditioning.

This past September, a team of researchers from Arizona State University began a project to ask a question very similar to “Is the grass always cooler on the other side?”

Normally, when researchers, planners, and policy makers are interested in investigating the distribution of hot places across the city, they rely on satellite imagery and stationary sensors (like thermometers at airports and atop buildings).

Through these sources, we have good measurements of how hot different places are, but what does that mean for the people who live there? For example, we know that places with more vegetation have lower temperatures – the plants provide a local cooling effect through shade and evapotranspiration (like sweating for plants).

Does that mean residents of greener neighborhoods actually experience lower temperatures as they go about their daily lives? And do residents of hotter, desert neighborhoods experience overall hotter temperatures?

That is exactly the question the ASU team wanted to answer. However, it turned out that measuring the temperatures people actually experience is a rather difficult task, especially without a lot of help.

The two lead researchers at ASU, Evan Kuras (supported by the Central Arizona-Phoenix Long Term Ecological Research Program) and David Hondula (supported by the Center for Policy Informatics), put out a call for undergraduate students to become involved with the project.

Eight student researchers joined the team to receive academic credit and gain skills in field research and data analysis. Dubbing themselves the Individually Experienced Temperature (IET) Lab at ASU, the team split up among five different Phoenix-area neighborhoods that provided interesting contrasts in vegetative cover, architecture, geography, socioeconomics, and history.



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The goal was to find residents within each neighborhood that would be interested in carrying around a small temperature sensor for a one-week period.

After many emails, phone calls, and on-the-street encounters, the research team recruited 80 participants, including 19 from Power Ranch. Large and small informational meetings with interested residents were organized at the Club House, in parks, and on the sidewalk, so that potential participants could learn about the study and decide if they wanted to take part.

Participants received their very own temperature sensor for the week, pre-programmed to start recording at 8 p.m. on Saturday, Sept. 13. In addition to carrying around the sensor and providing some contextual background, participants filled out daily surveys about how hot and comfortable they felt each day.

“I’m heading up to Sedona for the weekend, do I take it with me?” “I spend most of my time at home with the AC on, is that a problem?” “Can I swallow the temperature sensor?”

Except for the last question, the team didn’t care what participants did or where they went with the sensor, as long as they lived in the neighborhood. And in all, Power Ranchers did very normal things during the study week, like going to work, attending a concert, bowling, ice skating, getting sick, refereeing sports, and so on. Many left the neighborhood to go various places like Flagstaff and San Diego. And the all the while, the sensors were quietly recording temperature.

The IET Lab collected over 161,000 temperature data points and a lot of survey data and interview audio files! It was so much information that the team spent the month of October and much of November sorting and processing the data. Among Power Ranchers, the coolest participant recorded an average IET of 76.8°F and the warmest 85.8°F. This means that at least one resident of Power Ranch was 9°F warmer than a neighbor on average during the study week. The IET Lab is just starting to see some interesting patterns between neighborhoods, but it is too early in the analysis to say anything conclusive yet. You’ll just have to tune into the next issue for an update to the IET project. Until next time, stay cool!