Researching research: An undergraduate’s perspective on research, data collection, and the Watt’s experience.

Students Researchers
Karla Fuentes
Graciela Gomez Cruz
Ivie Herrera
Shay Parker
Marisleysis Topete
Michelle Tovar

Faculty Advisors
Alyssa Chamberlain
Danielle Wallace
Neighborhood disorder (the visual cues in a neighborhood that attunes you to safety) is notoriously hard and costly to measure. The gold standard of disorder measurement is systematic social observation (SSO) which involves borrowing the detailed and replicable methods of surveys and using them for direct field observations in the neighborhood.

Researchers are constantly looking for alternative ways of measuring disorder, particularly using Google Street View as a proxy for standing in the neighborhood; yet the imagery used is both inferior and infrequently captured.

In this project, we seek a middle ground, where higher quality, direct observations are being made of the neighborhood through unmanned aerial systems (UAV; aka, drones), which make less intensive demands on researchers’ time and presence.

We collected three different types of data and seek to compare their efficacy in identifying neighborhood disorder in the Sunnyslope neighborhood of Phoenix:

1. UAV Imagery and Coding
2. Google Street View Imagery and Coding
3. In person, Systematic Social Observations and Coding

Finally, we examine individuals’ perceptions of UAVs through surveys.
Target Neighborhood
The Work of Undergraduate Researchers

Using checklists of information to be gathered in the neighborhood, students have:

- Collected SSO data in-person in Sunnyslope over 4 time points in a semester
- Examined UAV Imagery of each timepoint and coded it
- Examined Google Street View Imagery and coded it
- Engaged in interrater reliability tests
- Entered data
Current Study

After 2 years, all data collection and coding is over and Drs. Chamberlain and Wallace are turning to data analysis. The vast majority of students on the project are graduating or heading into our 4+1 program.

In this presentation, we summarize our two year experience on an intensive data collection effort with a large group of researchers. We discuss who we are, what we did, what we learned, and how the UGRP has benefited us, and finally, our future plans.
Who We Are and Ways We Participated

How many years have you been at ASU? Average of 3 years
Are you a transfer student? 25% of student researchers in our group are transfer students.
About how many semesters were you involved in the project? 5 semester average
How did you become involved in the project? (Note: does not add to 100% given that students changed how they participated across semesters)
  Received the Undergraduate Research Program Stipend 100%
  Took for class credit 50%
  Took as an internship 0%
How did you become involved in the project?
  Professor Wallace mentioned the project during the class she was teaching: 87.5%
  Professor Wallace visited a different class to recruit undergraduate researchers: 12.5%
The Research Tasks & Student Learning

What ways did you engage with this project? (Note: does not add to 100% given that students changed how they participated across semesters)

- In-person coding in Sunnyslope **37.5%**
- Entering data from the in-person coding **62.5%**
- Coding drone photography **100%**
- Coding Google street view **100%**

Other: Participation varied, as some students participated in all ways.
The Research Tasks & Student Learning

What did you learn about data collection? 100% of students learned something about data collection

“I learned that we need to be really vigilant and detail oriented, as every little detail matters.”

What did you learn about data cleaning? 100% of students learned something about data cleaning

“I learned that data revision is important so that the study can have proper results and reach appropriate conclusions.”

What did you learn about neighborhood disorder by participating in this project? 100% of students learned something about neighborhood disorder from their participation in the project

“I learned that neighborhood disorder can be in different areas, meaning public or private areas like parks or homes. It also affects the residents if they feel their area isn’t taken care of by the city.”
Our opinion on measurement

Which way of measuring disorder -- in person, via the drone, via Google Street View -- do you feel gave us the most accurate data?

- In person: 50% across all interviews
- UAV Imagery: 50% across all interviews
- Google Street View: .25% across all interviews

Why?
- Drone: “... the drone gave us the view as an eye in the sky” (R8)
- In-person: “... you can physically look at the neighborhood so it gives you real insight” (R6)

Which way of measuring disorder -- in person, via the drone, via Google Street View -- do you feel gave us the least accurate data?

- In person: 0.125% across all interviews
- UAV Imagery: .25% across all interviews
- Google Street View: .625% across all interviews

Why?
- Google street view: “Outdated and may have been altered,” (R4) “data was out-of-date and blurred out” (R1)
- In person: “... could not spend much time looking in one parcel without having neighbors inquiry and worry” (R5)
Overall, did you enjoy working on this project? 100% of interviewees answered Yes. Some outlined why the opportunity was beneficial and 2 people said it helped them familiarize themselves with research and data. The following is a quote from interviews: “Yes, it was different than being in the classroom. You build personal relationships with faculty and fellow peers. Plus, we were able to work on our time.”

What made you sign up for this research project? The majority of the interviewees mentioned finding interest and curiosity after learning about the project. Several mentioned feeling motivated by Professor Wallace and her passion for this research. A few mentioned wanting to be involved and one person mentioned “feeling disconnected from campus” prior to participating.

What was the least enjoyable thing you did on the project? 63% of interviewees stated that entering and verifying data was the least-enjoyable thing they did on this project. More than one person mentioned it being “time-consuming” and “confusing”. The reason for this could be the learning curve experienced them attempting to access software and data remotely due to COVID-19.

Has your perception of the research process or research in general changed through your participation in this project? If so, how? 75% of interviewees answered yes as they were surprised by how time-consuming data entry was. The process was longer and more fluid than expected and thus led us to several conclusions. One person mentioned gaining “more appreciated for research and how it comes together”. Another enjoyed working “behind-the-scenes” on research before it is published.
Outside of course credit or the URP stipend, what do you plan to use your experience on this project for (e.g. letter of recommendation, graduate school)? 5 out of 8 interviewees mentioned possibly inquiring for a letter of recommendation from Faculty Advisors. Half of the interviewees also spoke briefly on building their resume for grad school or jobs. One person touched on how “these skills may benefit them later during their studies.”

Are there non-tangible ways that you think you’ll benefit from participating in the project (e.g. consider graduate school, helping you decide on your future occupation)? While responses varied for this question, we discovered a common theme. Interviewees were able to familiarize themselves and better understand the research process while becoming more aware of their surroundings and environment. For a few, it helped them determine whether or not they would seek a future occupation that requires data analysis. One person learned the importance of seeking help in order to “produce the best quality data.”

Has participating in this project helped to shape or change your future plans? For a few of the interviewees, participating in this project furthered their interests in Criminal Justice and allowed them to create a sense of belonging in this field, confirming that their future plans align with serving their community. One person even “obtained a job at ASU doing abstract coding.”
Summary

The purpose of this entire research has been to collect information on the sunnyslope neighborhood area. The way neighborhoods are kept up and measuring the percentage of disorder that can be seen and recorded. Not only has this research been beneficial for understanding the quality of living in this area but also help understand why the developments are occurring. During the process, our team was able to gain experience in research and data analysis. We also found that the best way to measure information was by using three different methods, those being UAV imagery, in person observations, and google street view. The methods that gave researchers the best results were UAV images and in person observations because more details were able to be seen. This allowed much more accurate information to be inputted. This project has also helped the team acquire skill sets needed for the future.