PROJECT PROPOSAL EXAMPLES

The examples provided here cannot be used in your project. They are only to showcase the format. Please think of different populations, variables, and goals, ideally something that you are personally interested in.

Examples Of Studies

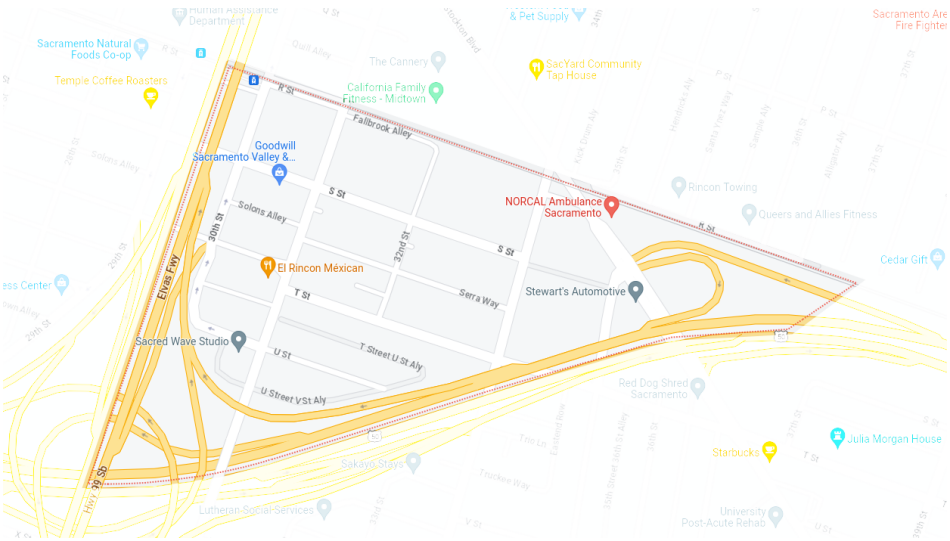
Here are some study goals, and the corresponding populations and variables:

- *Comparing means:* The purpose of this study is to test for a significant difference between the mean girth of an evergreen tree and the mean girth of a deciduous tree in Sacramento.
- *Comparing proportions:* We will attempt to show that the proportion of 2-story houses in East Sacramento is greater than the proportion of 2-story houses in West Sacramento.
- *Testing for correlation:* This is a proposal to test for linear correlation between the length and the width of cars parked in Midtown Sacramento.
- *Testing for independence:* This is a proposal to test for independence between the color and the body type of cars parked in Alhambra Triangle neighborhood.

Test For Correlation Proposal Example

Population. Every 4-wheeled motorized vehicle parked on a public street in the Alhambra Triangle neighborhood of Sacramento will be considered for this study.

Goal. This is a proposal to test for linear correlation between the length and the width of cars parked in Alhambra Triangle neighborhood.



Alhambra Triangle
Map generated by Google

Sampling Method. Since we cannot predict which cars will be parked in the testing area during the sample collecting stage, we will have to use a multi-stage approach, taking a cluster sample of streets in Alhambra triangle, and then taking a systematic sample of parked vehicles on each selected street.

First, we will make a list of all streets in Alhambra Triangle (see the provided map image), and choose a simple random sample of 4 streets.

We will walk down each street once, down the odd-numbered side, during a convenient time, and measure every 6th car parked on that side of the street using the systematic sample technique. To pick the first car to be measured, a fair six-sided die will be rolled.

We will measure the dimensions of a car by laying a measuring tape on the ground about 1 foot away from the car. Two measurements will be taken: the length from bumper to bumper and the width.

The sample size cannot be known in advance, but we expect to sample at least 5 cars on most streets, giving us a good chance of $n > 20$.

Discussion.

(a) Bias is expected due to choosing convenient times for sampling; a better approach would have been to randomize those times.
(b) Bias is expected due to using streets as clusters.
(c) Bias is possible, but unlikely due to the systematic stage.
(d) If all selected streets are very short, our sample size may end up being too small for a meaningful result.
(e) We expect to detect a significant positive correlation, since we expect larger cars to have greater width and length; the body style of a car (sedan, coupe, etc.) may well be the lurking variable in this case.