# PROJECT PROPOSAL FORMAT

For the first part of the project, you will choose which population(s) you want to study and which variable(s) you want to measure. You will also design a random sampling procedure which is realistic and reasonably free of bias. The end result will be a text document that specifies the project goal and description.

## PROJECT GOALS

There are four project goals to choose from. If you want to design your own goals, see the last section part of this document for more details.

**1. Comparing Population Means.** Compare the mean daily time spent on the commute to CRC among the two populations:

(a) CRC students who take in-person classes at the Main Campus
(b) CRC students who take in-person classes at the Elk Grove Center.

**2. Comparing Population Proportions.** Compare two populations:

(a) Elk Grove households East of I-99
(b) Elk Grove households West of I-99

By measuring the household's political preference, with possible responses:

- Democratic
- Republican
- Other/Independent

**3. Testing For Correlation.** Examine the population of small local businesses in Elk Grove. Test for correlation between two numerical variables:

(a) How many employees the business has
(b) When the business was founded

**4. Testing For Independence.** Examine the population of Los Rios District faculty to test for independence between the two categorical variables:

(a) Area of instruction, with responses
    - Arts
    - Counseling
    - Humanities
    - Sciences
    - Vocational
(b) Religious/spiritual belief, with responses
    - monotheist
    - polytheist
    - atheist
    - uncertain/agnostic
    - other

## PROJECT FORMAT

Your proposal should be a text document that specifies the project goal and contains the following two sections:

**Sampling Method.** Describe the sampling frame, if any, you will be using for taking your sample. In general, describe in detail how exactly you will select individuals for measurement: will you be picking random items from a large list? And if so, then how will you make that list? Or will you be measuring convenient individuals at randomly selected times and locations? Recall our discussion of multistage sampling, and identify which sampling techniques you will be using.

Next, imagine yourself performing the data collection, and describe in minute detail what you will do and how. State the intended/expected sample size. The main idea behind this section is to provide a description of a procedure so detailed, that anyone can repeat your experiment just the way you've conducted it. Another reason to be thorough here is to lay bare all the limitations of your chosen sampling technique.

**Discussion.** Provide constructive criticism of your proposal. In other words, enumerate the flaws which are present by design, starting with possible sources of bias in your sampling procedure. Try to anticipate the kind of responses you are likely to get, and explain why your sampling procedure might fail to produce a representative sample. Be thorough and specific.

There is no shame in finding flaws: almost every time you can blame them on either the lack of resources or an ethical dilemma or whatnot. There is, however, a great amount of shame in being willfully blind to the consequences of your own choices. Think of it this way: if you don't point out the built-in flaws now, someone will surely bring them up later in an attempt to discredit your work.

## EXTRA CREDIT FORMAT

If you are willing to go extra mile, consider designing your own project goals. Please be advised this will require additional effort on your part, additional time investment, and, quite likely, working with your instructor during the office hours.

Your challenge will be to design your own project goals. You will identify the population(s) of interest, the variable(s) you will measure, and the ultimate goal of your research.

Your proposal should now include the following two additional sections:

**Population(s).** Give a precise description of the two populations you will compare or the one population which you will examine for detecting a relationship between two variables. Be as specific as possible. For example, "Trees" is far too vague, whereas "All trees 6 feet or taller growing within the borders of the city of Elk Grove" is both specific and precise.

Your main challenge here is to pick a population that is neither too big nor too small. The population should not be so small that you can actually survey it (for example, the population of your personal coffee mugs), but neither should it be so large that you are unable to obtain a representative sample (for example, all people currently living on Earth).

**Goal.** State which population parameters you are trying to compare, or else which variables you are testing for correlation or independence. The goals you can choose from are:

- Comparing population means by measuring one quantitative variable in two independent samples.
- Comparing population proportions by measuring one binary variable in two independent samples.
- Testing for linear correlation between two quantitative variables measured in one sample.
- Testing for independence between two categorical variables measured in one sample.