

Math 138: Statistics

Final Project Stage 1: Project Proposal

For your final project, you should form a group of two or three. (Groups of one or four are not ideal but will also work.) Your group should make an appointment to meet with me before fall break. You should spend time thinking about each of the following issues, and be ready to discuss them in your meeting. You don't have to have all the answers by the time we meet; that's what the meeting is for.

- The topic of your project. Your topic could be a psychological, sociological, or political survey, or a physical, chemical, biological, or geological experiment, or anything else that you can think of relating to your major, sport, club, career goals, hobbies, etc. The most important thing is to choose a topic that is interesting to the members of your group, and ask a question or questions that you'd actually like to know the answer to.
- Your proposed method of choosing your sample and gathering your data. You may gather the data yourself via a survey of Willamette students or an off-campus population; observations of your environment on campus, in your town, or in natural settings; or scientific experiments in or out of a lab; or you may use data other people have already gathered, like from a source on the web. In the latter case, there's probably still work your group will be doing finding an appropriate source of data and cleaning and formatting the data to be useful to you. Make sure you get raw data, not already summarized by someone else, or it won't work for the project.
- Possible sources of bias due to your sampling procedure or your experimental design (or from the source of the data if you didn't gather it yourself). For example, surveys of Willamette students commonly suffer from undercoverage and non-response bias. While it's probably impossible to eliminate all bias, thinking about it in advance will help to reduce it.
- How many cases you can feasibly use in your sample. For some topics, a maximum number of cases is imposed by logistical issues, but if you have too few cases, drawing statistical inferences will be difficult.
- What variables you plan to use in your experiment. While your initial topic idea is likely to have just one or two variables associated to it, if you carry out your experiment with just one or two variables you run the risk of making no conclusions. Think about related questions you can ask that might yield alternate interesting conclusions. Using both quantitative and categorical variables is better, since you get to use different techniques from this course for different types of variables, but not required.
- What potential conclusions you hope to draw. Thinking about your possible conclusions in advance will help you gather your data in a way that will make it easier to analyze once you have gathered it.