

COMMENTS FOR INSTRUCTORS ON M 358K PROJECTS AND PROJECT HANDOUTS

My perspective on projects: I believe that the most important purpose of the project is for students to experience the process of planning and carrying out data collection as well as analysis. (I only recall once approving a project using existing data. That was for a couple of astronomy students who were interested in trying a new statistical analysis technique on some recent astronomical data. Since collecting astronomy data is not within the realm of a student class project, and since they intended to go learn new techniques on their own, I said yes.) I urge you to take the project seriously -- and see that the students do, too. It can be a valuable learning experience, if done appropriately.

Timing:

- I would give the students information about the project and have them start thinking about it as they begin Chapter 12. This should reinforce the ideas of Chapters 12 and 13, which are difficult to test on in any other way.
- About two or three weeks later, I have them turn in a preliminary project proposal, which I critique pretty harshly. Typical problems:
 - The question is worded poorly.
 - The variables are misidentified or misclassified.
 - The proposed sample is nowhere near random or is likely to be biased.

Insist that samples be as close to random as feasible.

Insist that call-backs be used if they do a survey.

- Some groups may decide (indeed, I may counsel some) after getting my comments on their preliminary proposal that their initial project idea isn't a good one. I have these groups turn in an informal preliminary proposal on their new topic for comment (but not a grade) before the final project proposal is due. Occasionally, students may switch topics after the final proposal -- again, I have them turn in an informal proposal for comment. The purpose is to have as good a plan as possible before they collect their data, to try to avoid problems later.
- About three weeks after the preliminary project proposal is due, students turn in a final proposal, which is usually much better than the first. The idea is to be sure they have a good design before collecting their data. However, as you cover the inference topics the students will be using in their projects, they may need to rethink their sample size -- e.g., figure out what sample size is likely to give their desired margin of error and confidence level; be sure the sample size is large enough so that the counts will be large enough to apply the desired tests; etc.
- Emphasize that if something goes wrong in data collection or analysis, the group needs to consult with you and gain approval before changing any plans.

- I have the project report due the last day of class and don't cover new material the last week of class, so students can focus on getting the project completed.
- Throughout, I encourage students to come in to consult about their project. I try not to tell them what to do, but instead to point out possible problems and sometimes make suggestions. Occasionally I will need to alert them to or teach them something that is not in the course. For example, a group may want to use their data to answer more than one question, so I tell them about the problem of multiple testing and show them the Bonferroni technique.

Grading: I suggest counting the preliminary project proposal as 10% of the project grade and the final proposal as 15% of the project grade. You might want to count the preliminary project proposal less.

All told, the project takes about as much instructor time as a midterm exam. This will be spread out between reading the preliminary proposals, reading the final proposals, consulting with students as they carry out their projects, and reading the final proposals. Having the students work in groups cuts down on the instructor time spent.

Handouts included on the website:

Project Description

I would pass this out when I give the first assignment for Chapter 12, assign the handout as reading for the day I start Chapter 13, and spend some class time that day answering questions on the handout and then pass out the Project Proposal Handout (below). You might want to add (under Choosing a question) item 3 reading "It does not duplicate a project done for this class last year," then listing the particular questions that fall in that category.

Project Proposal

I would assign this to be read for the class meeting after I pass it out, then spend some of that next class day answering any questions they have on the assignment and go through items 3 - 5 REVISE? for a couple of the examples on the Project Description. (These are points where many of them mess up in their project proposal.)

The have had the Preliminary Project Proposal is due the class day after the first exam. The idea is that working on the project is one of the best ways to study the material in Chapter 12 and 13.

The same guidelines are used for the Final Project Proposal, due about three weeks after the Preliminary Project Proposal.

Project Proposal Checklist

I use this as a checklist for grading the project proposals. Since not every item applies to each project, I cross out the items that don't apply and determine the grade just based on those that do. (So some project proposals might be graded on the basis of 15 items, others on the basis of 22 items, etc.). I try to make comments that will help groups improve their project.

Project Report

I hand this out shortly after I hand back the final project proposal. The requirement that, in addition to the group report, each group member should hand in, separately, a short description of the role of each member in the work of the project group, and what they (the writer) learned from doing the project, serves two purposes. First, it helps give them the message that I expect everyone to participate. Second, it may give information that prompts me to give different grades to different members of the same group. (This hasn't happened in M358K, but did happen in a couple of instances in M316.)

Project Grading Checklist

This helps me grade projects in a reasonably consistent manner. As with the proposal grading checklists, not all items apply to all projects.