Statistics 36-303: Sampling, Survey and Society
Survey Project Ideas

1 Introduction

In this course you will be expected to make two serious proposals for survey projects, and take one of these to completion. This document is to help you get started.

1.1 How I Will Evaluate Projects

The easiest projects typically will involve an on-campus survey of some of your fellow students, especially a subset who are easily accessible to you. The easiest mode of administration is by e-mail using a web service like surveymonkey.com, but followup and high response rates are often easier to achieve with other modes of data collection (especially interviews and other face-to-face methods), though they may require more time and effort.

In my evaluation of your project work – both proposals and completed projects – there will be a tradeoff between (methodologically sound!) originality and cleverness on the one hand, and thoroughness and difficulty on the other. If you are willing to do a more complex and difficult project this may make up for lack of originality. For example, I will specifically evaluate all proposals for thoroughness, including plans for non-response followup (and prevention). On the other hand, I definitely do give credit for originality and timeliness. Thus a project that is really dull and boring but does hard statistics may not score higher than a project that is easier statistically but involves a clever problem or one of intrinsic scientific, social or policy interest.

1.2 Inferring Causality and Lurking Variables

Sample surveys are good at measuring things as they are (descriptive inference), and only can be used to measure causal effects (causal inference) in very special circumstances. Many questions of interest that are explored using sample surveys nonetheless are related to causal questions. In almost any statistical problem of comparing two or more subpopulations, or where we are studying the “effects” of some variables on others, there will be lurking variables, also known as confounders. These are variables that—if not measured and accounted for in your analysis—will cause a distortion of the results, especially when you are looking at relationships.

Most of you should plan to restrict your inferences to correlation, not causation, and you should think about what variables might influence the outcomes or relationships of interest. If you can measure these you should, but it will often be impossible to do so. All real-life data collection and analyses have limits; it is important that you recognize what they are and own up to them.

1.3 Thoroughness, Creativity and Impact

As suggested above, I will give a subjective evaluation of your proposals, based on two factors: First, is the idea really clever or really of scientific interest, and second, have you done a reasonably thorough job of things? I am hoping that this will induce you to think of a project that is both interesting and leaves scope for some statistical analysis.

For example, if you simply state that you plan to compare GPAs of male and female students, you are being neither creative nor thorough. It is easy to see that there are lurking variables (college and major), and there are also possible relationships with other variables of interest (e.g. SAT scores).
A good rule of thumb for whether your survey is interesting is whether anyone outside this class would pay attention to it. This might be because there is an actual client for the work, or because the work caught the interest of someone after it was completed. For example, the following 36-303 surveys were interesting:

- CMU dining services changed some of its offerings after seeing the results of a 36-303 survey on student satisfaction with food and restaurant choices on campus.
- A 36-303 survey on student attitudes toward introducing +/- grading for undergraduates was written up in the Tartan.
- A 36-303 survey for The Jewish Chronicle (a client) led to changes in the Chronicle’s website and publications.

Not all 36-303 surveys reach this level of impact, but if yours does, it will count positively in my evaluation of your project.

1.4 Other Notes Relating to the Project

- I suggest that you spend approximately 80-90 hours as a team on this project. You may spend more time if you are convinced that the benefits of spending more hours on this project are greater than the costs - for example, extra time spent in creative data collection efforts.

- Keep a diary (e.g. in the form of a lab book or Google Doc), and update it regularly throughout the project (no less than once a week!). Record your expenditures of time and other resources, as well as any notable events that may influence the interpretation of your data or data analyses. Keep track of which team members attend each meeting. You will not turn in this diary, but it will help you keep track of your effort and your team’s effort throughout the semester.

- You will invest a certain amount of time, energy, money and other resources, in doing this project. As is the case with all investments, the amount of return you will receive on this project, both now and later in your career, depends on the amount you invest in it and the risk you take.

2 Some Project Ideas

Here are some topic ideas. Some of these have been used by past 36-303 teams, some have been used in other survey sampling courses, some have never been used.

You are welcome to ignore these ideas and come up with your own (more creative), or use one or more of these ideas as-is or in modified form. Either way, you will have to make a strong case that you would do a thorough and creative job on the topic, and that the survey could have impact outside this class if it is done this semester.

- Surveys that have been or could be conducted using campus email and websites like SurveyMonkey. Because of the large number of groups in this class, I will limit the number of groups that will be able to conduct this type of survey.
  - CMU community smoking habits and attitudes toward smoking
  - Average workload at CMU
– Student attitudes towards plus/minus grading at CMU
– Student attitudes toward PAT bus passes
– What makes Carnegie Mellon students read email?
– CMU student perceptions of academic integrity and old course-materials archives
– Student attitudes toward CMU dining facilities
– Post-Graduation plans of Carnegie Mellon University’s undergraduate class of 2010
– Knowledge and utilization of CMU SafeWalk and Escort Services
– Student perception and utilization of mandatory student fees

• Surveys that have been or could be conducted with other methodologies (not on-campus email/SurveyMonkey surveys).
  – Identify a local business and design and implement a survey of their customers
  – Sample prices of goods (food items, etc.) at nearby stores to see how prices compare at Entropy
  – Sample meals from outlets at the UC to assess their variability or nutritional content
  – Academic departments’ uses of information technology
  – In-class surveys of StuCo students, to assess satisfaction with classes and opinions about StuCo policies
  – Estimate how often smokers violate the “X feet from the door rule” by counting the number of violations during randomlt selected time intervals
  – In-person surveys of freshmen, conducted by sampling on-campus housing units
  – Measure use or visibility of bulletin boards by posting flyers with tear-off strips people could use to enter a contest.
  – Sample job placement records for CMU graduates to find out how their job matches their degree, what they earn, where they go, etc.
  – Sample books in the library to assess various forms and costs of physical damage to books, etc.
  – Measure the danger of an intersection by sampling or designating 30 minute blocks of time over a couple of days, and then counting the number of traffic violations (e.g. bikes running red lights) in each 30 minute block.
  – Measure facility usage by interviewing or observing people who use the facility. Example include
    * Sample building entrances and count the number of smokers who do not stand far enough away from the doors when smoking.
    * How often do students break rules like no food/drinks in the computer clusters?
    * Who eats lunch at the lunch trucks on Margaret Morrison? When are the busiest/slowest times?
    * Who uses the exercise rooms at the UC? When are the busiest/slowest times?