

Homework policies

Homework is due at the beginning of class on the due date. Late homework will not be accepted, with one exception: you may hand in one assignment late (by 12:00 noon on the next school day, not the next class day) once during the semester. If you are planning to hand in a homework late, you must email me by the beginning of class on the original due date.

This assignment should be typed (i.e., on a word processor). I encourage you to discuss this assignment with others, but each person should hand in a paper written in his or her own words.

(1) Read the following article from a recent *New York Times Magazine* (after which you may never believe any medical studies again) and answer the following questions (a short sentence or two should suffice for each part):

<http://tinyurl.com/2lb2h9>

(a) According to the article, why are randomized clinical trials (experiments) the “gold standard” for establishing medical knowledge?

(b) What is the healthy-user bias? Why does it make it difficult to draw causal conclusions from observational studies?

(c) What is the prescriber effect? Why does it make it difficult to draw causal conclusions from observational studies?

(d) What is the compliance effect? Why does it make it difficult to draw causal conclusions even from controlled experiments?

(2) Download and read “How Polls Are Conducted” from the link on the following web page:

<http://media.gallup.com/PDF/FAQ/HowArePolls.pdf>

(a) In national opinion polls, Gallup and other organizations typically take samples of roughly 1000 individuals. Briefly describe how Gallup arrives at this number, describing the tradeoffs involved. Approximately what percent of all US adults does this represent?

(b) The article states that the size of the sample is less important a factor than the soundness of the selection method. Explain briefly why this is true.

(c) Once a randomly selected household is reached on the phone, the interviewer attempts to select a random adult within the household. Why is this necessary (as opposed to just interviewing whoever answers the phone)?

(d) After interviewing is completed, the article states that often the sample is weighted “to correct for any possible sampling biases on the basis of demographic variables...”, but it does not explain what this weighting entails. What do you think this means, and why is this weighting done?

(3) Suppose a survey is carried out by the planning department to determine the distribution of household size in a large city. The researchers select a random sample of 1000 households and send out interviewers to interview people in these households. After several visits, however, the interviewers find people at home in only 856 of the sample households. Rather than face such a high non-response rate, the planners draw a second batch of households, and use the first 144 completed interviews in the second batch to bring the sample size up to its planned size of 1000 households. They count 3203 people in the 1000 households and therefore estimate the mean household size in the city to be about 3.2 people. Is this estimate likely to be too low, too high, or about right? Explain briefly.