

**Instructions:** Answer each question completely. Show all work for any computational questions.

1. How does undercoverage produce bias in a sample?

The sample may not represent the whole population

2. What is the difference between a sampling error and a response error? Give a specific example of each.

A sampling error is a mistake in the way the sample is taken (for instance, not random). A response error is a mistake in the way respondents answer questions (misremembering)

3. How does a stratified sample differ from a cluster sampling?

A stratified sample breaks into parts & then each part has a small random sample taken from it. In cluster sampling, it's the clusters that are randomly chosen & then everyone in the cluster is surveyed.

4. Give an example of a badly worded survey question. It can be on any topic you like.

If you knew that President Obama was really born in Kenya, how would you feel about his support for his Ukrainian policy? (answers will vary)

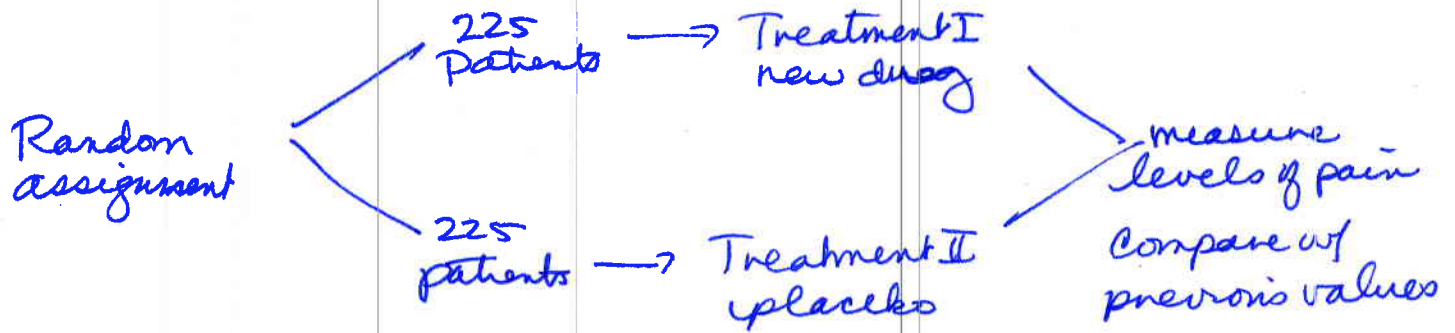
5. What does confounding mean?

there is another variable not being considered that is influencing the data.

6. Ice cream sales rise in July. Sunburns also rise in July. Does ice cream cause sunburns? What is a possible lurking variable in this data?

increased sun and temperatures lead to both higher ice cream sales and cause sunburns.

7. An experiment takes a sample of 450 patients with a particular pain disorder and divides them into a control group (that receives a placebo), and a treatment group (that receives a new drug). The patients are measured before and after for their level of pain. The results are compared to determine whether the medication is effective. Draw a diagram of the experimental design.



8. What do we mean when we talk about a study being statistically significant?

*the result is unlikely to occur by chance*