Module 3 preparation guide

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1. Statistical Inference is the process of making conclusions about a population from the results of a single sample.
2. Observational studies are meant to disturb as little as possible whereas experimental studies are meant to draw strong cause and effect statements.
3. The main difference is that strong cause and effect statements cannot not be made from observational studies
4. Factor= is a variable that is deliberately manipulated to determine its effect on the response variable, response= the change that is being observed from experiment to experiment, levels= the number of the categories of the factor variable, treatments= the number of unique conditions that the individuals in the experiment are exposed to and replicates= the number of individuals that will receive each treatment.
5. The number of treatments is equal to the number of levels
6. One advantage of a multi-factor experiment is that it uses individuals more efficiently and it also allows for the testing of presence and absence of interaction not just the presence of it.
7. The three major principals are control which allows for strong cause and effect conclusions, randomize which removes bias and replicate individuals which assures that the induvial in the experiment are as alike as possible at the start of the experiment.
8. The three major types of observational studies are voluntary response which relies on people to volunteer them self by responding to a general appeal. Convenience studies are studies that consist of individuals that are the easiest for researchers to reach. Probability based studies has each individual has a known chance of being selected for the sample
9. A biased sample is when the group doesn’t reflect the population which can be caused by the sampling technique or data collection method.
10. Bias can be avoided by randomization.
11. Observational studies are important because they can lead directly to form hypotheses that form basis of experiments, they can be used outside of a lab setting and they can used when an experiment cannot be done.