Module 14 prep  
Mason Deja

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Hypothesis Testing

1. The four steps of the scientific method are 1) observe and describe a natural phenomenon, 2) formulate a hypothesis to explain the phenomenon, 3) use the hypothesis to predict new observation and 4) experimentally test the predictions.
2. The research hypothesis is a wordy statement about the question or phenomenon that the researcher is testing. The statistical hypotheses are mathematical and more easily subject to statistical methods.
3. The null hypothesis always represents no difference situations.
4. The symbols that appear in each hypothesis are = in null hypothesis and for alternative hypothesis the symbols are < less than, greater than > and not equals.
5. The two abbreviations are Ho for null hypothesis and Ha for alternative hypothesis.
6. Two tailed will contain a not equals sign and a one tailed will contain < or >.
7. A p-value is the probability of the observed statistic or a value of the statistic more extreme assuming that the null hypothesis is true.
8. The null distribution is also called the sampling distribution which depends on the value u from the null hypothesis.
9. α are smaller p-values that would result in rejecting Ho as a viable hypothesis.
10. The most common values of α are 0.05, 0.01, and 0.10.
11. P-value and α are used to determine if the null hypothesis should or should not be rejected.
12. The test statistic measures how many standard errors the observed statistic is away from the hypothesized parameter.
13. The reasons why statisticians say do not reject Ho instead of accept Ho as true because the null hypothesis is almost always not true and there are multiple possible values besides the specific value in the null hypothesis that would lead to a DNR conclusion.
14. The two different types of errors are type I and type II, type I is when a true Ho is falsely rejected and type II is when a false Ho is not rejected.
15. Power is the probability of rejecting a false Ho.
16. Researchers can increase power by increasing α or n. increasing n is more beneficial because it does not result in an increase of type I errors.