Chapter 9: Testing a Claim

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| Key Vocabulary: | power |
| Null Hypothesis | standard error |
| Alternative Hypotheses | t distribution |
| Inference Toolbox | degrees of freedom |
| test statistic | paired t-test |
| p-value | one-sample z statistic |
| level | one-sample t statistic |
| one-sample z statistic | two-sample t statistic |
| statistically significant | robust |
| Type I Error | power |
| Type II Error |  |

9.1 Significance Tests: The Basics (pp.528-546)

1. What is a significance test?
2. What is a *null hypothesis*?
3. What is an *alternative hypothesis*?
4. Explain the difference between a *one-sided alternative hypothesis* and a *two-sided alternative hypothesis*.

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 1a) parameter of interest =

 b) Ho =

Ha =

2a) parameter of interest =

 b) Ho =

Ha =

1. In statistics, what is meant by the *P-value*?
2. If a *P-value* is small, what do we conclude about the *null hypothesis*?
3. If a *P-value* is large, what do we conclude about the *null hypothesis*?
4. If you fail to reject Ho, can you accept it?
5. What is meant by a *significance level*?
6. What does it mean if we say this is statistically significant?
7. On what evidence would we reject the null hypothesis?
8. On what evidence would we fail to reject the null hypothesis?
9. What is a *Type I Error*? 
10. What is a *Type II Error* ?

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 1.

 2.

 3.

1. What is the relationship between the *significance level*  and the probability of *Type I Error*?
2. What is meant by the power of a significance test?
3. State two ways to increase the power of a significance test:
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9.2 Tests about a Population Proportion (pp.549-562)

1. What conditions must be verified before carrying out a significance test for a population proportion?
2. State the general form of the “test statistic”.
3. What does the test statistic measure?
4. What 4 steps should you follow when you are performing a significance test?
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1. State the null hypothesis for a *one-sample z test for a proportion*.
2. Give the formula for the *one-sample z test for a proportion*, and define each variable in the equation.
3. State and use diagrams to illustrate the three possible alternative hypotheses for a *one proportion z-test.*

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 State:

 Plan:

 Do:

 Conclude:

1. If no α level is given what should you use?
2. What additional information does a confidence interval provide that a significance test does not?

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9.3 Tests about a Population Mean (pp.565-587)

1. State the null hypothesis for a *one sample t-test.*

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 1.

 2.

 3.

1. Give the formula for the *one-sample t-statistic*, and define each variable in the equation.
2. When can we use *one-sample t-test?*

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 State:

 Plan:

 Do:

 Conclude:

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 1.

 2.

1. When should a *paired t- test* be used, and what would be the statistic of interest?