

3.6: Putting it all Together Using the Classical Method

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To Test a Claim about μ when σ is Known

- Write the null and alternative hypotheses.
- State the level of significance and get the critical value from the standard normal table.
- Compute the test statistic.

$$z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}} \quad (3.6.1)$$

- Compare the test statistic to the critical value (Z-score) and write the conclusion.

To Test a Claim about μ When σ is Unknown

- Write the null and alternative hypotheses.
- State the level of significance and get the critical value from the student's t-table with n-1 degrees of freedom.
- Compute the test statistic.

$$t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}} \quad (3.6.2)$$

- Compare the test statistic to the critical value (t-score) and write the conclusion.

To Test a Claim about p

- Write the null and alternative hypotheses.
- State the level of significance and get the critical value from the standard normal distribution.
- Compute the test statistic.

$$z = \frac{\hat{p} - p}{\sqrt{\frac{p(1-p)}{n}}} \quad (3.6.3)$$

- Compare the test statistic to the critical value (Z-score) and write the conclusion.

Table *PageIndex*1. A summary table for critical Z-scores.

	Two-sided Test	One-sided Test
Alpha (α)	α	Z α
0.01	2.575	2.33
0.05	1.96	1.645
0.10	1.645	1.28

To Test a Claim about Variance

- Write the null and alternative hypotheses.
- State the level of significance and get the critical value from the chi-square table using n-1 degrees of freedom.
- Compute the test statistic.

$$\chi^2 = \frac{(n-1)S^2}{\sigma_0^2} \quad (3.6.4)$$

- Compare the test statistic to the critical value and write the conclusion.

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