

1 Sample Z Hypothesis Testing Steps

Step 1. State Both Hypotheses

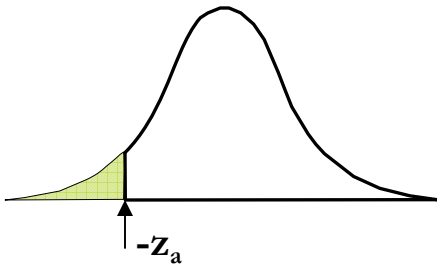
$$\begin{aligned} H_0: \mu &\geq \mu_o \\ H_a: \mu &< \mu_o \end{aligned}$$

$$\begin{aligned} H_0: \mu &\leq \mu_o \\ H_a: \mu &> \mu_o \end{aligned}$$

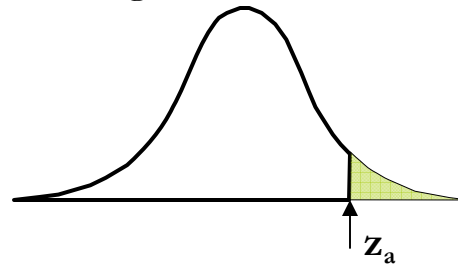
$$\begin{aligned} H_0: \mu &= \mu_o \\ H_a: \mu &\neq \mu_o \end{aligned}$$

Step 2. Draw a Graph

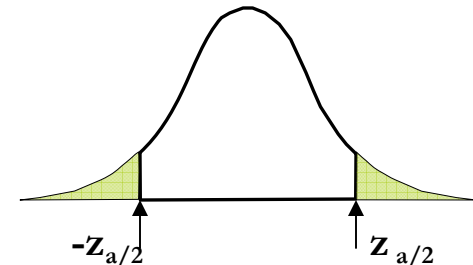
Left-Tailed Test



Right-Tailed Test



Two-Tailed Test



Step 3. Get the Critical Value

$$\begin{aligned} a = .1 & \quad z_a = 1.282 \\ a = .05 & \quad z_a = 1.645 \\ a = .01 & \quad z_a = 2.326 \end{aligned}$$

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$$\begin{aligned} a = .1 & \quad z_{a/2} = 1.645 \\ a = .05 & \quad z_{a/2} = 1.960 \\ a = .01 & \quad z_{a/2} = 2.576 \end{aligned}$$

Z

Step 4. Calculate the Test Statistic

$$z = \frac{\bar{x} - \mu_0}{\sigma / \sqrt{n}} \quad \text{OR} \quad z = \frac{\bar{x} - \mu_0}{s / \sqrt{n}}$$

Step 5. State the Rejection Rule

A. Critical Value Approach

Reject the Null if.....

$$z < -z_\alpha$$

$$z > z_\alpha$$

$$z < -z_{\alpha/2} \quad \text{OR} \quad z > z_{\alpha/2}$$

B. P-Value Approach

Reject the Null if $p < \alpha$ for all three.

IN CALCULATOR: STAT → TESTS → 1:ZTEST