

Hypothesis Testing for the Mean (Large Samples)

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Using P -values to Make a Decision

Decision Rule Based on P -value

To use a P -value to make a conclusion in a hypothesis test, compare the P -value with α .

1. If $P \leq \alpha$, then reject H_0 .
2. If $P > \alpha$, then fail to reject H_0 .

Recall that when the sample size is at least 30, the sampling distribution for the sample mean is normal.

Using P -values to Make a Decision

Example:

The P -value for a hypothesis test is $P = 0.0256$. What is your decision if the level of significance is

a.) 0.05,

b.) 0.01?

a.) Because 0.0256 is < 0.05 , you should reject the null hypothesis.

b.) Because 0.0256 is > 0.01 , you should fail to reject the null hypothesis.

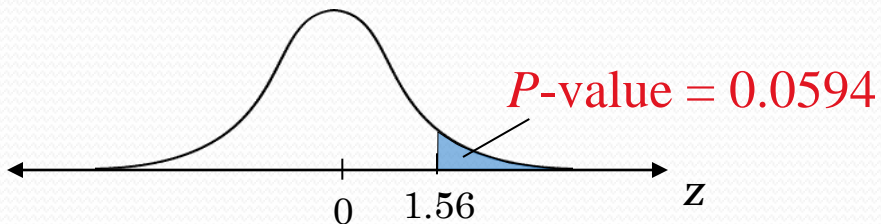
Finding the P -value

After determining the hypothesis test's standardized test statistic and the test statistic's corresponding area, do one of the following to find the P -value.

- For a left-tailed test, $P = (\text{Area in left tail})$.
- For a right-tailed test, $P = (\text{Area in right tail})$.
- For a two-tailed test, $P = 2(\text{Area in tail of test statistic})$.

Example:

The test statistic for a right-tailed test is $z = 1.56$. Find the P -value.

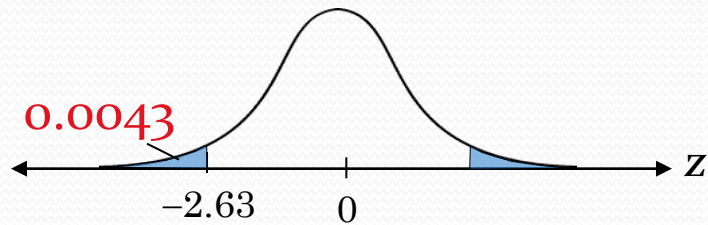


The area to the right of $z = 1.56$ is $1 - .9406 = 0.0594$.

Finding the P -value

Example:

The test statistic for a two-tailed test is $z = -2.63$.
Find the P -value.



The area to the left of $z = -2.63$ is 0.0043.
The P -value is $2(0.0043) = 0.0086$