

Hypothesis testing for normal.

Notation: Confidence level c ; Significant level $\alpha = 1 - c$;

Sample size is n

Some comments:

- If we can reject H_0 on level α , then we can reject it on any higher level. (The reverse is not true.)

- Theorem: (For two-sided test)

A c -level CI includes $\mu_0 \Leftrightarrow$ Retain $H_0 : \mu = \mu_0$ with

$\alpha = 1 - c \Leftrightarrow p - value > \alpha$

A c -level CI doesn't include $\mu_0 \Leftrightarrow$ Reject $H_0 : \mu = \mu_0$ with

$\alpha = 1 - c \Leftrightarrow p - value < \alpha$

- If we have a hypothesis testing with level α , then $P(\text{Type I error}) = \alpha$.
- The standard error for normal case is $se = \frac{\hat{\sigma}^2}{n}$, where $\hat{\sigma}^2$ is the sample variance.