

Relationship between Hypothesis Tests and Confidence Intervals

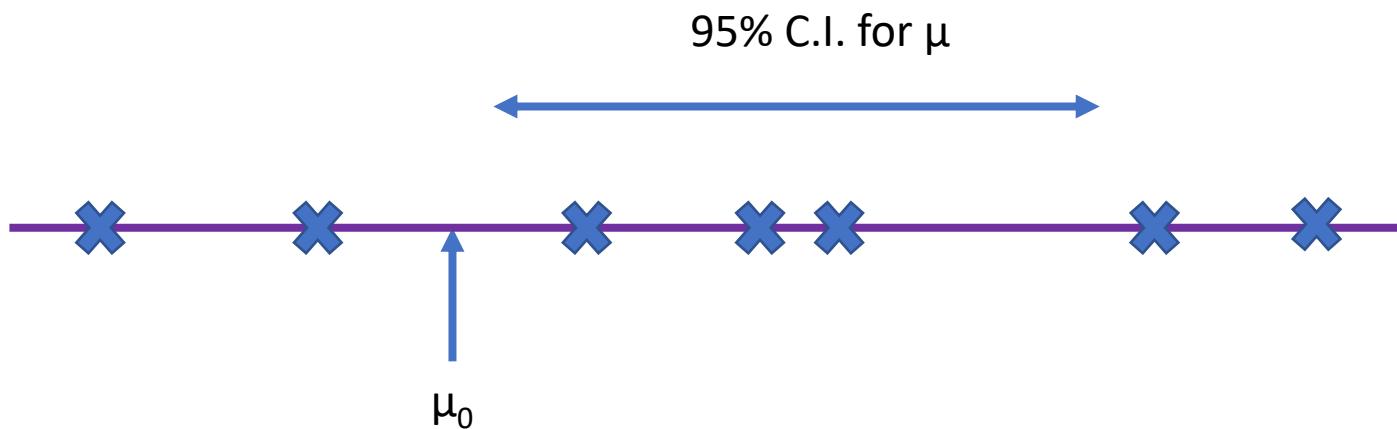
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- Consider our usual hypotheses:

$$H_0: \mu = \mu_0$$

$$H_1: \mu \neq \mu_0$$

We will be able to reject the null hypothesis at the 5% significance level if a 95% confidence interval for μ excludes μ_0 :

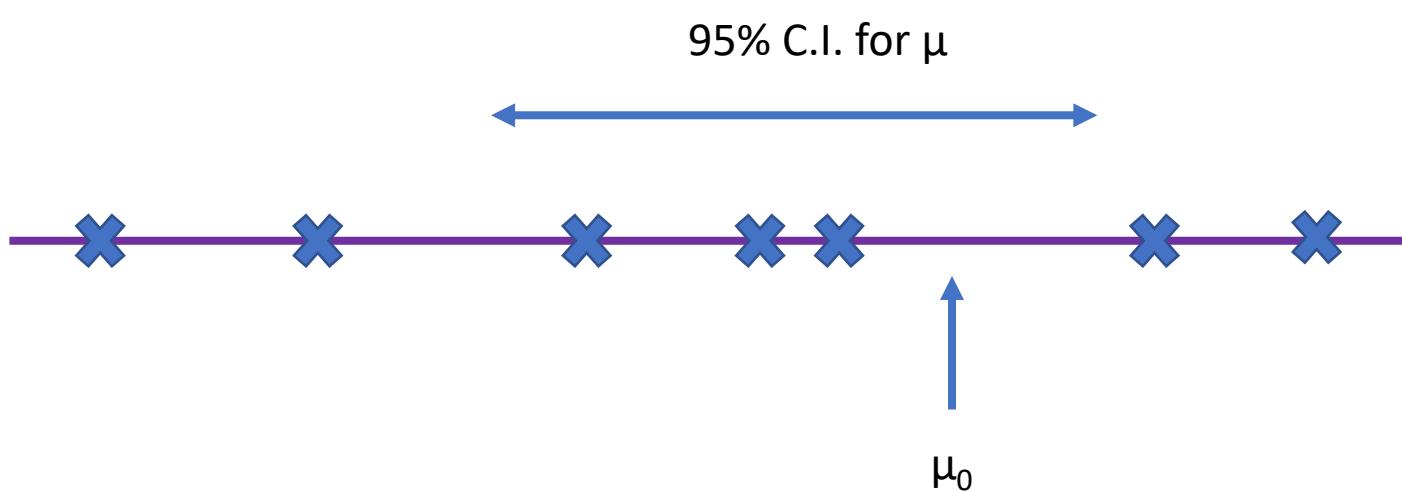


- Consider our usual hypotheses:

$$H_0: \mu = \mu_0$$

$$H_1: \mu \neq \mu_0$$

If a 95% confidence interval for μ includes μ_0 then we have insufficient evidence to reject the null hypothesis:



Insufficient evidence to reject H_0 at the 5% significance level, meaning that μ_0 is a plausible value for the population mean.

General Result

We can reject H_0 at the α level if and only if a $100(1-\alpha)\%$ confidence interval for μ excludes μ_0 .

For example, we can reject H_0 at the $\alpha = 0.01$ level if and only if a 99% confidence interval for μ excludes μ_0 .