SEST - CO3 - 2024-07-22

22 July 2024 09:32

-> Inferencing : Deriving Conclusions.

-> Hypothesis Testing : Yes / No.

-> Null Hypothesis : H_0

Alternative Hypothesis : H_1 / H_α / H_a

-> Level of Significance : α ~ Type I Error.

Assume confidence level.

-> 2-Tailed & 1-Tail Test :

↳ Mean age of people is 40 yrs

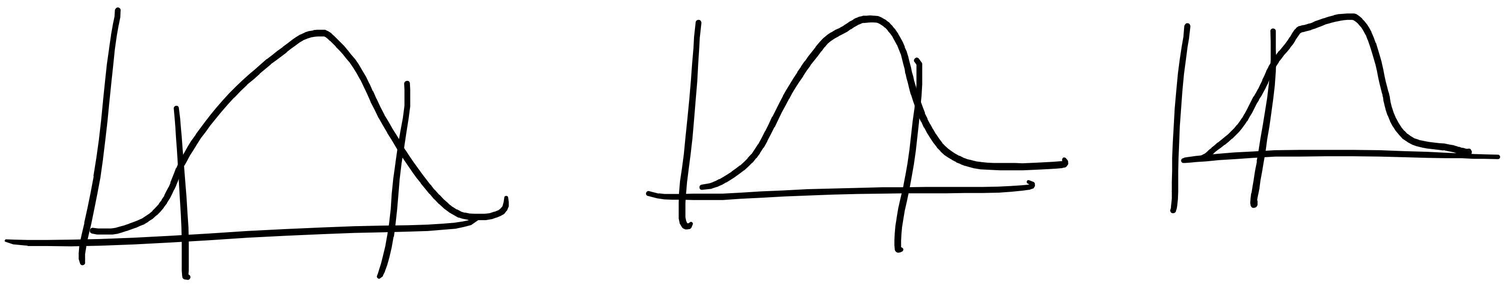
-> 40 or not -> 40 > -> 40 <

-> $H_0 : \mu = 40$ against $\mu \neq 40 = H_1$ (2-tail)

$H_0 : \mu = 40$ against $\mu > 40$ (Right Tail)

$H_0: \mu = 40$ against $\mu > 40$ (Right Tail)

$H_0: \mu = 40$ against $\mu < 40$ (Left Tail)



→ Critical Region : $(1-\alpha)$ as acceptance.

→ Hypothesis Testing for Mean:

↳ Case 1: σ is known: $n \geq 30$

$$z_c = \frac{\bar{x} - \mu_0}{\sigma / \sqrt{n}}$$

→ 74914 rs

112 – CA – 78695

$\sigma = 14530$

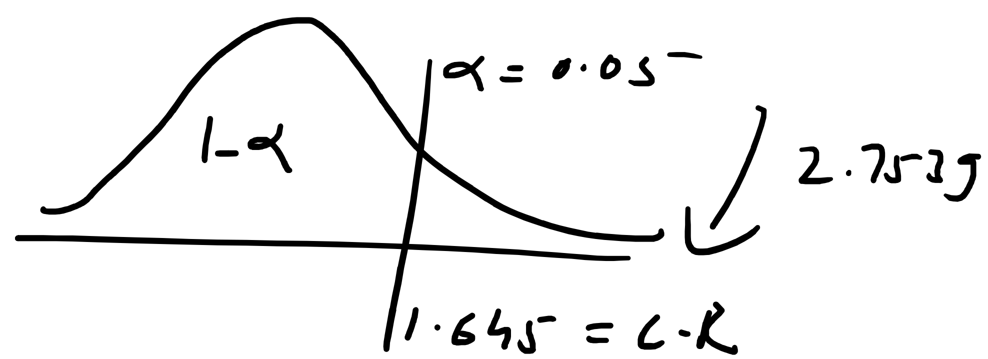
→ $H_0 : \mu \leq 74914$ (Right Tail Test)

$H_1 : \mu > 74914$

$\sigma = 14530$; $n = 112$

$$Z_c = \frac{\bar{x} - \mu_0}{\sigma/\sqrt{n}} = \frac{78695 - 74914}{14530/\sqrt{112}}$$

$$= 2.7539$$

→ 

→ Computed Value > Critical Value at 5% L-O-S, we reject H_0 at 5% L-O-S & accept H_1.

→ <u>Case 2 : σ is not known:</u>

$$T_c = \frac{\bar{x} - \mu_0}{\;/\sqrt{\;}}$$

$$t_c = \frac{\bar{x} - \mu_0}{s_1 / \sqrt{n}}$$

where $s_1 = \frac{1}{n-1} \sum_{i=1}^{n} \sqrt{(x_i - \bar{x})^2}$