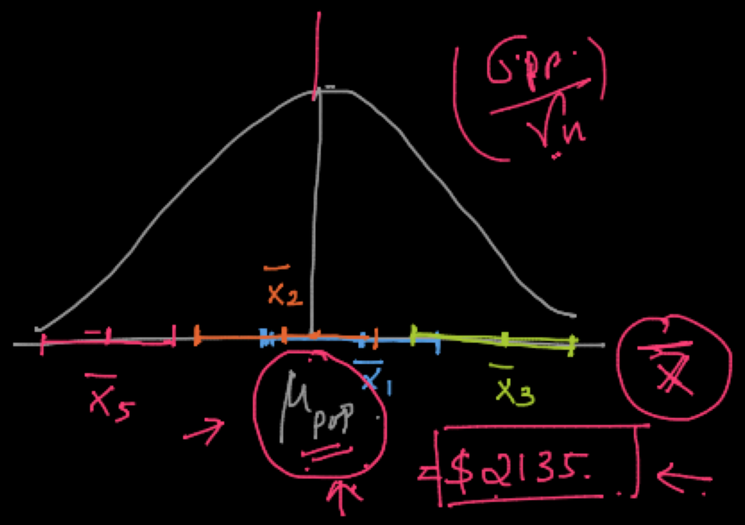


$\left(\frac{\sigma_{pop}}{\sqrt{n}}\right)$

$\sigma =$

3 $(\bar{x} \pm \Delta)$

60 %

= 30 %

C = 60 %

$\bar{x}_1$ $\bar{x}_2$ $\bar{x}_3$ S1 S2 S3 μ_{pop}

$x_i \pm \Delta \rightarrow \mu_{pop}$

$\bar{x}_1 \pm \Delta$

$\bar{x}_2 \pm \Delta$

$\bar{x}_3 \pm \Delta$

95 % → 95 of samples

95 % μ_n

RE → [ ]

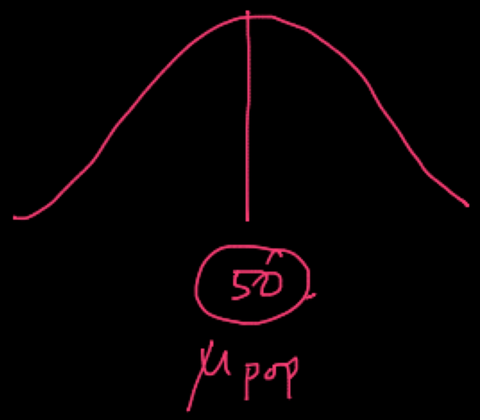
Δ → 95 %

100

5

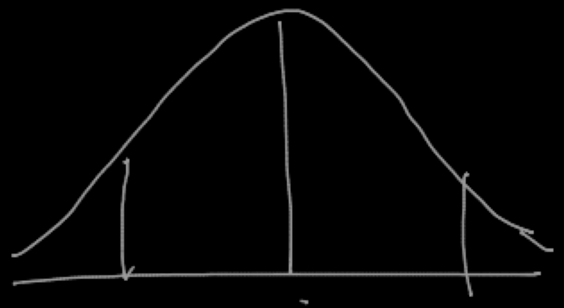
150 ± 25 → 95 %

← [125, 175] →



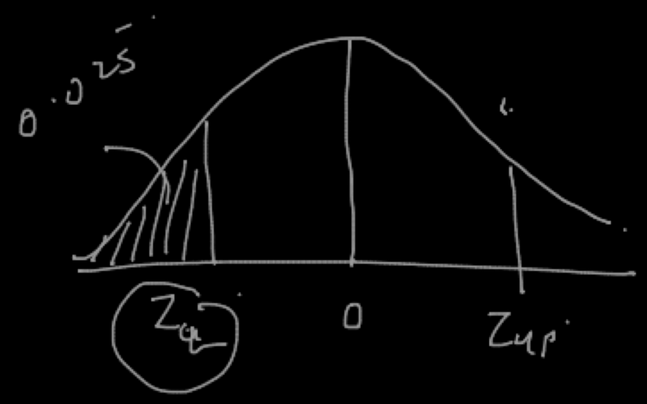
$$\text{R.E.} = \bar{x} \pm z_{\alpha/2} \cdot \frac{\sigma_{pop}}{\sqrt{n}}$$

σ_{pop} → std. dev. of the population



x_L 1990 x_U

If, Z-dist -



t-distribution :

→ Normal distribution - (z Distr :

→ Appwx. of N.D. for small values of 'n'

$n < 30$?

σ_{pop} Not known -

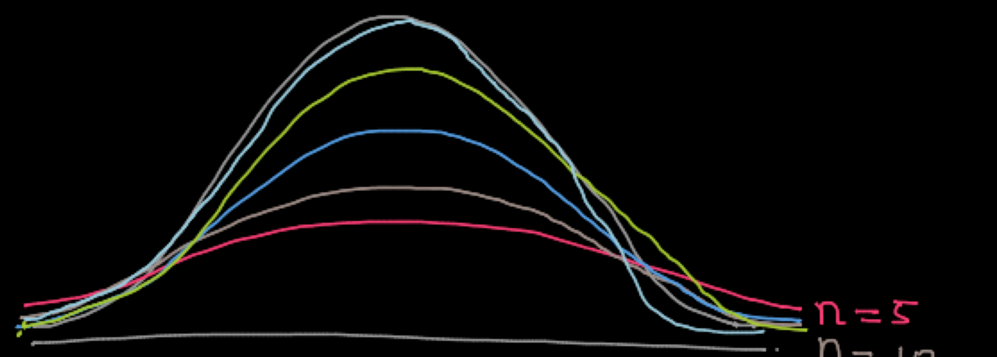
↳ Not kn.

$n > 30$

$n > 100$.

$n > 1000$.

z & t → Will be Same -



σ_{pop} → Not known .

— S (Sample Std . dev)

— $t_{\alpha/2}$ (Instead of $z_{\alpha/2}$)

$$\Delta = t_{\alpha/2,\, n} \cdot \frac{s}{\sqrt{n}}$$

σ_{pop} is known.

$$R.E = \bar{x} \pm z_{\alpha/2} \cdot \frac{\sigma_{pop}}{\sqrt{n}}.$$

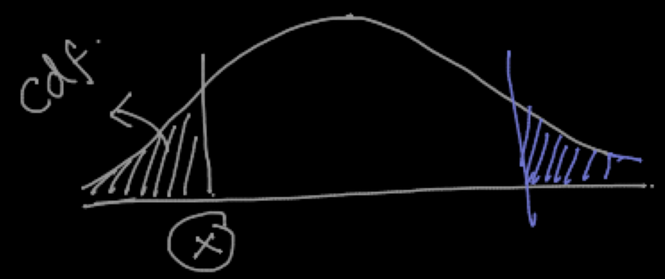
Standard Normal table → z-table

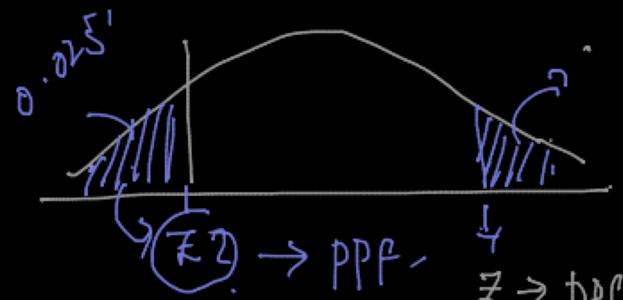
σ_{pop} is not known.

$$R.E = \bar{x} \pm t_{\alpha/2, n} \frac{s}{\sqrt{n}}.$$

t-table.

Stats.norm.cdf → Area





→ PPF

Z → PPF

Stats.
- norm.
  - cdf ( ) ✓
  - PPF ( ) ✓
  - interval ( ) ← 95%
- t
  - cdf ( )
  - PPF (, df)
  - interval ( ) →

Hypothesis Testing

Hypothesis → Assumption without any proof

Hypothesis

'Earth is Flat' → . .

Wt loss → 10kg / 2months

Hypothesis:

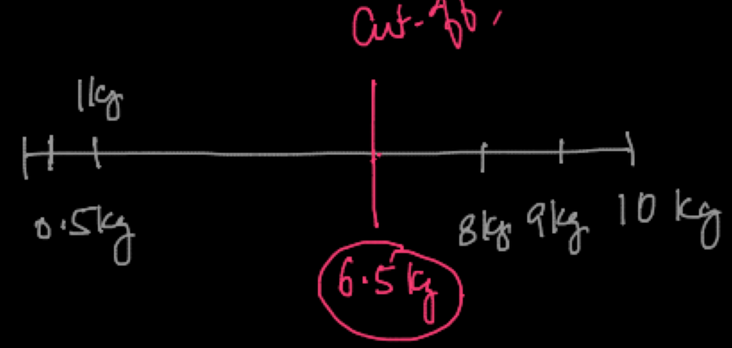
'Drug produces a Wt. loss of 10kg in 2months'

↳ population

Evidence → Samples

Wt. loss
3.5
7.3
6.5
⋮
⎯⎯⎯

$\bar{x} =$ ⎯⎯⎯ 0.5kg



C = 95%

α → Significance level.

H_0: Drug is ineffective ✗ ✓ } population.

H_a: Drug is effective ✓] ✗ x

Evidence from sample

$(\bar{x})$ → Null Hypothesis

→ Accept / Reject the H_0.

'Proof by Contradiction'

H_0 → ~~accept Null~~. 'Fail to reject Null'

→ Reject Null

H_0: Prisoner is innocent ✓ →