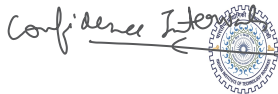


Basic Ideas of Sampling



~ Case I : $500 - 9000 \rightarrow (8900, 9100)$

~ Case II : $100 - 8800 \rightarrow (8200, 9400)$

1. Population (Sometimes, it is not even observable and only abstract)
2. Sampling Frame (if you are lucky, you might get this, not guaranteed in most practical situations)
3. Subject
4. Parameter (Constant - might be unknown)
5. Statistic (Random Variable)

Central Limit Theorem



$$\mu = \frac{A_1 + A_2 + \dots + A_N}{N}$$

A_1
 A_2
 \vdots
 A_N

Theorem

If the sample size is large, for WITH REPLACEMENT and independent sampling, the sample mean \bar{X} is approximately normal with

1. mean = μ

2. variance = $\frac{\sigma^2}{n}$

What is meant by large n ? Typically, $n \geq 30$

$$\bar{X} =$$

$$\frac{x_1 + x_2 + \dots + x_{500}}{500}$$

x_1 ←
 x_2 ←
 \vdots
 x_{500} ←