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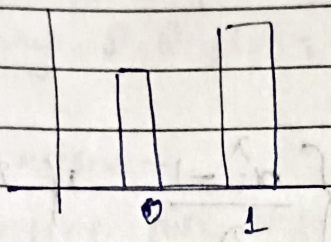
· Bernoulli Distribution

↳ have a binary outcome
↳ either success or failure
Success = p failure = $1-p$

$$P(X=x) = p^x (1-p)^{1-x}$$

graph



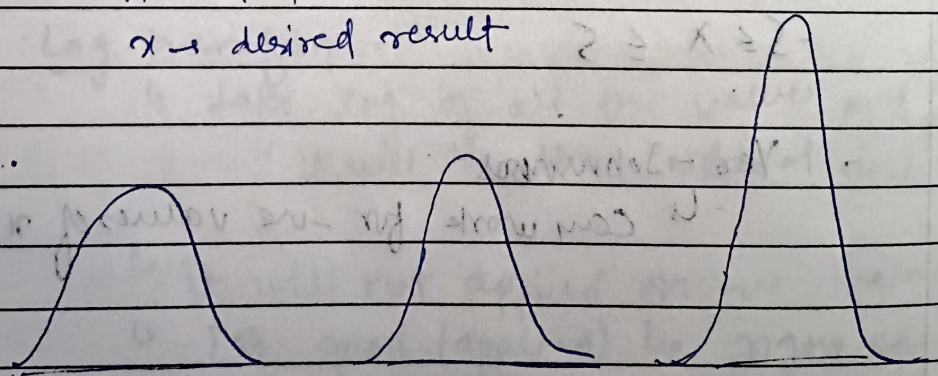
· Binomial Distributn -

↳ It tells number of success in fixed no. of independent bernoulli trials

(n, p) if $n=1$ ⇒ Bernoulli.

$$P(X=x) = {}^nC_x \, p^x (1-p)^{n-x}$$

n → # trials
x → desired result



$P_{success} = 0.2$ (graph shift towards left)

$P = 0.5$ (graph is at center)

$P_s = 0.7$ (graph shift towards right)

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· Sampling distribution.

↳ suppose Total population - 140cr
we want sample → 50k

→ we will take 50 people & find mean : $\bar{x}_1$
" " . " " . $\bar{x}_2$
↳
we will do this 100 times.

So, $\bar{x}_1, \bar{x}_2 \cdots \bar{x}_{100}$ ⇒ Sampling dist. of sample mean

Now instead of mean if we do variance then it will be Sampling dist of sample variance

· Central Limit Theorem -

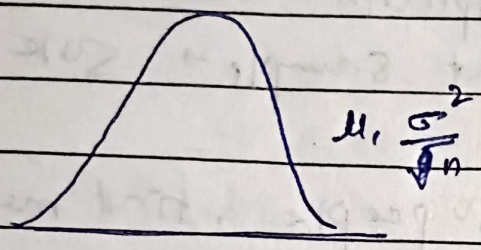
↳: The dist. of sample mean will approach to normal dist. regardless of underlying dist of variable

Assumptions -
· Sample size ~~should be~~ should be > 30
· Sample is from finite population or from inf. population with finite variance
· The R.V in sample are independent & Identically dist.

If Consider salary of Indian people.
we take sample size 100 & find $\bar{x}_1$
then $\bar{x}_2 \cdots \bar{x}_{1000}$

of mere sample means

- when we draw graph then we will get Normal dist



$\mu, \sigma^2 \Rightarrow$ of original then

for Normal dist : $\mu, \frac{\sigma^2}{n}$

NOTE -

Validity of results using CLT depends on the quality of your data & representa of your sample