7 day

① P value & Significance value

② Distribution

③ Central Limit Theorem

④ Bernoulli's Distr Log Normal Distr

⑤ Binomial Distr

⑥ Pareto's Distr {Power Law}

⑦ F Test (ANOVA) → 1 hr → upload a seperate video.

{ 7080 ⇓ KRISHIO → 10% }

① P value & Significance

↳ Derive the p value

Q) The average weight of all residents in Bangalore city is 168 pounds. With a standard deviation 3.9. We take a sample of 36 individuals and the mean is 169.5 pounds. C.I : 95%

Ans) $\mu = 168$ $\sigma = 3.9$ $\bar{X} = 169.5$ $n = 36$ $\alpha = 0.05$

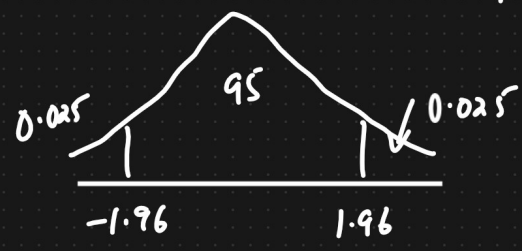
① $H_0 = \mu = 168$

$H_1 : \mu \neq 168$

② $\alpha = 0.05$

③ Decision boundary

$1 - 0.025 = 0.9750$ ⇓



(5) Z Test

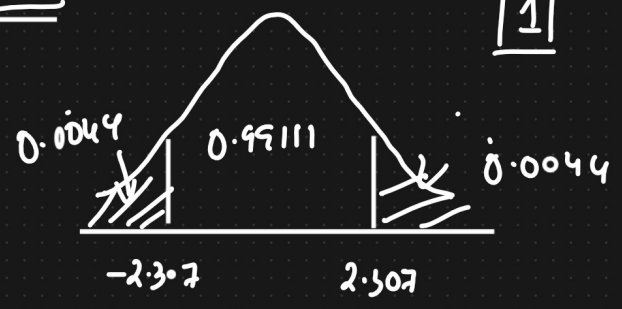
$$Z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}} = \frac{169.5 - 168}{\frac{3.9}{\sqrt{36}}}$$

$$= \frac{1.5}{3.9} \times 6$$

$$= 2.307$$

(6) $Z = 2.307 > 1.96$ Reject the Null Hypothesis

P value



$1 - 0.9828$

$1 - 0.99111 =$

P value $= 0.0044 + 0.0044$

$= 0.0088$

P value < 0.05

$0.0088 < 0.05$ → Reject the Null Hypothesis

② P value $\leq$ Significance value

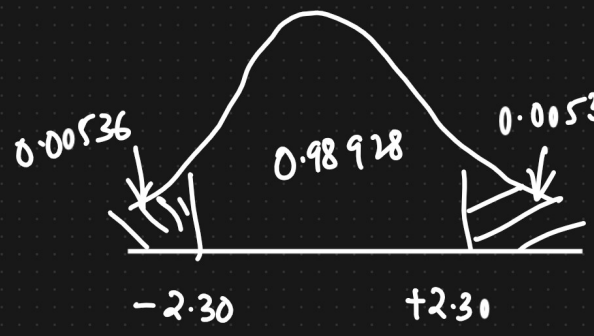
⇓

Reject the Null hypothesis

P value $>$ Significan value

⇓

Fail to Reject the Null Hypothesis



$Z = 2.30$

$1 - 0.98928 =$

$2.30 > 1.96$ {Reject the Null Hypothesis}

P value $= 0.00536 + 0.00536$

$= \_\_\_\_\_ \leq \alpha$ ⇒ Reject the Hypothesis

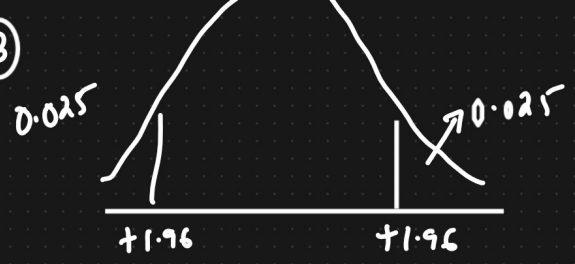
② Average age of a College is 24 years with a standard deviation 1.5. Sample of 36 student students mean is 25 years. With $\alpha = 0.05$ C.I : 95%, do the age vary?

Ans) ① H_0 $\mu = 24$ $\sigma = 1.5$ $n = 36$ $\bar{x} = 25$ $\alpha = 0.05$

H_1 $\mu \neq 24$

② $\alpha = 0.05$

③

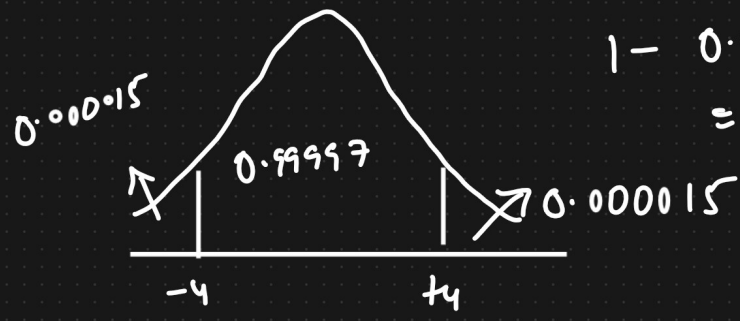


④ $Z\text{-score} = \dfrac{\bar{x} - \mu}{\dfrac{\sigma}{\sqrt{n}}} = \dfrac{25 - 24}{1.5} \times 6$

$= \dfrac{1 \times 6}{1.5}$

$= 4$

$4 > 1.96$ Reject Null Hypothesis



$1 - 0.99997$

$=$

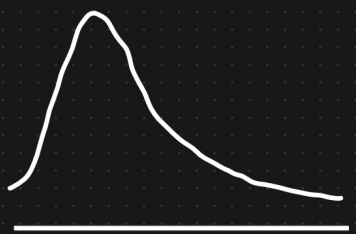
0.000015

$p\text{value} = 0.000015 + 0.000015$

$= 0.00003$

pvalue $\leq$ Significance {Reject the Null Hypothesis}

② Log Normal Distribution



Eg:- Wealth Distribution

② people writing big comments

{$y \sim$ LogNormal. Distr}

$\Downarrow$

$\log(y) \longrightarrow$ Normal Distribution

④ Bernoulli's Distribution

2 Outcomes | 0 or 1 | Single Trial

Tossing a coin

$P = 0.5$

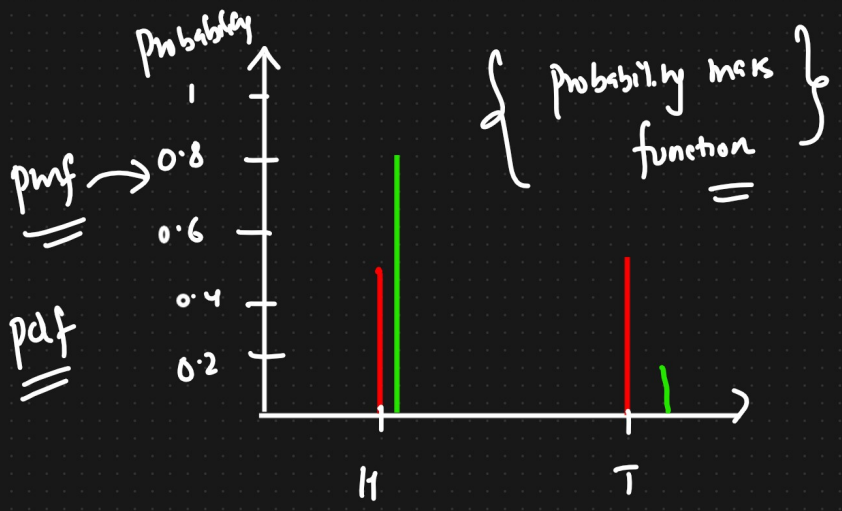
$q = 1 - P = 0.5$

$P(H) = 0.5 = P$

Do not have a fair coin

$P(H) = 0.3 = P$

$P(T) = q = 1 - p = 1 - 0.3 = 0.7$



⑤ Binomial distribution

Every → Bernoulli distribution

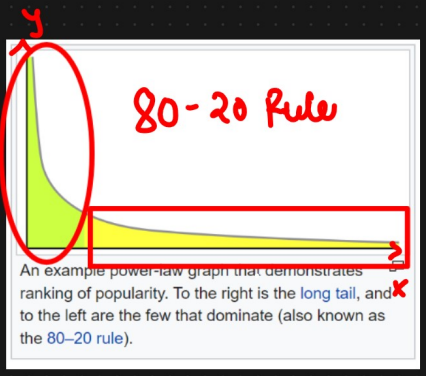
Multiple Trail

↓

$P(H) = 0.5$ $P(H) = 0.6$ - — - - - - .

$P(T) = 0.5$ $P(T) = 0.4$

Pareto distribution



An example power-law graph that demonstrates ranking of popularity. To the right is the long tail, and to the left are the few that dominate (also known as the 80–20 rule).

① Eg: 80% of the wealth is distributed with 20% of the people

② 80% of the company project are done by 20% of the people in a team

(K) 80% of sales is done by 20% of famous product.

(K) 80% of the Cricket match is won by 20% of the team.

Power law distribution

Log Normal Distribution

Lognormal Distribution

→ Transformation

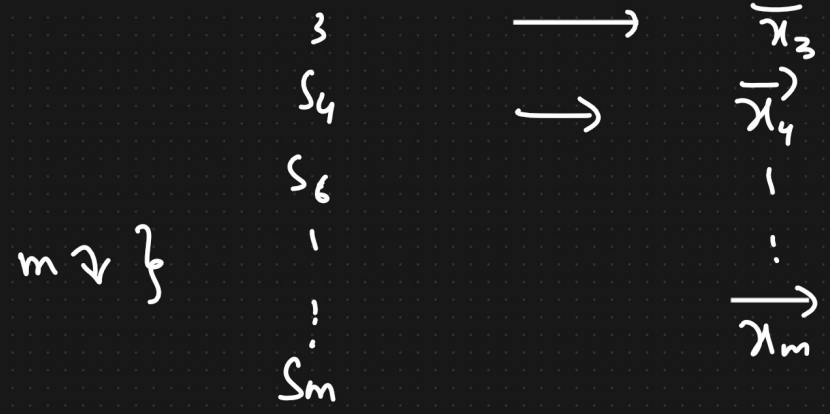
(K) Central Limit Theorem

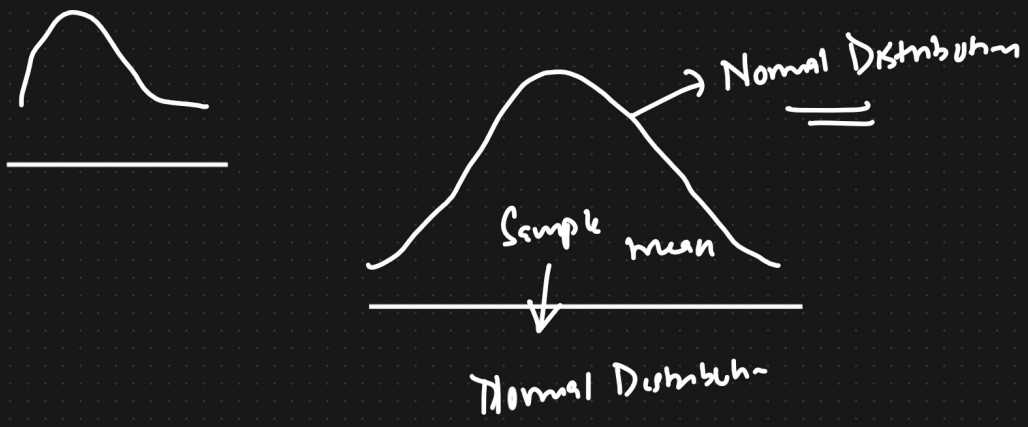
Sample size → $n \geq 30$

S_1 $\bar{x}_1$

S_2 → $\bar{x}_2$

} → Sample mean





Poisson Distribution

→ 2 Algorithms

① Machine Learning Algorithms ✓
② Deep Learning Algo ✓
③ FLASK & DJANGO ✓
④ Mongodb, Sql ✓
⑤ Blockchain Session ✓