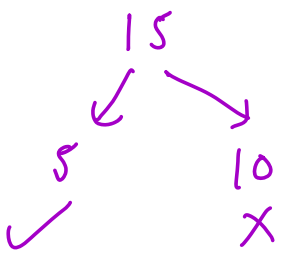
Revision Class

→ Distribution
→ Hypothesis testing
→ Sampling

⇒ Interview Questions

⇒ Observation sample

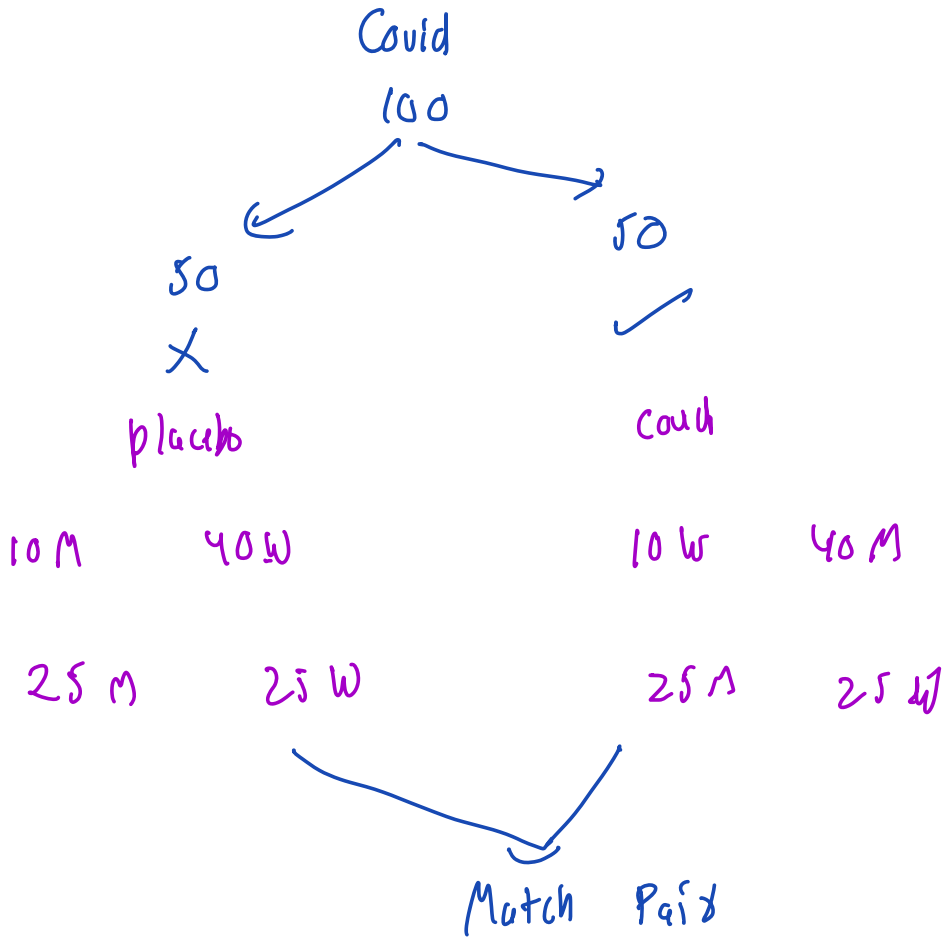


Two way table

100 people

low	140 cm – 150 cm	10 ✓	10 ✗
	151 cm – 160 cm		
medium	161 cm – 170 cm	25 ✓	15 ✗
higher		36 ✓	4 ✗

② Experimental study



Replication

Biases

Almonds – Badam → 2
Raisins – Kismis → 2
Walnuts – Akrot → 2
Cashew – Kaju → 2

Measurement Biasness

Wrong in tool

Social Desirable bias

"Have u ever stolen anything?"

Leading Question

giving some hints & then asking ques

Selection Biasness

Selection of people

Non responsive

population
⇓
sample

infer

$$\sigma^2 = \sum \frac{(x_i - \bar{x})^2}{N}$$

$$s^2 = \sum \frac{(x_i - \bar{x})^2}{n-1}$$

~~5 balls~~

3 Red & 2 Blue balls

⇓

○ ○ ○ ○ ← 4 R Balls

$E(x) = 2.3$ Pf ∈ population

$E(x) = 2.0$

$2.0 \pm ?$

$2.0 \pm .5$

$[2.3, 3.3]$

Population Dist ⇒ gaussian

⇓

< 30

gaussian ✓

Population $\Rightarrow$ non - gaussian

≥ 30

Sample $\rightarrow$ gaussian

Standard Error $\quad \frac{\sigma}{\sqrt{n}} \simeq \frac{s}{\sqrt{n}}$

$n \rightarrow$ sample size

Q) 30K $\Rightarrow$ 100 employs

$\bar{x} = 36.6$ min

$s = 10$ min

$\bar{x}\ (36.6) \pm$ margin of error

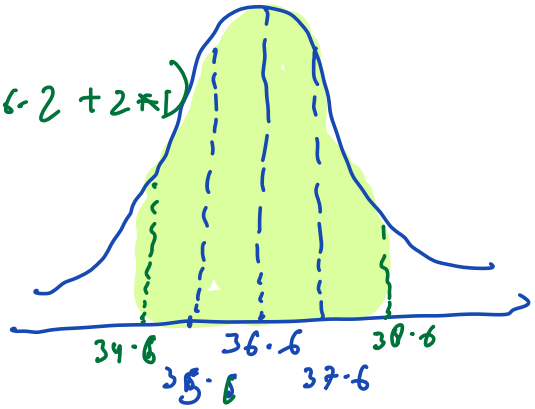
$SE = \frac{\sigma}{\sqrt{n}} \simeq \frac{s}{\sqrt{n}} = \frac{10}{\sqrt{100}} = 1$

$P(36.6 - 2*1 < w < 36.2 + 2*1)$

$\approx 95.4\%$

↓

confidence level



$\{34.6, 38.6\}$

⇓

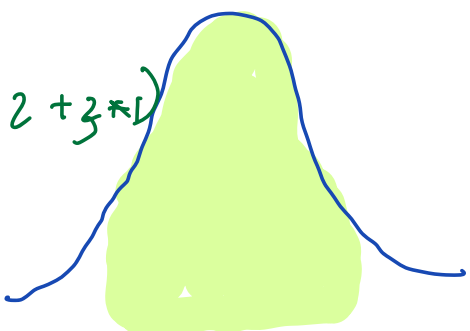
95% confidence interval

$P(36.6 - 3*1 < w < 36.2 + 3*1)$

$[33.6, 39.6)$

⇓

99%



$$\left(\bar{x} - z * \frac{s}{\sqrt{n}}, \bar{x} + z * \frac{s}{\sqrt{n}}\right)$$

CL	Z
95%	± 1.96
99%	± 2.58

Maggi

Lead ≤ 2.5 ppm

Sample → 100 ⇒ $\bar{x} = 2.3$ ppm

$s = 0.3$ ppm

CL ⇒ 99%

$$\Rightarrow \bar{x} \pm Z \frac{*s}{\sqrt{n}}$$

$$\Rightarrow 2.3 \pm 2.58 * \frac{0.3}{\sqrt{100}}$$

(2.223, 2.377)

||

99%