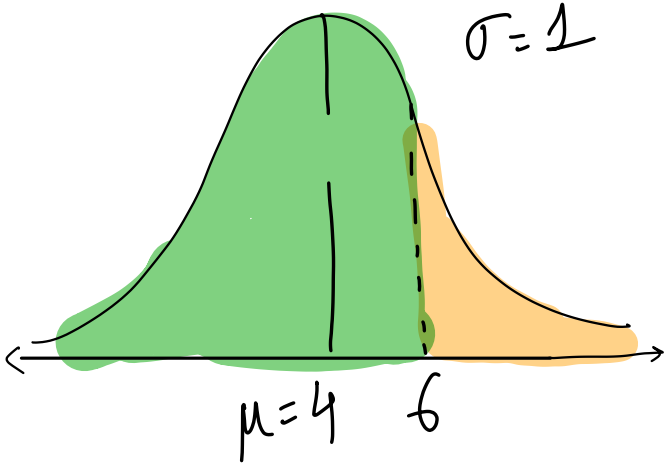
CONFIDENCE INTERVAL

The average time taken for customers to complete a purchase is 4 minutes with a standard deviation of 1 minute.
Find the probability that a randomly selected customer will complete a purchase within 6 minutes? Assume Gaussian



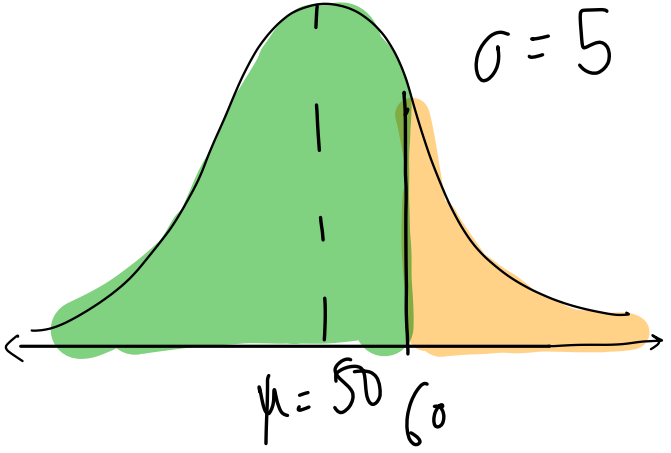
41 users have participated

A	0.85	10%
B	0.93	7%
C	0.95	2%
✓ D	0.97	80%

norm.cdf ( )

0.977

The average order value on an e-commerce website is $50, with a standard deviation of $5.
What is the probability that a randomly selected order will have a value exceeding $60?



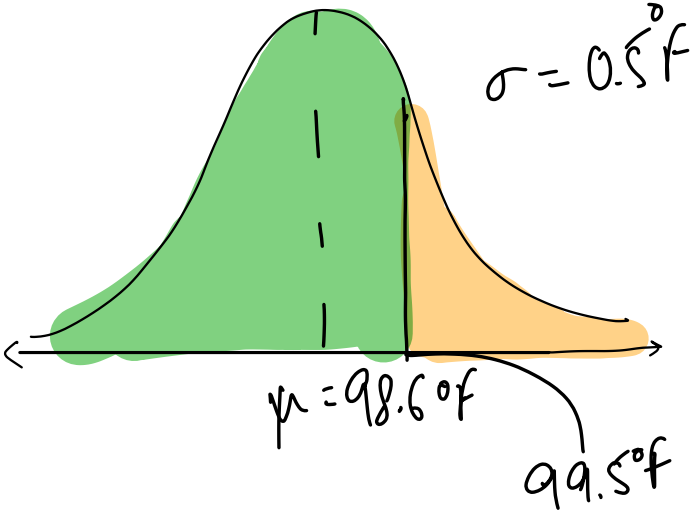
45 users have participated

✓	A	0.02	87%
	B	0.04	7%
	C	0.06	7%
	D	0.08	0%

1 - green = orange

0.02

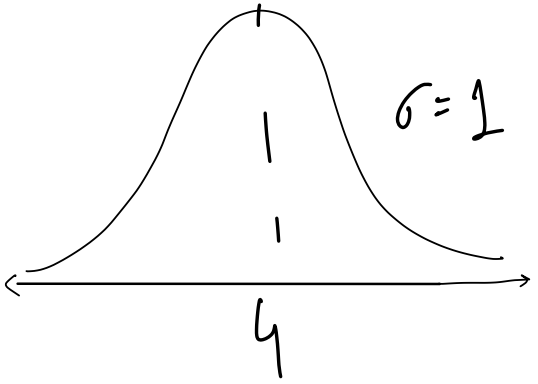
Average body temperature has a mean of 98.6°F and a standard deviation of 0.5°F.
What is the probability that a randomly chosen patient has a body temperature higher than 99.5°F?



43 users have participated

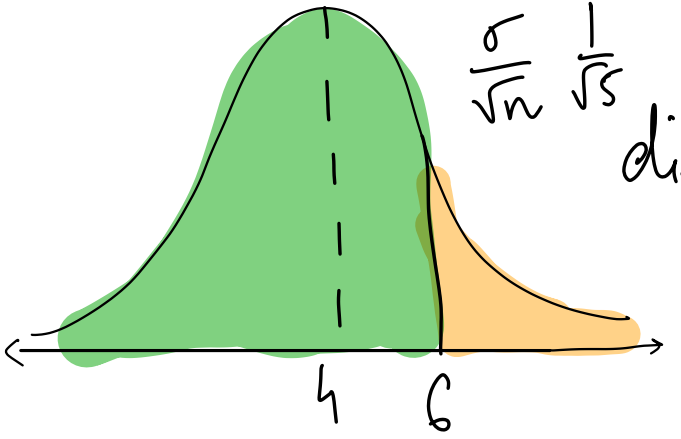
A	0.01	9%
B ✓	0.03	86%
C	0.05	5%
D	0.07	0%

The average time taken for customers to complete a purchase is 4 minutes with a standard deviation of 1 minute.
What is the probability that the average time of the next 5 customers is less than 6 minutes?



42 users have participated

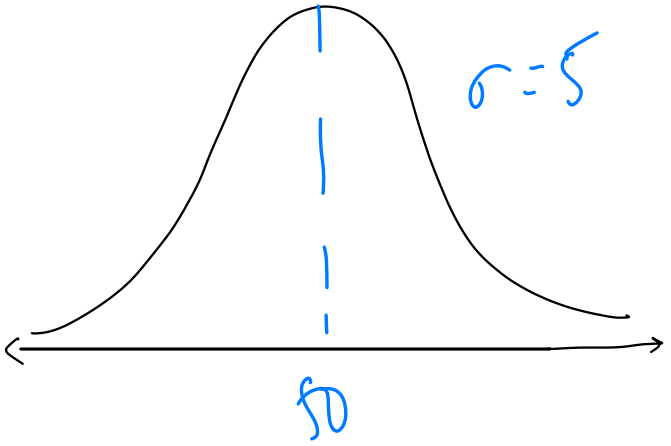
A	0.96	12%
B	0.97	26%
C	0.98	12%
D	0.99	50%



$\frac{\sigma}{\sqrt{n}}$ $\frac{1}{\sqrt{5}}$

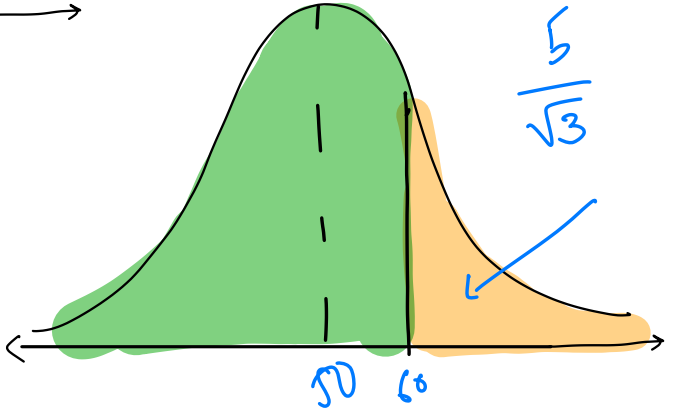
distribution of sample means

The average order value on an e-commerce website is $50, with a standard deviation of $5.
What is the probability that the average of the next 3 orders exceeds $60?



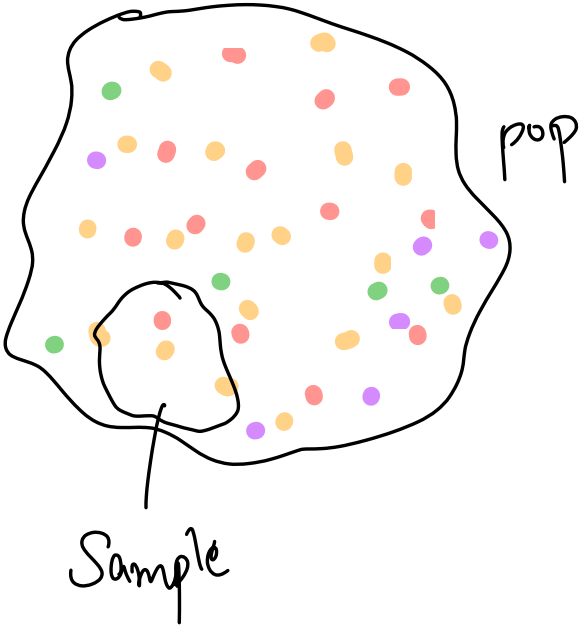
51 users have participated

A	0.002	71%
B	0.004	8%
C	0.006	14%
D	0.008	8%



Sample → make conclusions about Pop^{n}.

1. CLT
2. Bootstrapping



Height.

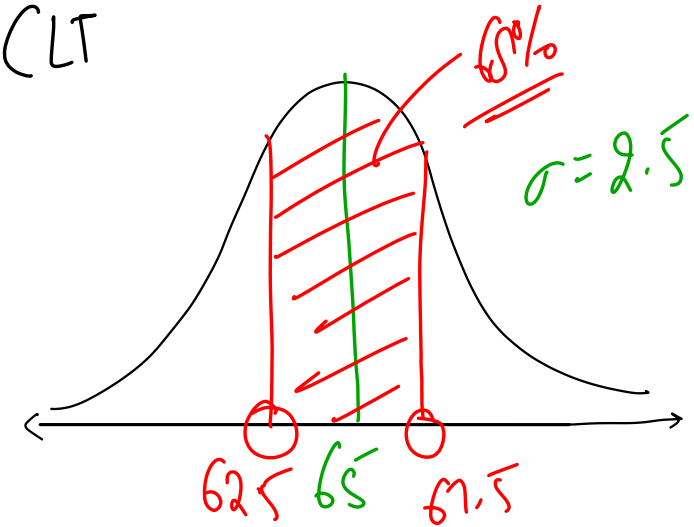
100 Samples → Sample mean = 65

Sample std = 2.5

pop mean = μ

pop std = σ

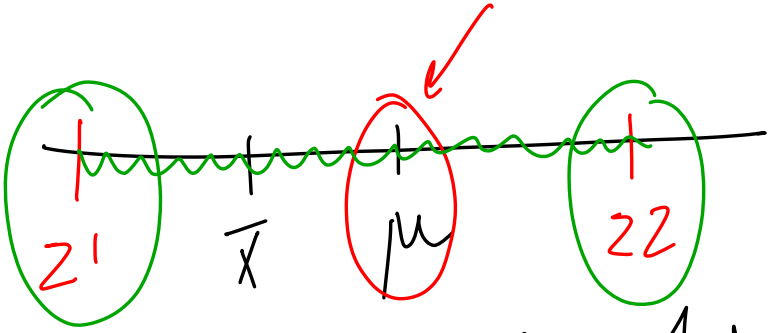
CLT



Standard error $= \frac{\sigma}{\sqrt{n}}$

95% Confidence

95%



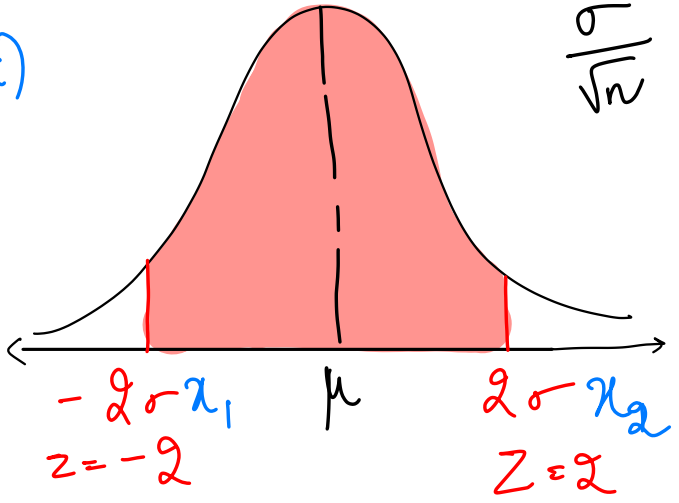
Flight:

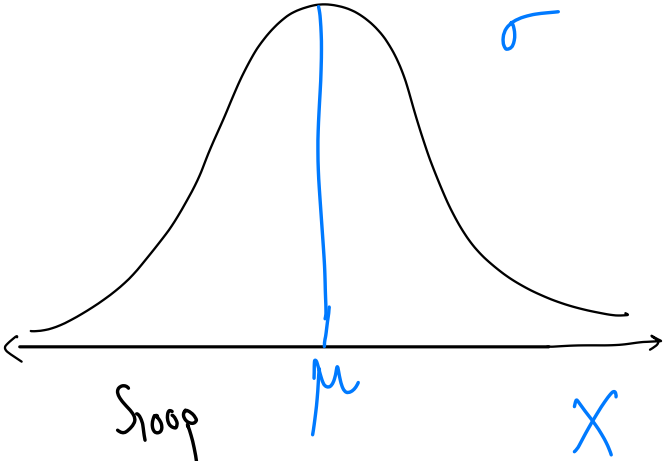
95% confidence interval

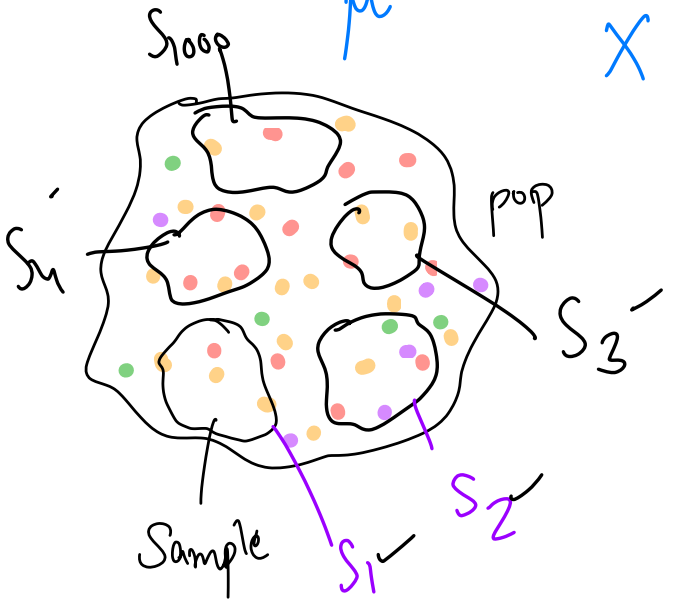
$[x_1, x_2]$

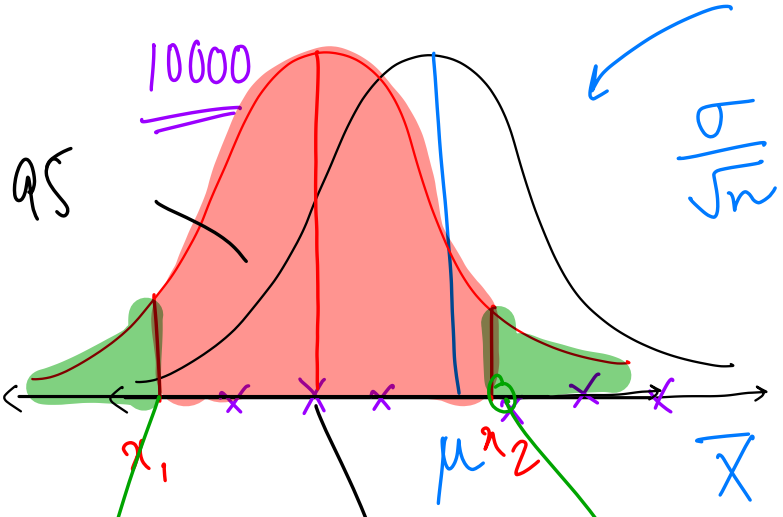
100 → μ (Sample)
s (std)

$\frac{\sigma}{\sqrt{n}}$







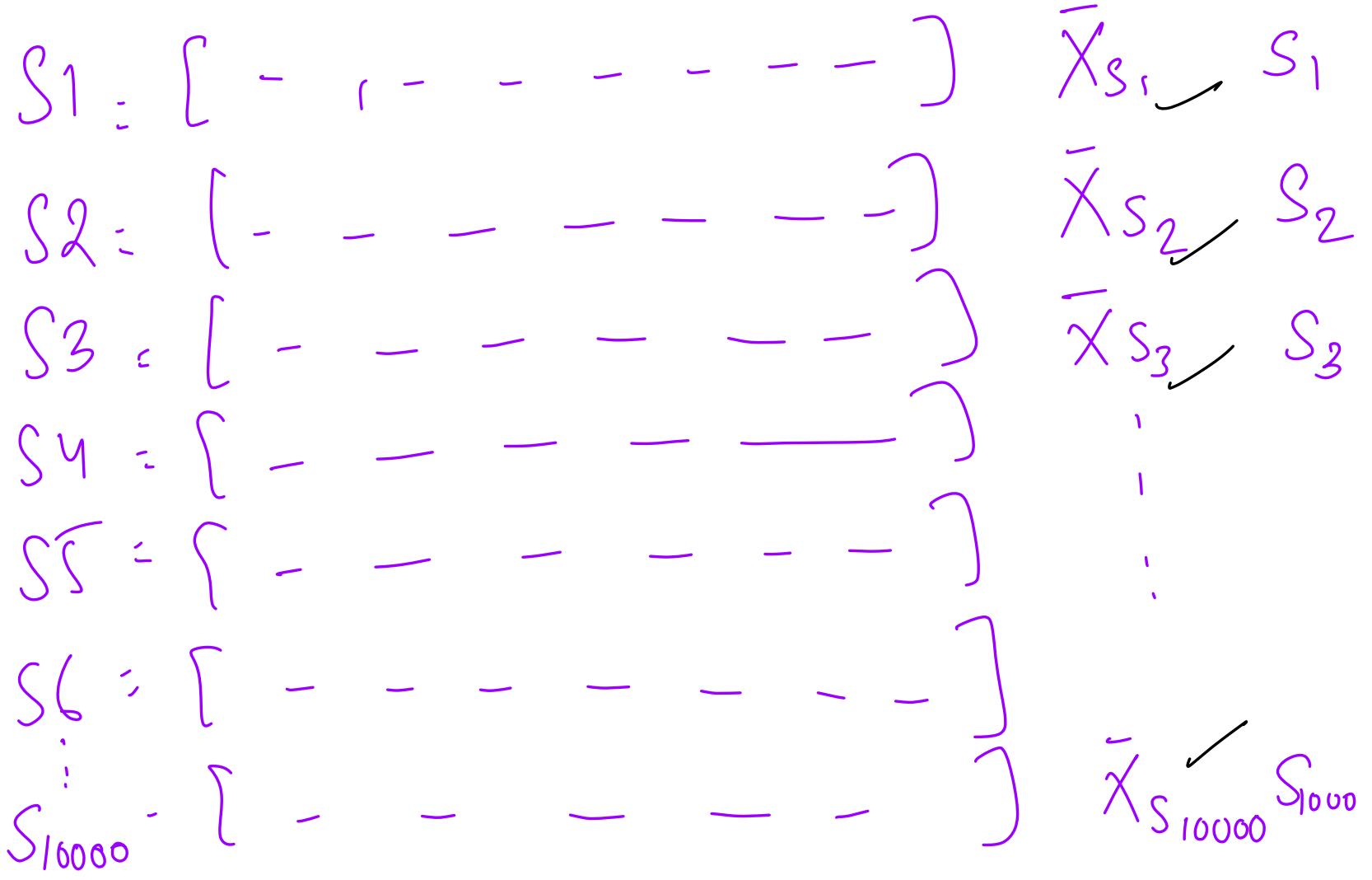


nom.ppf(0.025) $\bar{X}_{S2}$

nom.ppf(0.975)

$$x_1 = \bar{X}_{S_2} - 2\left(\frac{\sigma}{\sqrt{n}}\right)$$

$$x_2 = \bar{X}_{S_2} + 2\left(\frac{\sigma}{\sqrt{n}}\right)$$


S1 : [- - - - - - - - -]
S2 : [- - - - - - - - -]
S3 : [- - - - - - - - -]
S4 : [- - - - - - - - -]
S5 : [- - - - - - - - -]
S6 : [- - - - - - - - -]
S10000 : [- - - - - - - - -]
X̄S1 S1
X̄S2 S2
X̄S3 S3
X̄S10000 S10000

$$\mu \pm \underbrace{(\text{nom.ppf}(\bullet))\frac{\sigma}{\sqrt{n}}}$$

$$\bar{X}_{S_2}$$

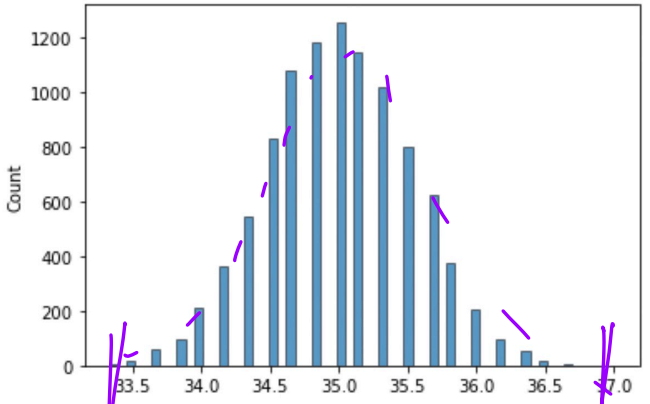
$$x_1 = \bar{X}_{S_2} - 2\frac{S_2}{\sqrt{n}} \quad \Big| \quad x_1 = \mu - 2\frac{\sigma}{\sqrt{n}}$$

$$x_2 = \bar{X}_{S_2} + 2\frac{S_2}{\sqrt{n}} \quad \Big| \quad x_2 = \mu + 2\frac{\sigma}{\sqrt{n}}$$

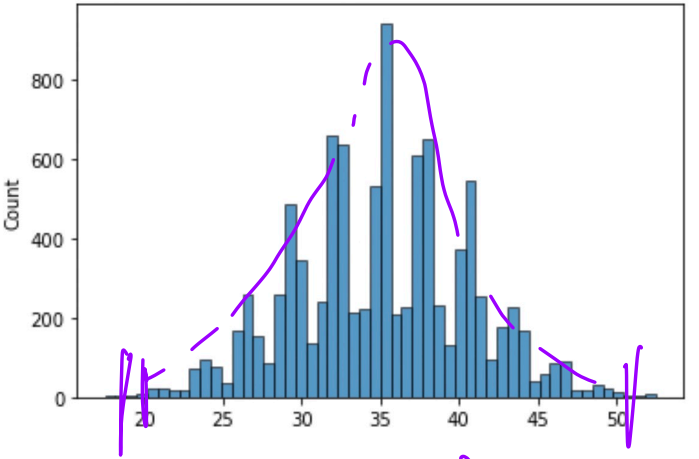
$S1 = [35, 36, 33, 37, 34, 35)$ $\mu = 35$

$S2 = [20, 37, 17, 50, 53, 33)$ $\mu = 35$

Bootstrapping : Random Sampling with Replacement.


Count
0
200
400
600
800
1000
1200
33.5
34.0
34.5
35.0
35.5
36.0
36.5
37.0

(33.5, 36.5)


Count
0
200
400
600
800
20
25
30
35
40
45
50

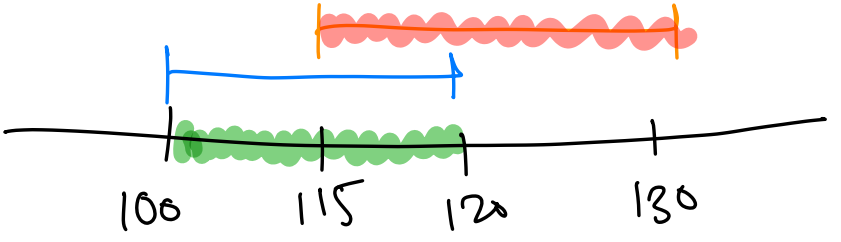
(20 - 50)

SDt1 Salaries

Indian

Non Indian

95% [100-120] [115-130]



90% [105-115] [120-128]