Nikhila Kadiyala

Tuesday,
30 October

weight	weight	(measured) weight
16 oz	16.0 oz	15.97 oz
16 oz	16.0 "	16.01 oz
16 oz	16.0 "	⋮
⋮	⋮	⋮

DETERMINISTIC — PROBABILISTIC

Bias: a systematic tendency to over/underestimate the ~~weight~~ truth.

Random: Haphazard fluctuations (e_n)

y_1 = (true value)
y_2 = (true value)
y_3 = (true value)
⋮
y_n = (true value)

(θ) (b)

y_1 = (true value) + (bias) + (random error$_1$)
y_2 = (true value) + (bias) + (random err$_2$)
y_3 = (true value) + (Bias) + (random error$_3$)
⋮

IID
mean = 0
sd = σ

$y_1 = \theta + b + e_1$
$y_2 = \theta + b + e_2$
⋮

$\bar{y} = \theta + b + \bar{e}_n$

sample mean

$\bar{e}_n = \dfrac{e_1 + e_2 + e_3 \dots e_n}{n}$

suppose:
θ = 16.02
b = 0

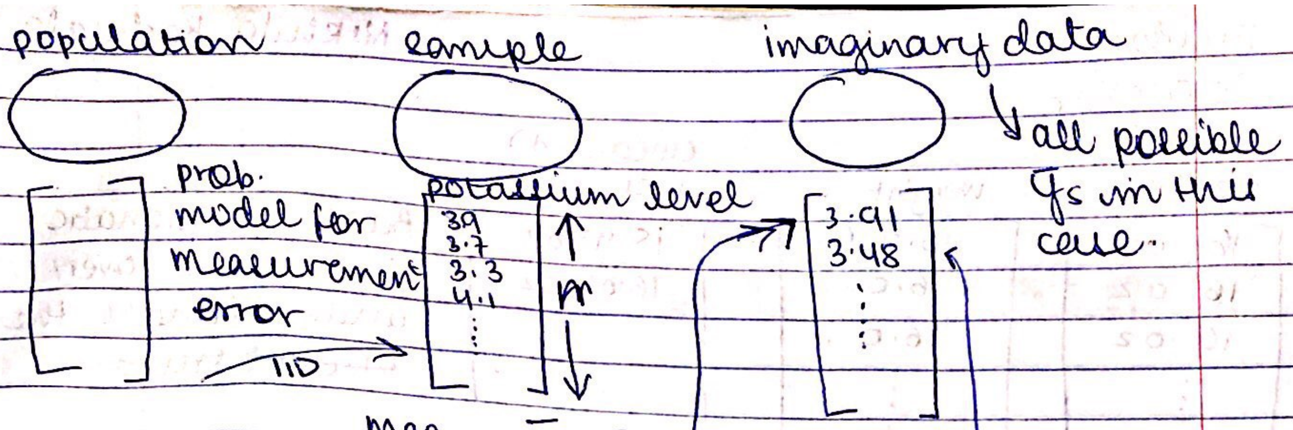
[15.97, 16.01, ⋮]

∴ 15.97 = 16 + 0 + (−0.03)
16.01 = (16 + 0 + (0.01)
⋮
15.99 = 16 + 0 + (−0.01)

$\dfrac{e_1 + e_2 \dots e_n}{n}$ } cancellation of + and − values will give an $\bar{e}_n$ that is highly likely to be closer to 0 than any of the errors e_1 or $e_2 \dots$ or e_n themselves.

as $n \uparrow$ $\bar{e}_n \longrightarrow 0$
and $\bar{y}_n \rightarrow \theta + b$

good data: no bias

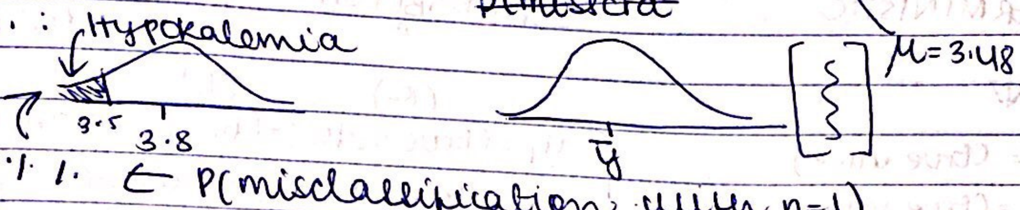


mean: $\bar{y}$ = ?
ex = 3.91

popmean: $\mu = 3.8$

pop sd: $\sigma = 0.2$

pop. hist.: Hypokalemia



7% ← P(misclassification with n=1)

↑ too high

p(misclassifications with n=4) = P ($\bar{y}$ < 3.5)

to estimate P($\bar{y}$ < 3.5) we have to imagine getting lots of $\bar{y}$s

long run mean? $E_{IID}(\bar{y}) = 3.8$

long run SD?

long run histogram:

total