HW - #8

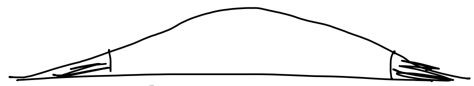
$\mu_0 = 5.5$

$\bar{x} = 5.4$

$$\frac{5.4 - 5.5}{0.33/\sqrt{55}} = -2.25$$

$$\frac{5.38 - 5.5}{0.3/\sqrt{56}}$$

if alternate not =, 2 sided



-2.25 2.25

find # in table for -2.25 *2 = answer

#9 P-value

* assume

~ Z = 3.81

#10 $\mu = 10$

$\mu < 10$

$\bar{x} = 8$

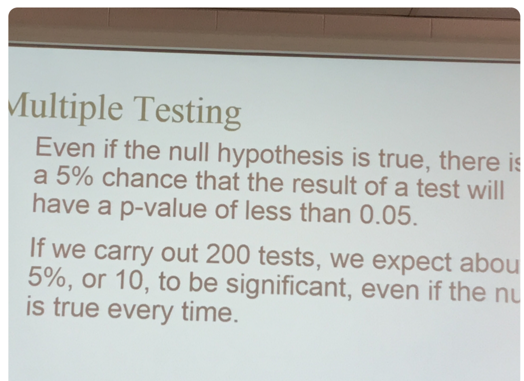
p value = .04 → ~ 4%

*false positives

Bonferroni correction

Ad. P = orig P * # of tests

if ad. p is still small, still significant :)



or say D = 0.022

0.022 * 5 = 0.11

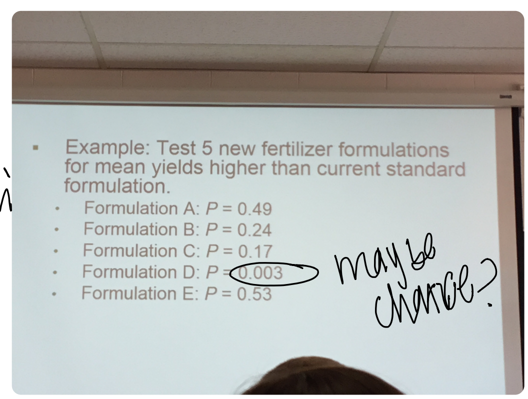
not extreme, so DON'T REJECT

* Do test again

* do bonferroni

aka .003 * 5 = .015

still extreme so still reject :)



maybe chance?

large samples ($n \geq 40$) one samp / pop test / CI for mean

$$z = \frac{\bar{x} - \mu}{(s/\sqrt{n})}$$

① assume sampling dist. is normal

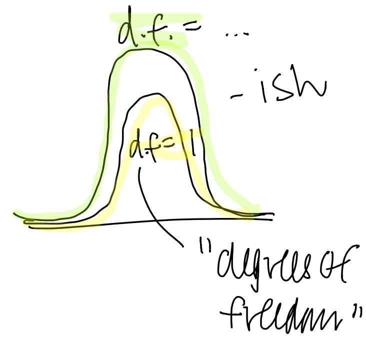
central limit theor.

Small-Sample Intervals

2 problems
assumption
① only normally distributed random variables
② must use pop. standard dev ⟶ $Z = \frac{\bar{X}-\mu}{(\cancel{s}\,\sigma/\sqrt{n})}$

$T = \frac{(\bar{X}-\mu)}{s/\sqrt{n}}$ use diff. table

⟶ w/ n-1 degrees of freedom!



t_v is bell curve w/ heavier tails
↳ "nu"

$T_{35-40} \sim$ normal

$\boxed{\text{As } v \to \infty \text{ closer to normal distribution}}$

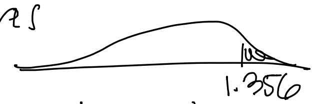
* T table - probs on top/side (opposite)
* t scores are on inside
* each row is different distribution

Ex: $T \sim t_{12}$ (n=13) ⟶ 12th row

$P(T \geq 2.681) = 0.01$ (column) $t_{0.01,12} = 2.681$

$P(T < -1.356) = 0.1$

but table gives



aka 0.1

Ex: $t_9 = T$ (n=10)

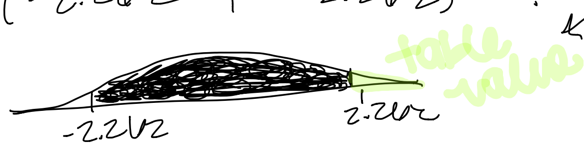
$P(T \geq 1.833) = .05$

find 9 in column → find # → answer is column title

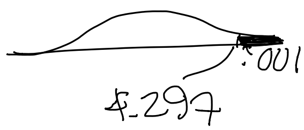
$\therefore t_{.05,9} = 1.833$

$P(-2.262 < T < 2.262) = ?$ $.025 * 2 = .05$

.95



Find c such that $P(T>c)=0.001$



$t_{.001,9} = 4.297$ tadah :)

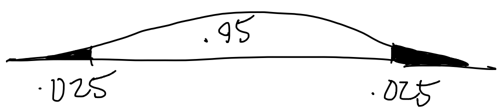
$\bar{X} \pm t_{\alpha/2,n-1} \frac{s}{\sqrt{n}}$

double sided →

CI for small sample

① assume normal distribution

② CI looks exactly same, except not 1.96 for 95%



$\alpha = .05$