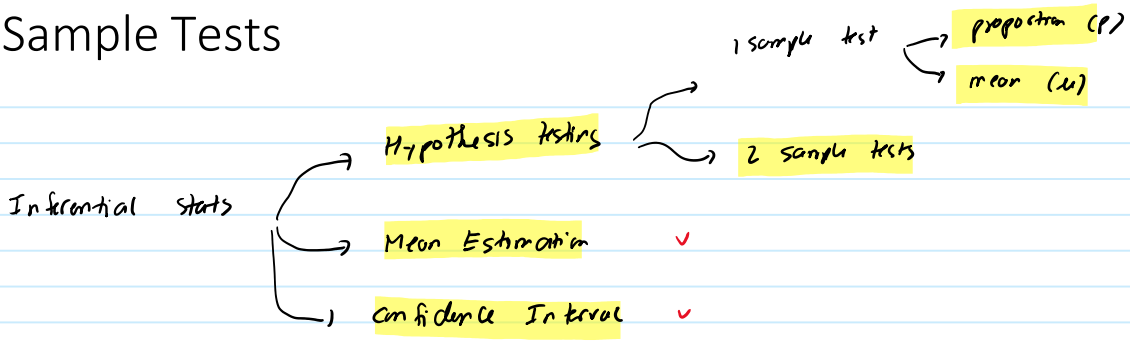
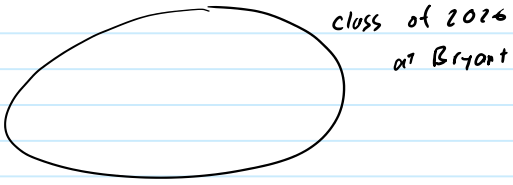
Two-Sample Tests

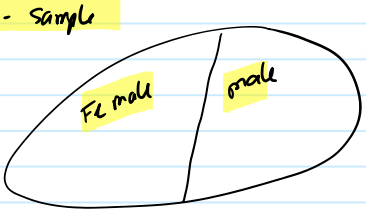


① 1 - sample :



H_1 : On average, class 26 sleep more than 7 hours a day

② 2- sample

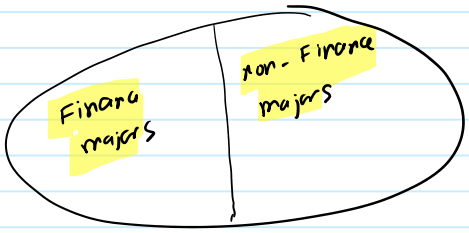


H_1 : On average, Male students sleep more than female students of class 26

This is called a 2-sample hypothesis.

H_1 : On average Athletes sleep more than non-athletes Students in class of 26

in class of 26



H_1: On average, non-finance majors sleep 1 hours less than finance majors

All of these are 2-sample hypotheses.

Data needed should look like this:

# hours	Majors
8	Finance
10	Non-F
6	F
2	F
5	non-F
⋮	⋮

Assignment 8

(1) H_1: On average the number of hours female study is different than the number of hours male study daily.

μ_1: The average number of hours female study daily

μ_2: _____ male study daily.

H_1: $\mu_1 \neq \mu_2$

OR:

H_1: $\mu_1 - \mu_2 \neq 0$

(The difference between μ_1 and μ_2 is not zero)

Null hypothesis	$H_0: \mu_1 - \mu_2 = 0$
Alternative hypothesis	$H_1: \mu_1 - \mu_2 \neq 0$

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T-Value	DF	P-Value
6.37	386	0.000

p-value < .05 ⇒ The data support H_1. There is some difference between study time of male and female.

(2) H_1: On average, the number of hours female students study (μ_1) is greater than the number of hours male student study (μ_2).

OR : $H_1: \mu_1 > \mu_2$

or : $H_1: \mu_1 - \mu_2 > 0$

Null hypothesis $H_0: \mu_1 - \mu_2 = 0$
Alternative hypothesis $H_1: \mu_1 - \mu_2 > 0$

T-Value	DF	P-Value
6.37	386	0.000

p-value < .05 ⇒ The data support H_1. This means female students study longer hours than male students.

(3)

Test if the students who have access to Internet at home (μ_2) have a higher final grade than those who do not (μ_1).

μ_1: population mean of final_grade when internet = no
μ_2: population mean of final_grade when internet = yes

$H_1: \mu_1 < \mu_2$

OR

$H_1: \mu_1 - \mu_2 < 0$ (smaller than)

Null hypothesis $H_0: \mu_1 - \mu_2 = 0$
Alternative hypothesis $H_1: \mu_1 - \mu_2 < 0$

T-Value	DF	P-Value
-1.99	94	0.025

Null hypothesis $H_0: \mu_1 - \mu_2 = 0$

Alternative hypothesis $H_1: \mu_1 - \mu_2 < 0$

T-Value	DF	P-Value
-1.99	94	0.025

p-value $< .05 \Rightarrow$ H_1 is supported. Those who have Internet access have higher final grade.