**STAT430**

Homework 3

Name: Paaras Bhandari

1. (In Code/Output)
2. (In Code/Output)
3. (In Code/Output)

Null hypothesis: H0: μ1 = μ2

Alternate hypothesis: Ha: μ1 ≠ μ2

For t-test at significance level α = 0.05, we have

p-value = 0.4741

Since p-value > α (0.05), we **fail to reject the null hypothesis.**

Therefore, we do not have sufficient evidence to support the claim that

there is a difference between the Male and Female high school GPA.

In other words, we have sufficient evidence to support the claim that there is no difference between the Male and Female high school GPAs



Null hypothesis: H0: μ = 3.5

Alternate hypothesis: Ha: μ > 3.5

For t-test at significance level, α = 0.05, we have

p-value = 0.0204

Since p-value < α (0.05), we **reject the null hypothesis.**

Therefore, we have sufficient evidence to support the claim that the students have increased their exercise from 3.5 times a week.



The 95% confidence interval is (36.3206276, 48.0271985)

Interpretation:

If we take a large number of samples of size n from this population, the sample mean of the average time it takes to get ready is expected to fall within this interval in 95% of the samples.

Code:

DATA SURVEY;

INFILE '/home/u45142062/my\_courses/schimiak/OldClassData.csv' delimiter=',' dsd;

INPUT Subject $

Gender $

Phone $

Campus $

Grade $

Car $

Optimist

Math

Siblings

Pets

Credit\_Hours

Social\_Media

Extra\_Curricular

Height

HS\_GPA

Exercise

Time\_To\_Get\_Ready

Distance

;

/\* 2 - Creating LETTER\_GRADE variable \*/

if HS\_GPA > 4.0 then LETTER\_GRADE = "A";

if HS\_GPA >= 3.0 & HS\_GPA < 4.0 then LETTER\_GRADE = "B";

if HS\_GPA >= 2.0 & HS\_GPA < 3.0 then LETTER\_GRADE = "C";

if HS\_GPA >= 1.0 & HS\_GPA < 2.0 then LETTER\_GRADE = "D";

if HS\_GPA < 1.0 then LETTER\_GRADE = "F";

RUN;

PROC FORMAT;

VALUE $ GENDER\_FMT 'M'='Male' /\* 1a \*/

'F'='Female'

Other = 'ok';

VALUE MATH\_FMT 1 = 'I really like math' /\* 1b \*/

2 = 'I somewhat like math'

3 = 'I could take math or leave it'

4 = "I really don't like math"

5 = "I'd rather have a root canal";

RUN;

/\* 1c \*/

PROC PRINT DATA=SURVEY;

FORMAT Math MATH\_FMT. Gender $GENDER\_FMT.;

TITLE 'Survey';

RUN;

/\* 3 - Frequency chart \*/

PROC GCHART DATA=SURVEY;

VBAR LETTER\_GRADE;

RUN;

/\* 4 - Two-tailed test at 95% confidence \*/

PROC TTEST DATA=SURVEY;

VAR HS\_GPA;

CLASS Gender;

RUN;

/\* 5 - Right tailed test at 95% confidence \*/

PROC TTEST DATA=SURVEY H0=3.5 Sides=U;

VAR Exercise;

RUN;

/\* 6 \*/

PROC MEANS DATA=SURVEY CLM;

VAR Time\_To\_Get\_Ready;

RUN;