Name: MARIA RUTH T. VERGARA **Date:** 11/28/2023
Section: IK1

Workshop 3
ANOVA

A. ANOVA Example

A Social work Researcher wishes to compare level of **institutional attachment adjustment scale** students with their Age. At $\alpha = 0.05$, can it be concluded that there is a difference in the level of **institutional attachment adjustment scale** students with their Age?

Part 1: Testing the assumption

1. Groups should be independent. This represents your independent variable.

   Answer: INDEPENDENT VARIABLE- Age

2. The Dependent variable is Continuous.
   Answer: DEPENDENT VARIABLE- level of institutional attachment adjustment

3. The dependent variable should be normally distributed (in each group).

   H0: The level of institutional attachment adjustment scale is normally distributed across age.

   H1: The level of institutional attachment adjustment scale is NOT normally distributed across age.

Table 1. Test for Normality

Dependent Variable	Independent Variable (Age)	p-value*	Decision
Level of institutional attachment adjustment scale	18 years old	0.873	Fail to reject HO
	19 years old	0.687	Fail to reject HO
	20 years old	0.335	Fail to reject HO
	21 years old	0.690	Fail to reject HO
	22 years old	0.906	Fail to reject HO

tested at 0.05 level of significance using Shapiro Wilk test

Conclusion: Therefore, the level of institutional attachment adjustment scale is normally distributed across age.

4. The variances of the dependent variable across groups should be equal. (Homogeneity of Variances):

   H0: The variances of the level of institutional attachment adjustment scale across age is equal.
   H1: The variances of the level of institutional attachment adjustment scale across age is NOT equal.

Table 2. Test for Homogeneity of Variances

Dependent Variable	Independent Variable	p-value*	Decision
level of institutional attachment adjustment scale	Age	0.416	Fail to reject HO

tested at 0.05 level of significance using Levene's test

Conclusion: Therefore, the variances of the level of institutional attachment adjustment scale across age is equal.

Can we used ANOVA? yes

Part 2. Analysis

H0: There is NO significant difference the level of institutional attachment adjustment scale across age is equal.
H1: There is significant difference between the level of institutional attachment adjustment scale across age is equal.

Table 3. Significant difference of level of institutional attachment adjustment scale **Age.**

Independent Variable (Age)	Mean	Standard deviation	P-value*	Decision
18 years old	94.24	18.411	0.643	Reject the HO
19 years old	92.94	16.55		
20 years old	91.47	13.501		
21 years old	83.429	18.627		
22 years old	92.25	6.702		

tested at 0.05 level of significance using ANOVA. Dependent variable: level of institutional attachment adjustment scale

Conclusion: Therefore, there is NO significant difference the level of institutional attachment adjustment scale across age is equal.

B. ANOVA Example

A Social work Researcher wishes to compare the level of **Academic adjustment scale** students with their Section (1-section A, 2-section B, 3-section C). At $\alpha = 0.05$, can it be concluded that there is a difference in the level of **Academic adjustment scale** students with their Section?

Part 1: Testing the assumption

1. two groups should be independent. This represents your independent variable.

   Answer: INDEPENDENT VARIABLE- Section

2. The Dependent variable is Continuous.
   Answer: DEPENDENT VARIABLE- level of Academic adjustment scale

3. The dependent variable should be normally distributed (in each group).

   H0: The level of Academic adjustment scale is normally distributed across section.

   H1: The level of Academic adjustment scale is NOT normally distributed across section.

   Table 1. Test for Normality

Dependent Variable	Independent Variable(section)	p-value*	Decision
level of academic adjustment scale	SECTION A	0.982	Fail to reject HO
	SECTION B	0.961	Fail to reject HO
	SECTION C	0.953	Fail to reject HO

tested at 0.05 level of significance using Shapiro Wilk test

Conclusion: Therefore, the level of Academic adjustment scale is normally distributed across section.

4. The variances of the dependent variable across groups should be equal. (Homogeneity of Variances):

   H0: The variances of the level of institutional attachment adjustment scale across section is equal.
   H1: The variances of the level of institutional attachment adjustment scale across section is NOT equal.

Table 2. Test for Homogeneity of Variances

Dependent Variable	Independent Variable	p-value*	Decision
level of academic adjustment scale	SECTION	0.073	Fail to reject

Can we used ANOVA? yes

Use the Non-Parametric test:

Part 2. Analysis

H0: There is NO significant difference the level of Academic adjustment scale across section is equal.

H1: There is significant difference the level of Academic adjustment scale across section is equal.

Table 3. Significant difference of level of academic adjustment scale **section.**

Independent Variable (section)	Mean	Standard deviation	P-value*	Decision
SECTION A	133.725	22.79	0.760	Fail to reject HO
SECTION B	133.345	14.852		
SECTION C	137.107	25.359		

***tested at 0.05 level of significance using leven's test . Dependent variable** level of academic adjustment

Conclusion: Therefore, there is NO significant difference between the level of Academic adjustment scale across section.