<u>ST2007 – Applications in Statistical Inference</u> <u>Assignment – 03</u>

Index Number: S14878

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a.

Statistical test: Anova test

b.

Path: analyze>compare mean >one way anova

Dependent list- Conductivity

Factor- Coating Type

c.

 H_0 : All the means of the four groups are equal $/ \mu 1 = \mu 2 = \mu 3 = \mu 4$

H₁: At least one mean is not equal to the rest/ $\mu i \neq \mu j$

d.

Decision rule: If $p \le \alpha$, then we reject H0.

Statistical conclusion:

p = 0.000 and $\alpha = 0.05$

 $P < \alpha$

reject H0.

General conclusion: There is enough evidence to conclude that at least one mean is not equal to the rest at 5% significance level

e.

Statistical test: post hoc test

H0: Variability of 4 groups are equal.

H1: Variability of 4 groups are not equal.

Decision Rule: If $p \le \alpha$, then reject H0.

Statistical conclusion

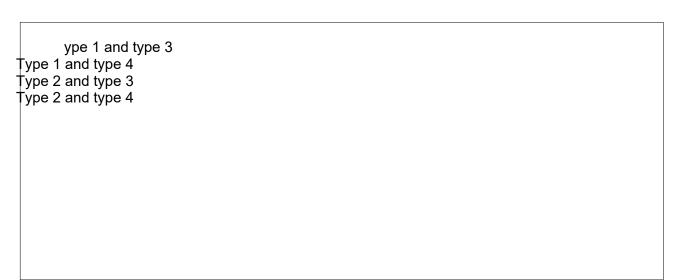
$$p = 0.122$$
 and $\alpha = 0.05$
$$p < \alpha$$

$$\therefore \text{ we not reject H0.}$$

Reason for the choice:

By the test of homogeneity of variances we can say that our H0 can't reject so we can do post hoc test to this scenario

f.



Question 02

a.

Path:

Analyze-->correlate-->Bivariate

Select the variable we want to find the correlation of into the "variable" box

Tick Pearson option from "correlation coefficients".

Select "Two-tailed" in test of significance box.

Tick "flag significant correlation"

Then click ok.

b.

Pair of Variable	Suitability	Reason (if not suitable)	
Make & Price	Not Suitable	The Pearson's correlation value is in between 0	
		and 0.2. Hence it has very weak relationship	
		between make &price. Therefore, this type of	
		relations is not suitable to check Pearson's	
		correlation.	
Fuel_type & Body_style	Not Suitable	The Pearson's correlation value is in between 0	
		and 0.2. Hence it has very weak relationship	
		between fuel type and body style . Therefore,	
		this type of relations is not suitable to check	
		Pearson's correlation.	
Height & Price	Not Suitable	The Pearson's correlation value is in between 0.2	
		and 0.4. Hence it has very weak relationship	
		between height and price. Therefore, this type	
		of relations is not suitable to check Pearson's	
		correlation.	
Price & Width	Suitable		

	No Comment

c.

Before calculating the Pearson's correlation coefficient, we should perform a scatter plot and graphically check whether the association between the two variables is linear.if the relationship is not linear, Pearson's correlation coefficient is not an appropriate statistic for measuring their association.

If the between two variable has relationship according to the scatter plot we can follow the below path for get the results.

d. (Complete the table for the valid variables only)

			Significance at
Pair of Variable	Direction	Strength	0.01 significance
			level
Make & Price	Negative	Very weak	Not significance
Fuel_type & Body_style	Positive	Very weak	Not significance
Height & Price	Positive	weak	significance
Price & Width	Positive	Very strong	significance

Question 03

a.

 H_0 : There is no relationship between "work class" and "income" variables.

 H_1 : There is a relationship between "work class" and "income" variables.

b.

Statistical test: Chi-Squared test of independent for categorical variables

c.

Path:

Analyze ----> Descriptive Statistics ----> Crosstabs

d.

Decision rule:

If $p \le$ alpha , then reject H0.

Statistical conclusion:

alpha =0.05 , p=0.000 Alpha >p reject H0 at 5% significance level.

General conclusion:

There is not enough evidence to conclude that at 5% significance There is no relationship between work class and income.

e.	
	Explanation: hence 12.5<20 this result is aceepect.
f.	
	Adjustment:
g.	

Question 04

a. Statistical test: Chi-Squared, One-Variable Test Reason: b. H_0 : p1 = 0.25,p2 =0.3 ,p3 = 0.2,p4=0.15 ,p5=0.1 H_1 : pi not equal p0i for at least one i c. Transform -----> Automatic Recode d. **Order of Proportions:** e. Test statistic: 1534.840

Decision rule: If $p \le \text{alpha}$, then reject H0.

Statistical conclusion:

alpha =0.05 p=0.000

Alpha>p value

reject H0 at 5% significance level.

General conclusion:

There is not enough evidence to conclude that, at 5% significance level for at least one pair paired is not equal to given proposition

f.

go to data tab click weight cases tick weight cases enter frequency column to frequency variable