Analysis of Mean Test Score

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STAT 6949

**ABSTRACT**

The main purpose of this paper is to determine the interaction between race and test preparation and their interaction on the mean score of the students. If there exists significant interaction, we simply use simple effects. Simple effects are comparisons of the cell means across levels of one factor for some or all levels of the other factor (Montgomery, 2021). If there doesn’t exist interaction then, we use main effects. The main effects are comparisons of marginal means for one of the factors (Montgomery, 2021). Test preparation and Race are considered as the two fixed factors in our project. Test preparation consists of two levels (completed and none) whereas race consists of five levels (A, B, C, D, and E). There were three scores in the dataset: Reading scores, writing scores, and Math scores. We created a new variable and calculated the mean of three scores called “Mean” which represents the mean score of the students. The mean scores of the students were considered as the response variable.

 A 2-factorial ANOVA test was performed to determine the interaction between race and test preparation and its effect on the mean score of students. We further conducted a multiple comparison test to meet the final conclusions. We analyzed the data using R statistical software throughout the procedure. The study found that there was no significant interaction between race and test on the mean score of the students (p-value =0.775>0.05). However, we can say that the race (p-value =1.06e-7<0.05) and the test(p-value=2e-16<0.05) individually have a significant effect on the mean score of the students. Thus, from Tukey’s post hoc test, we concluded that there is a significant difference in mean groups between race and mean groups between tests.

Keyword: Race, Test preparation, interaction, main effect

**Contents**

**ABSTRACT**

**1.Introduction…............................................................................................................................1**

1.1. Hypothesis................................................................................................................................2

**2.Methodology...............................................................................................................................3**

2.1.Data Description........................................................................................................................3

**3. Descriptive analysis...................................................................................................................**4

3.1. Descriptive analysis for test......................................................................................................4

3.2.  Descriptive analysis for race....................................................................................................5

3.3.  Descriptive analysis for Race and Test Preparation................................................................6

3.4.  Interaction Plot........................................................................................................................7

3.5.  Main effects of test and race....................................................................................................8

**4. Analysis......................................................................................................................................9**

4.1.  A two-factorial ANOVA Design............................................................................................9

4.2.  The F-test................................................................................................................................9

4.3.  ANOVA results.....................................................................................................................10

4.4.  Tukey test for race and test....................................................................................................11

4.5.  Model Adequacy...................................................................................................................13

**5. Conclusion and Recommendation.........................................................................................16**

**REFERENCES............................................................................................................................18**