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STA 3064

Assignment 2

* 1. A table with numbers and a number of error

     Description automatically generated with medium confidence
  2. ‘EURO’ is positive 2, which suggests that tend to have a higher ‘Index’ value compared to the other countries in ‘Country’. ‘ASIA’ is negative 14, which suggests that tend to have a lower ‘Index’ value compared to the other countries in ‘Country’. ‘SA’ is negative 9.67, which suggests that tend to have a lower ‘Index’ value compared to the other countries in ‘Country’.
  3. ‘EURO’ has a t Value of 0.40, and Pr>|t| of 0.7009, indicating statistical insignificance for ‘Index’. ‘ASIA’ has a t Value of -2.79 indicating moderate impact on ‘Index’, and Pr>|t| of 0.0236, indicating statistical significance. ‘SA’ has a t Value of -1.92 indicating moderate impact on ‘Index’, however Pr>|t| of 0.0904, indicating statistical insignificance.
  4. A screenshot of a computer

     Description automatically generated  
     R2=0.6357, meaning that the variables ‘EURO’, ‘ASIA’, and ‘SA’ explains approximately 63.57% of the variance in ‘Index’.
  5. A table with numbers and a few black text

     Description automatically generated with medium confidence  
     Pr > F is 0.0364, indicating statistical significance. Since the model is statistically significant, it is doing a good job explaining the variance in ‘Index’.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Source** | **DF** | **SS** | **MS** | **F** |
| Interface | 4 | 1616 | 404 | 2.78 |
| Error | 36 | 5215 | 145.14 |  |
| Total | 40 | 6831 |  |  |

* 1. Since MS\_Interface is 404, it suggests that it has a stronger impact on the dependent variable for ‘Interface’.
  2. A screenshot of a computer

     Description automatically generated  
     P-value = 0.95872
  3. The high P-value (0.95872) indicates that F (2.78) is not significantly different from what would be expected by random chance if the null hypothesis were true. Given the high p-value, there is not enough evidence to reject the null hypothesis.
  4. Since we are comparing three different testing groups (Low, Medium, and High), the variances may not be equal throughout the three groups and the data may not be normally distributed. Further, running multiple t-tests could result in a Type I error. Finally, ‘Voids’ is categorical data and running t-tests are not an appropriate test.
  5. A screenshot of a data table

     Description automatically generated  
     With the F-value being 8.30 and Pr > F being 0.0022, we reject the null hypothesis. There are significant differences between the means of the void classification levels.
  6. A screenshot of a graph

     Description automatically generated  
     Low tends to have the highest strength among the three, with high being the lowest, and medium being between the other two.
  7. A table with numbers and text

     Description automatically generated  
     Apple = -0.0485714  
     Samsung = 0.2071429  
     Overall mean = (-0.0485714 + 0.2071429)/2 = 0.07978575  
     *a1* = -0.0485714 - 0.07978575 = -0.12835715  
     *a2* = 0.2071429 - 0.07978575 = 0.12735715
  8. A screenshot of a computer screen

     Description automatically generated  
     Since Pr > F is 0.0418, we reject the null hypothesis. The brand of the watch does appear to make a difference in the mean relative accuracy.
  9. A screenshot of a computer screen

     Description automatically generated  
     Since Pr > F is 0.0222, we reject the null hypothesis. The "Person" variable does indeed make a statistically significant difference in the mean relative accuracy.
  10. A screenshot of a data sheet

      Description automatically generated  
      Both the type of “Primer” and “Method” used significantly affect “Adhesion”. However, the interaction of “Primer” and “Method” is not significant. Since Pr>F values for both “Primer” and “Method” are very small, it indicated a highly significant influence on “Adhesion”.
  11. A graph with numbers and a bar

      Description automatically generated  
      When comparing the Minimum Significant Difference to the “Primer” variables, we see that each primer is statistically significant, with primer 2 being the highest, primer 1 being in the middle, and primer 3 being the lowest.
  12. A graph of a graph with lines and numbers

      Description automatically generated with medium confidence  
      The plot supports my findings. Primer 2 is the best, for both spray and drip, with primer’s 1 and 3 following.