



EvalFest How-Tos for Conducting a Bonferroni Post Hoc Test using SPSS

Bonferroni Post Hoc Test

1. Explanation of a Bonferroni Post Hoc Test
 - a. If the results your Chi Square Test of Independence are statistically significant, and if your predictor variable has more than 2 categories, you need to run additional tests to determine where the different patterns are in your data.
 - b. In this case, you will use a Bonferroni post hoc test to help figure out where those differences are. This statistic compares each cell to all of the other cells, and so that means instead of just one chi square test, we are now running lots of smaller statistical comparisons. The Bonferroni test takes the number of tests you are running into account and adjusts the p-value based on that number.
2. You need to first conduct the Chi Square test of independence to determine if there are different patterns in the outcome variable. If you are unfamiliar with the concept of this test or how to run it using SPSS, please see our other videos related to this test. Let's look at Time at Festival predicting Overall Rating.
 - a. The results indicate that there are different patterns in the outcome variable, Overall Rating, based on the predictor variable, Time at Festival. Because the predictor variable, Time at Festival, has more than 2 categories, you need to conduct a Bonferroni post hoc test to determine where these different patterns are.
3. Conducting a Bonferroni Post Hoc Test
 - a. There are several ways to conduct a Bonferroni Post Hoc Test using SPSS. The next steps allow you to create a table of percentage comparisons and associated significant differences.
 - b. Go to Analyze, Tables, Custom Tables.
 - c. Now, you want to place our outcome variable, Overall Rating, in the Rows space and our predictor variable, Time at Festival, in the Columns space. This will show the significantly different patterns in the outcome variable, Overall Rating.
 - d. Next, click on Overall to highlight it in the table. Click on N% Summary Statistics in the bottom left.
 - e. In the Statistics box at the top left, click the arrow next to Column Percent to open that menu.
 - f. Click on Column N% and then click on the arrow next to the Display box.
 - g. Highlight Count in the Display box and then click on the arrow next to the

Display box in order to remove Count from the display.

- h. Click Apply to Selection at the bottom right. Then click Close.
 - i. Click on the Test Statistics tab at the top.
 - j. Check Compare column properties.
 - k. Click OK.
4. Interpreting Bonferroni Post Hoc Tests Output
- a. You will notice that SPSS assigns a letter to each category in the predictor variable, Time at Festival. The letters within each box of the bottom table indicate where there are significant differences between categories. You can see from the results that a significantly higher percentage of festival-goers who had been at the festival More than 91 minutes chose a rating of Excellent when compared to any other group. Similarly, a significantly lower percentage of festival-goers who had been at the festival More than 91 minutes chose a rating of Good when compared to any other group. Finally, a significantly higher percentage of festival-goers who had been at the festival 46-60 minutes chose a rating of Very Good when compared with those who had been at the festival More than 91 minutes.



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