

How to Use SPSS Statistics to Run an ANOVA FACULTY CREATED CONTENT

A short burst learning video prepared by the Research & Methodology SIG in the Research Hub

Welcome to the short burst learning video on how to use SPSS Statistics to run an ANOVA presented by the Research and Methodology Special Interest Group on the University Research Hub.

I'm Dr. Frederick Lawrence, a quantitative methodologist.

Analysis of variance or ANOVA is used to determine whether there are any statistically significant differences between the means of two or more independent or unrelated groups of one or more factors.

We illustrate the procedure with an example, courtesy of Laerd Statistics and images from SPSS Statistics with permission from the IBM Corporation.

The research question was, are there any differences in the average time to solve a problem between employees who took a beginner, intermediate or advanced spreadsheet training course? A sample of 30 employees was randomly chosen and split into three groups of 10.

Each group took one of the spreadsheet training courses.

After the training, mean times to solve a spreadsheet problem were compared between the three courses using a One-Way ANOVA.

To start, the data were entered in the Data View and the variable attributes in the Variable View of SPSS Statistics.

For help with these steps, see our short burst learning video using Quantitative Analysis Program.

Then the assumptions were checked.

The dependent or test variable should be measured on a continuous scale interval or ratio.

The independent variable or factor should consist of two or more categorical independent groups.

Observation should be independent and there should be no significant outliers.

The dependent variable should be approximately normally distributed for each category of the independent variable.

Homogeneity of variances can be checked with the Levene's test which is a part of the One-Way ANOVA in SPSS Statistics.

For further discussion on checking assumptions, see the example on the Laerd website.

Choose One-Way ANOVA in the compare means group on the Analyze menu.

In the dialog box, move the time variable to the dependent list window and the grouping variable course to the factor window.

Then click Post Hoc.

In the Post Hoc multiple comparisons dialog box select one or more tests to compare the means after the ANOVA.

Tukey's test shown here is frequently used for prime researches.

Click Continue then click Option.

Select Descriptive and specify how to handle missing values.

Selecting homogeneity of variance test runs Levene's test for equality of variances.

Click Continue and then click Okay at the bottom of the dialog box.

In the descriptives output, the mean times for the three groups are shown.

For this example, the ANOVA was statistically significant at the 2% level against the alternate hypothesis at least one group mean is different from the others.

Multiple comparisons show the mean times for both the intermediate and advanced groups were statistically significantly different from the beginner group but the meantime for the intermediate group was not statistically significantly different from the advanced group.

Further help is available through the quantitative office hours.

On the Research Hub homepage, navigate to the Research and Methodology group and then to office Hours Implementing Research.

Contact a quantitative methodologist to schedule a consulting appointment.

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