



Week 7

Non-Parametric Statistics

Traditional parametric research tests you have been introduced to in this course (t -test, ANOVA, ANCOVA, MANOVA, MANCOVA, Pearson correlation, and regression) specify certain conditions about the sample data. How meaningful a parametric test is depends on the validity of these assumptions. Serious violation of one or more assumptions(s) may yield misleading results.

Sometimes the data we collect from a sample does not meet the assumptions necessary to perform traditional statistical research. For example, we might examine our data in advance of running an ANOVA and find that we do not come close to meeting the assumption of normal distribution or homogeneity of variance. In this case, we may need to use an alternative tool that will help to mitigate the effects of the violations, or at least be more appropriate to the conditions of the analysis. These alternative tools are called non-parametric statistics. Parametric statistics are used to make inferences about population parameters. Non-parametric statistics cannot make this leap and simply define what happened in a set of data (Weiers, 2011).

Examples of non-parametric statistics include the chi-square analysis, which is used to compare proportions, usually in nominal level data. The Spearman analysis is a non-parametric form of correlation analysis. The Wilcoxon methods allow us to test single samples, paired samples, and independent samples. This method is the non-parametric version of the different forms of t -tests discussed two weeks ago. The Kruskal-Wallis test is the non-parametric form of the one-way analysis of variance. There are many more, including the "benefit of the doubt model" (DeWitte, et al., 2013).

Be sure to review this week's resources carefully. You are expected to apply the information from these resources when you prepare your assignments.

Reference:

De Witte, K., Rogge, N., Cherchye, L., & Van Puyenbroeck, T. (2013). Economies of scope in research and teaching: A non-parametric investigation. *Omega*, 41(2), 305-314.

83.33 % 5 of 6 topics complete

Books and Resources for this Week



Knapp, H. (Academic). (2017). Mann-Whitney u-test [Streaming video]. Retrieved from SAGE Research Methods.

[Link](#)



Knapp, H. (Academic). (2017). Wilcoxon test [Streaming video]. Retrieved from SAGE Research Methods.

[Link](#)



Knapp Ph.D., H. (Academic). (2016). Correlation and Regression - Spearman[Video]. SAGE Research Methods Video

[Link](#)



Introduction to Business Statistics (7th ed.)

[External Learning Tool](#)



NCU School of Business Best Practice Guide for Quantitative Research Design and Methods in Dissertations

[Link](#)



Week 7 - Assignment: Conduct a Comparative Analysis of Non-Parametric Statistics in Extant Literature

Assignment



Due July 24 at 11:59 PM



For this assignment, you first will identify a topic of interest that you might want to pursue research. You are not tied to this topic when you reach the dissertation sequence, but it should be a topic that you find interesting now and also relates to your program *and* specialization.

Next, conduct a literature search using the NCU library to locate two studies examining your selected topic and in which the researchers used non-parametric statistics. In your search for articles, you should use any combination of the term “non-parametric” as well as the different tools discussed in this week’s lesson (e.g., Wilcoxon, Kruskal-Wallis, Spearman, Friedman, etc.).

Once you have located your articles, you will prepare a short paper using the following format:

- Introduction to the selected topic of interest
- Brief summary of first article
 - Include research question, statistical test(s), and general findings.
- Brief summary of second article
 - Include research question, statistical test(s) and general findings.
- Synthesis
 - Specifically, compare and contrast the two articles, assessing the types of statistical methods and analysis used.
- Conclusion
 - Assess what approach you might take if you were to conduct a study in this topic area.

Length: 3 to 5 pages not including title page and reference page.

References: Include a minimum of 3 scholarly resources.

Your paper should demonstrate thoughtful consideration of the ideas and concepts presented in the course and provide new thoughts and insights relating directly to this topic. Your response should reflect scholarly writing and current APA standards. Be sure to adhere to Northcentral University's Academic Integrity Policy.

Upload your document and click the *Submit to Dropbox* button.