Homework assignment 08

Use black text (if possible) for everything you include in this document. Keep both your answers and the original questions. Save this document in PDF format and submit it on Canvas. Please follow the general requirements described in the grading rubric.

1. Show a documentation header.

2. Download the file data-08-bacterial-soap.txt and review the documentation associated with this file. Prepare a data dictionary from the information provided in that documentation. If some of the documentation is incomplete (for example, no units of measurement specified), note this in your data dictionary.

3. Import the data into SPSS. Calculate the means and standard deviations of bacterial counts for each group. Draw boxplots for bacterial counts by group.

4. Do you think there are problems with meeting the equal variances assumption? Explain why or why not.

5. Run a oneway ANOVA model for this data. Display an analysis of variance table with only three rows properly labeled as between, within, and total. Use at least four significant digits for the sums of squares (SS) and mean squares (MS) but round the F-ratio and p-value to two significant digits. This will require you to re-type the analysis of variance table rather than cutting and pasting an image from the SPSS output.

6. Write the formal null and alternative hypotheses for this model. Would you accept or reject the null hypothesis? Explain.

7. Compute the Tukey post hoc comparison of pairwise differences. Display them below.

8. Interpret the results of the hypothesis test and Tukey post hoc comparison.

9. Compute the predicted values and residuals from the oneway ANOVA model. Display the first ten rows below.

10. Draw a QQ plot of the residuals and display it below.

11. Interpret the QQ plot.