# Guided Workshop 7: Two-Way Analysis of Variance

***Instructions:*** Download the file “Guided Workshop 7 – STARTER.xlsx”. I would recommend setting aside about an hour for this activity. When you are ready to start the workshop, open and begin the video “Guided Workshop 7: Two-Way Analysis of Variance”.

The video will have optional in-video questions to help teach you and guide you along. You won’t submit this document, but it will be a good template/guide for the activity.

At the end, after you have completed the Excel file above, you will open the “Guided Workshop 7 Submission” quiz, where you will enter the answers to the questions at the end of this document.

***Background/Objective***

In this guided workshop, you will learn how to analyze two-factor data using two-way analysis of variance (ANOVA). In one-way ANOVA, one is only looking for differences between groups with respect to a single factor. For example, a study might be conducted on the wear of tires from different manufacturers – the only factor is tire manufacturer. However, you may also be interested in tire wear not only as a function of tire manufacturer but also on road type (gravel vs. concrete vs. asphalt). In this case, we have two factors (manufacturer and road type) and we need to analyze the data using two-way ANOVA.

In this workshop, we will be exploring scores of high school students on the math portion of the SAT (a common college entrance exam in the U.S.) as a function of whether a student took a prep course and as a function of two different high schools. We have two factors (prep course and high school) and two levels of each (no prep course/prep course and high school 1 vs. high school 2). We can use two-way ANOVA to determine if there are any significant differences between taking a prep course or not and between students attending the two schools.

You will want to have the Week 7 Cheat Sheet available for this workshop. When you are done putting together your Excel file, answer the following questions in the “Guided Workshop 7 Submission Quiz” on Coursera (the text fields below are only for your benefit – you won’t be submitting this document).

1. What is the value of ? Click here to enter text.
2. What is the value of ? Click here to enter text.
3. What is the value of ? Click here to enter text.
4. What is the value of ? Click here to enter text.
5. How many degrees of freedom are there for Error? Click here to enter text.
6. What is the value of for the interaction effect? Click here to enter text.
7. What is the P-value for the effect of the Prep Course? Click here to enter text.

**That’s all! 😊**