CHAPTER OVERVIEW

4: ANOVA Models Part II

Objectives

By the end of this chapter, students will be able to:

- Apply the overall mean, cell means, and dummy variable regression models for a one-way ANOVA and interpret the results.
- Identify the design matrix and the parameter vector for each ANOVA model studied.
- Recognize aspects of ANOVA programming computations.

This is a continuation of the previous lesson, and in this lesson, three more alternative ANOVA models are introduced. ANOVA models are derived under the assumption of linearity of model parameters and additivity of model terms so that every model will follow the general linear model (GLM): $Y = X\beta + \mathcal{E}$. In later sections of this lesson, we will see that the appropriate choice of X, the design matrix, will result in a different ANOVA model. This lesson will also shed insight into the similarities of how ANOVA calculations are done by most software, regardless of which model is being used. Finally, the concept of a study diagram is also discussed, demonstrating its usefulness when building a statistical model and designing an experiment.