

4.8: Chapter 4 Summary

This chapter, together with Chapter 3, covered four different versions of single-factor ANOVA models. They are: Overall Mean, Cell Means, Dummy Variable Regression, and Effects Coded Regression models. This lesson also provided the coding compatible with the SAS IML procedure, which facilitates the ANOVA computations using Matrix Algebra in a GLM setting. The method of least squares was used to estimate model parameters yielding a prediction equation for the response in terms of the treatment level. This prediction tool will show to be more useful in ANCOVA settings where model predictors are both categorical and numerical (more details on ANCOVA in Chapters 9 and 10). The prediction process can be utilized effectively only with a sound knowledge of the parameterization process for each ANOVA model, which we have been able to acquire as the design matrix was an input resource for running the IML code and the knowledge of the parameter vector was useful in interpreting the prediction (regression) equations.

Finally, using the greenhouse example, the concept of a study diagram was discussed. Though a simple visual tool, a study diagram may play an important role in identifying new predictors so that perhaps a pre-determined ANOVA model can be extended to include additional factors to create a multi-factor model discussed in Chapters 5 and 6. In addition to identifying the treatment design, the study diagram also helps in choosing an appropriate randomization design, a topic discussed in Chapters 7 and 8.

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