Week 10 – Two-Way ANOVA

# Section 1 – Introduction to Two-Way ANOVA

### Example 3.1

1. How many variables are the researchers studying? What are the variables? Are these variables categorical or quantitative? If categorical, what levels does each variable have?
2. What limitations do you see in Study Design #2 (Figure 3.1.2)?
3. What is a “full-factorial design”?
4. What is a “balanced design”?
5. Why should there be equal numbers of participants in each group (as seen in Figure 3.1.3)?
6. For testing these four treatment groups, what are the null and alternative hypotheses?
7. Why should the authors use a two-way ANOVA model for these data instead of two one-way ANOVA models?

# Section 2 – Two-Way ANOVA Interaction Models

### Example 3.2

1. What is the difference between a “blocking variable” and an “experimental factor”?
2. How much variation was there in the peroxide remaining in the pistachios?
3. How much variation in the peroxide remaining was explained by the model?
4. What pattern do you see in the predicted treatment values in Figure 3.2.4?
5. What pattern do you see in the observed (actual) treatment values in Figure 3.2.4?
6. What is the definition of a “statistical interaction”?
7. Where have you seen statistical interactions before?
8. What are the null and alternative hypotheses for testing for an interaction?
9. How would you use cards to simulate what peroxide value a pistachio would have if there was no interaction (if the null was true)?