BUS 735: Business Decision Making and Research   Name: _____

Instructor: Dr. James Murray

In-class Exercise: RANOVA (and lots of other tests ;))

Learning Objectives:

- LO2: Be able to construct and use multiple regression models (including some limited dependent variable models) to construct and test hypotheses considering complex relationships among multiple variables.

- LO6: Be able to use standard computer packages such as R to conduct the quantitative analyses described in the learning objectives above.

- LO7: Have a sound familiarity of various statistical and quantitative methods in order to be able to approach a business decision problem and be able to select appropriate methods to answer the question.

Directions: Work in groups of up to four people and answer the following questions. All papers will be collected, but only one member's paper will be randomly selected and graded and all members of the group will receive the same grade.

By signing below, you agree that the following work represents the efforts of everyone in the group, and you are willing to accept as your own grade for the group project the grade earned from this representation of your group's work. Every member must agree to these terms to earn a non-zero grade for this assignment.

_____   _____   _____

Signature Group Member 1   Print Name   Date

_____   _____   _____

Signature Group Member 2   Print Name   Date

_____   _____   _____

Signature Group Member 3   Print Name   Date

_____   _____   _____

Signature Group Member 4   Print Name   Date

The exercise uses the dataset `comptraining.csv` on the class website. Recently hired assembly line workers were timed on how quickly they could perform their task. The elapsed time to complete the task was measured for every employee at three occasions: one month, two months, and three months after the worker was hired. Thirty of the employees did not engage in formal training, thirty employees participated in face-to-face training, and thirty employees were engaged in computer-based training. Half of the employees reported having some prior manufacturing experience, and the other half reported having none.

1. Is there a difference in the average elapsed time after one month between employees that engaged in face-to-face training, computer-based training, or no training? If so, which training methods lead to the fastest time? Conduct the appropriate post-hoc tests.

2. Is there a difference in the average elapsed time between one month, two months, and three months after being hired? If so, does the time to complete the task increase or decrease from one month to the next?

3. Accounting for training method, gender, is there a difference in elapsed time after *three months* between employees having some experience and employees with no experience?

4. Controlling for all of the variables in the dataset, does elapsed time depend on the month into employment?

5. Controlling for all of the variables in the dataset, does training method (none, face-to-face, computer-based) affect elapsed time?

6. Controlling for all of the variables in the dataset, does the impact that the training method has on elapsed time depend on whether the employees have prior experience?

7. Controlling for all of the variables in the dataset, does the impact that the training method has on elapsed time depend on the month into employment?