**BAN 5733 Individual Exercise 5 (10 points)**

**Data Set Description:**

A pharmaceutical company has developed a new drug that has shown amazing regenerative capabilities in cartilage regrowth in lab tests. It has also passed phase I clinical trials and proven to not be harmful to human health. Now the company has conducted a phase II clinical trial to determine if patients with arthritis show improvement in pain after treatment. Patients were assigned to either a treatment group of the new arthritis drug or a placebo. Researchers also believe that there may be some interaction with gender because the drug works on certain biologic pathways. The pharmaceutical researchers have asked your analytics company to examine the data to see if you can explain and predict whether someone will have a successful treatment outcome or not. This information will be used to pass FDA approval processes and develop marketing campaigns for the drug.

Your answers will be looked at by the managers at the pharmaceutical company, the researchers and the marketing analysts. So, write your report with a short section in a manager friendly way with a separate detailed technical section for the researchers and marketing analysts. The managers are interested in primarily non-technical explanation of your final model and recommendations based on that model. The researchers and marketing analysts are interested in knowing all the technical details including but not limited to testing of assumptions of your model. The Researchers/Analysts do not want you to transform any variable for this modeling exercise.

Your analysis may be conducted in JMP or SAS (use effect coding for categorical IVs). Your report should be restricted to 6-pages maximum. Please back up your assertions with appropriate statistics and graphs as needed.

Variable Descriptions:

* ID is identification variable
* Improve: A binary dependent variable indicating whether a patient shows marked improvement (1) or no improvement (0) in arthritis pain.
* Gender: 0 = Male, 1 = Female
* Treatment: 0= Placebo, 1 = Active