MATH 651: Regression & Generalized Linear Models
Final Project Guidelines

In lieu of a final exam, students will complete a final (data analysis) project, either individually or in groups (depending on class size) using the statistical methods discussed in class. Students may locate their own data to analyze, or search for a potential dataset from a list of possible sites provided by the instructor. Students will submit a project proposal and present a final in-class report both orally and in writing.

Final Project Proposal Information

You MUST submit a one- to two-page summary of your project idea (with a reference to the data source(s)), along with a preliminary list of questions you wish to address. Proposals are due by the stated deadline on Blackboard, by the stated timeframe.

Final Project Information

a. Final manuscript

Final projects should be:

- Typewritten (double-spaced, with 12pt font size)
- No more than 15 typewritten pages, not including the abstract, figures or tables.
- Figures and tables should be appended to the end of your manuscript.
- Written in report/article format:
  - **Abstract**: Motivate the problem(s), and summarize your work.
  - **Introduction**: Should include a statement of the project objectives and clearly state the scientific questions of interest.
  - **Methods and Materials**: Should include a brief description of the problem and the data (with reference to the data source). This section can also include a quantitative and graphical summary of individual variables and relationships between variables of interest. Clearly indicate the methods applied and specific models considered (e.g., when conducting a hypothesis test, clearly state the null and alternative hypotheses in this section).
  - **Results**: Summarize the results as much as possible with clear reference to tables and figures. All tables and figures presented should have captions and be clearly referenced in the text.
  - **Discussion and Conclusions**: Clearly discuss your findings and draw conclusions.
  - **Bibliography**: Use a citation format appropriate for your discipline.

b. Final presentation

Final oral presentations will last no longer than the stated timeframe listed on Blackboard. There will be time for a few questions.

Please use the article format noted above (Introduction, Methods and Materials, Results, Discussion and Conclusion) for your presentation as well.

Methodology and Data

You may find your own dataset or refer to the "Resource List for Potential Data" for a listing of possible resources.

Minimum guidelines for the data include a minimum sample size of 50 observations. Further, the data should contain at least one response variable, and at least three predictor variables. Note: Depending on the specific characteristics of a data set, these guidelines may need to be modified (e.g., a dataset containing 30 variables requires a sample size much larger than 50 to be viable for analysis).

The scope of the statistical methods required to analyze your data should include at least one of the methods you will have learned in the course:

1. Regression Analysis (Simple Linear Regression, and Multiple Regression)
2. Analysis of Variance
3. Generalized Linear Models (Logistic Regression, Poisson Regression)

However, you are not limited to these methods for analysis. You may still consider analytical methods discussed in previous statistics courses, or also approach the instructor about other statistical methods to address questions of interest.

You are required to check the assumptions and conditions for the methods you use and justify your choices. If the normality assumption is not reasonable for the standard methods above, consider analogous nonparametric methods where able, or proceed with the chosen statistical method noting that this is an exercise and explaining how the assumptions are not met.

Effort

You are expected to implement at least two methods in the analysis (where one out of the three methods was introduced in this course), and present your results and final conclusions.

Evaluation
Final manuscripts and presentations will be evaluated by the instructor and peers according to the following criteria:

- Clarity of presentation: can the audience understand what was done and why? Can the audience follow how the results from your analysis are related to the conclusion?
- Correct use of technique(s)
- Correctly reporting results
- Assumptions checked appropriately (residual analyses, outlier and influential cases, etc.)
- Thoroughness in terms of method(s) chosen and overall effort

For group project experiences, students will further complete an assessment survey regarding their partnership experience. If no survey is completed, the instructor will assume that their partners give an average rating across all questions requiring feedback.

Keep in mind that the emphasis will be on the appropriate integration of statistical methodology learned in this class as well as from classes you have taken in the past. Your manuscript should clearly explain what was done and the associated rationale.

Project Submission
Manuscript and presentation submissions must be submitted in Blackboard by the stated deadlines. **Manuscripts are to be submitted in Word or PDF format; presentations may be in PowerPoint or PDF format.** For both submissions, be sure to name your submission as "LastName(s).docx", "LastName(s).pptx" or "LastName(s).pdf", respectively (e.g. Sellers.docx, Sellers.pptx or Sellers.pdf).

Only one submission is required from each group. Make sure your project files include the names of all group members. **No alterations are allowed to either the manuscript or presentation files after the deadline.**

Deadlines
See Blackboard for relevant project deadlines. **Late project submissions will not be accepted under any circumstances.**

Other notes

- You are encouraged to be creative in your data analyses!
- The organization of your report is very important. Points will be subtracted due to lack of organization in your report.
- You are free to choose the methods and options used in your analyses, however, you are expected to justify those choices.