MATH 6330: Workshop in Statistical Consulting
METHODS PROJECT REQUIREMENTS

The goals of your methods project is to become expert on a method beyond those you have learned in your courses; to educate your classmates on this method; and provide a paper that will serve as a long-term resource. You will also present your methods project as a 20 minute oral presentation.

Papers:

All papers must have the main sections specified below. Within each section I have given requirements as to what should be included. This is not an exhaustive list so please include what is necessary for your particular topic.

1. Introduction that gives background that is necessary for your method, the main objectives of the method, how to identify that the method may be useful in a given consulting project or statistical analysis, and what information the results of the method provide (or similarly, what questions are addressed by the method).

2. Case study description: details regarding the data set to be used and the goals of the analysis. *Depending on data availability*, you may be analyzing a data set or summarizing results from an analysis conducted by others. Typically, example data sets are available for use in an R package for a method. *The goal of including a case study is to show application of the method, presentation of the results, and interpretations that can be made from this method.*

3. Model and Methods
   - Clear mathematical specifications for your method
   - Assumptions of the method, including experimental design and target population
   - What data is required, e.g., quantitative, discrete, distributional assumptions, covariates etc.
   - Are there any commonly used pre-filtering or processing steps before the method is applied?
   - When should this method be applied? Optimal scenarios? How can you identify when this method will be useful?
   - How is missing data handled by your method?
   - Provide any other details necessary for the specific method.

4. Analysis and Results
   - Be sure to include interpretations of the final results/findings
   - Your results should be presented clearly with tables and figures. DO NOT USE PROGRAMMING CODE AND OUTPUT to provide your results. Programming code and/or scripts should be placed in an appendix to the paper.

5. Discussion
    - Discuss your results. Keep this cleanly broken out from analysis/results.
    - What are the next steps from such an analysis?
    - What are the strengths and weaknesses of the method?
    - Give relationship to other methods
    - Recommended resources

6. References

7. Appendix
    - Include necessary code or software instructions to carry out the method. If providing a script, use commenting throughout to explain code.
    - Provide a link to the utilized data set, if available
    - Feel free to include any other resources you have referred to or found helpful

Some project guidelines:

If you choose to use a data set to demonstrate your method, it should be a "simple" data set. That is, utilize a set of data that illustrates your method without getting bogged down with the complications of the data. There is a fine line between choosing a good data set for illustrating a method and choosing one that is too simple or too complicated. Be sure to put sufficient thought into the data you have selected.

Your demonstration should include step by step instructions of how to perform the method including providing the associated code **in the Appendix** and access to the data you used if appropriate.

Formatting of paper:

Please place an electronic copy of your paper in your Dropbox folder the day of your presentation titled [StudentLastName]_methodsPaper.

Your paper should be double-spaced typed text with 1 inch margins and 12 point font. In terms of length, it should be long enough to contain all of the requirements listed above and do so in a clear manner. I would be surprised if the length turned out to be fewer than 15 pages and would hope it would not be more than 25 total including figures, etc.

Grading of project:

I will use the following criteria and breakdown of points for grading your project. Note that the paper is worth 75% of your grade and the presentation 25% of your grade.

PAPER:	
55%	Content –The required sections and information are provided. Statistical arguments made are correct. Statistical definitions are clearly and accurately stated or referenced. The data set used for the case study is suitable for the method, and details are presented at an appropriate level. Support is given for conclusions reached.
5%	Organization –The ideas and information are effectively arranged to support the purpose of the project. The material is easy to follow and revisit information as necessary.
5%	Visuals –Visuals, e.g., figures and tables, clearly support the purpose of the project and their placement are such that they help the reader understand the content.
5%	Style/Clarity –The writing is efficient, clear and easy to read, e.g., overview, topic sentences, transitional sentences and section headers etc. are used to assist the reader throughout the paper. The tone of the paper is appropriate.
5%	Mechanics –Document is free of spelling, punctuation and grammatical errors.
PRESENTATION:	
5%	Content –The content provided is at an appropriate level to introduce the method and case study, engage discussion and enable the presenter to provide instruction of the method to audience. Content is correct as well as clearly and accurately stated.
5%	Organization –The ideas and information are effectively arranged. The material is easy to follow and revisit information as necessary.
5%	Visuals –Visuals, e.g., figures and tables, clearly support the purpose of the project and their placement in the presentation are such that they help the reader understand the content.
5%	Style/Clarity –The writing is efficient, clear and easy to read, e.g., overview, topic sentences, transitional sentences and section headers etc. are used to assist the reader in their viewing of the presentation.
5%	Mechanics –The presentation is free of spelling, punctuation and grammatical errors.