

Math 341/448 - FINAL PROJECT GUIDELINES

Presentation Date: Tuesday, June 7th, 2022

Written Report Due Date: Friday, June 10th, 2022

Submit a suitable dataset to work with for the final project. Possible websites include datasets and links on <http://www.statsci.org/datasets.html>. You may also use data sets from your work place if available.

Note: Other sites exist, but for now this is a good start.

Requirements for the Dataset

The data set must have a minimum of 6 to 10 variables with at least 3 quantitative variables and at least two categorical variables with a minimum of 100 cases. (If you find an interesting set with a good design that does not meet these minimal requirements, e-mail me and I may let you use it)

Background Research for Project Topic

Every paper should begin with appropriate background information about the topic. References used in obtaining this information should be cited at end of paper. You should have references about the topic of your paper. These journal references must all be cited in your paper.

Statement of Research Objectives

Once you find suitable data set to work with, you must formulate a set of research hypotheses or objectives that your project will address. The objectives guidelines will be discussed more in class, and the objectives you create will determine what tests and methodology will be needed from the course to address these needs. The statements of your objectives can be included as part of your purpose or in another paragraph early in your report.

Statistical Procedures to use in the Report

The procedures to use besides the numerical descriptives, should include at least three of the following concepts with SAS:

- Chi-square testing and its applications (Odds Ratios, Trend Tests etc.)
- Regression and Correlation techniques including Multiple Regression procedures
- t-tests and various hypothesis testing techniques and / or confidence interval determination for differences of means
- Analysis of Variance techniques
- Logistic Regression if applicable
- Nonparametric techniques may also be used.

***** You could include SAS procedures not yet covered in the class. Some of you are more experienced than others and the class will benefit by other techniques used, but do still use MAT 341/448 SAS methodology as well.

BE SURE TO INCLUDE TITLE AND SOURCE OF DATA

- A. ABSTRACT** - An abstract is necessary because your report may have multiple readers. Some of them will need to know the details of your report including the supporting data on which you are basing your conclusions and recommendations. Other readers will not need as many details but will want only the preliminary study information and main conclusions. The abstract or executive summary should cover the general subject of the research, the scope of the research, identification of the type of methodology used, and conclusions. It must also include purpose, time of study if known and sample size. You can describe the project's objective, what you have done, and general findings. It should be limited to around 200 words.
- B. BACKGROUND AND PURPOSE OF STUDY** - This is an introduction to the report. Review of literature should be included here also. The articles you referenced should be cited in the paper. The literature review is mandatory for your final project. You most likely have many goals in mind and you can state these objectives here or in a separate section titled objectives. It is these objectives you will be addressing in the paper. Try to limit yourself to three or four objectives. Go for quality not quantity in your writing.
- C. Sample collection techniques, methodology, and design if applicable** - Describe the data collection process, if you know it. If not, tell us how and when you acquired the data. Describe the size of the sample and information about the variables of interest. Include information about margin of error for percentages quoted in report based on sample sizes used. Discuss the design if known.
- D. LIST OF VARIABLES AND RESPONSES**
- E. Routines used on SAS** - This should be included in your introduction when discussing the purpose and objectives of your study.
- F. THE BODY OF REPORT** - The body is the bulk of your report. It is the major part of your paper. In a logical order present the results.
 - 1. Begin with the tabular and numeric descriptive techniques. These descriptive findings should be supported by tabular summaries using the results from proc means and proc freqs. This is followed by a summary paragraph of characterizing the subjects in your study as found by your descriptive findings. Be sure to include margin of error for all percentages quoted in the report. **ALL TABLES AND FIGURES MUST BE NUMBERED AND TITLED.**
 - 2. The next part summarizes the inferential procedures used. These should correspond to your objectives previously stated. Comment on the rationale for using certain procedures. For all statistical tests contained in the report, be

sure name of test and purpose, tests run with important findings and p-values summarized in paragraph form and conclusions are made clear and summarized in paragraph form. All results should be in narrative form and supported by tables or graphs when needed to enhance the explanation. Follow guidelines in class session handouts. Don't be afraid to be creative.

- G. SUMMARY/CONCLUSIONS AND RECOMMENDATIONS SECTION -** This contains a brief summary of your findings. Be specific about your findings. How did they compare with your research hypotheses? The conclusions are generally stated first and are the outcomes and decisions based on your research results. Recommendations on the other hand, are suggestions for how to proceed based on your conclusions. List any limitations, if they exist, and give suggestions for future research.
- H. LIMITATIONS (IF ANY) and OTHER VARIABLES YOU WISH YOU WOULD HAVE INCLUDED IN THE STUDY -** What other variables would you have tried to include in the study, and were there variables you would not use in further studies that were contained in this study?
- I. REFERENCES SECTION -** Include any sources where you may have done a search on background information on the topic, include the source of data reference site (if not confidential) and references you used.
- J. APPENDIX -** This also should include source of data. If you used survey data, a copy of the survey should be included in the Appendix. Some people also put the Codebook in the appendix. SAS code should also appear here. I do not need data lines. Any other output you think I should see should be included here also.