

NRS 736: Quantitative Analysis of Clinical Data FALL 2017

by M. Higgins

Dated 15 November 2017

30% of FINAL GRADE

FINAL Exam/Data Analysis Project:

1. Datasets will be provided to choose from or you can bring in an appropriate one of your choice, but the dataset must be approved by the instructor prior to executing your final analysis.
2. Develop a short proposal including a description of the dataset, how it was acquired, sampling design, hypotheses, and analysis plan(s)
3. Analyze the data using SPSS, SAS or R
4. Write up "journal-ready" sections for each of the following:
 - a. (brief) Background of data and purpose of the planned analyses (i.e. your hypotheses)
 - i. This does not have to be in depth – just a few sentences to describe the dataset
 - ii. Be sure to clearly state your hypotheses
 - b. Methods section
 - i. If you know, describe how the data was obtained and how each of the variables were selected and measured in the study
 - ii. Clearly describe all of the statistics you used for your analyses and all data presented within the final report
 - c. Results
 - i. Systematically go through each section of your results and describe the findings
 - ii. Describe any significant co-linearities or confounders in your data (relative to your hypotheses)
 - d. Tables and Figures as needed
 - i. DO NOT use BOTH a TABLE AND A FIGURE to present the SAME DATA
 - ii. You need at least 1 table with descriptive statistics (n, mean, standard deviation, median, min and max for continuous variables and n counts and relative %'s for ordinal/categorical variables) for the demographics and key clinical variables described
 - iii. Typically another 1 or more tables are presented that provide the descriptive statistics for each of your key outcome variables as well.
 - iv. Figures are typically presented for visual presentation of the key outcomes and/or final models (e.g. scatterplot with fitted line for linear regression or boxplots or error bar charts for analysis of variance models).
 - e. Discussion of results and conclusions drawn
 - i. Again, this does NOT have to be in-depth (in terms of theory and such), but describe whether or not the results you found supported your original hypotheses/research questions or not and provide an explanation.
 - ii. You can also discuss whether the results were clinically meaningful or not – for example, it is possible that you saw a results that was clinically meaningful but statistical significance wasn't found – possibly due to too small a sample size – or visa-versa – you can find statistically significant results that might not be clinically meaningful or relevant.
 - f. Limitations and Suggestions for Further Research
 - i. Also make sure to state the limitations in your data (like small sample size or amounts of missing data) or analysis (confounders present in the data that limit the ability to draw conclusions).
 - ii. Suggestions for future research or improvements on the current dataset/study
 - g. [check all spelling and grammar; format section neatly; make tables and figures neat and use informative labels – **DO NOT CUT AND PASTE Statistical Software output!!!**]
5. Provide a copy of the formatted dataset (with appropriate labels and codebook) and complete syntax/code/script used to complete your analyses

DEVELOP 2 HYPOTHESES/RESEARCH QUESTIONS – Suggestions for Hypotheses:

1. Multivariate Linear Regression – with one or more predictors – adjusting for covariates as needed
2. Analysis of Variance – again for one or more ordinal/categorical group predictors adjusting for covariates as needed
3. Logistic Regression – with one or more predictors – adjusting for covariates as needed
4. Repeated Measures Analysis of Variance – for ONE outcome variable measured at 2 or more time points – with one or more predictors (either ordinal/categorical or continuous or both)

NOTE: simple bivariate correlations, t-tests (Mann Whitney tests) and Chi-square tests may be used to help describe the data and look for initial underlying relations – but your FINAL models should involve at least one of the options 1-4. Use these initial correlations, t-tests and chi-square tests to investigate which variables should be combined for the best prediction and understanding of your outcome variable(s) of interest.

FINAL PROJECT REPORT SECTIONS:

- Abstract – limit to 300 words (some journals even limit this to as few as 150 words)
 - [include 5 sections in the abstract: (1) background;
 - (2) objective;
 - (3) methods;
 - (4) results; and
 - (5) conclusions]
- Background/Introduction
- Methods
- Results [including Tables and Figures]
- Discussion
- Limitations and Recommendations for Further Research

See example Author Guidelines at:

- Journal of Cardiovascular Nursing, <http://edmgr.ovid.com/jcn/accounts/ifauth.htm>
- Research in Nursing and Health, [http://onlinelibrary.wiley.com.proxy.library.emory.edu/journal/10.1002/\(ISSN\)1098-240X/homepage/ForAuthors.html](http://onlinelibrary.wiley.com.proxy.library.emory.edu/journal/10.1002/(ISSN)1098-240X/homepage/ForAuthors.html)
- American Journal of Public Health, http://ajph.aphapublications.org/userimages/ContentEditor/1318438422261/Instructions_for_Authors.pdf
- and the APA Guidelines