HUMH399/MA480 Social Justice & Statistical Concepts

Criteria for Capstone Project

General Instructions:

The majority of major decisions regarding the project will be discussed in class as a group. However, the report that you submit will be completed individually. The project will include the following components:

- Introduction, connecting the topic to the broader literature and course concepts.
- Narrative, illustrating the data that is collected; this can be woven in throughout the report in various ways.
- Study Design, describing the data collection procedure
- Data Collection (to be completed as a class)
- Statistical Analysis, describing the analysis and results for your particular question
- Communication of Results, connecting the results of the analysis to Introduction and Narrative

Every student is expected to participate in all aspects of the project. Often, individuals will be given specific assignments in order to advance the project throughout the term.

During the course of your analysis, you may use any resource available to you - including the internet, texts, notes, etc. If any resource has a substantial impact on the project, it should be appropriately cited. You need not cite course notes on analysis; this is understood to be common knowledge. However, if you choose to employ a strategy you discover in a textbook, it should be cited.

As noted above, this project combines a statistical analysis with a narrative element bringing in the voices of individuals represented in the data. There is no one template for weaving these elements together; you are encouraged to draw on the examples from the course readings.

Caveat: this is real research. We may not have a successful project. If we choose a project involving human subject research, it is possible we do not receive IRB approval in the time required to complete the project. We will need to be flexible and adapt as we proceed through the process. The instructors are ultimately in charge of the direction of the project and will have the final authority in all decisions related to the project.

Criteria:

The criteria stated below ensure that both your analysis as well as the clarity of the presentation are of an acceptable caliber. First, the criteria that apply to the overall report are stated, and then criteria specific to each of the three sections are provided. A project will be considered successful if it adheres to approximately 85% of the criteria below **and *all*** *essential criteria* (highlighted in orange below). The idea is to allow for small mistakes (which were clearly unintentional) which do not distract from the overall quality of the paper.

Overall Criteria:
The submission should be well formatted, which includes the following:

- The report is typed in 11 or 12 point font.
- The report is well-organized (distinct sections, headers, etc.).
- The report is no more than 8 pages, excluding the appendix; there is no length restriction on the appendix.
- R code / Minitab output should only be placed in the appendix, and not referenced in the text.

R code is not considered readable by a general audience; therefore, it is not appropriate to include it in the body of the report. However, it should be included in the appendix to construct a complete, self-contained, record of the analysis. Note: this code should **not** be referenced in the text; it is included for completeness, not because it helps tell the story of the data.

In addition to formatting, the submission should be publication-ready, which includes being well written. To this end, the report should only require minor editing before it would be suitable for publication, which includes the following:

- The report should have no more than 5 grammatical errors.

It can be very helpful to have someone else proofread your report for grammatical mistakes. Note that artistic choice of wording will not be evaluated.

Introduction Criteria:
The Introduction should clearly state the question of interest as well as summarize the rationale for the study. This includes placing this study in the context of the broader literature as well as making connections to major concepts introduced through the course readings. We would expect that this will be improved through the inclusion of narrative of the individuals represented by the data to establish context. Your introduction should satisfy the following:

- In your own words, summarize why the study is of interest.
- Include narrative illustrating the voices of those represented by the data; this is really helping to establish context of your study at the personal level.
- Include at least 2 new (not provided in class) references from the broader literature connected to your study.
- State the primary and secondary (if applicable) questions that are to be addressed in the analysis.

Methods Criteria:
The "technical" portion of the report comes in describing the analytical methodology. In this section, you should detail the analyses conducted and any summaries constructed, as well as the data collection itself. You are striving to give enough detail that a trained statistician could replicate your results; this is not the same as printing R code. The following criteria should be adhered to:

- There should be an accurate and clear description of the data collection. While you may draw heavily on class conversations and documents created as a group, this should be told from your perspective (not copy and pasted).
- There should be an accurate description of the model/analysis constructed.
- The methods chosen should be appropriate for the question you are trying to address.
- Describe any changes to the data necessary or assumptions required when performing your analysis.

If you are very clear, this can be done without actually stating the model explicitly. However, you *may* include the model along with the description for clarity. However, the model alone is **not** sufficient, and if it is included, it should be formatted using an equation editor (or LaTeX). The last bullet above emphasizes the importance of any assumptions/restrictions you imposed when working with the data; for example, if groups are collapsed or you assumed a particular interpretation of a response, these should be documented.

Again, you want enough detail that I can replicate your work **without the R code**.

Results/Discussion Criteria:
The description of your conclusions should not be technical. That is, it should be readable by anyone who has graduated from Rose-Hulman. Therefore, our goal is to write up the results of the questions asked in the Introduction in context, avoiding jargon. This should also tie back into the "narrative" portion of the project, drawing on stories from the people behind the data.

- The Results section should **avoid** jargon such as "we rejected the null hypothesis." Every conclusion should be stated in context.
- Include narrative connecting the results of the statistical analysis to the voices representing the data that provided context in the introduction.
- At least 1 graphic summarizing the data should be included (see criteria for graphics below). The graphic should address a question of interest.
- Any included graphic should be referenced (discussed in context). This discussion often coincides with the discussion of a p-value or confidence interval.
- Address the questions of interest, citing any p-values or confidence intervals relevant to each question.
- Any limitations regarding the study or analysis should be noted.

These remarks should bring your story to its conclusion; what is the big take away? The last bullet indicates that no study is perfect. There must be additional questions left unanswered, limitations you had to impose, decisions you would make differently. These should be discussed to improve future research.

Criteria for Graphics / Tables:
Graphics help to tell the story presented by the data. Many researchers often "skim" articles by reading the abstract and examining the graphics in the text. Therefore, our graphics need to be of sufficient quality to tell the story of our analysis. Only graphics relevant to the question of interest

should be included in the text. Any graphics used solely for assessing assumptions should be relegated to the appendix. The same is true of tables.

- All Figures/Tables should be numbered.
- All Figures/Tables should be appropriately labeled (axis and legends) and captioned (description of graphic).
- Captions are placed just above (or below) the accompanying Figure/Table.

The above specifications ensure the graphic can stand alone. If all you were provided was the graphic (without the accompanying text in the Results section), you should be able to understand the graphic. The implications are discussed in the results section, but the graphic itself should be self-contained. Additional requirements for graphics and tabular summaries:

- Refrain from using too many significant digits on the axis markings.
- Axis labels should include units, where applicable.
- Fractional values should be presented with a leading zero (e.g., 0.3432 and never .3432).
- Graphics for assessing assumptions only should be placed in the appendix (not necessarily referenced in the text).
- Output directly from a computer package should be reformatted to be clear without knowledge of the program itself.

Criteria for Appendix:
The appendix should contain information not relevant for telling the primary story but useful for constructing a complete record of the analysis. The appendix should include the following elements:

- Graphics used to assess assumptions, if applicable.
- Full R code or Minitab output, if applicable.

Last modified: Wednesday, January 18, 2023, 2:15 PM

◄ Capstone Project

Jump to...

Course Portfolio ►