**Rubric for Capstone Project**

This rubric will be used to assess the capstone project. In addition to the adequacy of the statistical methodology employed to address the question of interest, this rubric addresses the clarity with which the methodology is presented. This rubric will be applied by the instructor to the final project you submit. A score will be assigned for each standard and the final grade for the assignment will be computed using the following equation:

This rubric can therefore also be used as a self-assessment to determine if your project meets the standards of the course.

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| Standard | Score | Description |
| A. Grammar and Formatting:  English grammar rules should be adhered to throughout the publication.  *Note: discipline-specific language does NOT constitute poor grammar; artistic choice of wording should not be evaluated unless it drastically interferes with readability.* | 9 – 10 | The submission is very readable in its current format. Only minor editing, if any, is required. |
| 7 – 8 | While the submission is readable, several minor mistakes are present and should be addressed. |
| 5 – 6 | The submission is readable, but substantial editing is required to address mistakes that should have been addressed during proofreading. |
| 3 – 4 | The submission is difficult to follow due to several minor and major grammatical errors. Substantial editing is required. |
| 0 – 2 | The submission is extremely difficult or impossible to follow due to several major grammatical errors. A complete re-write is suggested. Shows evidence that no proofreading was done. |
| B. Introduction: The questions of interest are clearly stated. Primary and secondary goals should be distinguished, if applicable. Appropriate background is provided.  *Note: stating the questions clearly requires there be no ambiguity about the primary goal of the study; it should be evident what the study was hoping to discover.* | 9 – 10 | The questions of interest are clearly stated AND sufficient background is provided on the problem. |
| 7 – 8 | The questions of interest are stated but not clearly AND sufficient background is provided;  OR, the questions of interest are stated clearly AND background on the problem is provided, but not in sufficient detail. |
| 5 – 6 | The questions of interest are clearly stated but no background is provided on the problem;  OR, the questions of interest are absent but sufficient background is provided on the problem;  OR, both the questions of interest as well as background on the problem are provided, but the questions are not clear and the background is insufficient. |
| 3 – 4 | The questions of interest are stated but not clearly AND no background is provided on the problem;  OR, the questions of interest are absent AND insufficient detail is provided regarding the background of the problem. |
| 0 – 2 | Both the questions of interest and background on the problem were absent from the publication. That is, upon reading the publication, it was unclear what the reader should be expecting upon seeing the results. |
| C. Choice of Statistical Methodology:  The statistical method(s) chosen is appropriate for addressing the question of interest.  *Note: there are often multiple ways to model a problem; the chosen method needs to be statistically sound (assumptions met, etc.). Appropriate methodology includes the manner in which the data was collected and the model chosen. The appropriateness of the graphical summaries is assessed separately.* | 9 – 10 | The chosen statistical analysis is appropriate for addressing all questions of interest stated in the publication. No revisions are recommended. |
| 7 – 8 | The chosen statistical analysis is appropriate for the majority of the questions of interest, but some questions could be better addressed using different methodology. |
| 5 – 6 | The chosen statistical analysis is appropriate for some questions, but the majority of the questions could be better addressed using different methodology;  OR, the chosen statistical analysis is appropriate for the majority of the questions, but it was completely inappropriate for some questions. |
| 3 – 4 | The chosen statistical analysis could be improved upon in all respects, but is not completely inappropriate;  OR, the chosen method is appropriate for a minority of the questions, but completely inappropriate for a majority of the questions. |
| 0 – 2 | The chosen statistical analysis is completely inappropriate for all questions. This shows a lack of statistical knowledge on the subject. |
| D. Clarity of Statistical Methodology:  The statistical method(s) implemented are adequately summarized.  *Note: any code developed should be included only as an appendix. However, enough detail should be given in the primary text that the analysis could be replicated by a statistician.* | 9 – 10 | The statistical methods, regardless of whether they are appropriate, are described such that the analysis could be duplicated by a statistician. |
| 7 – 8 | The statistical methods were fairly clear; however, there were some components of the analysis that were unclear and would require a statistician to make assumptions about the analysis conducted. |
| 5 – 6 | The statistical methods were referenced, but several gaps in the methodology were present requiring a statistician to make several assumptions in order to reproduce the analysis. |
| 3 – 4 | The statistical methods were only vaguely referenced; the publication lacked sufficient detail to reproduce the analysis. |
| 0 – 2 | The statistical methods used were absent from the publication; that is, the type of analysis conducted was not discussed by the authors and could not be duplicated by a statistician. |
| E. Graphical Summaries: The graphical and tabular summaries chosen are appropriate for the question of interest and available data are clearly presented.  *Note: graphics for graphics sake are inappropriate; they should address the question or analysis. All graphics and tables should be captioned and labeled. All tables should be captioned and model output reformatted to be understood by someone with knowledge of the procedure but not necessarily the computer package that generated it. Graphics that are primarily for assessing assumptions and not directly discussed should be placed in the appendix.* | 9 – 10 | The graphical/tabular summaries chosen are appropriate for addressing the question of interest and summarizing the chosen data AND are clearly captioned and labeled. |
| 7 – 8 | The graphical/tabular summaries chosen are appropriate for addressing the question of interest and summarizing the chosen data but the captions are not descriptive or the labels are a little confusing. |
| 5 – 6 | The graphical/tablular summaries chosen could be improved upon but are not inappropriate AND they are clearly captioned and labeled;  OR, the graphical/tabular summaries chosen are appropriate for addressing the question of interest and summarizing the chosen data AND they do not contain clear captions or labels. |
| 3 – 4 | The graphical/tabular summaries chosen are inappropriate for addressing the question of interest AND they are clearly labeled and contain a descriptive caption;  OR, the graphical/tabular summaries chosen could be improved upon but are not inappropriate AND they do not contain a caption nor clearly labeled. |
| 0 – 2 | The graphical/tabular summaries chosen are completely inappropriate for addressing the question of interest or summarizing the data AND they are difficult to understand as they lack a descriptive caption and appropriate labels. |
| F. Results: The results of the analysis are interpreted correctly, are placed in context of the question, and are cited appropriately.  *Note: references to confidence intervals or p-values should be given when discussing the significance of a result. All results should be put in context of the study. Any scientist (regardless of their discipline) should be able to follow the conclusions of the submission.* | 9 – 10 | All results are interpreted correctly AND stated in context of the problem AND results are appropriately cited. |
| 7 – 8 | All results are interpreted correctly AND are stated in context of the problem BUT results are inappropriately cited;  OR, all results are interpreted correctly AND appropriately cited BUT are not stated in the context of the problem;  OR, some results are interpreted incorrectly BUT are stated in context of the problem AND cited appropriately. |
| 5 – 6 | Some results are interpreted incorrectly AND cited inappropriately BUT are stated in context of the problem;  OR, some results are interpreted incorrectly AND not stated in context of the problem BUT are cited appropriately;  OR, results were interpreted correctly BUT not stated in context of the problem AND are cited inappropriately. |
| 3 – 4 | Results are interpreted incorrectly AND cited inappropriately AND are stated in context poorly;  OR, results are interpreted incorrectly AND are stated in context poorly AND are cited inconsistently. |
| 0 – 2 | Results are not interpreted correctly AND are not placed in context of the problem (too technical) AND are not appropriately cited. This demonstrates a lack of understanding of the analysis results. |