

MATH 222 – Business Statistics

Course Project Instructions

This course is constructed around the six steps of statistical investigation. To demonstrate that you have learned the process – and the many tasks included in these steps – you will conduct an investigation of your own. The course project has three deliverables:

- Project Plan – due in Module 7
- Project Data – due in Module 8
- Project Report – due in Module 9

The group discussion in Module 6 will give you the opportunity to begin thinking about the topic for your project and the preparation of your plan. Use this time wisely to engage with peers (and your instructor) to hone your Project Plan for quick approval in Module 7. A strong plan is key to success as is an early start on data collection.

Project Plan (15 points)

There is a “quiz” assignment in Canvas that contains three open-response questions worth five points each. These questions correspond to the three topics that were discussed in Module 6: a research question that can be answered statistically, a description of the data needed to answer that question, and a specific plan for collecting that data.

Take note that human subject research is carefully scrutinized by the Institutional Review Board. There is not time in the term to get approval for a study that includes direct collection of data from human subjects, even a simple survey. You may observe public behavior but cannot communicate directly. It is better to investigate inanimate objects (i.e., price comparisons, measurements, validating a manufacturer’s claim) due to the time constraints of the course.

Project Data (25 points)

Another Canvas “quiz” assignment has two questions that require a file upload. The first upload should be a document or spreadsheet that contains the data that you collected. This should be a well-organized and labeled list that your instructor can use to replicate your subsequent work. The second upload should be a file that contains descriptive statistics (summary tables, graphs, and numerical summaries) to show that you have begun to explore your data preparatory to analysis.

Project Report (60 points)

In the Module 3 discussion you reviewed a published report based on a statistical investigation. This report will emulate that – just *much* shorter. A template is provided with the initial formatting in compliance with APA formatting. Your own (plain) text will take the place of the italicized reminders of what belongs in each section. You will also replace the << text >> indicators with appropriate information. If you need further help with APA style or citation/reference formatting, visit the Hunt Library’s [Research Guide](#) on the topic. For some

basic help with the details of good writing, consult [EAGLET Communication Lab](#) or use the Tutoring link in the Canvas course for more extensive help.

There should be at least six sections between the cover page (an abstract is not required) and the reference page. The template is set up with seven sections in case the topic of your investigation is novel or complex, needing more than a paragraph of description/definition/explanation to introduce the research question. Even a concise introduction will need to cite sources that a curious reader could reference for more detailed information (e.g., a sports association, manufacturer's website, restaurant's online menu).

A thorough description of the study design will include a precise definition of the population and the effort made to select a sample that would be representative of that population. Specify the observational unit and how many are in your sample (justifying that this is of sufficient size for your analysis). Also describe the variable of interest and the units of measurement, if applicable.

Include information about how you explored the data to know the appropriateness of your sample size and analysis technique. This should include numerical and visual summaries to describe the shape, center, variability, and unusual occurrences of your data set. The raw data was already submitted to your instructor so only the summaries are needed here.

Describe your analysis beginning with the null and alternative hypotheses presented both in words and in notation. Output from applets or software may be included (APA captioning is not expected). Explanation of that output is required. Demonstrate your understanding of significance, estimation, and generalizability.

Answer the research question with appropriate reference to the results just explained.

Finally, consider the next steps of the investigation. Were there parts of the process that need more time and resources for a stronger study design? Does the answer to this question lead to other questions?

Remember that this is professional – even technical – writing. Grammar, spelling, capitalization, and punctuation are important as is the use of an equation editor and smooth insertion of appropriate visuals.

See the grading rubric on the next page or connected to the assignment in Module 9 for the relative weights of each part of the score.

| Some Rubric    | | | | |
|---|----------------------|----------------------------------|-----------------|----------|
| Criteria | Ratings | | | Pts |
| Paper is written a professional manner using APA style. | Complete 5.0 pts | Partially Complete 3.0 pts | Poor 0.0 pts | 5.0 pts |
| A brief introduction to the area of study culminates in a research question that can be answered through statistical investigation. | Complete 5.0 pts | Partially Complete 3.0 pts | Poor 0.0 pts | 5.0 pts |
| The study design is thoroughly explained. | Complete 10.0 pts | Partially Complete 5.0 pts | Poor 0.0 pts | 10.0 pts |
| Descriptive statistics are included to explain the analysis technique. | Complete 10.0 pts | Partially Complete 5.0 pts | Poor 0.0 pts | 10.0 pts |
| The statistical results are described in terms of significance, estimation , and generalizability. | Complete 10.0 pts | Partially Complete 5.0 pts | Poor 0.0 pts | 10.0 pts |
| The statistical evidence is translated into an answer to the research question. | Complete 10.0 pts | Partially Complete 5.0 pts | Poor 0.0 pts | 10.0 pts |
| Comments on how to make the study better in replication or further research needed. | Complete 10.0 pts | Partially Complete 5.0 pts | Poor 0.0 pts | 10.0 pts |
| Total Points: 60.0 | | | | |