Northeastern University
College *of* Professional Studies

Final Project

Overview and Rationale

To consolidate you theoretical knowledge into technique and skills with practical and applicable value, you are asked to analyze a data set using methods presented in this course.

Course Outcomes

This assignment is directly linked to the following key learning outcomes from the course syllabus:

- Describe data numerically and graphically and predict influential variables for real world business problems

- Make statistical inferences about parameter in real world problems.

- Conduct regularization method for models to describe relationships among variables and make useful predictions.

- Classify and cluster data in order to identify patterns for business and organizations through Data Mining Techniques.

- Apply time series models for making better business decisions.

- Build appropriate analytic models for addressing real world complex business problems

Assignment Summary

You are asked to find a large data set and complete an analysis of the data set using 2 – 3 methods presented in this course.

You may create groups of up to 3 students or work alone. There is no difference in this assignment regardless of the number of participants in your group.

This assignment has several deliverables:

Modules 3: Data set and group member selection.

Module 4: Preliminary Analysis of the data set including

Module 5: Draft Report

Module 6: Final report and 10 minute video presentation of your analysis, results and reasoning.

Data set selection

In a short paper, one page in length, identify your group members, the data set you will use for the final project, and a set of questions you hope to answer or a problem you hope to solve with your analysis.

Individual Short Essay

For each major project deliverable, Preliminary Analysis, Draft Report and Final Report, you will submit an Individual Short Essay that presents the work you have done towards the final project. Be sure to show all your work, even if not incorporated in the group deliverable. This should include:

- Resources and data gathered for analysis

- R Code and output

- Interpretations of your analysis

Each individual short essay should be **no longer than** 2 pages.

These assignments will be incorporated into your group project grade.

Preliminary Analysis

Write a 2-3 page paper that summarizes your preliminary analysis. This report should include:

- Identification of the methods used along with justification for those methods

- Your R code and outputs

- Interpretations of the outputs and results, including preliminary answers to questions posed in the data selection assignment if appropriate.

Report

The report should include the following elements.

Introduction

Introduce the goals of the project, the question that needs to be answered and the methods used in your analysis. Be sure that the goals, questions and methods used fit together, meaning, questions asked reflect the goals and the methods used will answer the questions.

Methods

You must use **at least 2 methods** presented in this course. Explain why your chosen methods were appropriate and the data involved in our analysis. Be as specific as possible.

Analysis (Body of report)

Incorporate the R code and the outputs of the R code. Be sure to add your analysis and interpretation of the output and the significance of the results. Use graphs, figures, charts, and tables to increase visual effects of the main points you are making based on the results.

Interpretation & Conclusions

Use the conclusion to summarize the analysis and findings. Present an answer the question pose in the introduction and recommendations based on the data presented in the report.

Format

Your assignment/project should It also should follow APA format with at least 1500 words (excluding title page and references page) and references page.

Presentation

Your presentation must be a summary of your report, highlighting main points about the data and the answer to the question you posed. Be sure to

- Introduce your report and identify the question that needs to be answered;

- Explain the methods you used to find you answer, including why the methods are appropriate, given the data;

- A summary of the R code and results, as it relates to answering the question;

- Incorporate graphs, figures, charts and tables to help summarize the results of the report;

- Provide an answer to the question and any recommendations that you developed based on your analysis and interpretation.

If you are using PowerPoint or slide presentation organize your presentation, use no more than 7 slides (including title and references slides). There is no specific slide format you must use, however it must adhere to guidelines of good presentation design. However, you are encouraged to think beyond PowerPoint or Google Slides for your visuals.

Your presentation (recorded for online or live for inclass) must be no more than 10 minutes in length.

Each group participant must take part in delivering a portion of the presentation.

Preliminary Analysis Rubric

Category	Above Standard	Meets Standards	Approaching Standards	Below Standards
Methods	Identifies the methods used an provides a succinct and well-reasoned justification for each method	Identifies the methods used and provides a rationale for each method	Identifies the methods used and provides a rationale for each, but the rationale is generalized.	Does not identify the methods used or does not provide rationales for the methods used.
Analysis	Provides R code with associated output. R code is formulated to answer questions posed in the proposal.	Provides appropriate R code and with associated output. Output is consistent with the methods identified. Output moves students towards answering questions posed in proposal	Provides R code with output. R code or output is not consistent with the methods identified. Output is related to the questions posed by the group, but there is significant additional analysis to be done	Does not provide R code, the results provided are not the result of the R code presented or does not provide output consistent with the methods identified. Output may not be consistent with the questions posed in the proposal.
Interpretations	Provides astute insights that give initial answer to questions	Provides specific insights that give foundational answers to questions.	Provide general insights that give exploratory answers to questions	Questions do not inform the interpretations presented or does not provide interpretations of the results.
Report: Writing Mechanics, Title Page, & References	Completely free of errors in grammar, spelling, and punctuation; and completely correct usage of title page, citations, and references. The report contains approximately of 1000 words	There are no noticeable errors in grammar, spelling, and punctuation; and completely correct usage of title page, citations, and references. The report contains approximately of 1000 words	There are very few errors in grammar, spelling, and punctuation; and completely correct usage of title page, citations, and references. The report contains approximately 1000 words	There are more than five errors in grammar, spelling, and punctuation; or the usage of title page, citations, and references are incomplete; or the report contains far less than 1000 words

Report Rubric

Category	Above Standard	Meets Standards	Approaching Standards	Below Standards
Introduction	Goes above the requirements of the assignment to provide a compelling introduction that is coherent and concise.	Clearly and briefly introduces the goals of the project, the question that needs to be answered and the methods used in the analysis. The goals, questions and methods outlined are consistent with one another.	Introduces the goals of the project, the question that needs to be answered and the methods used in the analysis but is too wordy or the goals, questions and methods are inappropriate.	Does not introduce project goals, project questions or methods or they conflict with one another.
Methods	Goes above the requirements of the assignment to provide a clear justification for the data and methods used in the analysis.	Uses at least 2 methods as identified in the introduction in the analysis. Explains the methods and data used in the analysis and provides valid reasoning.	Uses 2 methods as identified in the introduction in the analysis. Explains the methods and data used in the analysis, but is too cursory or reasoning for methods, or data, is not coherent.	Does not identify 2 methods used in the analysis. Does not explain the reasoning for the data or methods used in the analysis.
Analysis	Goes above the requirements of the assignment to provide an insightful analysis, using visualizations to focus on major points.	Incorporates R code and the outputs. Provides detailed analysis of the output focusing on significance results. Uses visualizations to make major points	Incorporates R code and outputs. Provides generalized analysis of the outputs. Uses visualizations, to address some major points.	Does not include all R code and outputs. Provides broad statements in the analysis. Uses few visualizations that do not pertain to main points.
Interpretation & Conclusions	Succinctly wraps up the findings in the conclusion by directly answering the question posed in the introduction. Provides clear and actionable recommendations that follow from the data presented.	Wraps up the findings in a conclusion that provides an answer to the question(s) posed in the introduction. Makes specific recommendations based on the data presented	Wraps up the findings in a conclusion that provides general answers to the question posed in the introduction. Makes general recommendations based on the data presented	Does not wrap up findings in a conclusion or does not provide an answer to the question. Does not make recommendations related to the data presented
Data Visualizations	Goes above the requirements of the	Data visualizations are appropriate for the	Data visualization are useful for the level	Data visualization are used minimally or not

Category	Above Standard	Meets Standards	Approaching Standards	Below Standards
	assignment to include professional visualizations to present main points	level and type of analysis. . Uses graphs, figures, charts, and tables to increase visual effects of the main points being made based on the results.	and type of analysis, but graphs, figures and tables do not clearly communicate significance of the results to the reader.	at all. If graphs, figures and tables are used, it is unclear what they are intended to communicate or why.
Report: Writing Mechanics, Title Page, & References	Completely free of errors in grammar, spelling, and punctuation; and completely correct usage of title page, citations, and references. The report contains approximately of 1500 words	There are no noticeable errors in grammar, spelling, and punctuation; and completely correct usage of title page, citations, and references. The report contains approximately of 1500 words	There are very few errors in grammar, spelling, and punctuation; and completely correct usage of title page, citations, and references. The report contains approximately 1500 words	There are more than five errors in grammar, spelling, and punctuation; or the usage of title page, citations, and references are incomplete; or the report contains far less than 1500 words

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Presentation Rubric

Category	Above Standard	Meets Standards	Approaching Standards	Below Standards
Presentation	Goes above the requirements of the assignment to provide tell a compelling story about the data that answers the questions posed in the written report.	Provides a summary of the report, highlighting main points about the data and the answer to the question(s) posed in the written report	Provides a summary of the written report, highlighting general themes about the data. Gives general answers to question(s) posed in the written report	Either reads the report, providing too much detail, or does not focus on the data a methods to provide answers to questions.
Design	Goes beyond the requirements of the assignment to provide an innovative, and engaging design	Incorporates all required elements of content in a concise, organized and visually appealing design	Incorporates all required elements of content in an organized and pleasing design	Does not incorporate all the required elements of content or the design disorganized or unattractive
Data Visualizations	Goes beyond the requirements of the assignment to seamlessly integrates graphs, figures, charts and tables at critical stages of the presentation to tell a story	Incorporates graphs, figures, charts and tables to help audience focus on main points and summarize the results of the report.	Incorporates graphs, figures, charts and tables, but important points are lost in the data or visualizations. Is able to highlight main results of the report	Does not incorporate graphs, figures, charts and tables or incorporates visualizations that are irrelevant to main points
Mechanics	Completely free of errors in grammar, spelling, and punctuation; and completely correct usage of title page, citations, and references.	There are no noticeable errors in grammar, spelling, and punctuation; and completely correct usage of citations, and references.	There are very few errors in grammar, spelling, and punctuation; and completely correct usage of citations, and references.	There are more than five errors in grammar, spelling, and punctuation; or the usage of citations, and references are incomplete;

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Individual Essay Rubric

Category	Meets Standards	Approaching Standards	Below Standards
Introduction	Provides a summary of their contribution to the report, highlighting main points about their work to answer to the question(s) posed in the initial proposal	Provides a summary of their contribution to the report, highlighting general themes of their work to answer the questions posed in the initial proposal.	Does not introduce their contribution to the report or does not provide a summary that logically precedes the analysis and interpretations.
Analysis	Incorporates R code and the outputs. Provides detailed and accurate analysis of the output focusing on significance results. Uses visualizations to make major points	Incorporates R code and outputs. Provides generalized analysis of the outputs. Uses visualizations, to address some major points.	Does not include all R code and outputs. Provides broad statements in the analysis. Uses few visualizations that do not pertain to main points.
Discussions	Wraps up the findings in a conclusion that specifies how their analysis helps to answer the team's questions that were posed in the proposal.	Wraps up the findings in a conclusion that discusses how their analysis helps to answer group questions, but is very generic or does not specify which questions are addressed.	Does not wrap up findings in a conclusion or does not discuss how their findings are related to questions posed by the group.
Mechanics	There are no noticeable errors in grammar, spelling, and punctuation; and completely correct usage of citations, and references.	There are very few errors in grammar, spelling, and punctuation; and completely correct usage of citations, and references.	There are more than five errors in grammar, spelling, and punctuation; or the usage of citations, and references are incomplete;