

Northeastern University

College of Professional Studies

Final Project

Overview

Communicating complex data information and insights using data visualizations via creating dashboards, scorecards, spatial data representations and use of annotations is an important aspect of data science. In various roles you must be able to evaluate, propose and implement appropriate visualizations for a specified audience using key informational design concepts. In this assignment you will, develop a dashboard, using Tableau or RShiny, that answers the audience's questions about the data.

Course Outcomes

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

- Apply strategies for systematic visual exploration of multidimensional and heterogeneous data sets using XY plots, histograms, bar charts, etc.;
- Communicate complex data information and insights using data visualizations via creating dashboards, scorecards, spatial data representations and use of annotations;
- Evaluate, propose and implement appropriate visualizations for a specified audience using key informational design concepts;
- Analyze the ethical considerations and diverse perspectives within an organization to communicate relevant and accurate data

Assignment Summary

In this final project you will, analyze and summarize a given data set into a dashboard developed using Tableau or R Shiny. You will, develop a dashboard that tells a story, based on the audience, communicates your findings of your analysis, and answers the audience's business question(s).

This assignment has several deliverables:

Module 1 - 3: Review of the data set and begin an initial analysis. Develop questions to be answered by the data.

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Module 3: Assigned to groups and share initial analysis

Module 4: Create initial Tableau dashboard

Module 5: Create initial RShiny dashboard

Module 6: Submit and present final dashboard

Initial Analysis

Once you understand the data it's much easier to design a dashboard knowing the key variables.

Review the data set and start looking for valuable information to determine key drivers of the analysis. Analyze the columns, information and seek correlations that complete a basic analysis. In your analysis, answer the following questions.

- What do you see as variables in the data?
- What correlations, patterns and trends do you see?
- Who will be the audience of the data? What question would they ask about the data?
- How could a dashboard be used to show data clearly?
- What types of graphs and charts can be used to clearly explain the data?

This analysis will help you ask the right questions for the analysis in the deliverables to follow.

In Module 3, submit a 1-2 page paper that presents the findings of your initial analysis and identifies the business questions that will be answered by the final project. Be sure to answer the above questions and provide visuals including graphs, charts and outputs that demonstrate your findings.

In Module 3, post at least two sentences about the correlations, patterns and trends you see in the data, or assumptions about the data to your group discussion board.

Group Tableau Dashboard

Review the dashboards created by each member of your group and select the best visualizations (as a group). Incorporate these visualizations into a Tableau dashboard. The dashboard should:

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- Include as many different visualizations as needed. These should be of varying types
- Answer the research/business question and display the key information that the intended audience needs
- Be easy to navigate and visually appealing
- Reflect the data accurately and generally communicate the data appropriately
- Tells a story

Group RShiny Dashboard

Review the dashboards created by each member of your group and select the best visualizations (as a group). Incorporate these visualizations into an RShiny dashboard. The dashboard should:

- Include as many different visualizations as needed. These should be of varying types
- Answer the research/business question and display the key information that the intended audience needs
- Be easy to navigate and visually appealing
- Reflect the data accurately and generally communicate the data appropriately
- Tells a story

Final Dashboard

Work together to develop a final dashboard that incorporates RShiny or Tableau elements. The final dashboard should:

- Include as many different visualizations as needed. These should be of varying types
- Answer the research/business question and display the key information that the intended audience needs
- Be easy to navigate and visually appealing
- Reflect the data accurately and generally communicate the data appropriately

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The dashboard should incorporate the elements, with revisions, from each member of the group.

Dashboard Presentation

Work together to create presentation of your dashboard. This presentation should:

- Discuss the process for determining the data chosen for the dashboard
- Discuss why the data points were chosen and how that relates to the questions you identified and needs of the audience of the dashboard
- Tell the story of the data. What does the dashboard reveal about the original data set? How should this be interpreted by the audience? What does it mean?

If you are taking this course online, record your presentation, using any tool you prefer and post it to the discussion board below.

Whether the presentation is live or recorded, it must be 8-10 minutes long.

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Basic Analysis Rubric

Category	Meets Standards	Approaching Standards	Below Standards
Data Analysis	Provides a thorough analysis of the data and identifies key data points and appropriate business questions that will formulate the basis of the visualizations	Provides a well-structured analysis of the data. Provides data points that will formulate the basis of the visualization but some data points that are critical for the answering the business question(s) are not included or extraneous data points are focused on.	Provides limited analysis of the data. Does not identify specific data points or data points used are irrelevant to the business question(s) or needs of the audience.
Visualizations	Provides graphs, charts and other output that reflect the data analysis. Identifies other charts, graphs and visualizations that can be used in a dashboard.	Provides graphs, charts and other outputs that are related to the data analysis. Identifies other charts, graphs and visualizations for a dashboard, but these are limited or referenced in passing	Provides limited graphs, charts and other outputs or the outputs are not related to the data analysis. Does not identify charts, graph and visualization for use in a dashboard or only vaguely references the use of such visualization in a dashboard.
Audience	Demonstrates a keen understanding of the audience and its needs. Specifically addresses how the business question(s) will be addressed in the dashboard.	Demonstrates an awareness of the audience's needs. Addresses how the business questions(s) will be addressed in the dashboard, but does so with generalities.	Demonstrates a lack of awareness of the audience and its needs. Vaguely addresses how the dashboard will address the business questions.
Writing Mechanics	There are no noticeable errors in grammar, spelling, or punctuation.	There are very few errors in grammar, spelling, and/or punctuation.	There are significant errors in grammar, spelling, and/or punctuation.

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RShiny and Tableau Dashboard Rubric

Category	Meets Standards	Approaching Standards	Below Standards
User Friendliness	The dashboard is easy to read and understandable. The navigation is simple and uniform. It highlights key information that the audience needs	The dashboard is straightforward and clear. The navigation is discernable. It provides principal information that the audience needs	The dashboard is complex and the complexity interferes with a user's ability to understand and navigate the dashboard. Insignificant and secondary information is highlighted in the dashboard.
Communication & Accuracy	Data presented in the dashboard is accurate and provides a full picture for the audience. The data communicated is essential to the audience and answers the business question(s)	Data presented in the dashboard is valid, but may not provide a full picture for the audience or answer all business questions. The data communicated is meaningful but has some extraneous elements	Data presented in the dashboard is inaccurate or deceptive. It provides a false picture to the audience. The data communicated is not meaningful or insignificant. Does not answer the business question(s)
Visual Appeal	The dashboard is visually appealing. It uses excellent visualization practices/guidelines.	The dashboard is visually appealing, but misses some elements of good practice/guidelines	The dashboard is not visually appealing. It does not adhere to most good practices/guidelines
Writing Mechanics	There are no noticeable errors in grammar, spelling, or punctuation. Labels and titles are clearly written and descriptive.	There are very few errors in grammar, spelling, and/or punctuation. Labels and titles capture the general concepts presented	There are significant errors in grammar, spelling, and/or punctuation. Labels and titles are unclear or vague or incorrect.

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Dashboard Rubric

Category	Exceeds Standards	Meets Standards	Approaching Standards	Below Standards
User Friendliness	Goes beyond the assignment requirements to present a dashboard that intuitive and self-explanatory.	The dashboard is easy to read and understandable. The navigation is simple and uniform. It highlights key information that the audience needs.	The dashboard is straightforward and clear. The navigation is discernable. It provides principal information that the audience needs	The dashboard is complex and the complexity interferes with a user's ability to understand and navigate the dashboard. Insignificant and secondary information is highlighted in the dashboard.
Communication & Accuracy	Goes beyond the assignment requirements to communicate accurate and useful data that specifically addresses the needs of the audience and answers the business question(s).	Data presented in the dashboard is accurate and provides a full picture for the audience. The data communicated is essential to the audience and answers the business question(s)	Data presented in the dashboard is valid, but may not provide a full picture for the audience or answer all business questions. The data communicated is meaningful but has some extraneous elements	Data presented in the dashboard is inaccurate or deceptive. It provides a false picture to the audience. The data communicated is not meaningful or insignificant. Does not answer the business question(s)
Visual Appeal	Goes beyond the assignment requirements to develop a visually appealing dashboard that demonstrates acute attention to professional practices	The dashboard is visually appealing. It uses excellent visualization practices/guidelines.	The dashboard is visually appealing, but misses some elements of good practice/guidelines	The dashboard is not visually appealing. It does not adhere to most good practices/guidelines
Writing Mechanics	There are no errors in grammar, spelling or punctuation. Labels and titles are precise and descriptive.	There are no noticeable errors in grammar, spelling, or punctuation. Labels and titles are clearly written and descriptive.	There are very few errors in grammar, spelling, and/or punctuation. Labels and titles capture the general concepts presented	There are significant errors in grammar, spelling, and/or punctuation. Labels and titles are unclear or vague or incorrect.

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Presentation 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.	Provides an introduction of the goals of the project, the question that need to be answered and the methods used in the analysis	Provides an introduction of the goals of the project, the question that need to be answered and the methods used in the analysis but lacks coherency or brevity	Does not introduce project goals, project questions or methods.
Slides/ Data Visualizations	Seamlessly integrates graphs, figures, charts and tables at critical stages of the presentation.	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 not clear or they are not relevant for the points being made.	Does not incorporate graphs, figures, charts and tables
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 and recommendations based on the data presented.	Wraps up the findings in a conclusion that provides an answer to the question and recommendations, but are only vaguely related to the data presented.	Does not wrap up findings in a conclusion or does not provide an answer to the question or recommendations that are related to the data presented.
Presentation	Articulation of ideas/ concepts are particularly well-organized, focused and skillful.	Concisely articulates ideas/concepts in an organized fashion and presented professionally.	Articulation of ideas/concepts are drawn-out and/or disorganized.	Articulation of ideas/concepts are disorganized AND unprofessional.