Assignment: Visualization Ethics and Communication

Project Overview

This assignment focuses on the power of visualization in shaping narrative and understanding. For this project, I have provided the Titanic dataset. *However, you may choose to use another interesting data instead*. In this project, you will create accurate visualizations that effectively communicate patterns in the data, as well as intentionally misleading visualizations to explore the ethical implications of data representation. The project includes individual coding, collaborative group work, and a final report and presentation.

Learning Objectives

1. Create effective visualizations that clearly communicate insights.
2. Understand and apply ethical principles in data visualization.
3. Demonstrate how visualization choices can mislead or distort interpretation.
4. Collaborate with peers to evaluate visualization quality and communicate findings.

Dataset

For the project:

You may use the Titanic dataset, which contains demographic and survival information for passengers aboard the RMS Titanic. This dataset allows for analysis of survival patterns across passenger classes, ages, genders, and other variables.

You may also use another interesting dataset if you wish. It should have enough attributes to allow you to clarify and obfuscate the complexities it has using visualizations. The characteristics that make the Titanic dataset suitable for the project are the complex reasons why people survived this disaster.

Project Steps

Step 1: Understand the Dataset

- Analyze the Titanic dataset or another dataset of your choice to identify key trends, such as survival rates across demographic groups.
- Identify opportunities for effective visualizations that highlight these trends.

Step 2: Set Up GitHub Repositories and a Google Document

1. **GitHub Repository:**
    - Create a shared GitHub repository named DATA6550-Visualization.
    - Create a shared Google document for the final report of this project. Google Docs will automatically record all document updates, and it is one of the ways the instructor will track your contributions. Share the document with the team, the instructor, and add a link to it in the Dropbox for the project in D2L, along with uploading a PDF of the document. My Gmail account is jfwallin@gmail.com when you add me to the document (with editing rights, please). Please submit only one PDF and link per group.
    - Follow this directory structure:
        - final_report.pdf: Shared Google document for the final report
        - readme.md: Overview of the repository.
        - Code/:
            - Individual subfolders (e.g., Lastname1/, Lastname2/) for personal coding contributions.
        - Data/: Store the dataset files here.
        - Collaboration/:
            - Weekly AI-generated summaries of group discussions (e.g., WeekA.pdf, WeekB.pdf). You may add your own document about what was missed in the AI summaries.
        - Analysis/: (Optional) Place graphics or intermediate results here.
2. **Google Document:**
    - Create a shared Google document for the final report of this project. Google Docs will automatically record all document updates, and it is one of the ways the instructor will track your contributions. Share the document with the team, the instructor, and add a link to it in the Dropbox for the project in D2L, along with uploading a PDF of the document. My Gmail account is jfwallin@gmail.com when you add me to the document (with editing rights, please). Please submit only one PDF and link per group.
3. Create a Group Communication Plan
    - Choose a communication method (e.g., D2L forums, Teams, Zoom, or something of your choice).
    - Invite group members and your professor to the forum you use.
    - Ensure all group members check in regularly and contribute to discussions.

- Use the selected method to coordinate tasks, share updates, and resolve challenges.
- Document communications with AI summaries and supplemental documents. This will be submitted.

Step 3: Individual Coding Work

1. **Accurate Visualizations:**
    - Create two visualizations that ethically and effectively represent patterns in the Titanic dataset.
    - Focus on clarity, accuracy, and professional presentation.
2. **Misleading Visualizations:**
    - Create two intentionally misleading visualizations to demonstrate how design choices can distort understanding.
    - Examples might include manipulated scales, cherry-picking data, or altering visual emphasis.
3. **Documentation:**
    - Write explanatory paragraphs for each visualization in your report, discussing why the accurate visualizations are effective and how the misleading visualizations could deceive viewers.
4. **Submission:**
    - Upload your personal coding work to your individual folder in the Code/ directory of the GitHub repository.

Step 4: Collaborative Group Work

1. **Group Discussion and Summaries:**
    - Participate in regular group discussions via your chosen platform (e.g., D2L forums, Teams, or Zoom).
    - Share and review visualizations, discussing:
        - Visualization effectiveness and areas for improvement.
        - Ethical implications of misleading visualizations.
    - Summarize group discussions using AI tools, including:
        - Key points discussed.

        - Decisions made (e.g., which visualizations to highlight in the report).
        - Challenges and resolutions.
    - Upload these summaries to the Collaboration/ folder in GitHub.

2. **Group Report:**
    - Use the shared Google document to collaboratively write the final report, including:
        - A summary of the dataset.
        - Description of the visualizations and their implications.
        - Ethical considerations in visualization design.
    - All group members must contribute to the writing process.

Step 5: Final Deliverables

1. **GitHub Repository:**
    - Ensure the repository includes:
        - final_report.pdf: Final report with contributions tracked.
        - All code files in the Code/ subfolders.
        - Dataset files in the Data/ folder.
        - Weekly summaries in the Collaboration/ folder.
        - Visualizations or intermediate results in the Analysis/ folder (optional).

2. **Dropbox Submission:**
    - Submit the following to the group Dropbox:
        - Final report (**final_report.pdf**). You need to upload the PDF file to Dropbox and to GitHub separately from the link you have been editing on Google Docs. This will allow the instructor to do a quick plagiarism check on your document.
        - Collaboration summaries (**WeekA.pdf** and **WeekB.pdf**) to GitHub and the Dropbox.
        - Upload the personal reflection document of YOUR contributions to the individual assignment Dropbox. This need only be a paragraph or two of your contributions and the lessons you learned in the project. Your individual contributions will be evaluated based on this document, your commits to GitHub, the summaries of the discussions, and your work on the Google document as found through track changes.

Step 6: Final Presentation

- Present your findings during the final Zoom session.
- **Include:**
    - A brief summary of the dataset and your analysis.
    - Key takeaways from the accurate visualizations.
    - Ethical implications of the misleading visualizations.
- One group member will be randomly selected to give a 5-minute presentation.

Evaluation Criteria

Your work will be evaluated based on the following:

1. **Individual Contributions:**
    - Quality and clarity of code.
    - Meaningful participation in discussions (as reflected in discussion summaries).
    - Contributions to the report (tracked in Google Docs).
    - Final reflection paper submitted to the individual Dropbox for the project.
2. **Group Deliverables:**
    - Quality of the final report (clarity, depth, and analysis).
    - Effectiveness of the presentation (engagement, visuals, and communication).
    - Organization and completeness of the GitHub repository.
3. **Collaboration and Documentation:**
    - Use of GitHub for version control and organization.
    - Comprehensive AI summaries of group discussions.

Notes

- Regular participation is critical for individual and group success.
- If challenges arise with group participation or technical issues, inform the instructor promptly.
- Use the course forum or office hours for additional support.