

CS 445/545: Final project Stage 2

For this stage, your task is to develop an analytical strategy based on the dataset selected in Stage 1 and outline your planned approach for exploring and visualizing the data. **Each team member** is required to submit at least **three distinct** visualization proposals in a single analysis report. Your proposals should not be the final visualization results but should clearly describe the rationale behind each idea and explain how they will help uncover insights or answer specific questions about the data.

Task:

Based on the dataset selected in Stage 1, develop an analysis report that outlines your planned approach for visualizing and exploring the data.

Submission:

Each team member must create and include at least three distinct visualization proposals. For each visualization, your report should contain:

- **Visualization Proposal Title:**
Clearly name the visualization idea (e.g., “Trend Analysis of GDP Growth” or “Heatmap of Urban Density”).
- **Rationale:**
Provide a clear explanation of why this particular visualization is being proposed. Discuss the problem or research question it addresses, and why this visualization is the appropriate method.
- **Expected Insights:**
Explain how the proposed visualization will help uncover insights or answer specific questions about the dataset. For example, discuss what trends, patterns, or correlations you expect to observe.

Note: This stage is about planning and strategizing your visualization approach rather than producing the final visual outputs.

Sample Project Ideas

To help inspire your proposals, consider these sample ideas:

- **Temporal Trends Visualization:**
Propose a line graph or area chart to track changes over time in key metrics (e.g., economic indicators, population growth).
- **Comparative Analysis:**
Suggest using grouped bar charts or side-by-side box subplots to compare different groups or regions within your dataset.
- **Correlation and Relationship Exploration:**
Consider using scatter plots or heatmaps to examine relationships between two or more variables, highlighting potential correlations.

- **Geospatial Mapping:**
If your dataset includes geographic information, propose map visualizations that could reveal spatial patterns or trends.
- **Dimensionality Reduction:**
Propose using PCA to visualize high-dimensional data in 2D or 3D, helping to identify clusters or underlying structures.

Effective Communication

When writing your one-page report, keep the following in mind:

Detail: Ensure every attribute is described thoroughly (including its meaning, range, and type).

Insight: Explain the potential insights the dataset might offer and outline preliminary research questions or directions for further analysis.

Visual Appeal: Although it's a written report, formatting and readability count. Use bullet points or numbered lists where appropriate to enhance clarity.

Rubric

Your submission will be evaluated based on the following criteria:

Completeness:

All required sections (Introduction, Dataset Description, and Potential Significance) are included and fully developed.

Depth of Analysis:

Each attribute is clearly described, and potential insights are thoughtfully discussed.

Helpful Links

Here is an excellent article which goes over the basics of a data visualization projects:

<https://www.knowledgehut.com/blog/business-intelligence-and-visualization/data-visualization-projects>

An article about top 10 data visualization project ideas in 2021:

<https://365datascience.com/trending/data-visualization-project-ideas/>

Another article with some sample data visualization project ideas:

<https://www.projectpro.io/article/data-visualization-projects-ideas/471>

Simplified Submission Template

Team name:

Member name:

Logo:

Title:

Provide a concise title that reflects your project theme.

1. Introduction:

- Briefly restate your selected dataset and its relevance to your project.

2. Visualization Proposals:

For each visualization, include:

- **Visualization Proposal 1 – Author 1: [Title]**
 - **Graph draft:** (Could be hand-painted)
 - **Rationale:**
Explain why you propose this visualization and what question it addresses.
 - **Expected Insights:**
Describe the insights or trends you expect to uncover.
- **Visualization Proposal 2 – Author 1: [Title]**
 - **Graph draft:** (Could be hand-painted)
 - **Rationale:**
Provide the reasoning behind this visualization approach.
 - **Expected Insights:**
Explain the anticipated outcomes or patterns that will be revealed.
- **Visualization Proposal 3 – Author 1: [Title]**
 - **Graph draft:** (Could be hand-painted)
 - **Rationale:**
Discuss the rationale for this proposal.
 - **Expected Insights:**
Detail how this visualization will help answer specific questions about the data.
- **Visualization Proposal 1 – Author 2: [Title]**
 - **Graph draft:** (Could be hand-painted)
 - **Rationale:**
Discuss the rationale for this proposal.
 - **Expected Insights:**
Detail how this visualization will help answer specific questions about the data.

(Repeat as needed if a team member proposes more than three visualizations.)

3. Conclusion:

- Summarize the overall analytical strategy and how these visualizations will work together to provide a comprehensive understanding of the dataset.