Data Visualization Project

Global Earthquake Visualization

Project Proposal

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1. <u>Introduction and Significance</u>

Earthquakes are among the most devastating natural disasters, causing significant loss of life, property damage, and economic disruption worldwide. Understanding seismic activity patterns over time is crucial for disaster preparedness, risk assessment, and public awareness. With the availability of historical earthquake data, interactive visualizations offer an effective medium to explore and analyze seismic events across the globe.

This project aims to develop an interactive web-based dashboard that visualizes global earthquake data, allowing users to explore patterns based on year, magnitude, and location. The dashboard will serve as a tool for researchers, policy makers, and the general public to gain insights into earthquake frequency, intensity, and geographic distribution.

2. <u>Objectives of the Project:</u>

The primary objectives of this project are:

- To create an interactive map that displays earthquake occurrences by year using a dynamic slider.
- To visualize earthquake density through a heatmap, highlighting regions with frequent seismic activity.
- To categorize earthquakes based on magnitude and present the distribution using a bar graph.
- To showcase the top 15 most powerful earthquakes using an engaging D3.js bubble chart.
- To provide an intuitive, user-friendly interface for exploring historical earthquake data.

3. <u>Expected Visualizations:</u>

The dashboard will consist of the following key visualizations:

1. Interactive Map with Year Slider: Allows users to filter earthquakes by year and view their locations and magnitudes on a world map.

2. Heatmap: Displays the density of earthquakes, helping to identify seismic hotspots globally.

3. Bar Graph (Chart.js): Categorizes earthquakes into Low (<4), Strong (4-7), and Destructive (>=7) magnitudes.

4. D3.js Bubble Chart: Highlights the top 15 strongest earthquakes, with bubble sizes representing magnitude.

5. Donut chart : Breakdown of seismic event causes.

4. **Wireframe Sketch:**

The following sketch represent the planned layout of the dashboard components.