Interactivity Techniques & Justification

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Spotify Unwrapped

Rationale:

1. Choropleth Map (Popularity of Song/Artist by Country)

- **Interaction:**
  - Linked to a **radio button** (Song/Artist).
  - **Dropdown** to select a specific song or artist.
  - **Filtered by the selected date range** (January–March 2024).
- **How it Works:**
  - When a user selects a song or artist, the map displays **country-level popularity**.
  - The map dynamically updates and is **linked to the line graph** to provide contextual trends.

2. Line Graph (Trend of Attributes by Month/Week)

- **Interaction:**
  - Connected to the **radio button**, **date range picker**, and **song/artist dropdown**.
- **How it Works:**
  - Displays trends in audio features like **danceability, energy, tempo, etc.**
  - Shows **week-to-week or month-to-month changes** from Jan–Mar 2024.
  - Supports temporal analysis of how song or artist features evolve and relate to geographic popularity (via choropleth map).

3. Bar Chart (Popularity by Audio Feature)

- **Interaction:**
  - Controlled via a **dropdown for audio attributes** (e.g., danceability, tempo).
- **How it Works:**
  - Shows the **average popularity** of songs or artists based on a selected attribute.

    - Helps users understand which **features contribute most to popularity** in early 2024.

4. Scatter Plot (Correlation Between Audio Features)

- **Interaction:**
    - Two dropdowns for selecting **X and Y axes** (e.g., Energy vs. Danceability).
- **How it Works:**
    - Reveals correlations between features, such as whether higher energy correlates with higher danceability.
    - **Now includes a color gradient** to encode an additional variable, such as:
        - **Popularity**
        - Or another audio feature
    - The color gradient enriches the scatter plot by providing a third dimension for interpretation.

Why These Interactions Matter

These visualizations and interactive controls are designed to support the following analytical goals:

1. Choropleth Map + Line Graph Integration

- Answers: **How does song/artist popularity evolve across time and space?**
- Enables **spatio-temporal analysis**: popularity shifts over time (line graph) and across countries (map).

2. Radio Button + Dropdown Selections

- Answers: **How do individual songs or artists change in popularity or audio style?**
- Filters all visualizations together, supporting **focused exploration** at the song/artist level.

3. Bar Chart for Attribute-Based Popularity

- Answers: **Which audio attributes are most strongly linked with popularity?**
- Enables **attribute-wise comparison**, helping users understand feature impact.

4. Enhanced Scatter Plot for Attribute Correlation

- Answers: **What combinations of features are common in popular songs?**

- The color gradient adds **depth**, enabling exploration of multi-dimensional relationships.

Visualization Choices (Update)

After exploring the updated dataset and incorporating instructor feedback, we made several important changes to the visualization choices to better align with data availability and analytical goals.

1. Genre Removed from All Visuals

In the original design, genre was a central dimension used in filtering and comparisons. However, the updated dataset no longer includes a `genre` column. As a result, we removed genre-based elements (such as genre distribution charts and filters) from the application. We replaced this by emphasizing **song- and artist-level exploration** using available audio features and popularity data.

2. Geospatial Scope Added: 73 Countries

A major enhancement in the updated dataset is the inclusion of **geospatial information**, which now covers **73 countries**. This made it possible to implement a **choropleth map**, allowing users to explore how a song's or artist's popularity is distributed globally across countries and over time. This change replaces genre analysis with a broader **regional lens**, adding a meaningful spatial component to the dashboard.

3. Bubble Map Dropped

The initial storyboard proposed a **bubble map** to show top artists by streaming count per region. However, since the updated dataset does not include **streaming count**, this visualization was removed. Its intended functionality is now partly absorbed by the **choropleth map** (showing popularity by country) and the **bar chart** (displaying popularity by attribute or artist).

5. Updated Interactivity Structure

Based on the new data and revised goals, we introduced a **radio button** to toggle between song and artist views, a **date range picker** for temporal filtering, and **dynamic dropdowns** for selecting songs/artists and feature axes.