

Project Report

1. Motivation

In short, we are searching whether I, Yunus Emre Yolal, is subject to so called “seasonal depression”?

The primary motivation behind this project is to explore the relationship between music preferences, represented by genres, and environmental factors, such as average temperature. Understanding such relationships can help identify patterns in user behavior and preferences influenced by external factors, such as climate. This analysis could provide actionable insights for music platforms, event organizers, and researchers interested in behavioral trends.

2. Data Gathering

The data used in this project was collected from two main sources:

1. **Spotify API:**

- The Spotify API was utilized to fetch information about user preferences, specifically their top genres.
- Using the API, a list of the user's top tracks was retrieved, and associated genres were extracted based on the artists of those tracks.
- The API provides endpoints to fetch 'short-term', 'medium-term', and 'long-term' user preferences, allowing analysis across various time ranges.

2. **Open-Meteo API:**

- The Open-Meteo API was used to gather weather data, specifically average temperature values for the relevant time periods.
- The API offers historical weather data, which was queried for the same dates corresponding to the Spotify data collection period.
- By linking temperature data with music preferences, the analysis sought to uncover potential correlations or patterns.

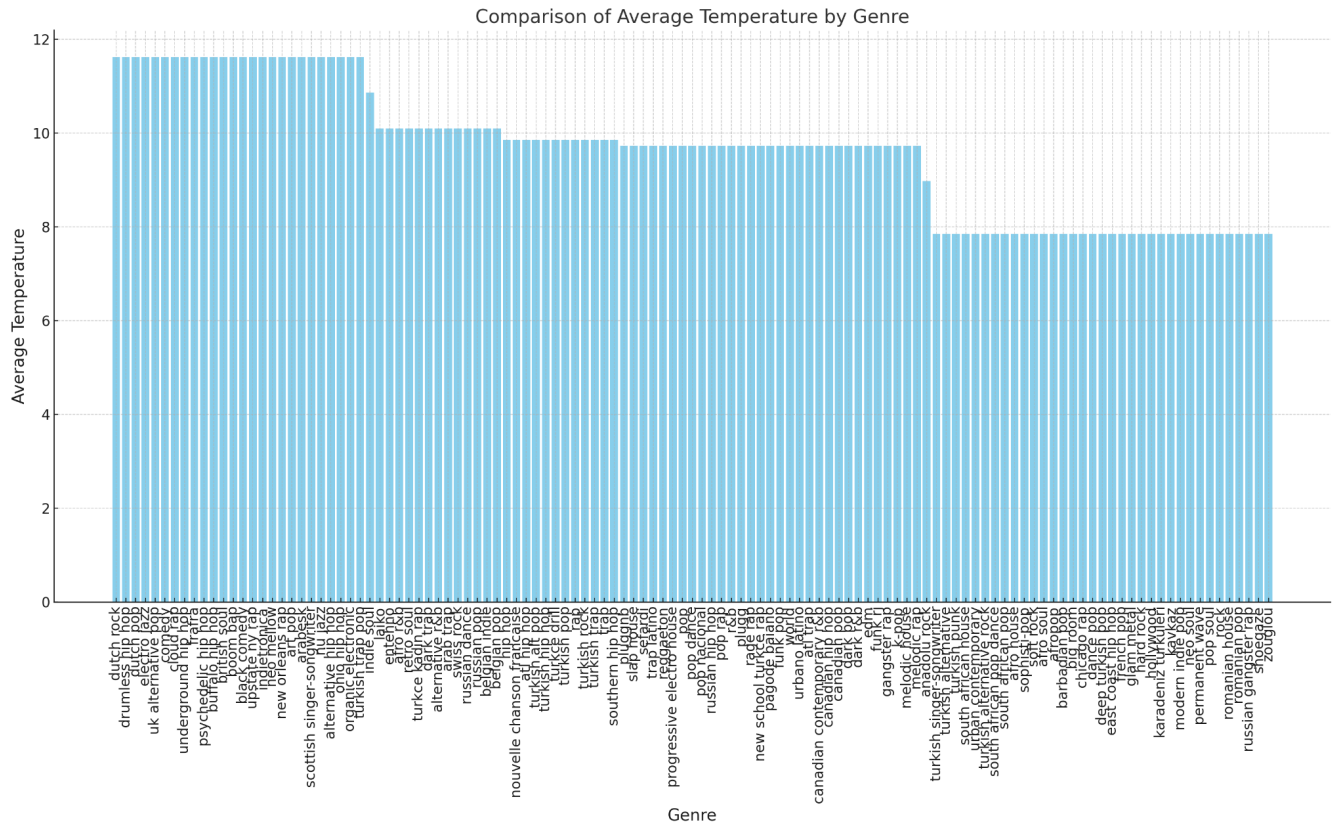
3. Outcomes and Visualizations

Visual 1: Bar Plot of Average Temperature by Genre

A bar plot was created to compare the average temperatures for each genre. The genres were sorted by temperature for clarity.

Key Observations:

- Certain genres are associated with higher average temperatures, potentially reflecting regional or seasonal popularity.
- The plot highlights noticeable differences between genres, making it easy to identify outliers.

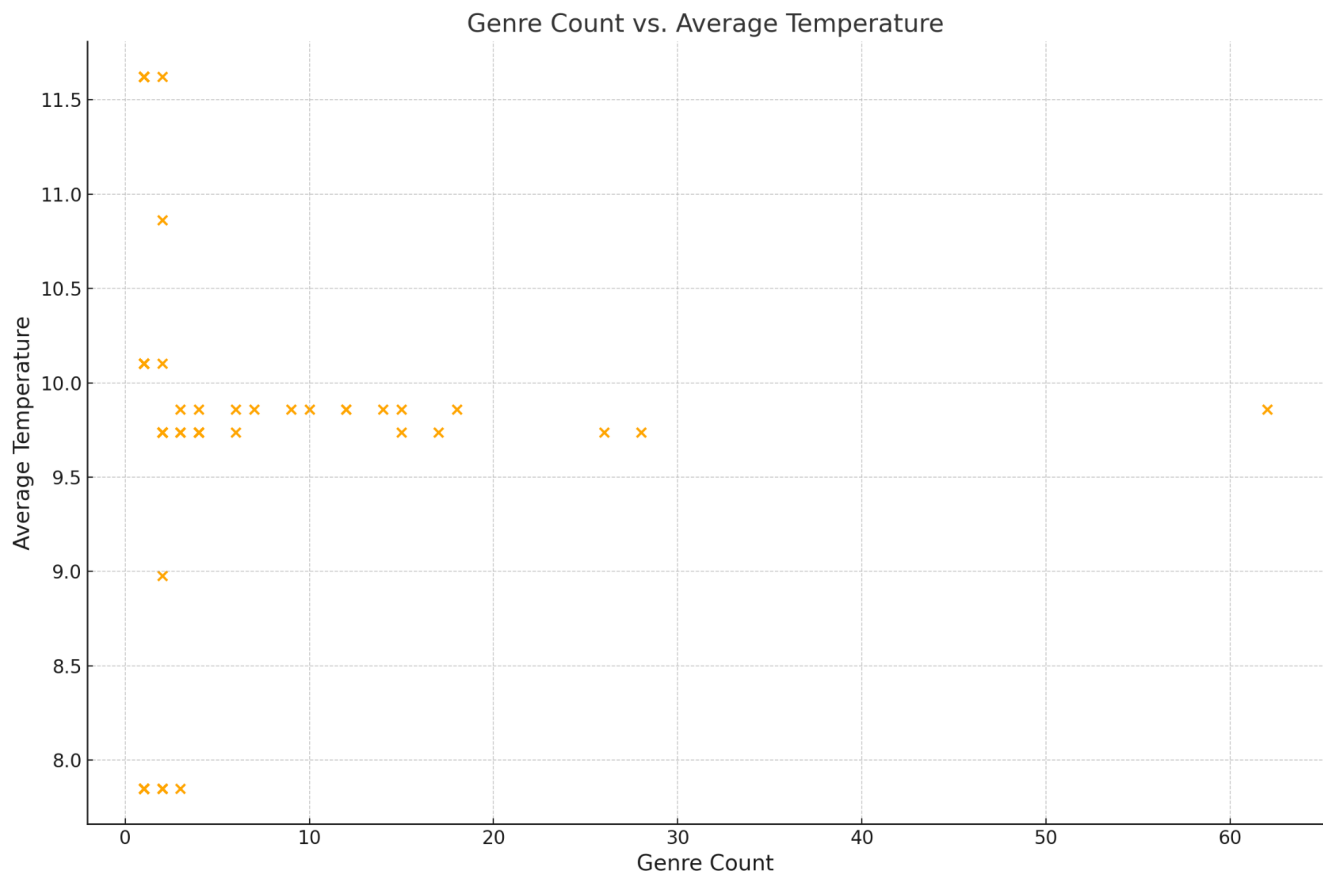


Visual 2: Scatter Plot of Genre Count vs. Average Temperature

This scatter plot illustrates the relationship between the frequency of genres and the average temperature.

Key Observations:

- There is no strong linear relationship between genre count and temperature.
- Clusters of genres with similar counts across different temperatures are noticeable, hinting at varying popularity trends.

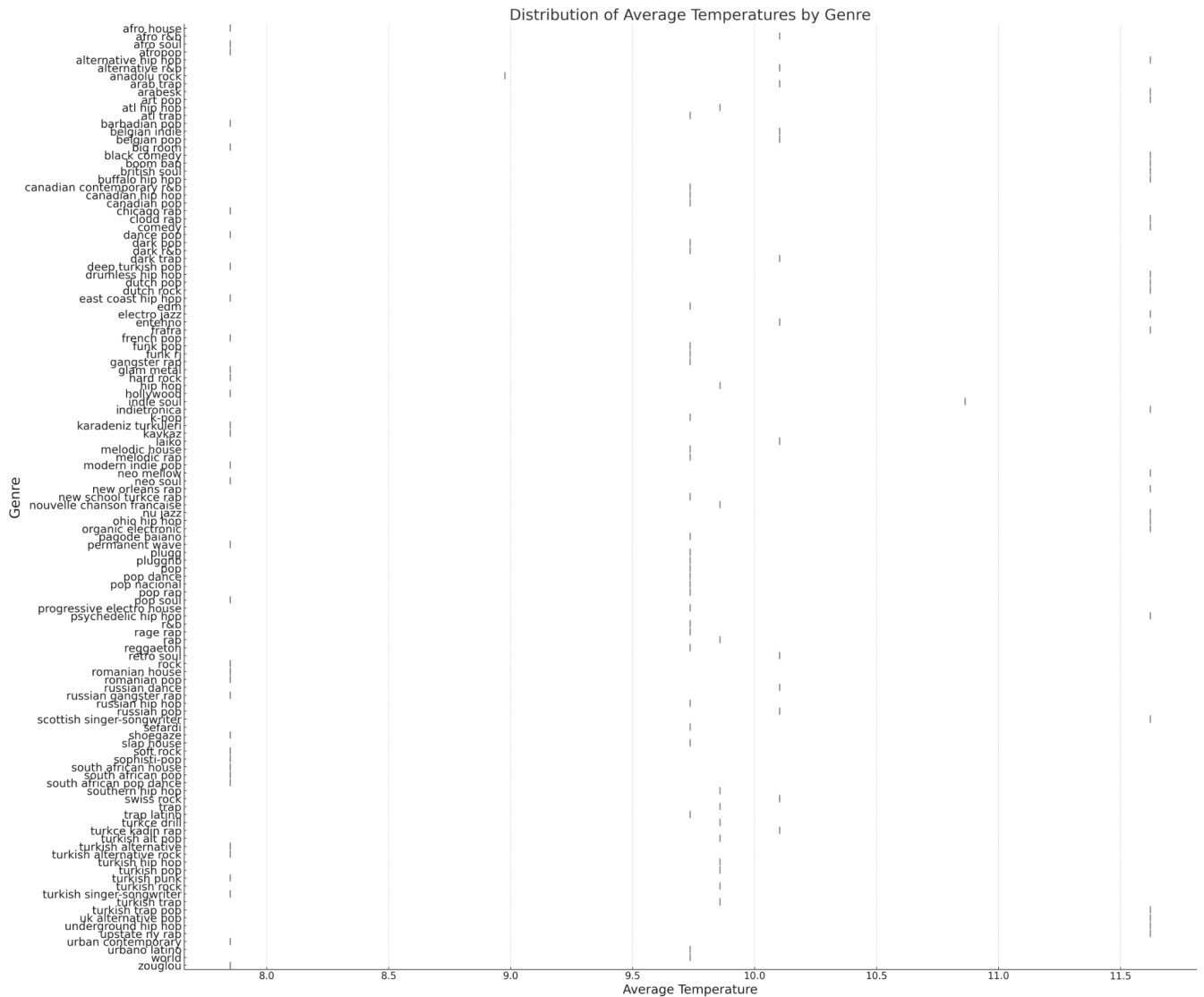


Visual 3: Box Plot of Average Temperatures by Genre

The box plot visualizes the spread of average temperatures for each genre.

Key Observations:

- Genres with wider boxes have more variability in their associated temperatures.
- Outliers highlight specific genres that deviate significantly from the norm.

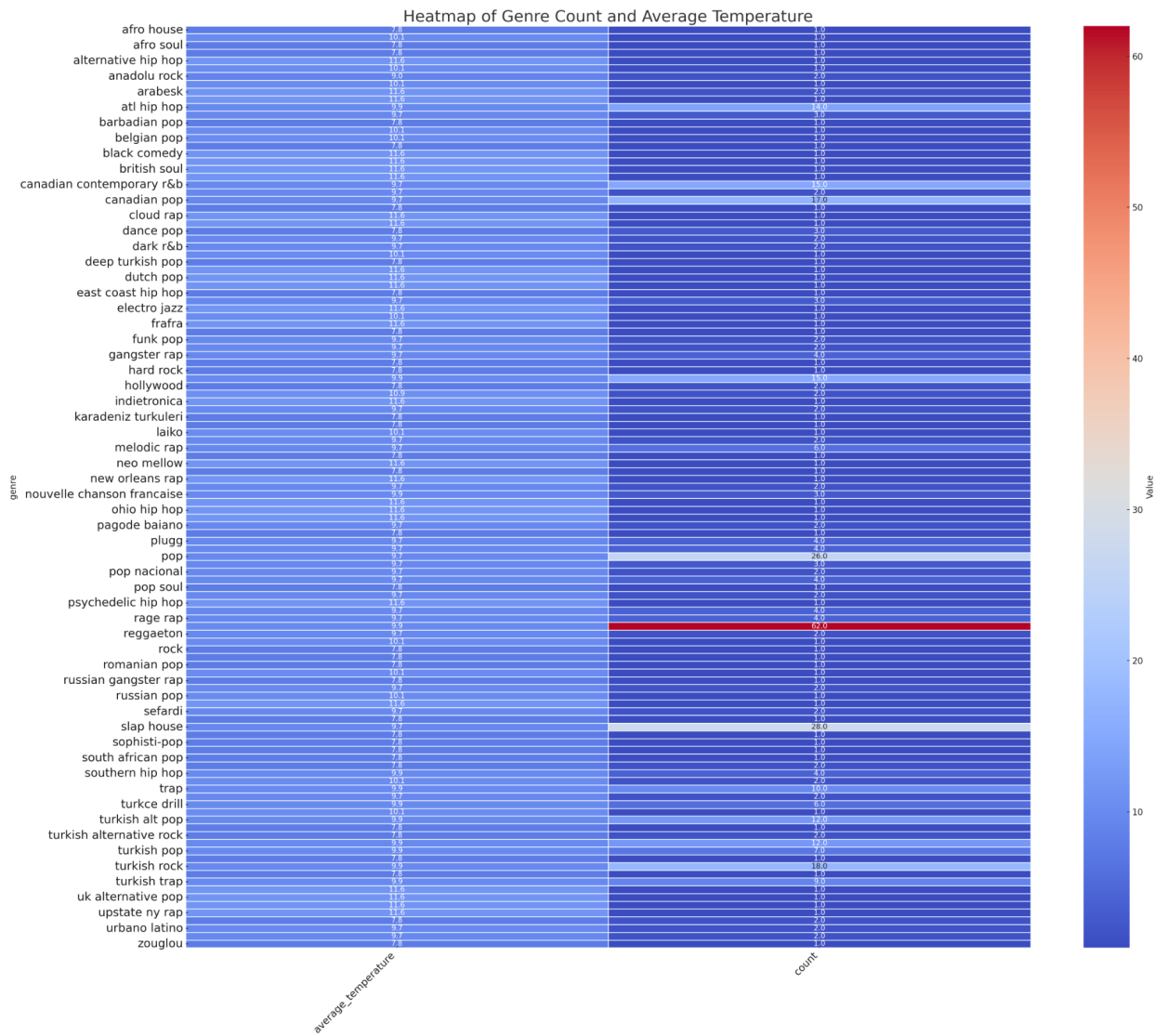


Visual 4: Heatmap of Genre Count and Average Temperature

The heatmap showcases the intensity of the relationship between genre count and average temperature.

Key Observations:

- Genres with higher counts are clustered around specific temperature ranges.
- Some genres are highly popular across multiple temperature ranges, indicating their broad appeal.



4. Analysis of Outcomes

The analysis reveals several insights:

1. **Correlation Patterns:**

- While there is no strong correlation between genre count and average temperature, specific genres show distinct trends.

2. **Seasonal Influence:**

- Higher temperatures are associated with genres that might reflect energetic or outdoor activities, such as electronic dance music.

3. **Genre Diversity:**

- Some genres display a wide range of temperatures, indicating their appeal is not climate-dependent.

These insights can help tailor music recommendations based on environmental contexts or target specific demographics during seasonal campaigns.

5. Conclusion

Am I subject to so called “seasonal depression”?

NO.

This project demonstrates the value of combining user preference data with environmental factors to uncover meaningful patterns. The visualizations effectively highlight the relationships between music preferences and average temperatures, providing actionable insights for businesses and researchers. Future work could involve incorporating additional variables, such as time of day or geographic location, to enhance the analysis further.