

# PROJECT REPORT

## My Spotify Streaming History Analysis Presentation

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# About the Project

## My Motivation and Purposes

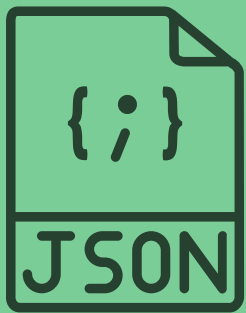
I initiated this Spotify listening history analysis project with the intention of delving deeper into my music consumption patterns beyond the annual summaries offered by Spotify. My motivation stemmed from a curiosity to gain more profound insights into my music preferences and habits in a highly personalized manner.

Throughout the analysis, I probed into the question of whether my listening durations and music preferences exhibit variations across different time segments. I compared my habits during weekdays and weekends, mornings and evenings, as well as distinct seasons like summer and winter.

These overarching ideas directed the trajectory of my analysis, enabling me to explore diverse facets of my Spotify listening history. The goal was to uncover nuanced details regarding how my music preferences dynamically shift over varying time durations and conditions.



## Data Source



As the main data, I requested my listening history data from Spotify in json format. While examining my last six months of listening history from this data, I needed to access the genre of the songs to test my hypotheses. For this, I used Spotify API directly, and when I accessed the artists' genres, I got all the data I wanted: my listening history and the information of the songs I listened to.



## Progress of Data Analysis

### 1. Data Collection and Preprocessing:

- Gathered Spotify listening history, including track details and timestamps.
- Extracted relevant features like 'dayOfWeek,' 'dayOfYear,' and 'timeOfDay.'
- Converted timestamps to datetime objects for ease of analysis.
- Filtered data to focus on specific time periods (e.g., summer, winter).

### 2. Genre Analysis:

- Utilized Spotify API for artist and genre information.
- Mapped artists to their associated genres using API responses.(searchArtist(), getToken() functions in the code)
- Explored changes in genre preferences over different times of the day or months.
- Identified and visualized top genres during specific time frames.

### 3. Top Artist Analysis:

- Leveraged Spotify API to search for top artists based on their names.
- Stored relevant information about top artists, including genres and popularity.

### 4. Time-of-Day Analysis:

- Grouped data based on the 'timeOfDay' feature (morning, night).
- Calculated average listening time for each time of day.
- Visualized distribution of listening time during mornings and nights.

### 5. Day-of-Week Analysis:

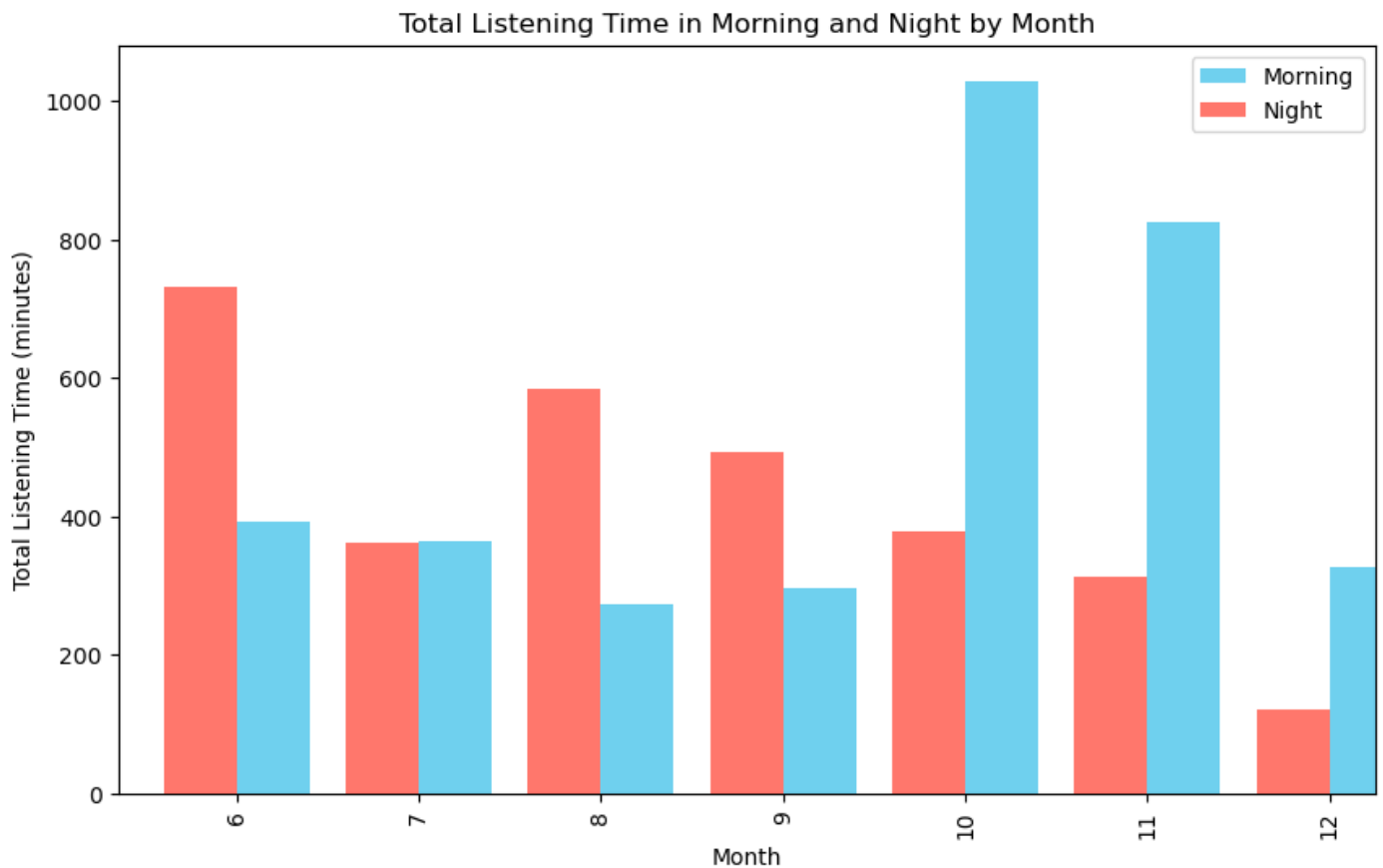
- Grouped data based on the 'dayOfWeek' feature.
- Explored and visualized differences in listening habits and times between weekdays and weekends.

### 6. Seasonal Analysis (Summer-Winter):

- Created subsets of data for summer and winter months.
- Investigated changes in listening behavior, genres, and top artists between seasons.
- Visualized and compared trends during summer and winter periods.

**These stages represent a comprehensive data analysis journey, encompassing data preprocessing, API integration, and visualization techniques to uncover meaningful insights into my music listening patterns on Spotify.**

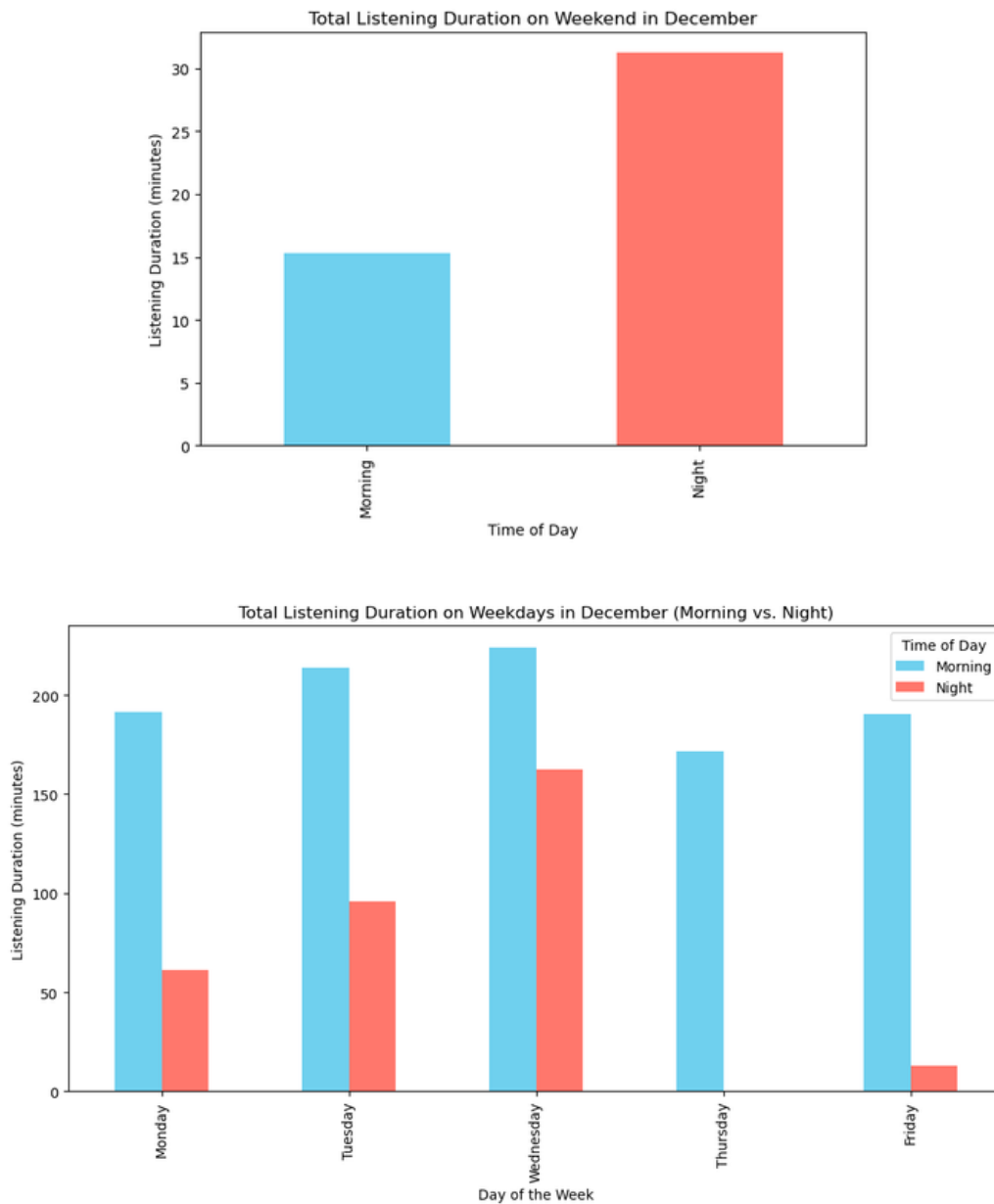
# Findings



**Hypothesis:** During the academic months (10, 11, 12), there is a discernible variance in my music listening patterns between morning and night. In the morning hours (9-11), particularly while commuting to school, witness a higher frequency of music consumption compared to the night hours.

In 6,7,8,9. months my listening time at night is either more or equal to my listening time at morning, but after school starts, it seems that I listen to seriously more music in the mornings.

# Findings

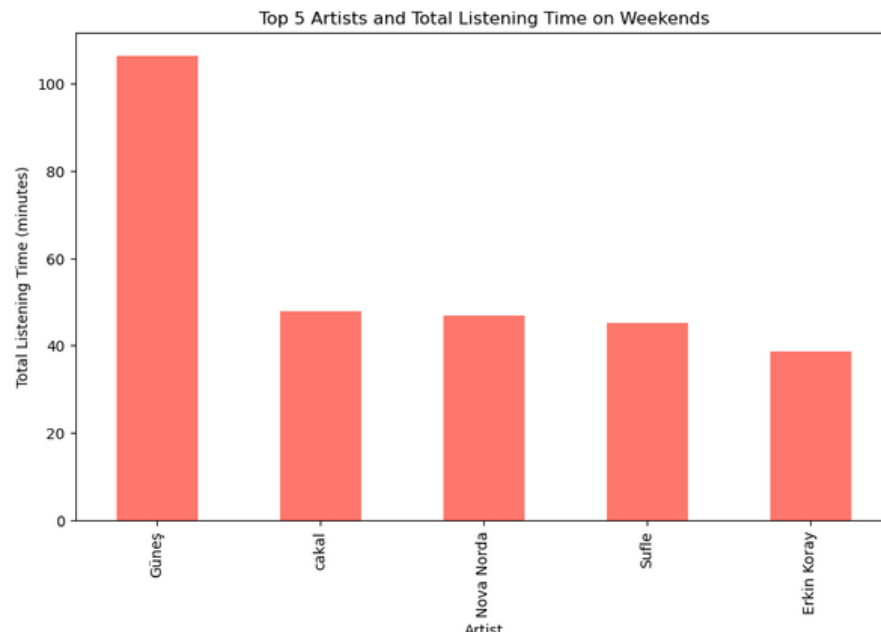
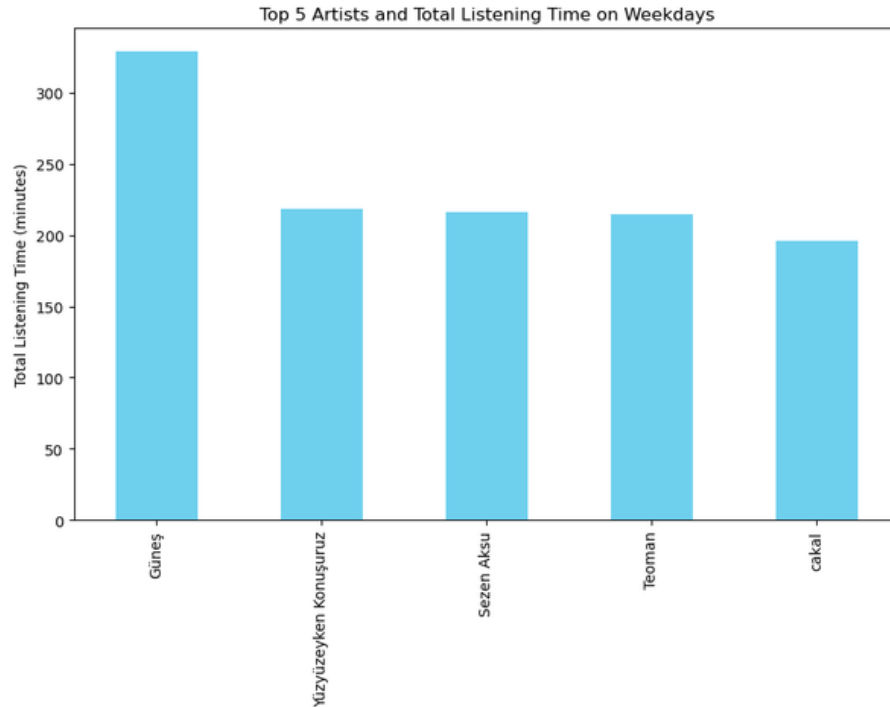


**Hypothesis:** There is a significant difference in my music listening patterns between weekdays and weekends. Specifically, I anticipate that my listening time is higher in the mornings on weekdays due to school commitments and early wake-up times. On weekends, I expect my listening time to be higher at night.

Supporting the above hypothesis, it can be seen from here that while I listened more in the morning on weekdays when I went to school, I listened more at night on weekends.

Also another result can be seen from this graph, on weekdays average total listening time is higher than my average total listening time on weekends.

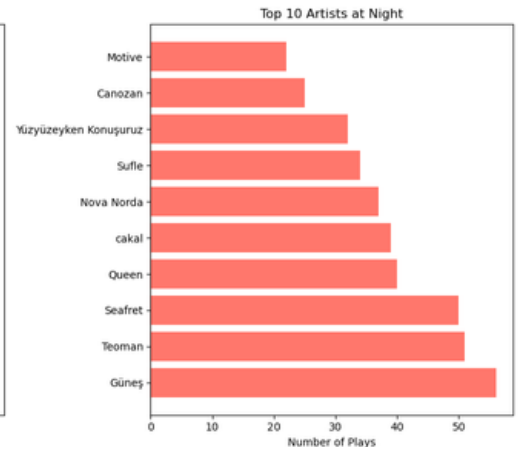
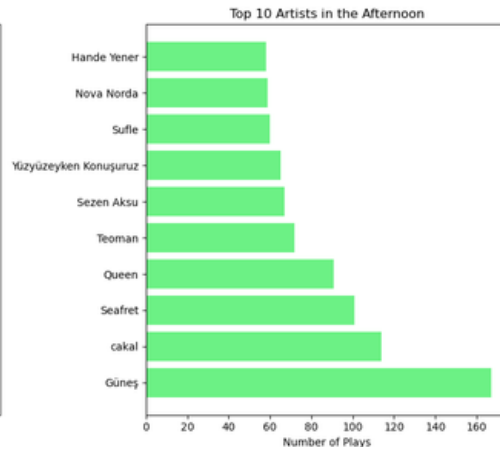
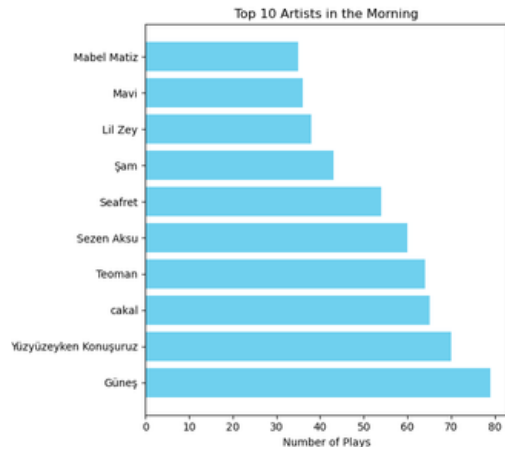
# Findings



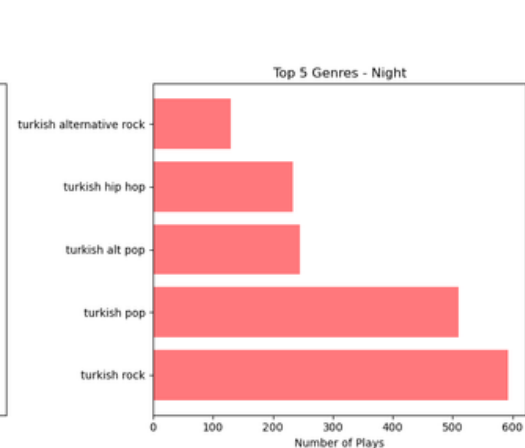
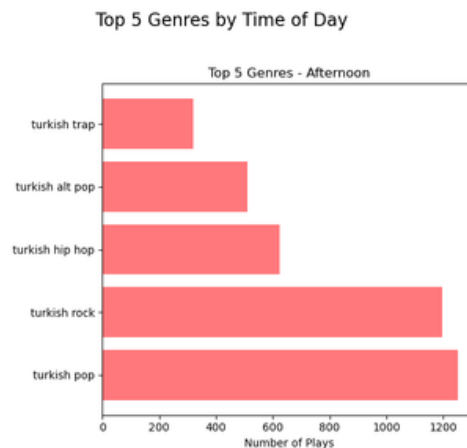
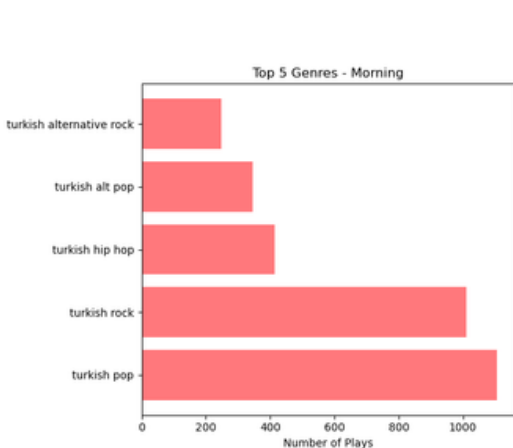
**Hypothesis:** Although not completely different, my top 5 artists change 3 artists depending on Weekdays and Weekends.

For example, Erkin Koray and Sufle is not in my top 5 artists list for Weekday but they are in the list for Weekends.

# Findings

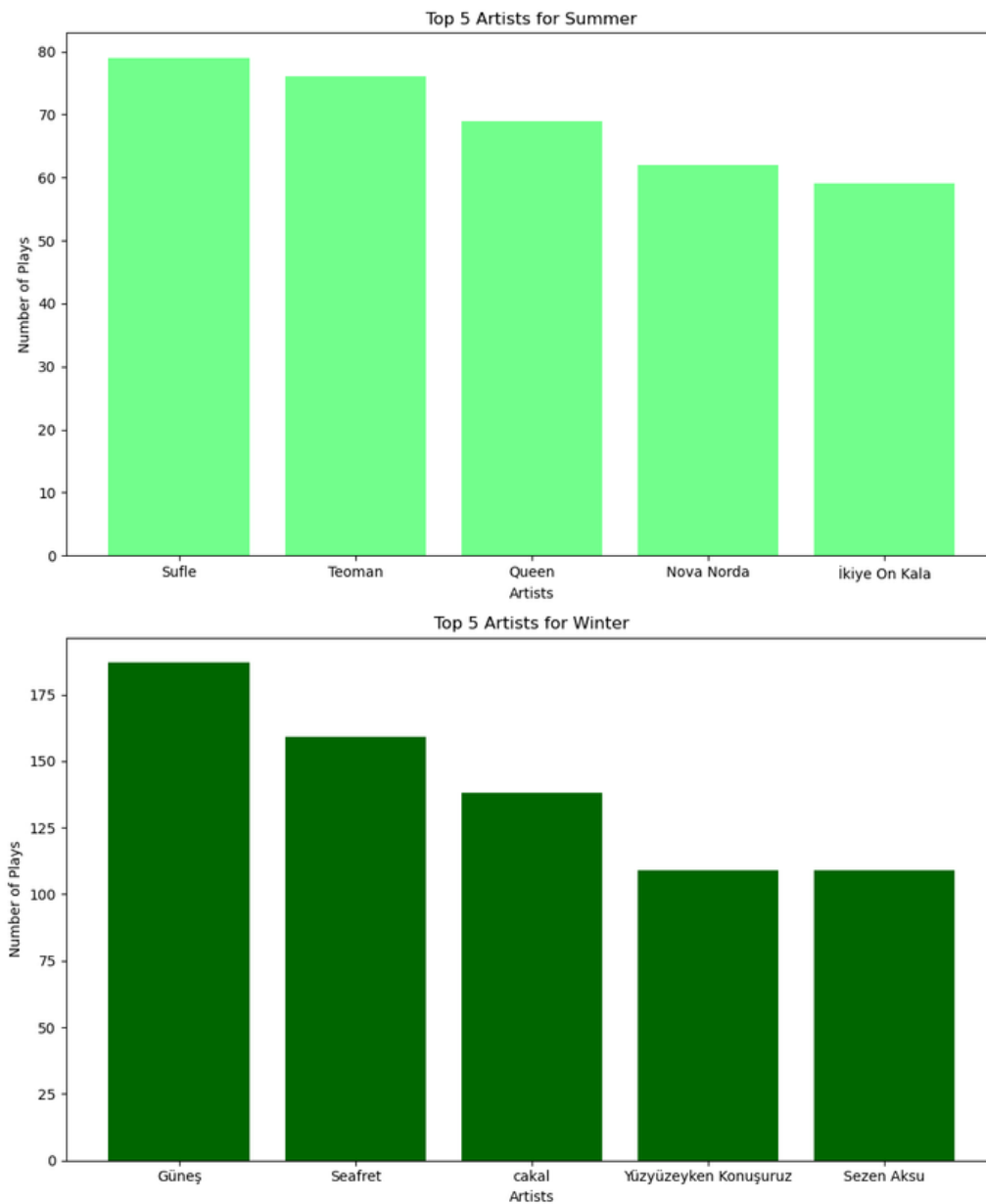


**Hypothesis:** Although not completely different, my top 10 artists change at least 2 artists depending on certain times of the day (Morning,Afternoon,Night).



**Hypothesis:** Although not completely different, my top 5 genres' ranks change at least 1 genre depending on certain times of the day (Morning,Afternoon,Night).

# Findings

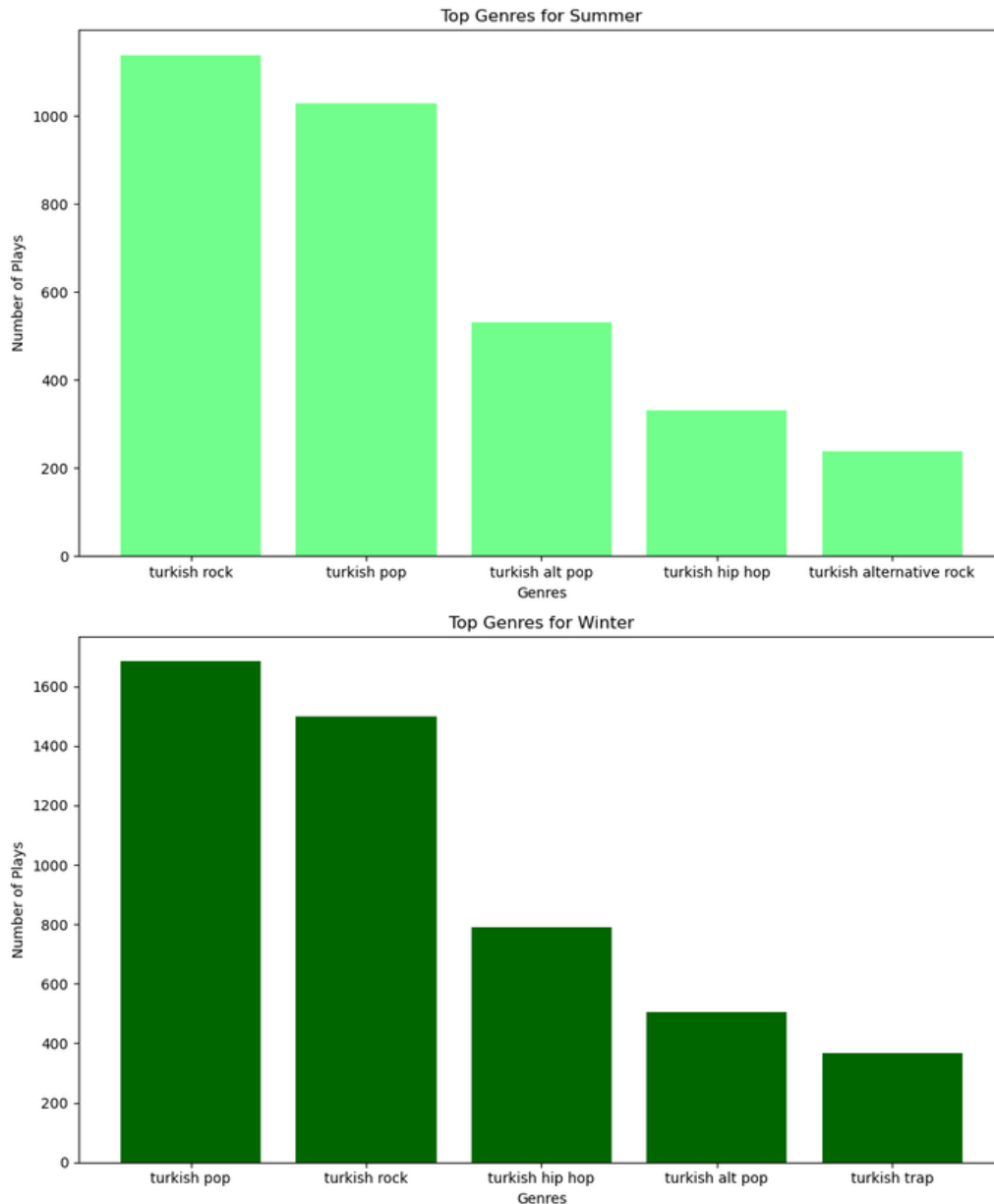


**Hypothesis:** My top 5 artists are completely different depending on the seasons as seen from the graph (Summer-Winter).

Also it can be seen that, in winter total time of my listening for my top artists is seriously higher than total time of my listening for my top artists in summer.



# Findings



**Hypothesis:** Although not completely different, my top 5 genres' ranks change at least 1 genre depending on seasons (Summer-Winter).

As an example, Turkish alternative rock is not one of my top 5 genres for winter but it is one of my top 5 genres for summer.

# Limitations and Future Work



## What could be done better?

**Genre Information from Artist Associations:** The analysis heavily relied on associating genres with artists. However, this approach might not fully capture the diversity within an artist's discography. Further improvements could involve obtaining genre information directly from Spotify or using more sophisticated methods to categorize music genres.

**Seasonal Changes in Listening Habits:** While the project explored differences in music preferences between summer and winter, it didn't delve deeply into the reasons behind these changes. Future work could involve qualitative research, such as surveys or interviews, to understand the external factors influencing these seasonal shifts.

**Lack of External Factors:** The analysis primarily focused on internal factors like time of day and season. External factors such as mood, external events, or even global occurrences could significantly impact music preferences. Future iterations of this project could incorporate additional external data sources to provide a more holistic view of the influences on music consumption.

## Future Work

One area of potential future improvement for this Spotify listening history analysis study is to provide accurate predictions with the usage of machine learning models while taking a variety of factors into account. By taking this technique, we may explore Spotify listening trends with a layer of predictive analytics in addition to expanding our understanding of evolving customer preferences.

At the same time, active visualization approaches are being used to improve the insights' engagement and accessibility. The strategy entails developing dynamic dashboards and graphics that surpass static depictions in order to enhance the appeal and accessibility of the Spotify listening history insights for consumers.

