



# What Makes A Hit Song?

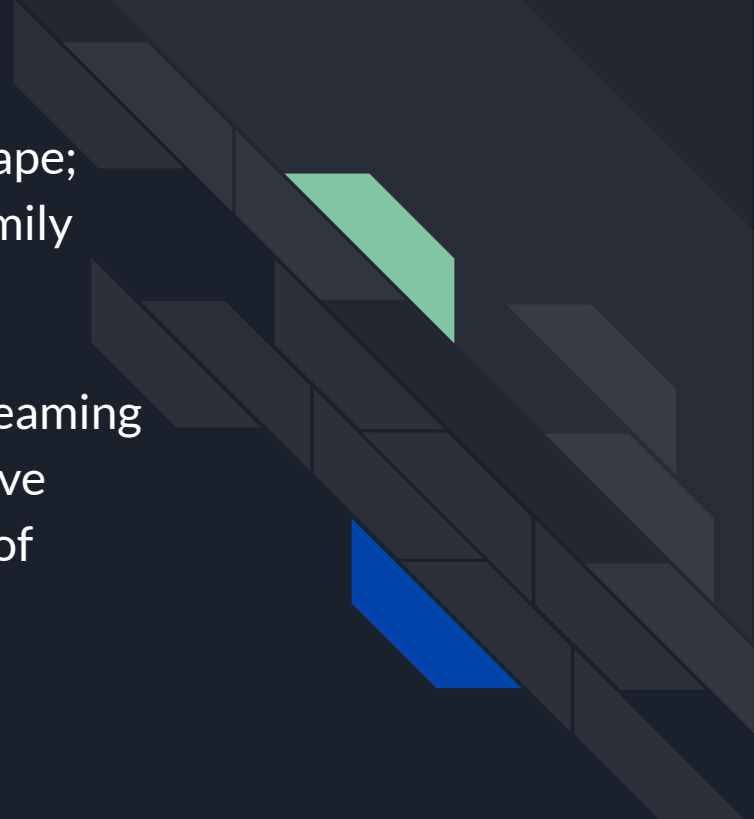
## By: Corey Kelly

Using the Spotify Daily Hits Dataset and Spotify API to find which song characters show the greatest correlation to hit songs.

# ***Soundtrack your life with Spotify.***

## ***Background***

- The Spotify playlist has become the new mixtape tape; something to share your music with friends and family or your public.
- Spotify is one of the largest global online music streaming services in the world with 406 million monthly active users, including 180 million paying subscribers, as of December 2021. (Spotify)



# ***What makes a hit song?***

## *Making the question quantitative!*

- Do hit songs share anything in common besides being popular?

## *Using resources on the web*

- With the Spotify API you get access to a wide variety of audio features that content curators can use to help make decisions like which song to drop as your debut or which song shares characteristics with the most popular songs.





# *Research Questions*

1. Is there any correlation between song characteristics/audio features and the number of times a hit song is streamed?
  - a. What about mega hit songs in the top 1% of songs that appeared on on the Daily Hits chart?
  - b. What about songs in a specific genre?



# Scope

1. All songs taken from the [Spotify Charts Data on Kaggle](#)
2. All other information pulled from the [Spotify API](#).
3. Data Analysis focused on the US Market and the year 2021

## Definitions:

- Hit Song :
  - Top 10% of all songs streamed on the Spotify Daily Hits chart in 2021
- Mega Hit Song:
  - Top 1% of all songs streamed on the Spotify Daily Hits chart in 2021



***The process of focusing  
the exploration.***

## Daily Hits Charts Dataset



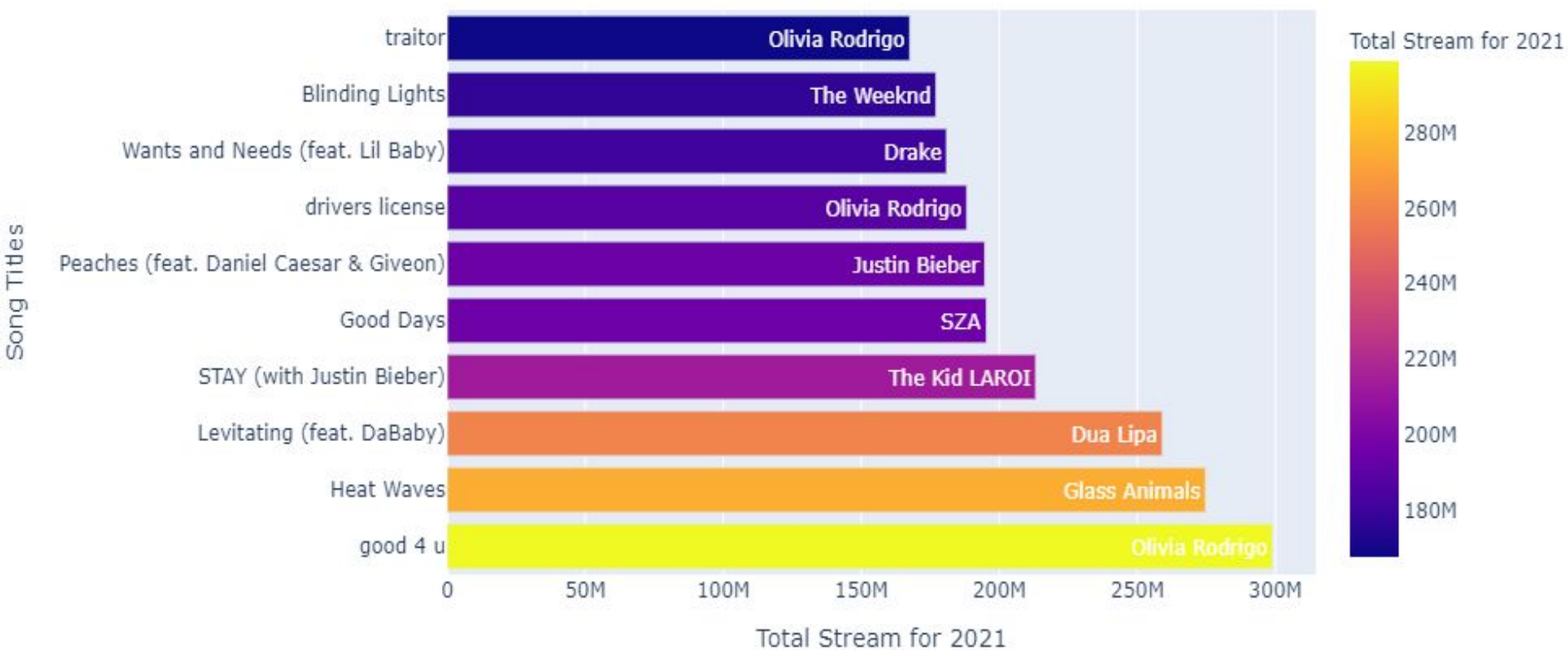


# *Exploring the data*

## *Top 10's in each category*

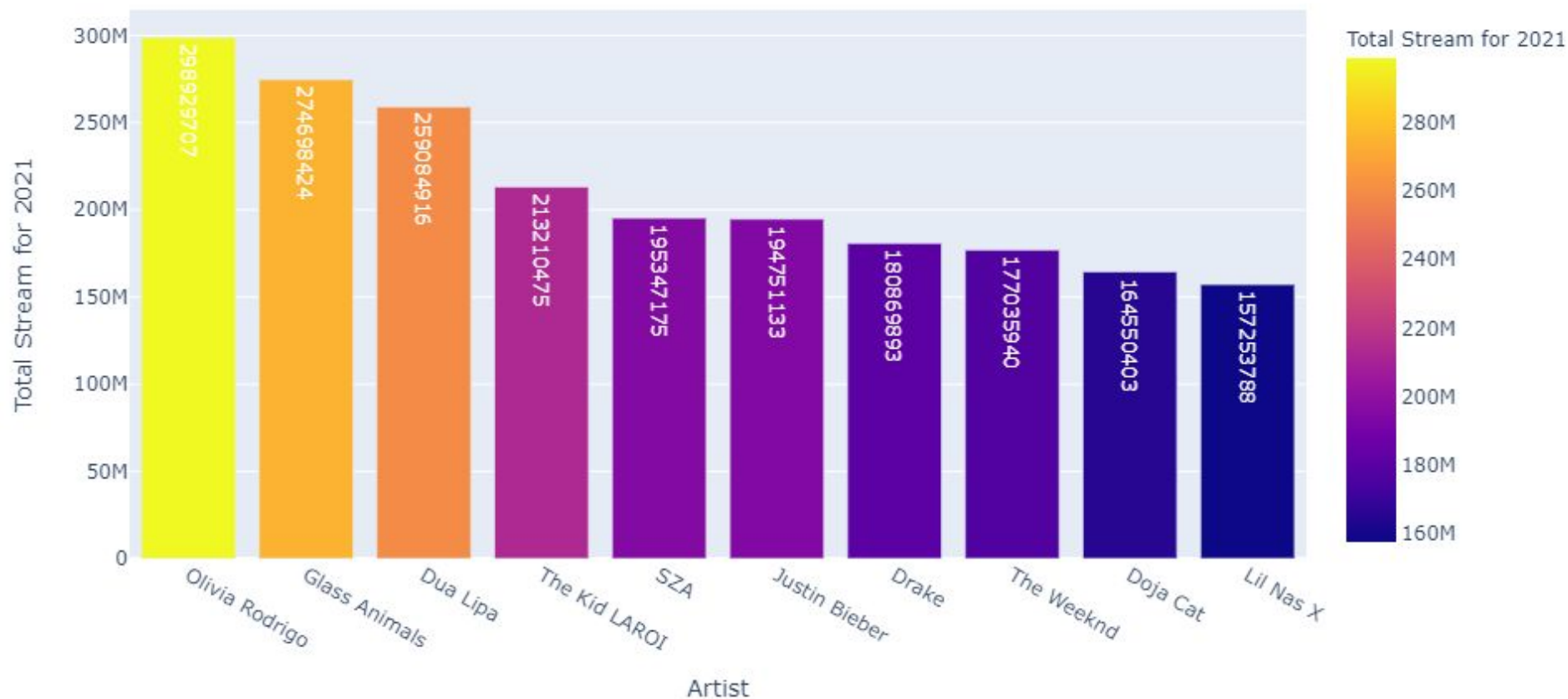
- a. Total number of streams for a given song in 2021
- b. Artists with greatest number of streams for all songs
- c. Genres with the greatest number of streams
  - i. Sub-genre breakdown by number of streams

## Top 10 Streaming Songs on Spotify in 2021

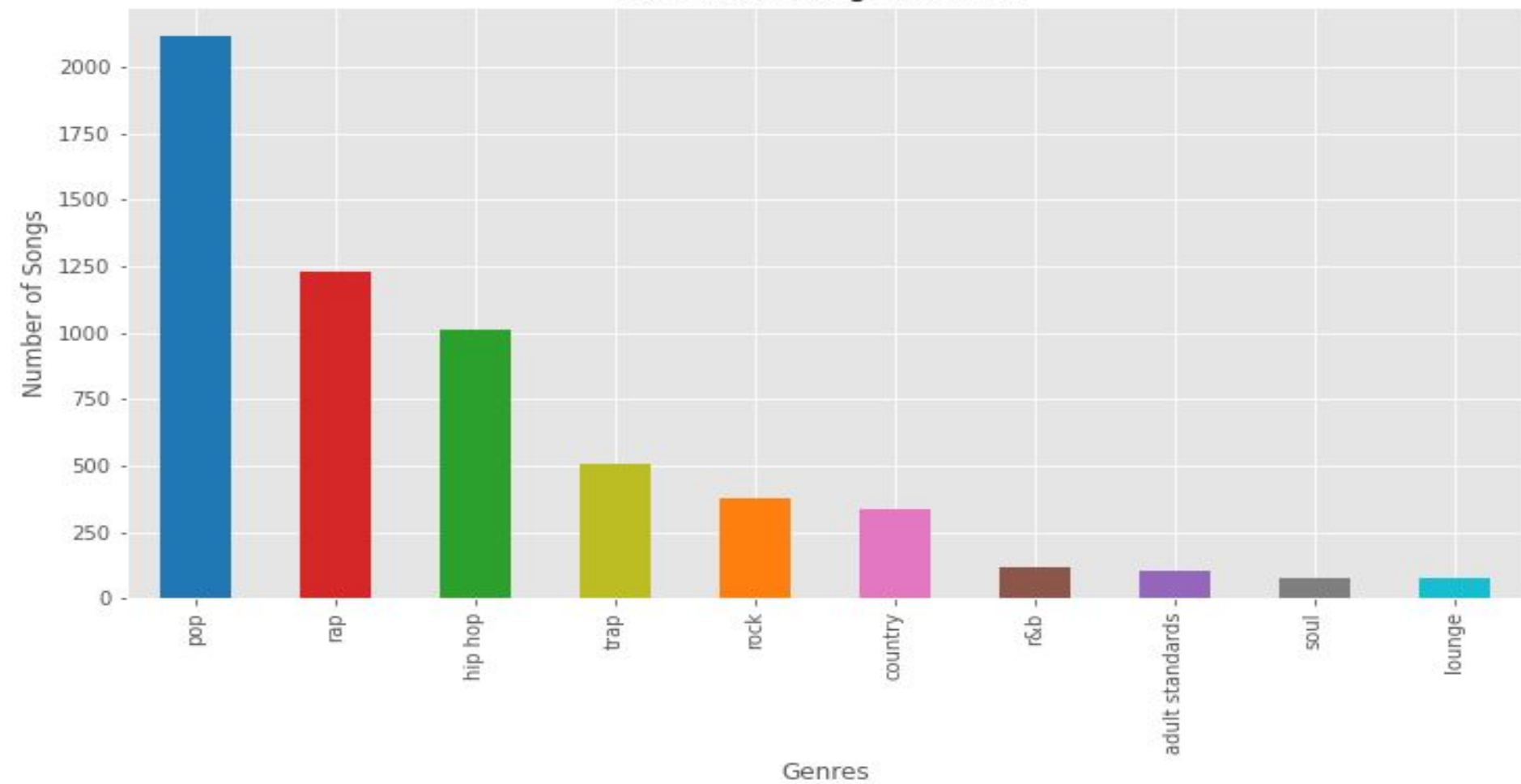




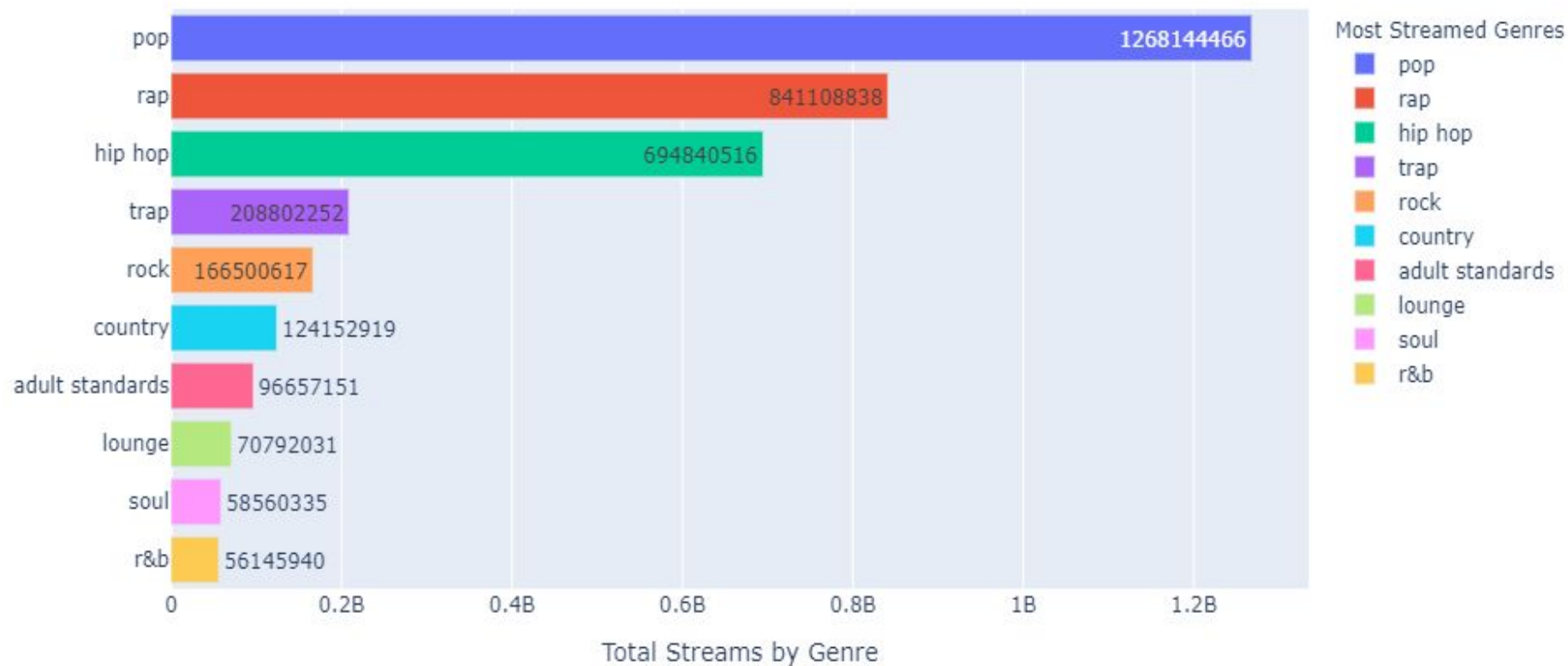
## Top 10 Streaming Artists on Spotify in 2021



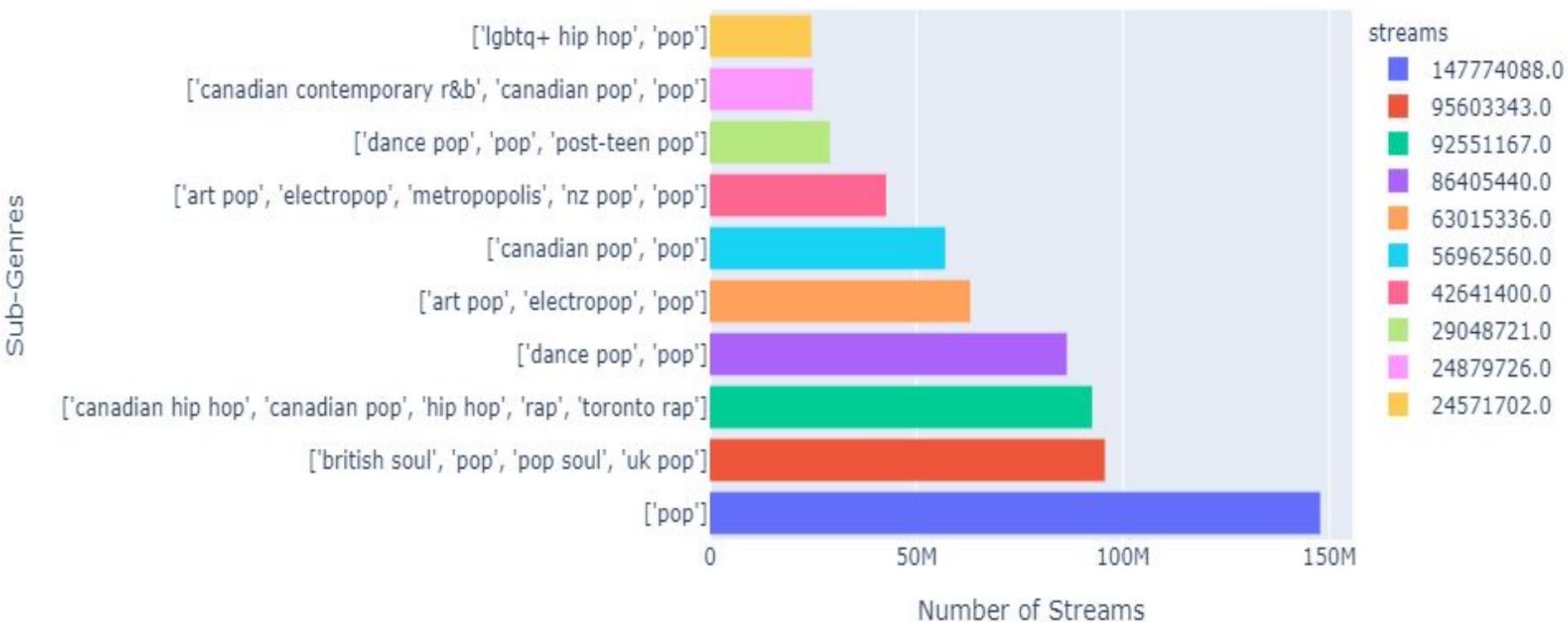
Number of Songs vs Genre



## Most Streamed Genres for 2021



## Top 10 Pop Genres in 2021





# Data Analysis Considerations

- Popularity:
  - Spotify has a popularity index that was considered but not the focus of this analysis as recent streams would skew data towards songs that were most streamed at the end of 2021 more than the beginning
- Genres:
  - Songs genres were genres most songs had in common
    - Sub-genres were the exact genres given by Spotify
- Three features were identified as category type: key, time signature, and mode.
- Tempe was normalized from its absolute numbers for easier analyzation.

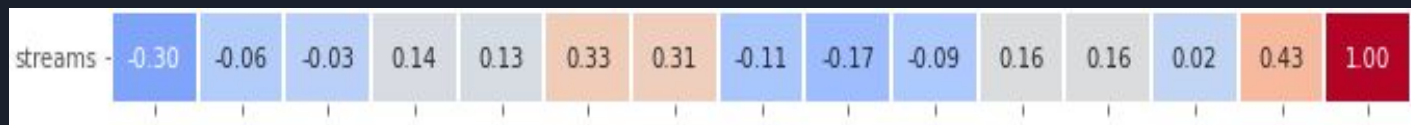


# ***Dive into the Data***

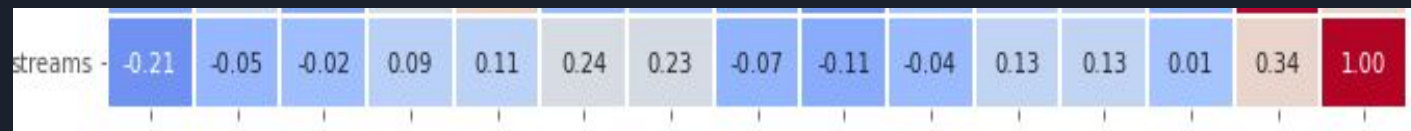
## ***Correlation - Pearson, Kendall, and Spearman***

- a. Total number of streams for a given song in 2021
- b. Genres with the greatest number of streams

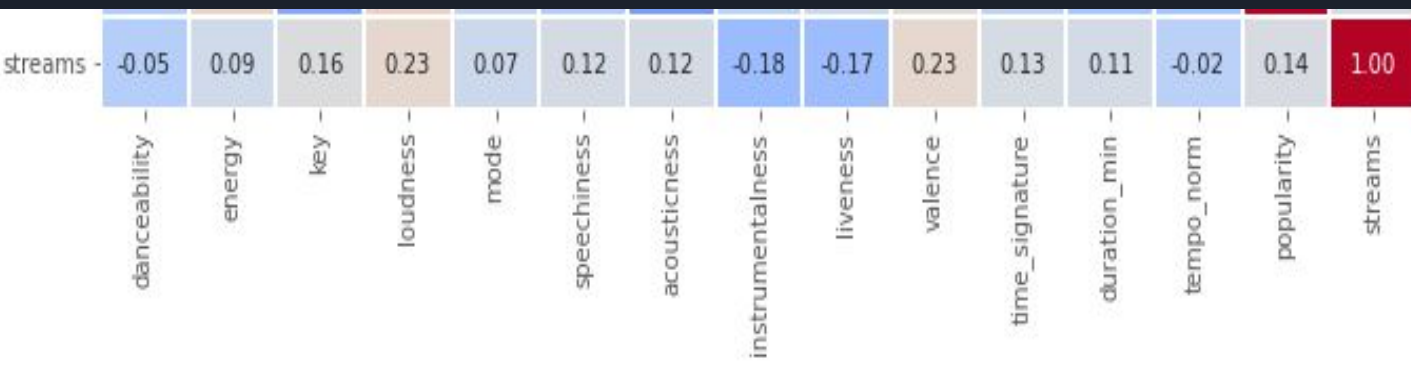
# Song Characteristics Correlation for Top 1% of Songs by Total Streams for 2021



Spearman Correlation

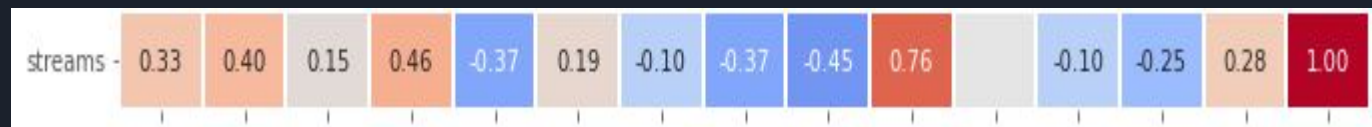


Kendall Correlation

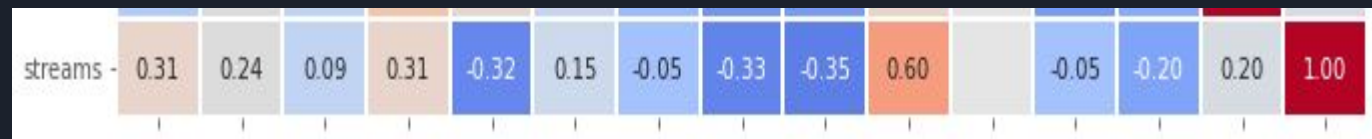


Pearson Correlation

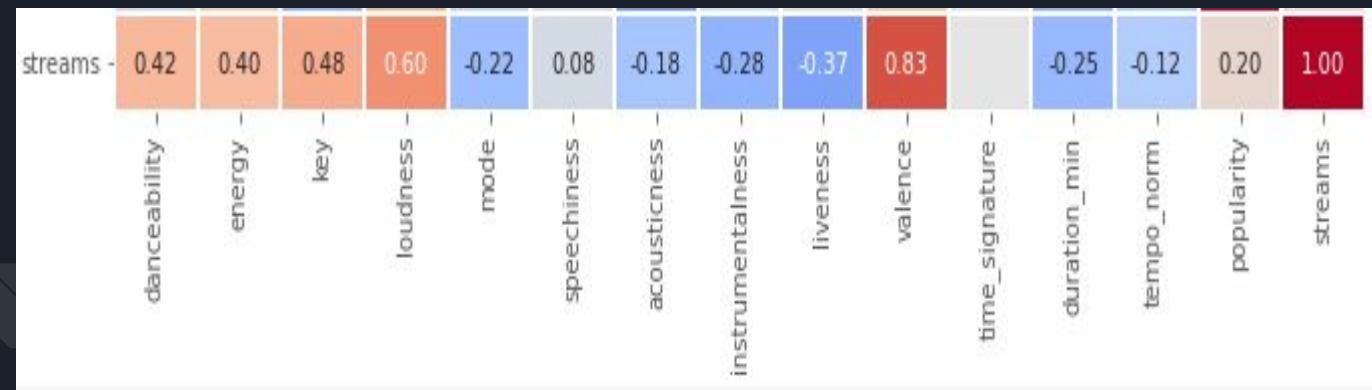
# Song Characteristics Correlation for Top 1% of Pop Songs by Total Streams for 2021



Spearman Correlation



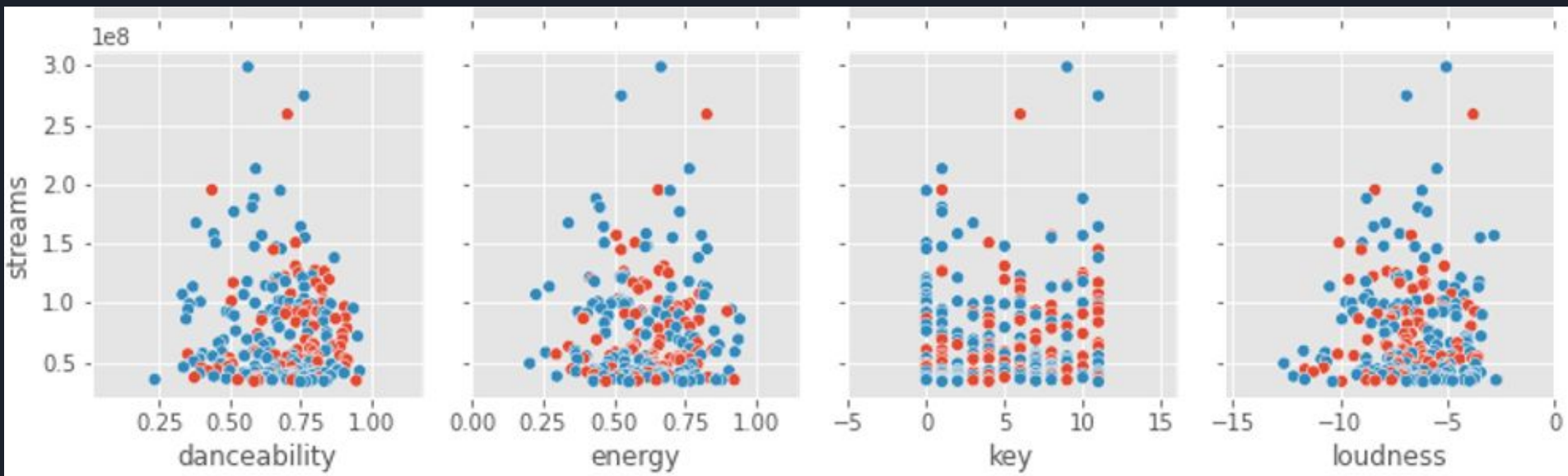
Kendall Correlation



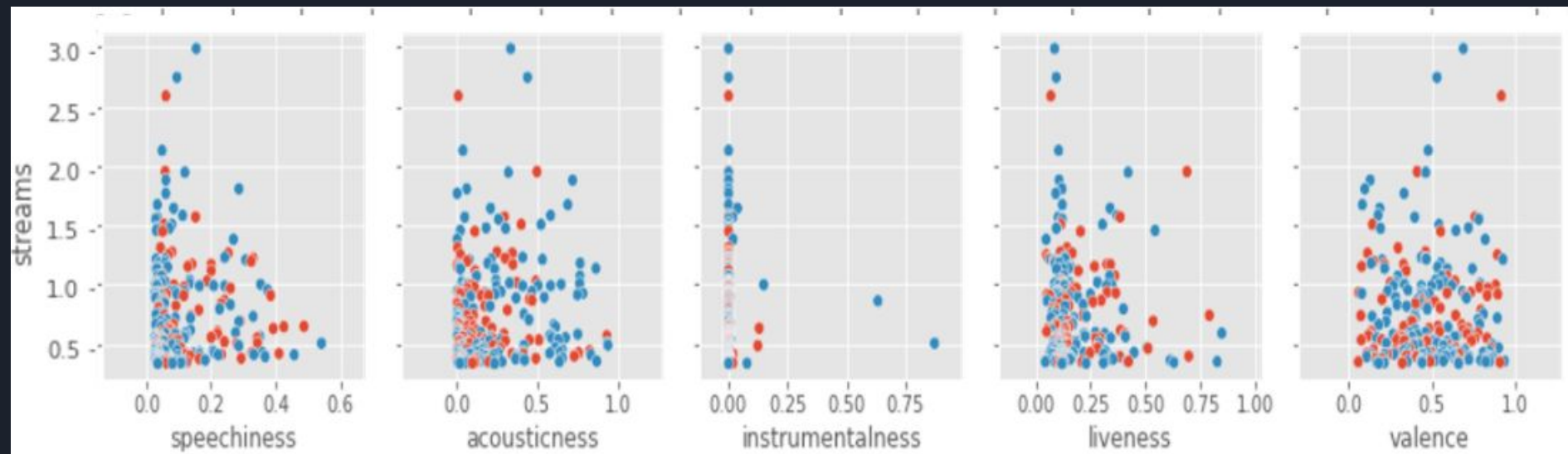
Pearson Correlation



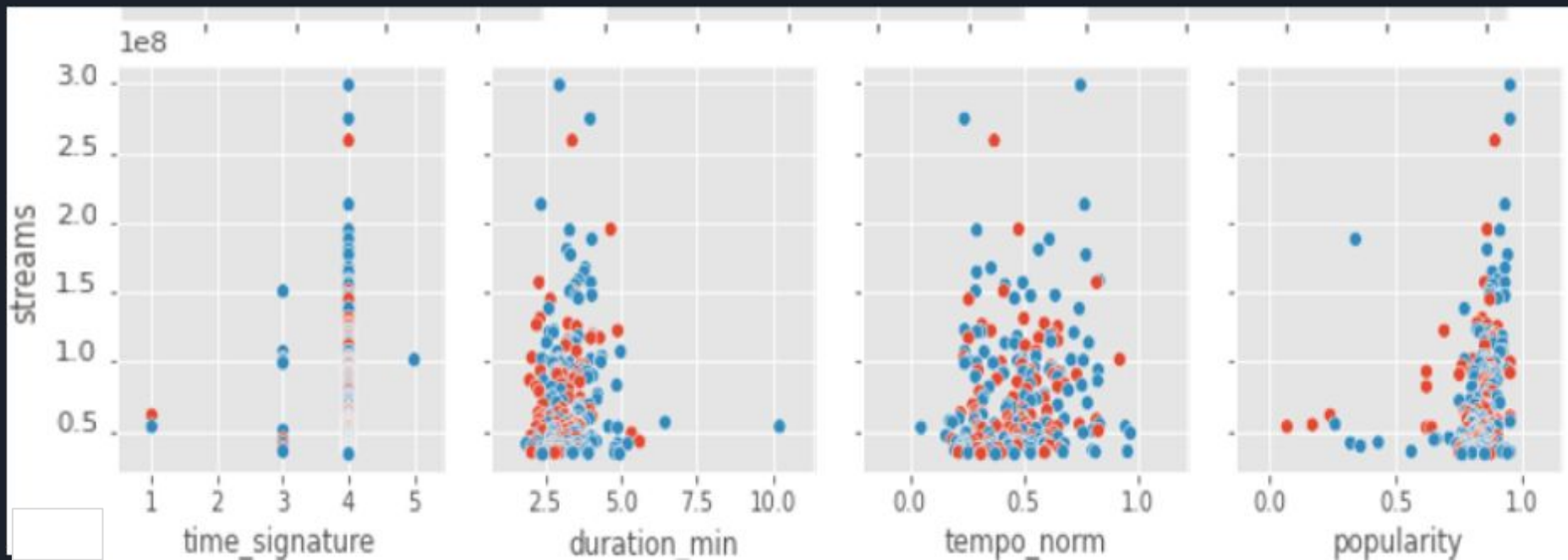
# Audio Features vs Streams



# Audio Features vs Streams



# Audio Features vs Streams





# *Data Analysis*

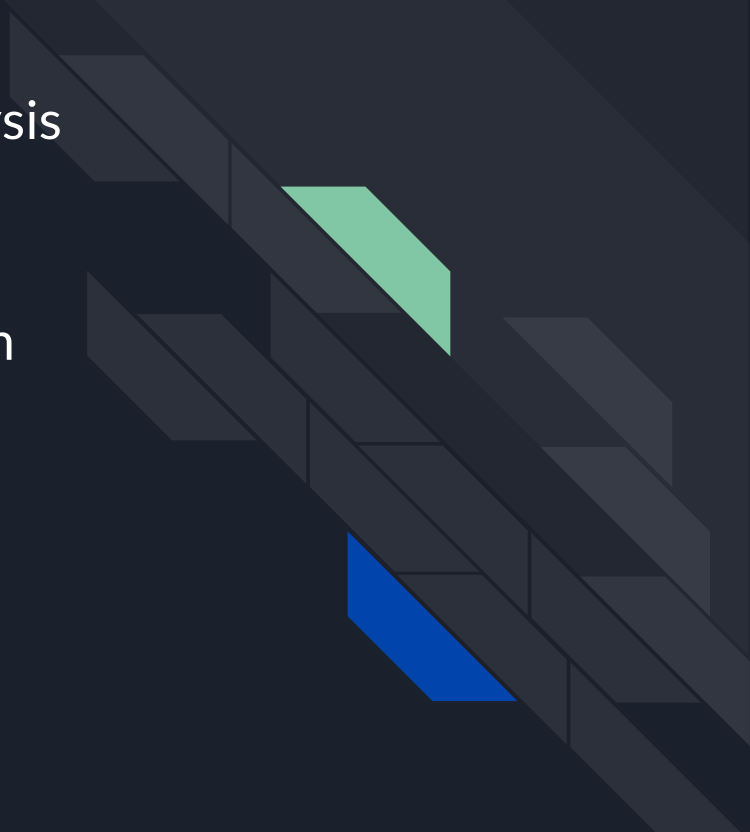
1. Is there any positive correlation between song characteristics/audio features and the number of times a hit song is streamed?
  - a. There was wasn't any significant correlation among hit songs.
2. What about mega hit songs in the top 1% of songs that appeared on on the Daily Hits chart?
  - a. There was a weak correlation to among mega hits.
3. What about songs in a specific genre?
  - a. The most streamed genre was Pop its mega hits had a :
    - i. strong correlation to valence.
    - ii. weak correlation to danceability, energy and loudness

# *Conclusion*

1. There is no magic bullet or holy grail to hit songs.
2. In the US characteristics of a hit widely vary.
3. Mega hits have slightly more correlation to each other but it is not enough to make any real statements based on this analysis.
4. As would be expected songs in the same genre have some correlation but I was surprised that based on this analysis it wasn't significantly greater.

# *Suggestions*

Content creators that want to leverage this analysis should focus on making pop music that is more happy, cheerful, and euphoric ( high valence number), that is energetic, and has tempo, rhythm stability, beat strength, and overall regularity (danceability).





# ***Future Explorations***

1. Genre Specific Deep Dive
2. Country Comparison
3. Year Comparison: 2017, 2018, 2019, 2020, etc.



# Citations

- Dhruvil Dave, “Spotify Charts.” Kaggle, 2021, doi: 10.34740/KAGGLE/DS/1265407.
- [Finding my new favorite song on Spotify](#)
- [Spotify API](#)