Analysis of Top Charting Music from Spotify in the 2010s

By: Greg Maginn, Michael Simon,
Brittany Whitaker, and Hallie Lam
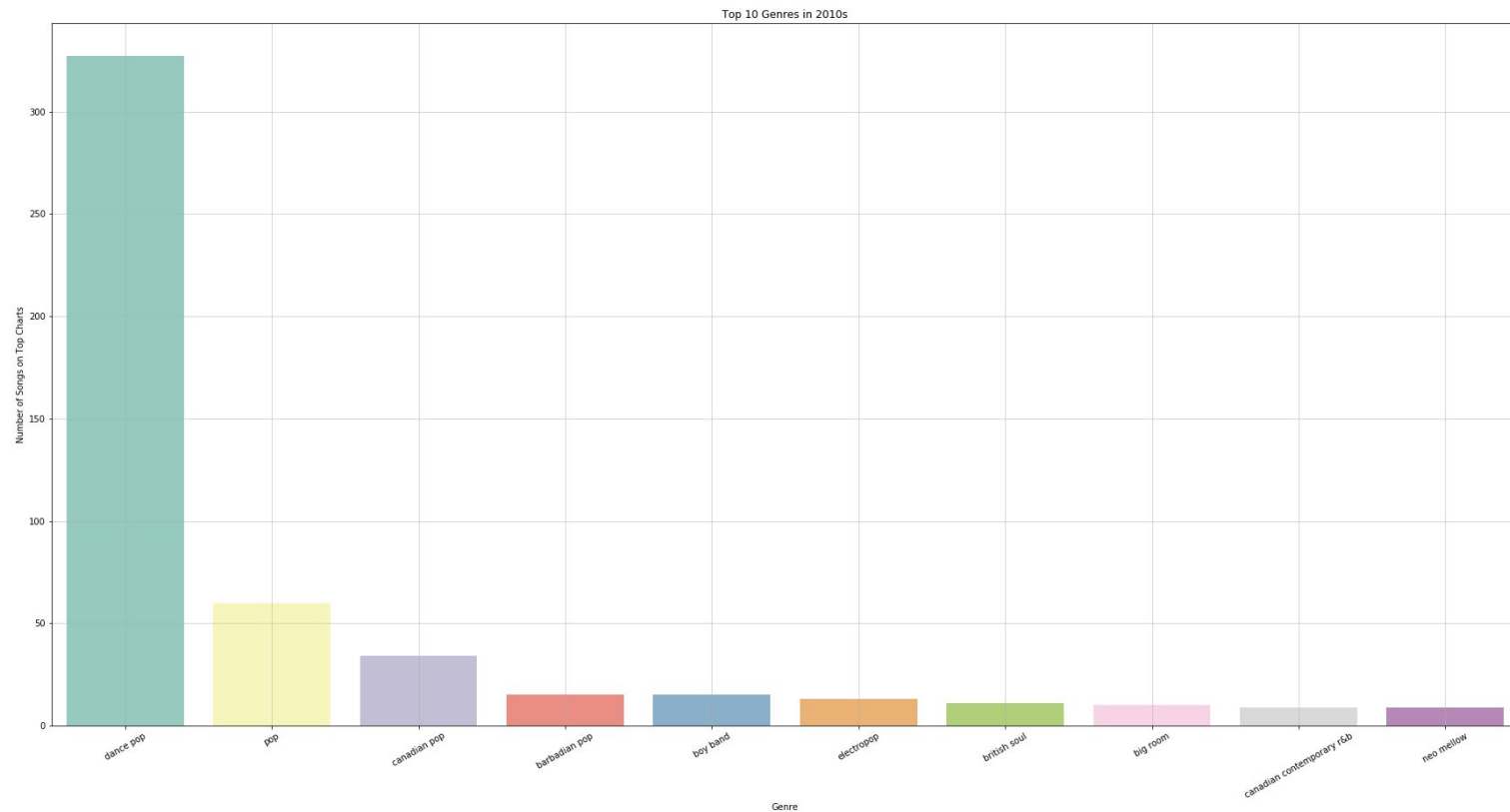
Questions Asked During Our Analysis

★ What was the evolution of genre popularity?
★ What was the prevalence of certain artists?
★ What are the song trends based on release year?
★ Are there optimal times to release certain songs?
★ Can we predict song success using track identifiers?

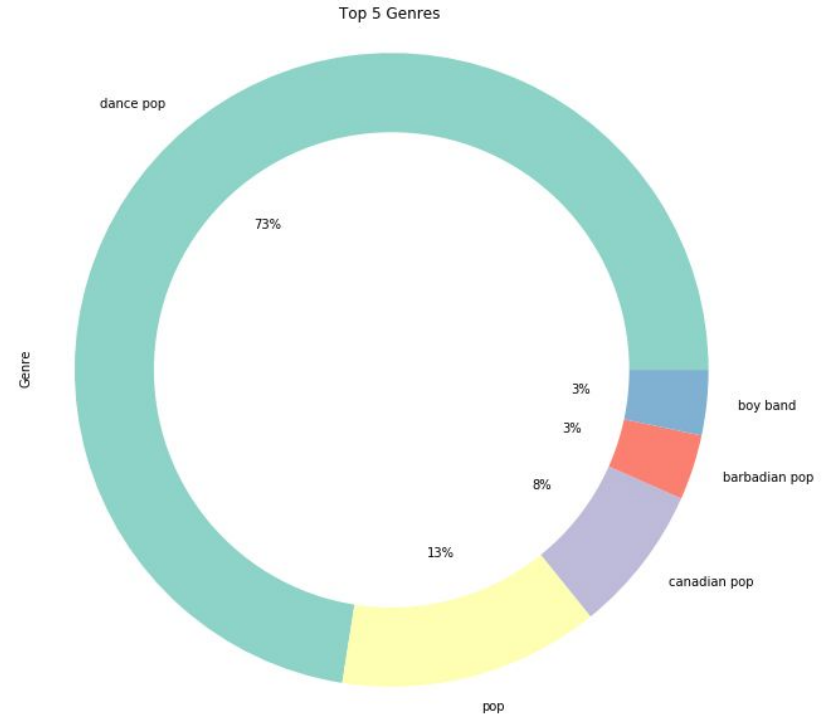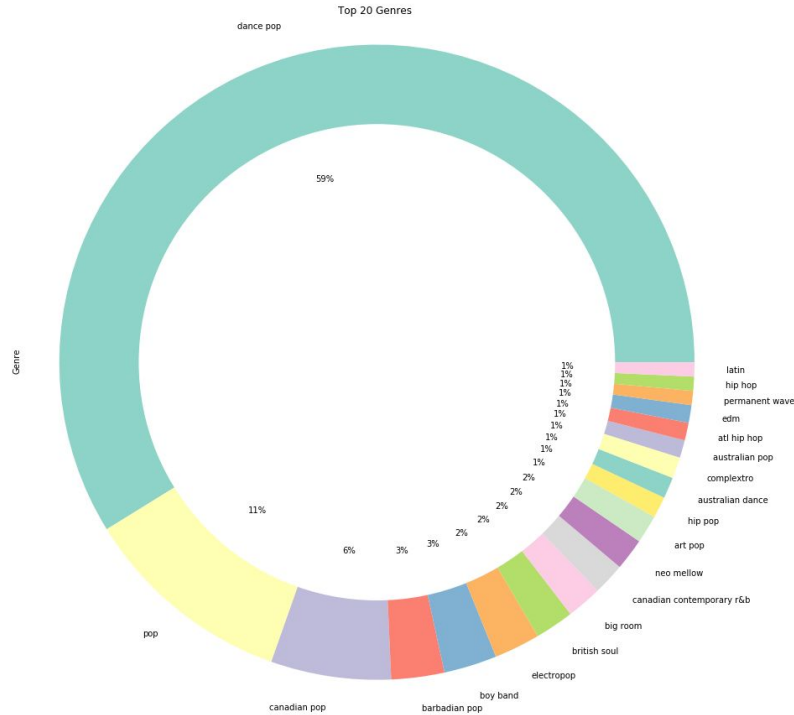# Analysis of Top Genres

Spotify Top Songs
2010 - 2019

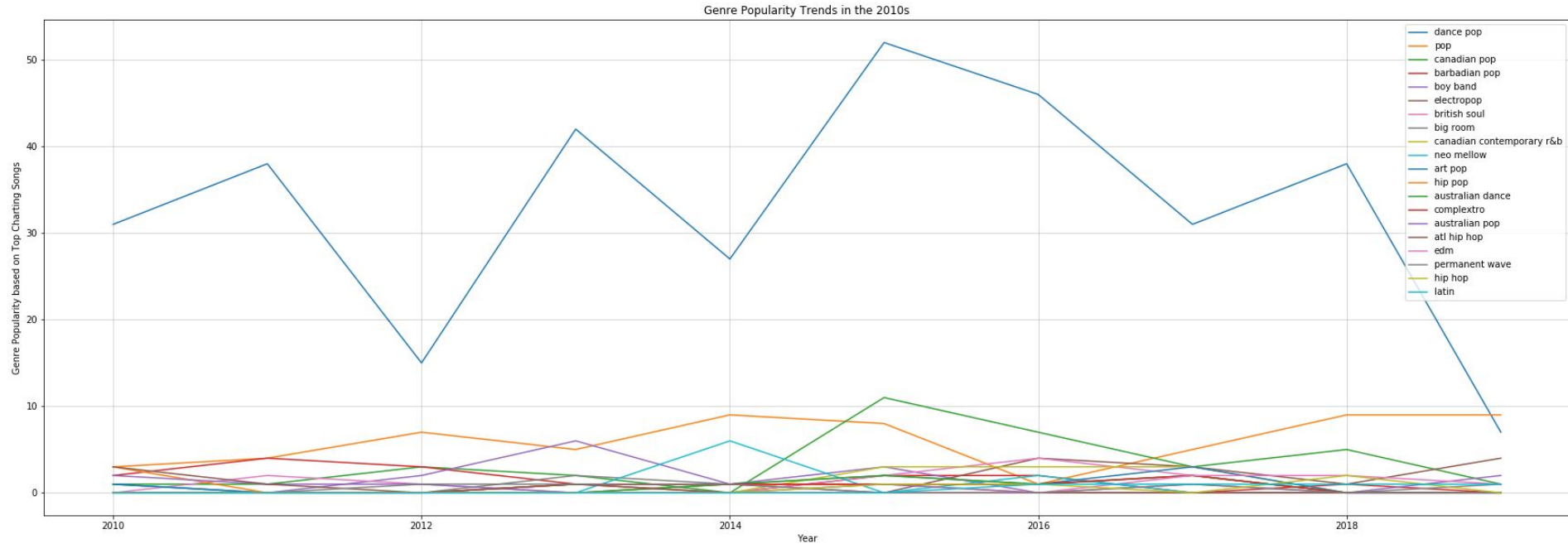# Which Genre Was The Most Popular in the 2010s?

Top 10 Genres in 2010s

Which Genre Was The Most Popular in the 2010s?

Top 20 Genres

Genre

- dance pop 59%
- pop 11%
- canadian pop 6%
- barbadian pop 3%
- boy band 3%
- electropop 2%
- british soul 2%
- big room 2%
- canadian contemporary r&b 2%
- neo mellow 1%
- art pop 1%
- hip pop 1%
- australian dance 1%
- complextro 1%
- australian pop 1%
- atl hip hop 1%
- edm
- permanent wave
- hip hop
- latin

Top 5 Genres

Genre

- dance pop 73%
- pop 13%
- canadian pop 8%
- barbadian pop 3%
- boy band 3%

Which Genre Was The Most Popular in the 2010s?

★ "Dance Pop" was the most popular genre of the 2010s
★ "Pop" was the second most popular genre
★ "Canadian Pop" came in at third most popular

★ Lowest charting music genres include Latin, Hip Hop, EDM, Permanent Wave, Atlanta Hip Hop, Australian Pop, Canadian Latin, Alaska Indie, House, Brostep, Escape Room, Candy Pop.

# The Evolution of Genre Popularity During the 2010s

Genre Popularity Trends in the 2010s

- ★ "Dance Pop" was the most popular genre throughout the 2010s
- ★ "Dance Pop" had a sharp decrease in popularity in 2019 as "Pop" became most popular and "Electropop" found an increase in popularity.
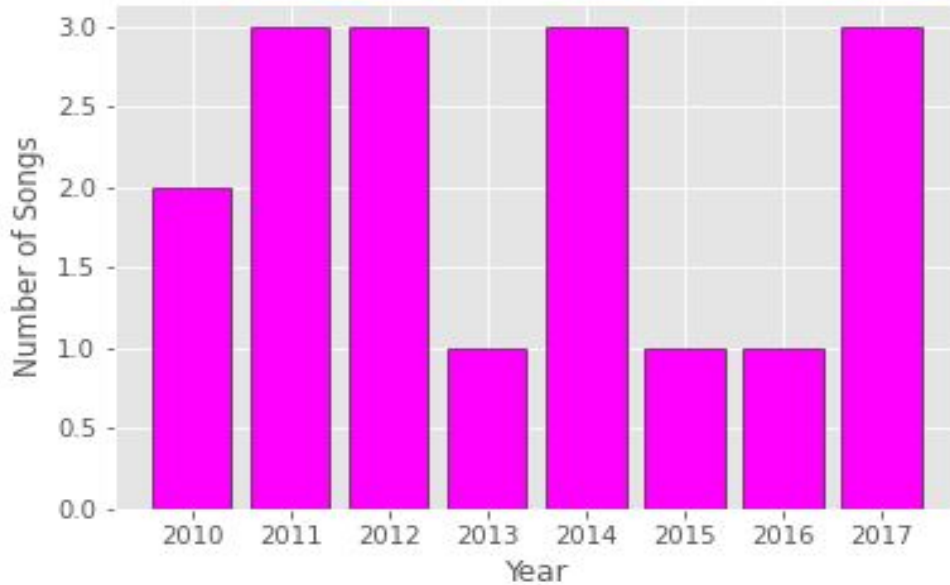- ★ Genre popularity did not change much through the decade, with Pop being the ultimate favorite Genre.

Analysis of Top Artists

Spotify Top Songs
2010 - 2019

Which artist appeared on Top Songs the most?

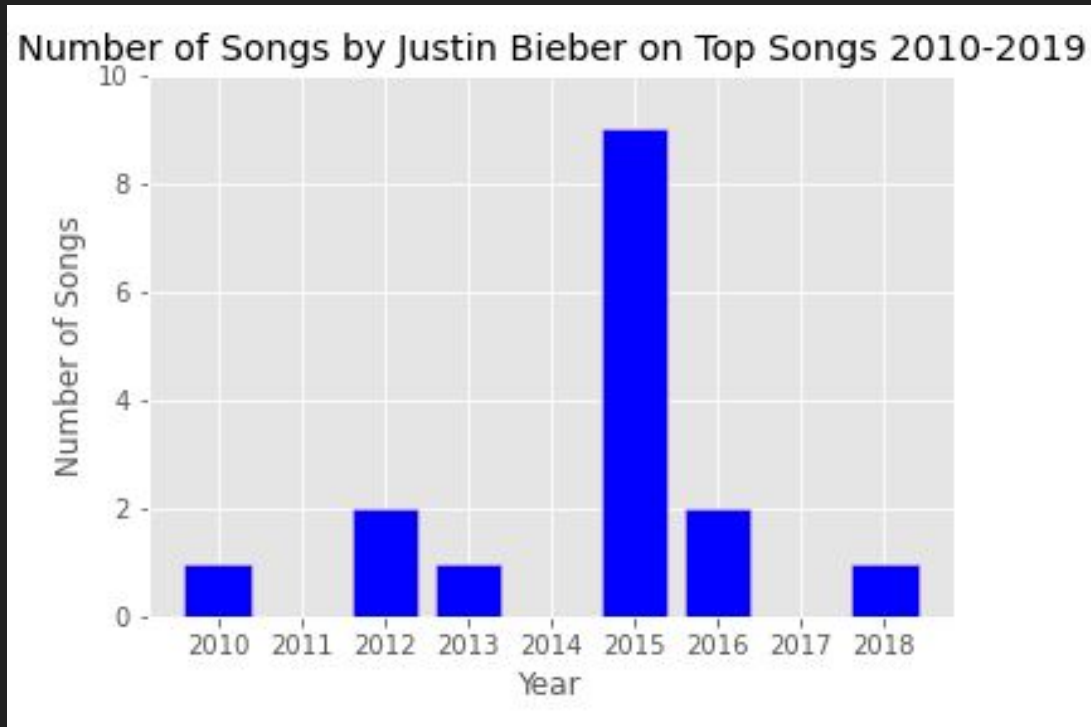Number of Songs by Artist on Spotify Top Songs 2010-2019
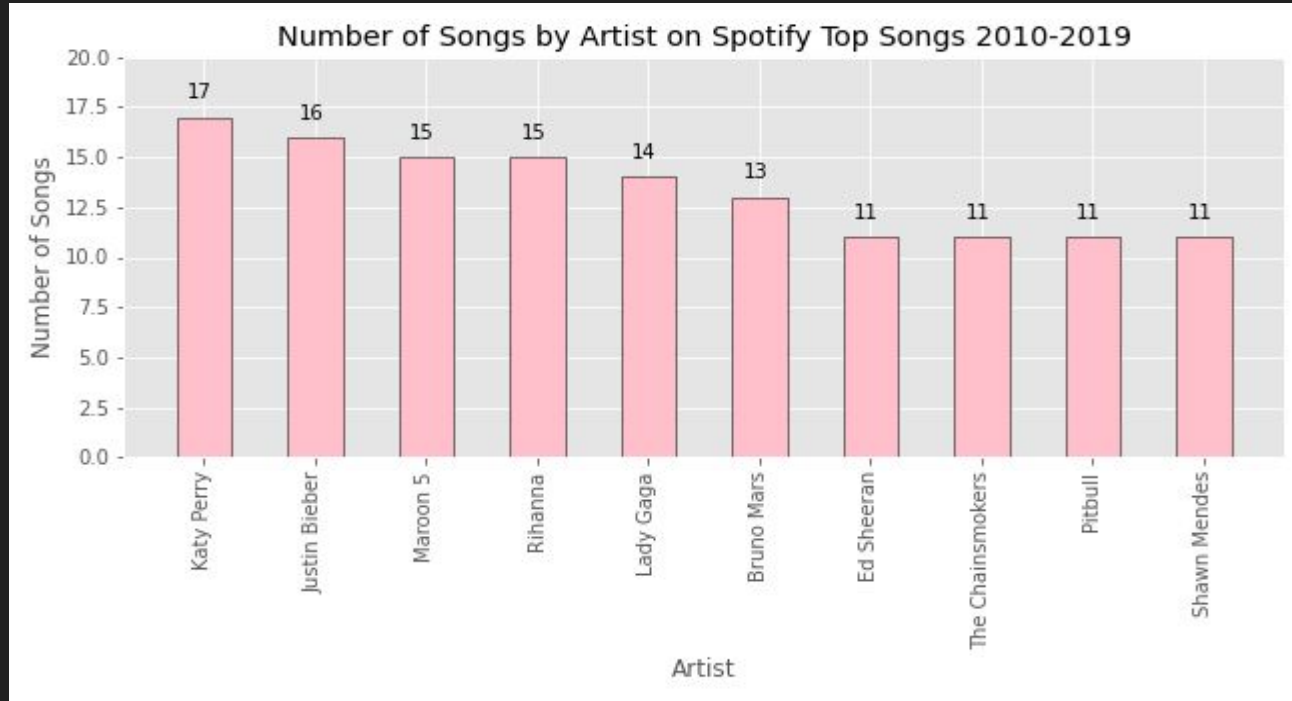
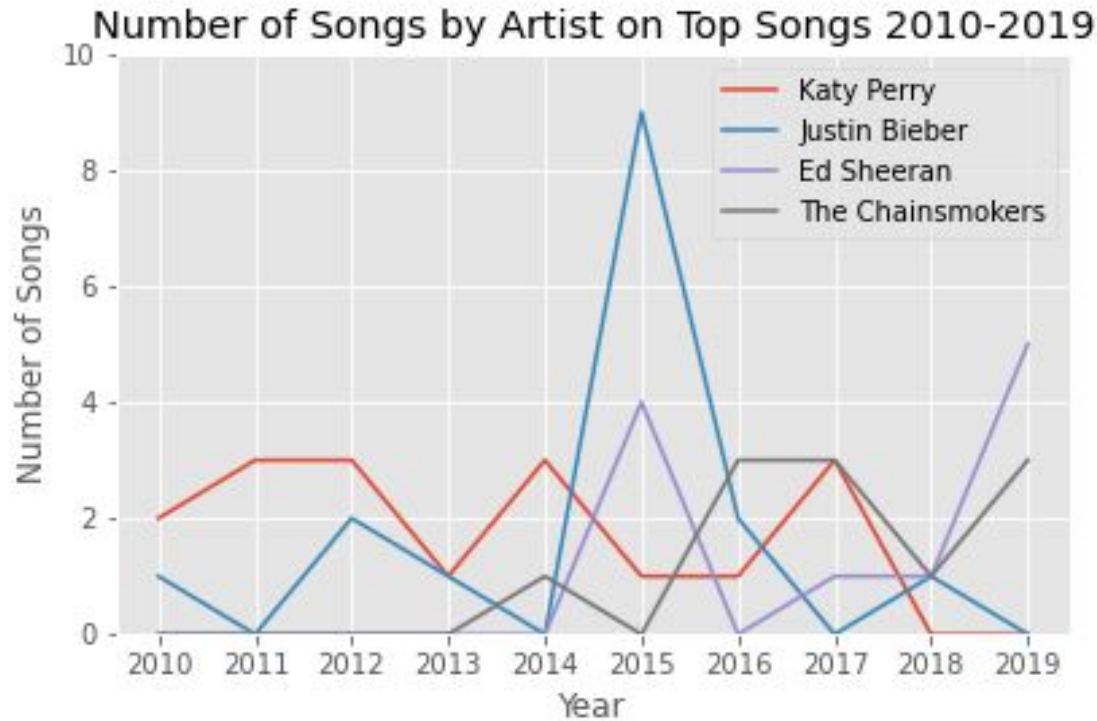Number of Songs by Katy Perry on Top Songs 2010-2019

Katy Perry's music was consistently trending

for 7 consecutive years from 2010 to 2017

Justin Bieber's Most Prolific Year

Justin Bieber is the only artist with 9 songs
in any given year

Number of Songs by Artist on Top Songs 2010-2019

Only Ed Sheeran and Lady Gaga (not shown) have the second
highest number of songs (5) in any one year

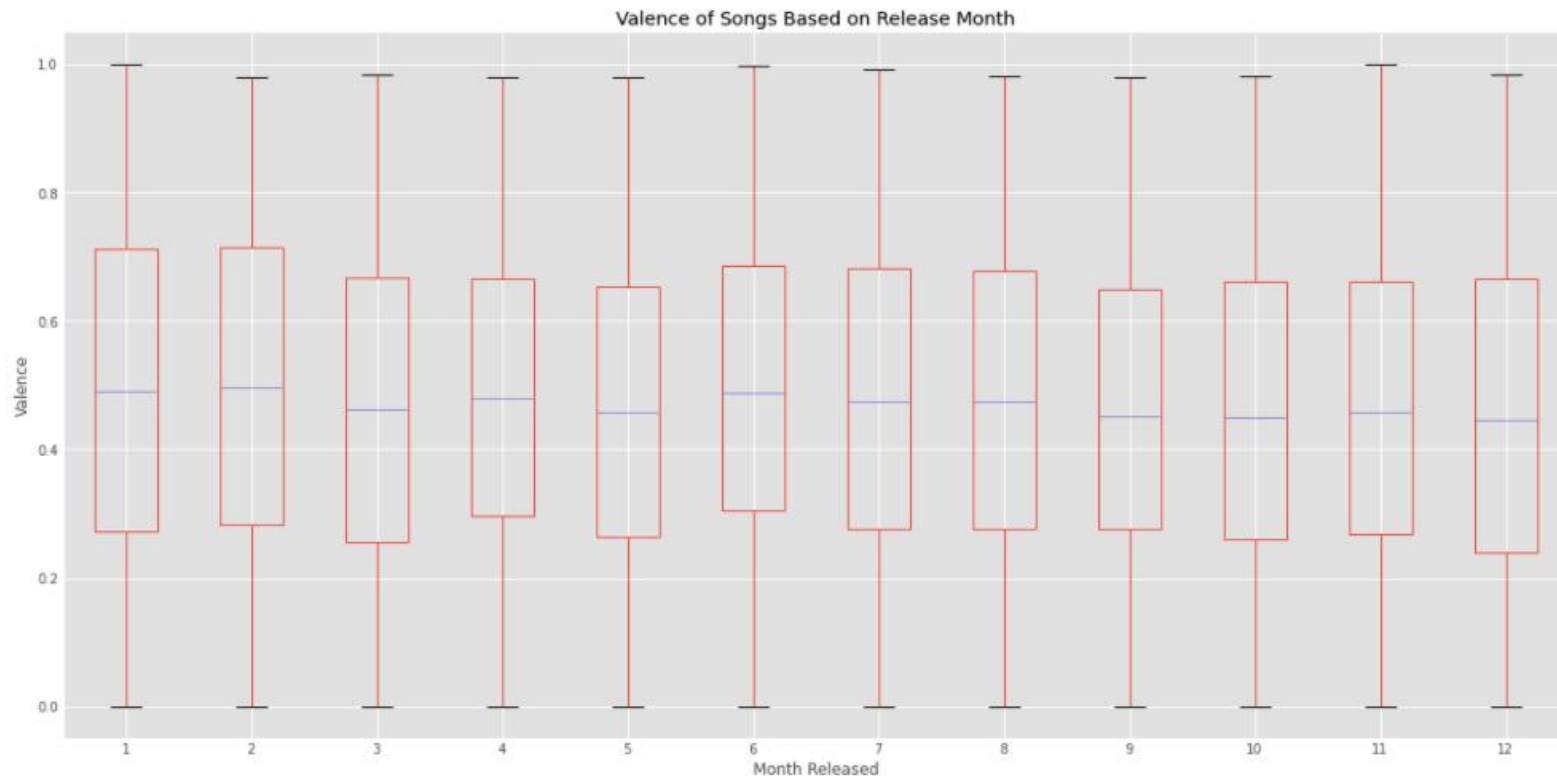# Trends Based on Release Date

- Initial Questions:

  - Do certain times of the year have signature sounds?

  - Are there optimal times to release certain songs?

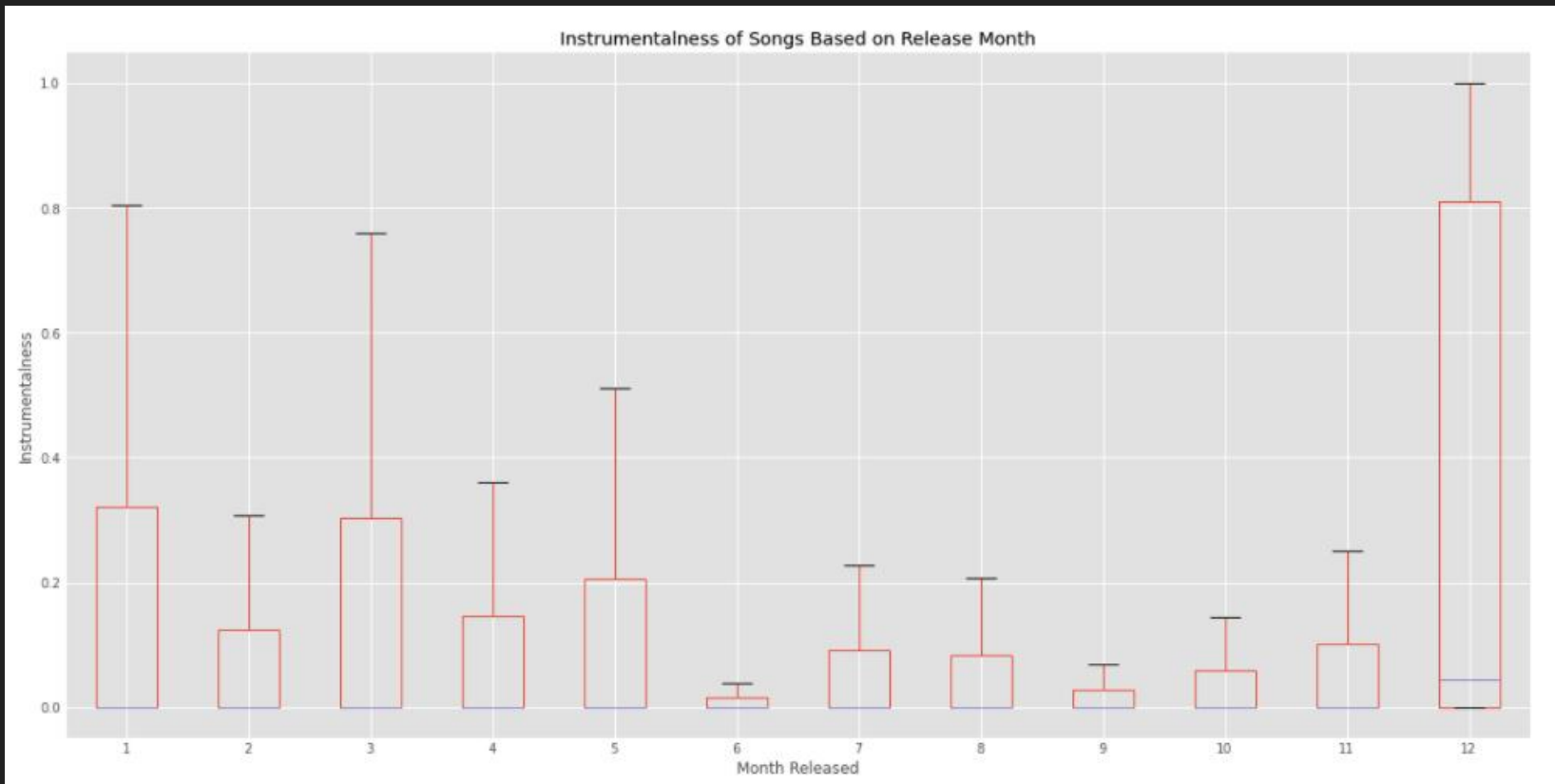 - What variables matter the most?

Data Selection

- Picked Data after the year 2001
  - Napster Founded
  - More freedom in music selection

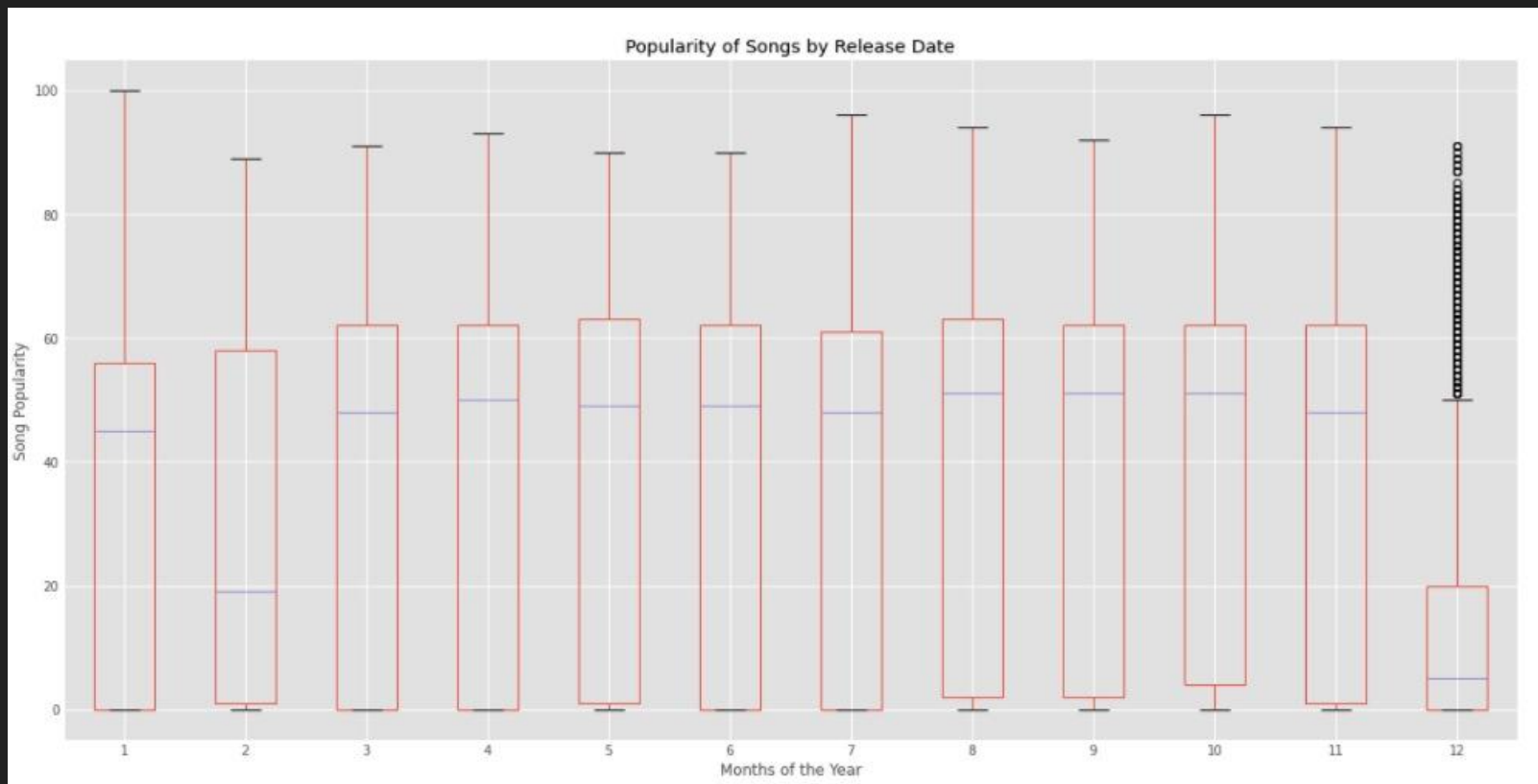- Kaggle Data Base

- Containing over 174,000 Songs

Seasonal Trends?

Valence of Songs Based on Release Month

Seasonal Trends!

More Instrumental Investigation
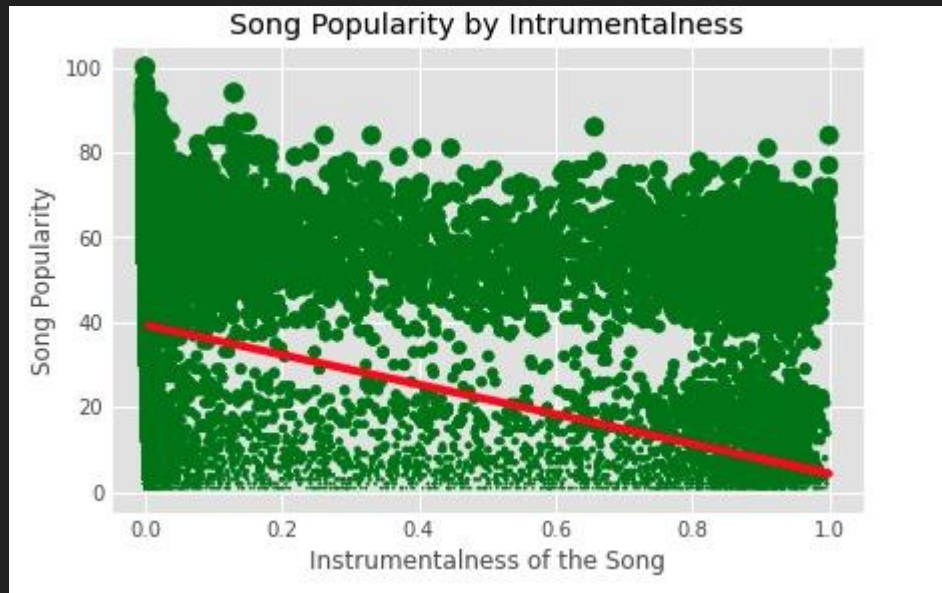

Popularity of Songs by Release Date

Possible Reasons for December Drop

- Are songs with more 'Instrumentalness' less popular?

OR

- Is it not a good idea to release a song in december as people may be listening to other holiday music?

Extrapolating

R-Value^2 = 0.1778
(Weak)

- What does this mean?

- Most likely not because of 'instrumentalness'

Circling Back

- Do certain times of the year have signature sounds?

- Are there optimal times to release certain songs?

- What variables matter the most?

# Spotify Track Identifiers (Range of 0-1)

- **Acousticness** - Composed of musical instruments

- **Danceability** - How suitable is a track for dancing (tempo, rhythm, beat strength)

- **Explicitness** - Use or no use of explicit content

- **Instrumentalness** - Amount of vocals used in a song

- **Liveness** - Probability that the song was recorded with a live audience

- **Speechiness** - Presence of spoken words in a track

- **Energy** - Fast, loud, and noisy

What Variables Matter The Most?

Popular vs All Songs Released in 2020

Popular = Popularity rating of 80+

- Some visual difference between averages of popular songs and all songs released in 2020

- Major Differences: Instrumentalness, Explicit
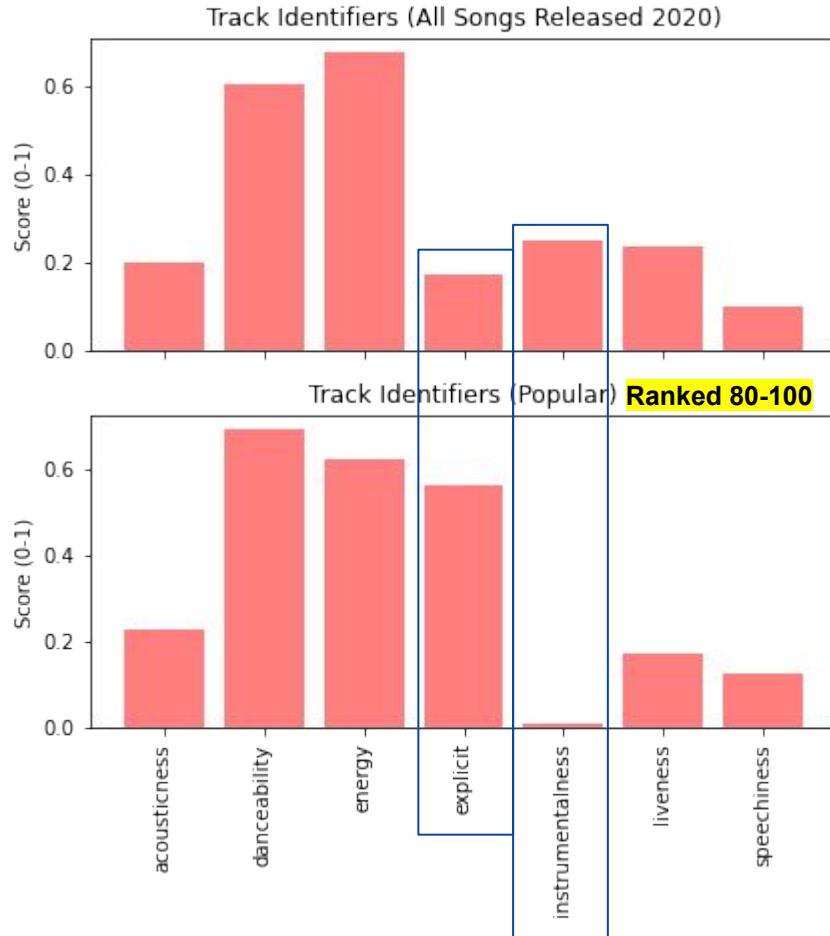
What Variables Matter The Most?

Identifier	P-Value
Acousticness	0.0535
Danceability	9x10^-24
Energy	0.001
Explicit	3.28*10^-39
Instrumentalness	9.6*10^-26
Liveness	1.85*10^-7
Speechiness	0.003
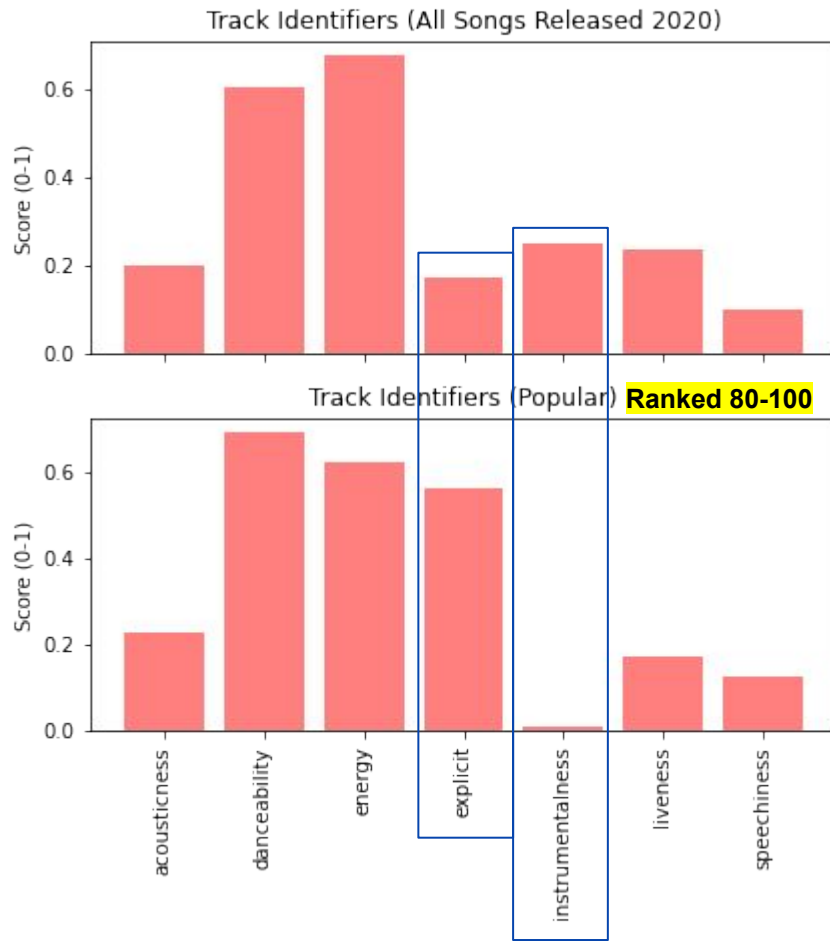
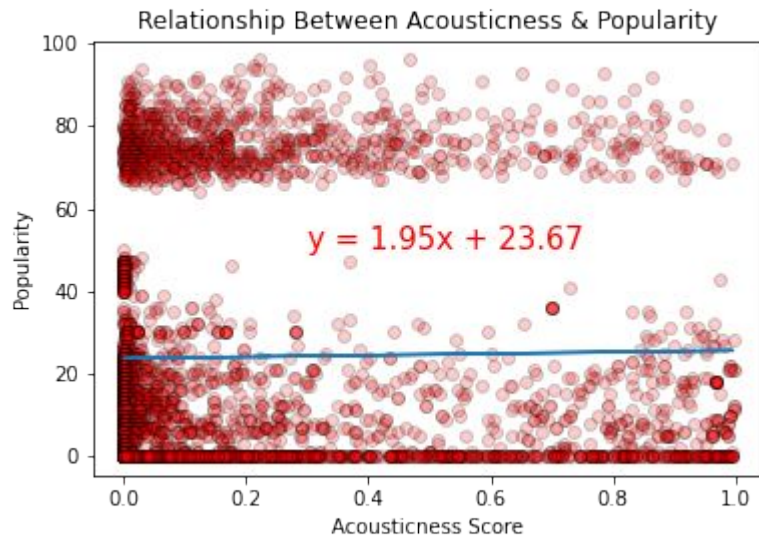Track Identifiers (All Songs Released 2020)
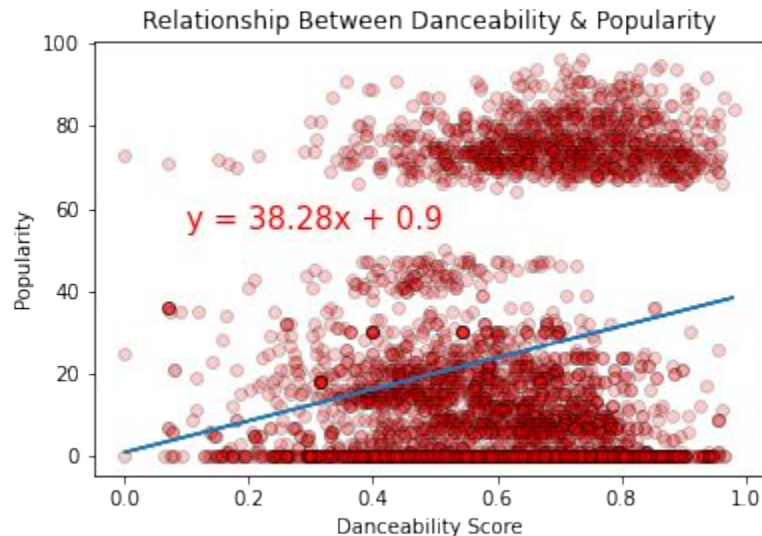
Track Identifiers (Popular) Ranked 80-100

Is There A Linear Relationship Between Song Success and Track Identifiers?
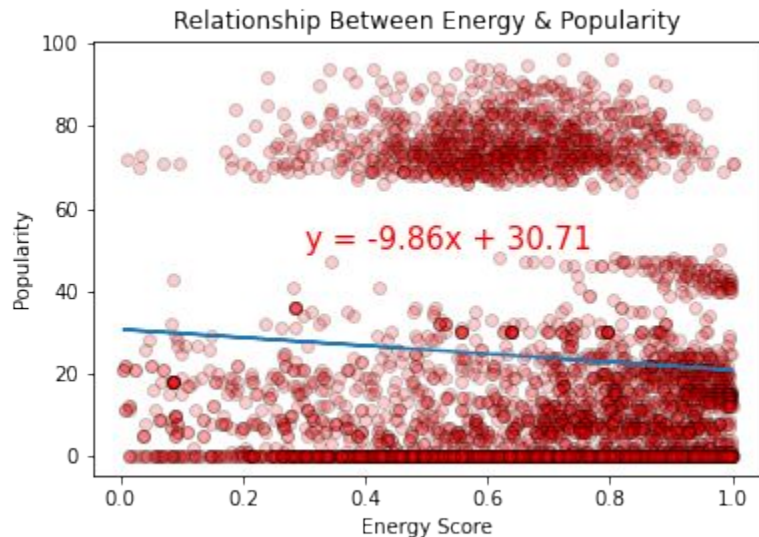

The r-squared is: 0.018434730012155797

The r-squared is: 0.21637817971972959
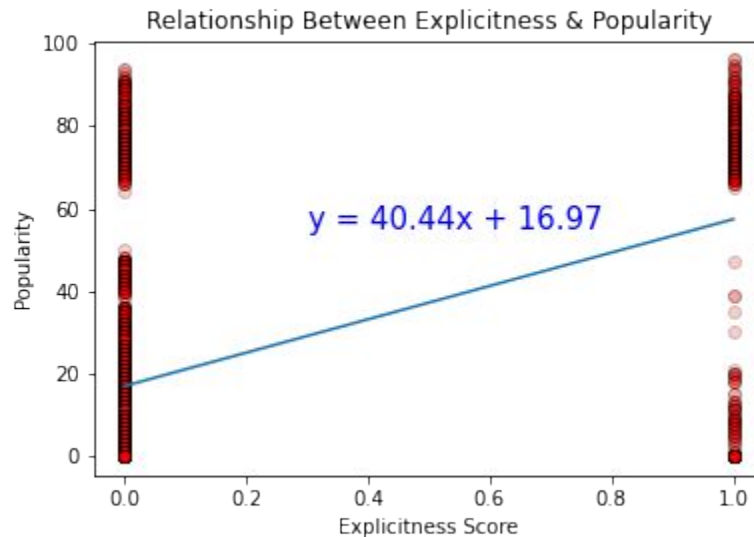
Is There A Linear Relationship Between Song Success and Track Identifiers?
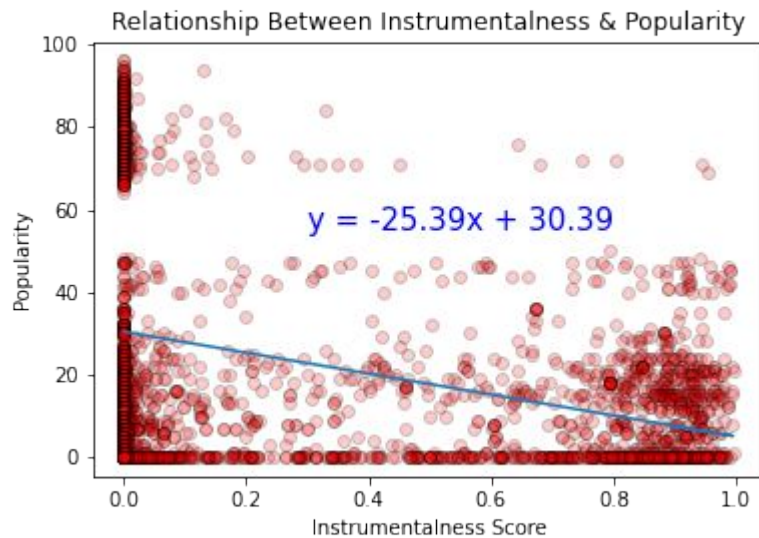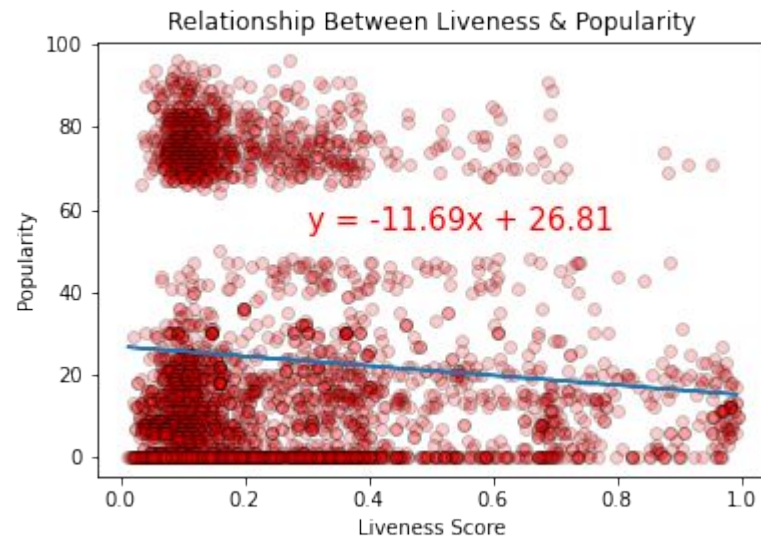
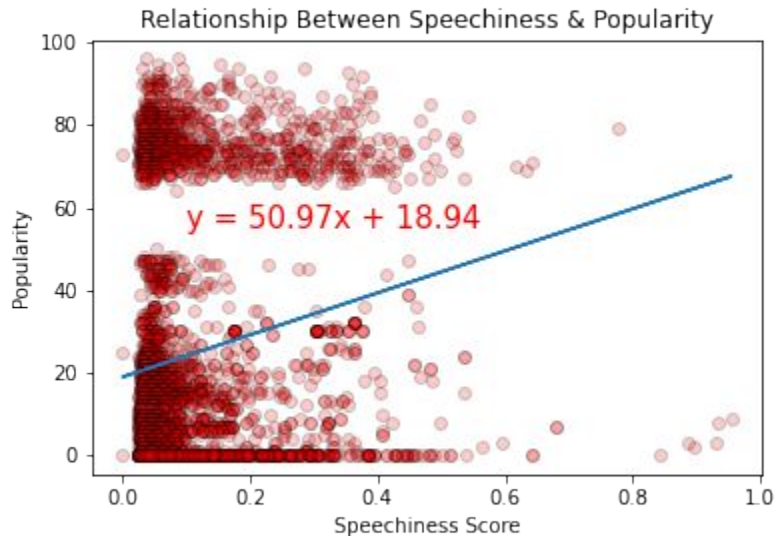# Is There A Linear Relationship Between Song Success and Track Identifiers?

The r-squared is: -0.310509921415585

The r-squared is: -0.08169870403401887

Is There A Linear Relationship Between Song Success and Track Identifiers?

Relationship Between Speechiness & Popularity

y = 50.97x + 18.94

The r-squared is: 0.17559298154990297

Conclusion

1. The difference in average danceability, energy, explicitness, instrumentalness, liveness, & speechiness of popular songs (80+ rating) and all songs released in 2020 on Spotify is unlikely to be caused by chance.

2. There is a low linear correlation between track identifiers and popularity of songs released on Spotify.

Resources

https://www.kaggle.com/yamaerenay/spotify-dataset-19212020-160k-tracks?select=data_by_year.csv

https://github.com/kelvingakuo/fycharts

https://spotifycharts.com/regional

https://www.kaggle.com/leonardopena/top-spotify-songs-from-20102019-by-year?select=top10s.csv

https://seaborn.pydata.org/generated/seaborn.color_palette.html

https://medium.com/@krishnakummar/donut-chart-with-python-matplotlib-d411033c960b