Two Decades of Spotify: *Analyzing Spotify's Top Hits (2000-2019)*

Deadcoders
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Project Overview

Our project aimed to analyze various aspects of popular music from Spotify using a dataset containing information on the top 2000 songs from 2000 to 2019.

Dataset Overview

The dataset consists of 2000 rows and 18 columns, capturing the Top 2000 songs during the analyzed period (2000-2019). Each row represents a song, and the columns provide detailed attributes:

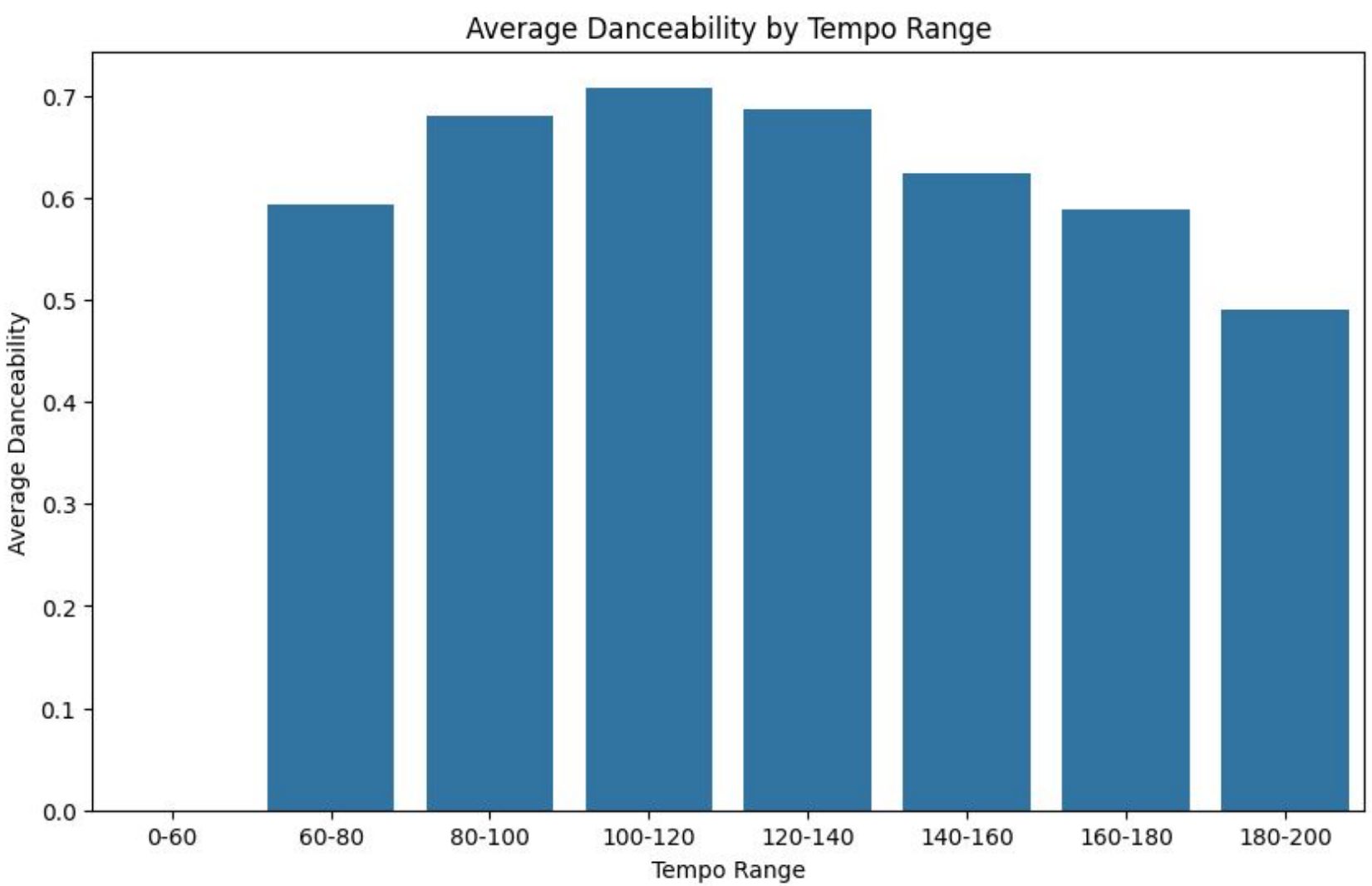
- **Artist**: Name of the artist.
- **Song**: Track title.
- **Duration_ms**: Track length in milliseconds.
- **Explicit**: Indicates if the song has explicit content.
- **Year**: Release year of the track.
- **Popularity**: Popularity score (higher is more popular).
- **Danceability**: How suitable the track is for dancing (0.0 to 1.0).
- **Energy**: Intensity and activity level of the track (0.0 to 1.0).
- **Key**: Musical key (0 = C, 1 = C♯/D♭, etc.).
- **Loudness**: Average loudness in decibels (dB).
- **Mode**: Major (1) or minor (0) key.
- **Speechiness**: Presence of spoken words (0.0 to 1.0).
- **Acousticness**: Confidence that the track is acoustic (0.0 to 1.0).
- **Instrumentalness**: Likelihood of the track being instrumental (0.0 to 1.0).
- **Liveness**: Presence of a live audience (0.0 to 1.0).
- **Valence**: Emotional positivity of the track (0.0 to 1.0).
- **Tempo**: Speed of the track in beats per minute (BPM).
- **Genre**: Genre classification.

Erick’s Analysis

Q:

What tempo range has the highest danceability score?

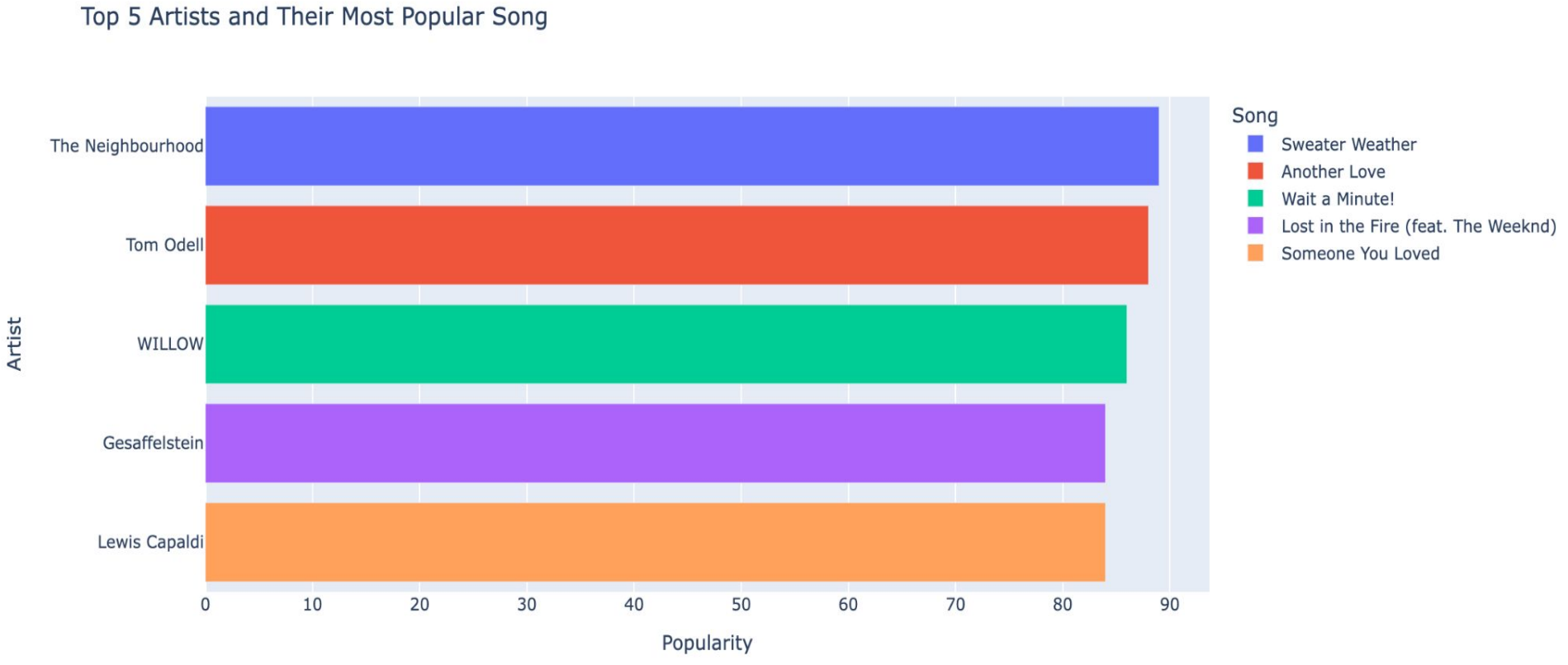
A:


Average Danceability by Tempo Range
Average Danceability
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0-60
60-80
80-100
100-120
120-140
140-160
160-180
180-200
Tempo Range

Q:

Who are the top 5 artists, and what is their most popular song?

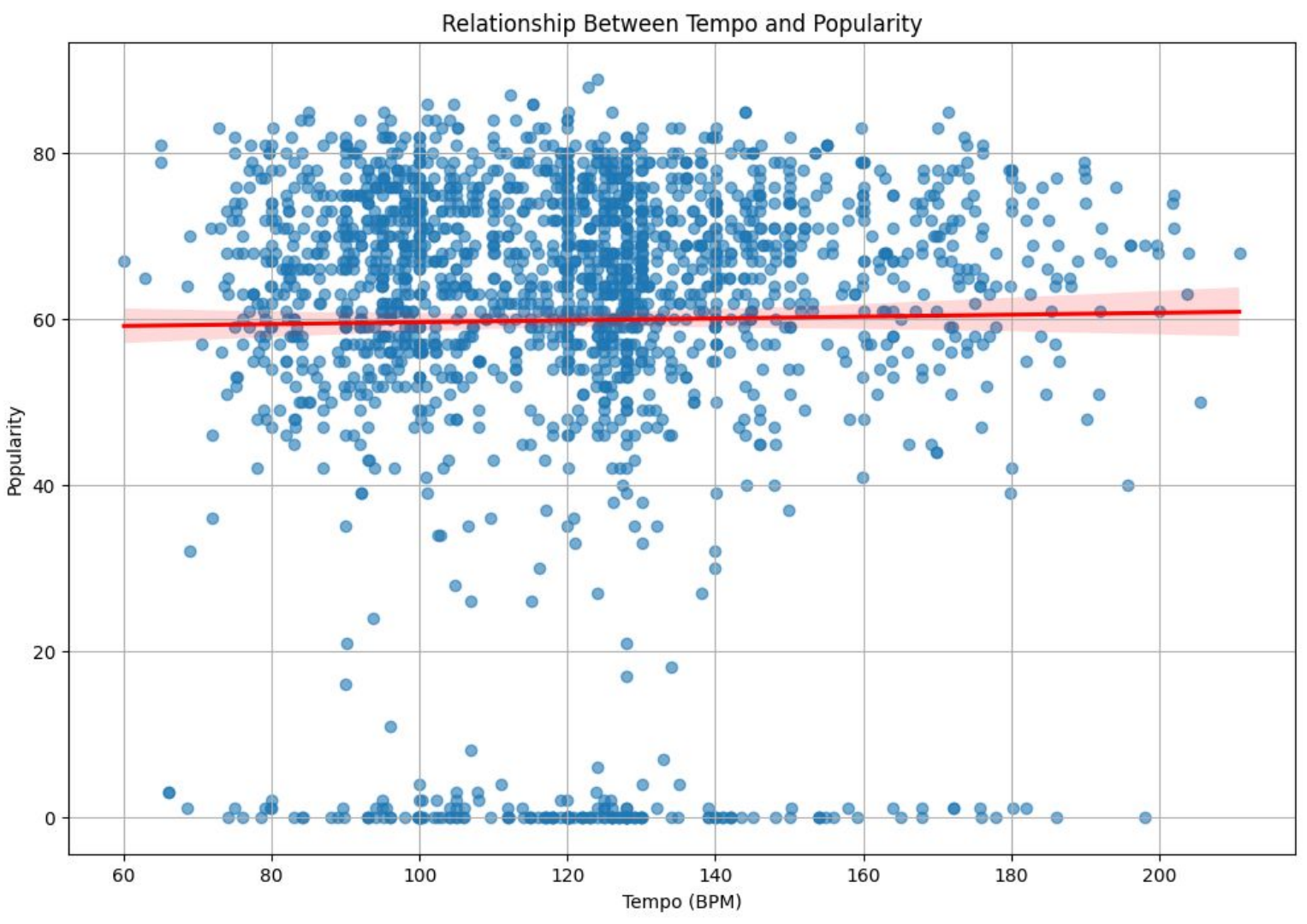
A:


Top 5 Artists and Their Most Popular Song
Artist
The Neighbourhood
Tom Odell
WILLOW
Gesaffelstein
Lewis Capaldi
0
10
20
30
40
50
60
70
80
90
Popularity
Song
Sweater Weather
Another Love
Wait a Minute!
Lost in the Fire (feat. The Weeknd)
Someone You Loved

Q:

What is the relationship between tempo and popularity?

A:

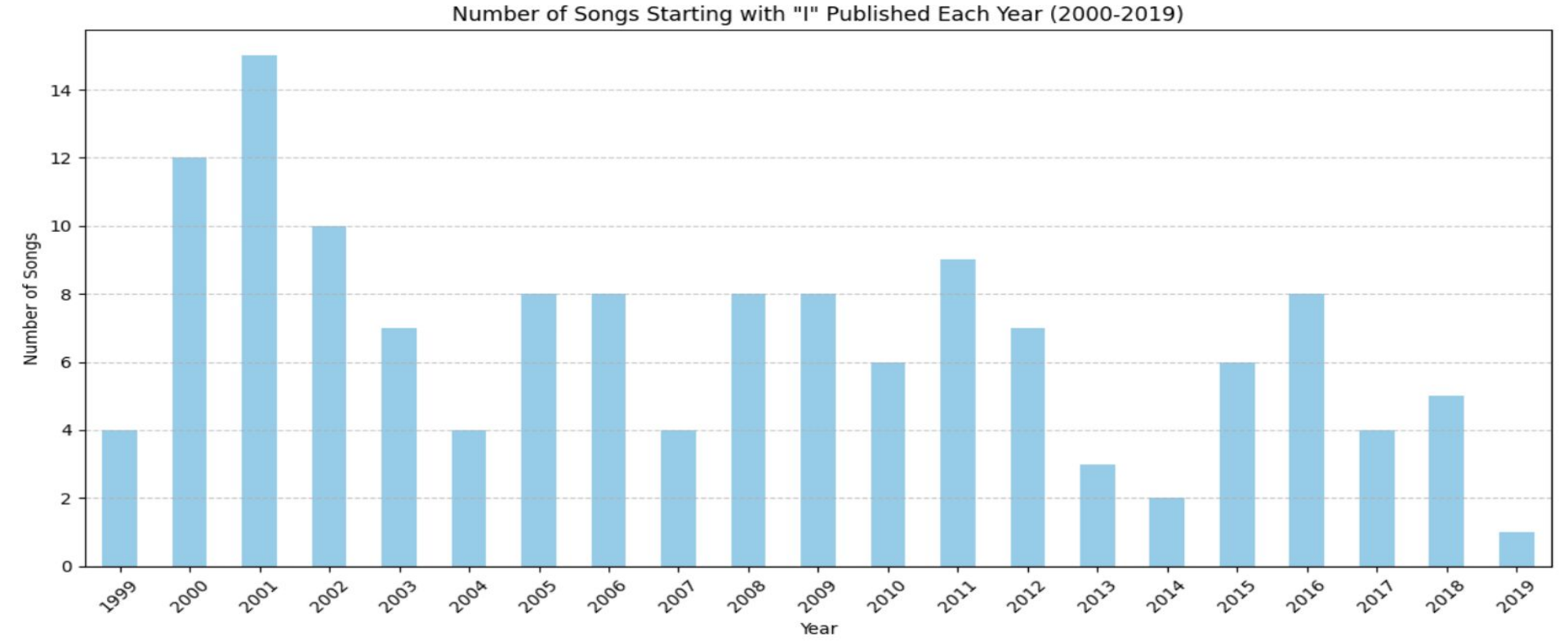

Relationship Between Tempo and Popularity
Popularity
Tempo (BPM)
0
20
40
60
80
60
80
100
120
140
160
180
200

Mariyah’s Analysis

Q:

In which year between 2000 and 2019 were the most songs published that start with the letter "I"?

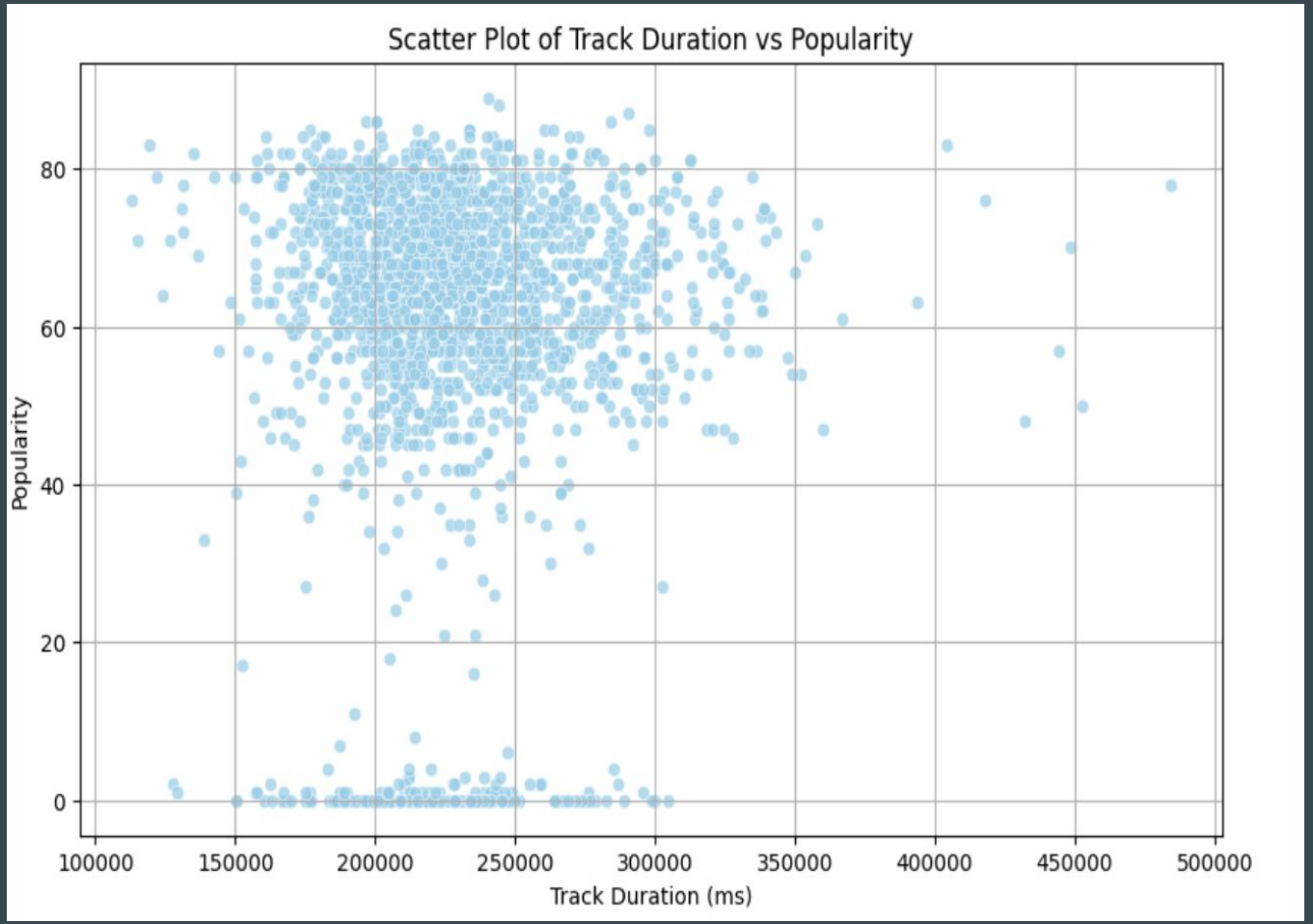
A:


Number of Songs Starting with "I" Published Each Year (2000-2019)
Number of Songs
0
2
4
6
8
10
12
14
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
Year

Q:

Does a longer track duration correlate with an increase or decrease in overall popularity?

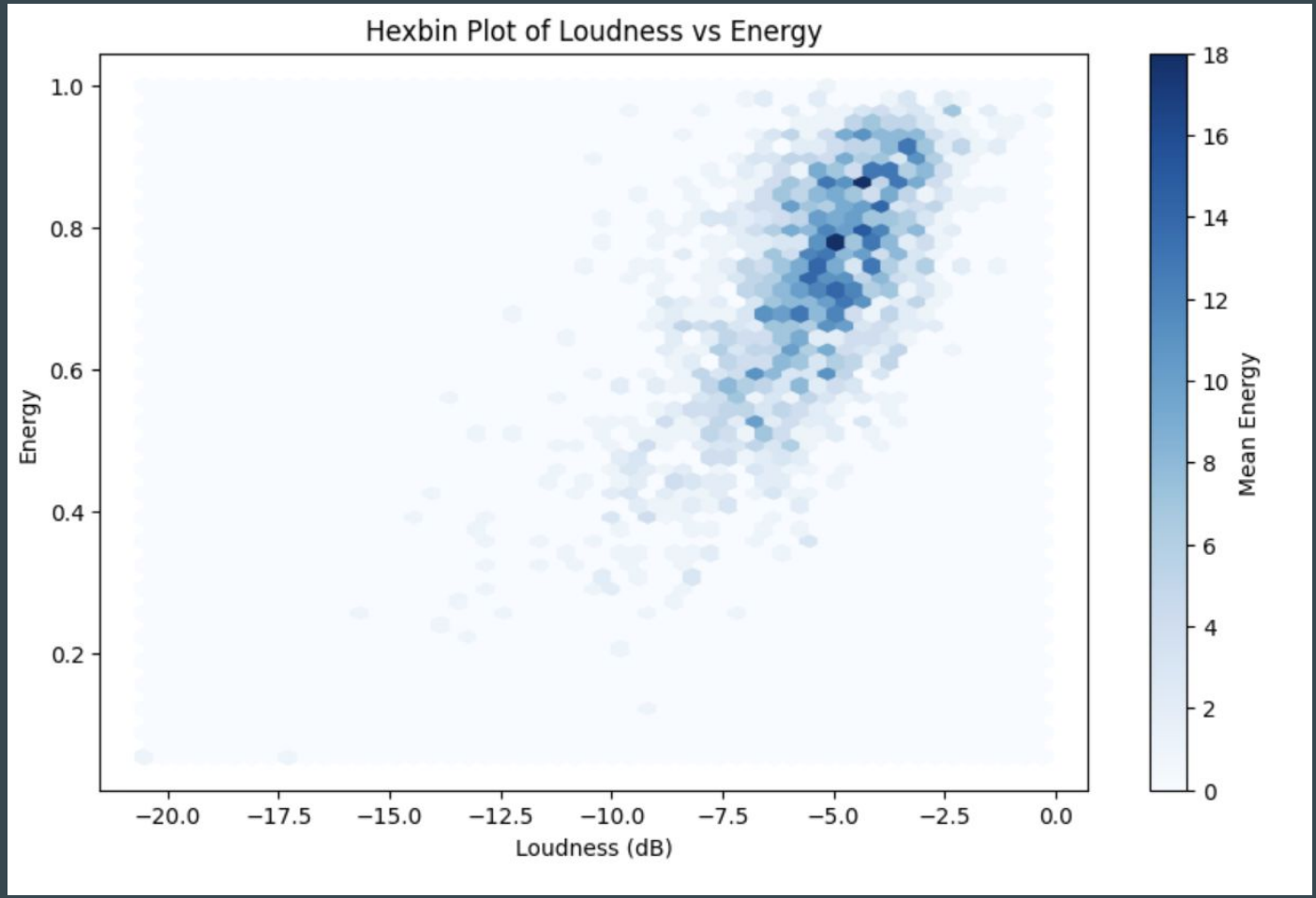
A:


Scatter Plot of Track Duration vs Popularity
Popularity
0
20
40
60
80
100000
150000
200000
250000
300000
350000
400000
450000
500000
Track Duration (ms)

Q:

Does an increase in loudness correlate with an increase in energy?

A:

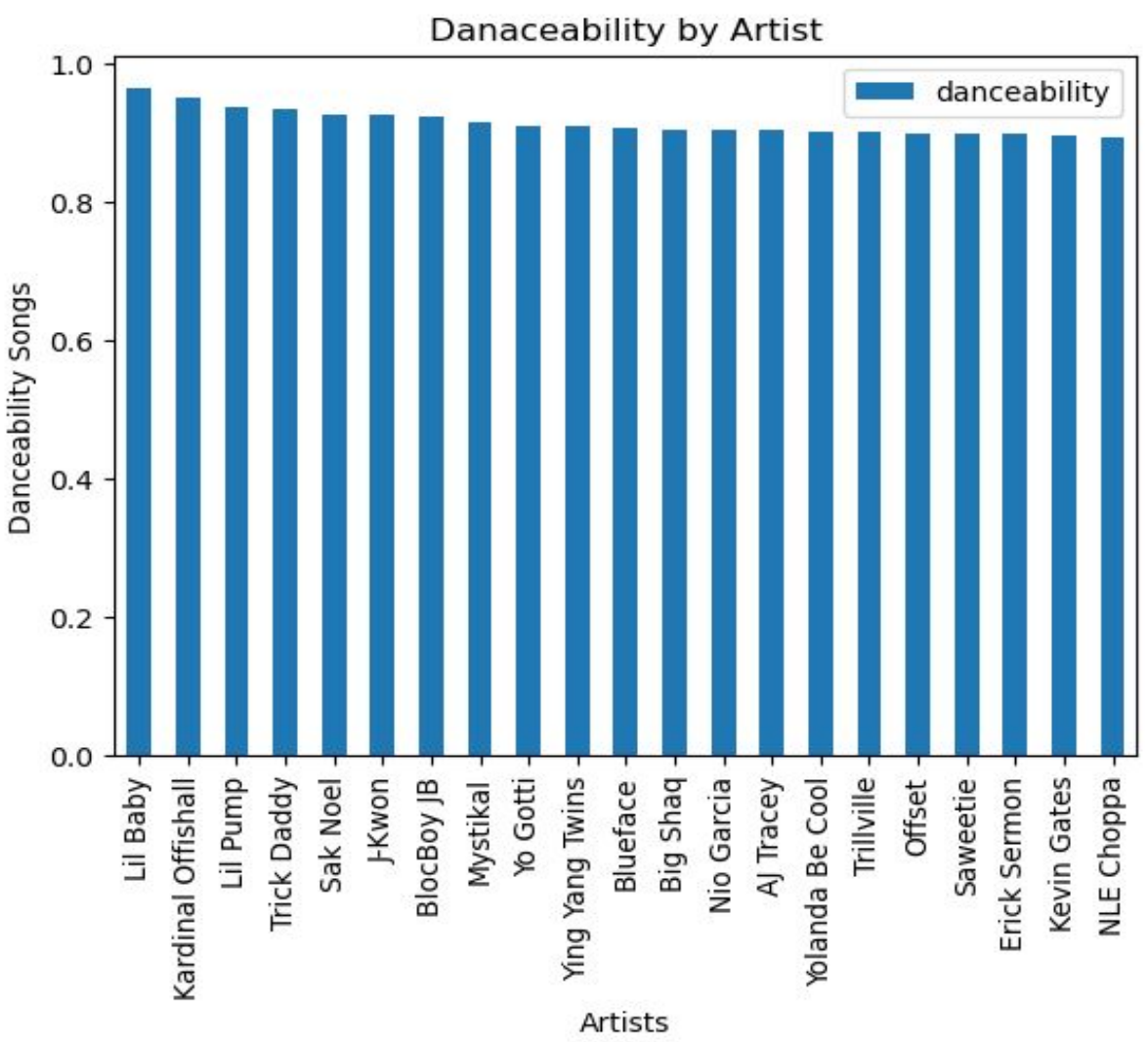

Hexbin Plot of Loudness vs Energy
Energy
1.0
0.8
0.6
0.4
0.2
−20.0
−17.5
−15.0
−12.5
−10.0
−7.5
−5.0
−2.5
0.0
Loudness (dB)
Mean Energy
18
16
14
12
10
8
6
4
2
0

Ibrahim’s Analysis

Q:

Which artist has the most danceable songs?

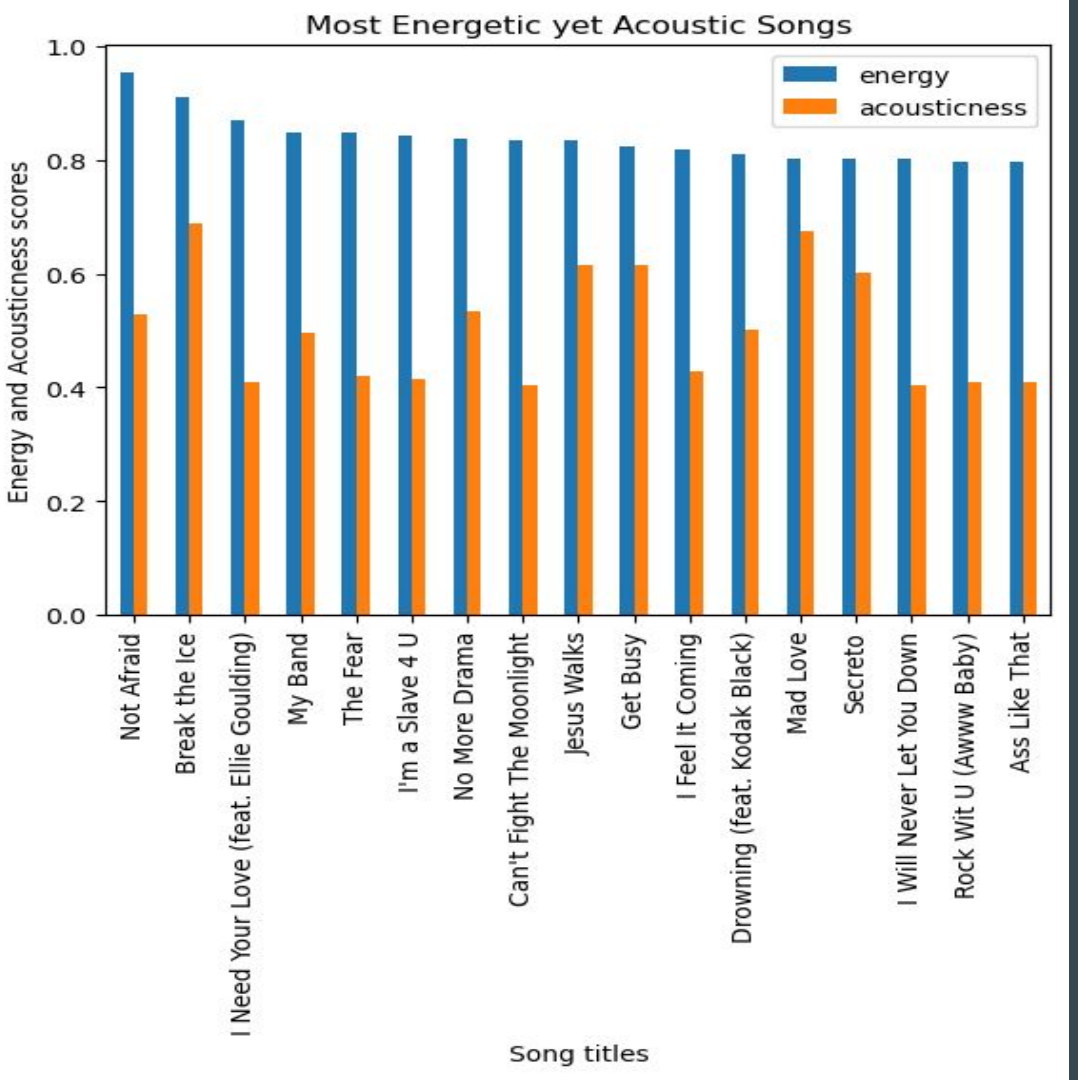
A:


Danaceability by Artist
danceability
Danceability Songs
1.0
0.8
0.6
0.4
0.2
0.0
Lil Baby
Kardinal Offishall
Lil Pump
Trick Daddy
Sak Noel
J-Kwon
BlocBoy JB
Mystikal
Yo Gotti
Ying Yang Twins
Blueface
Big Shaq
Nio Garcia
AJ Tracey
Yolanda Be Cool
Trillville
Offset
Saweetie
Erick Sermon
Kevin Gates
NLE Choppa
Artists

Q:

What are the most energetic songs that score high on acousticness?

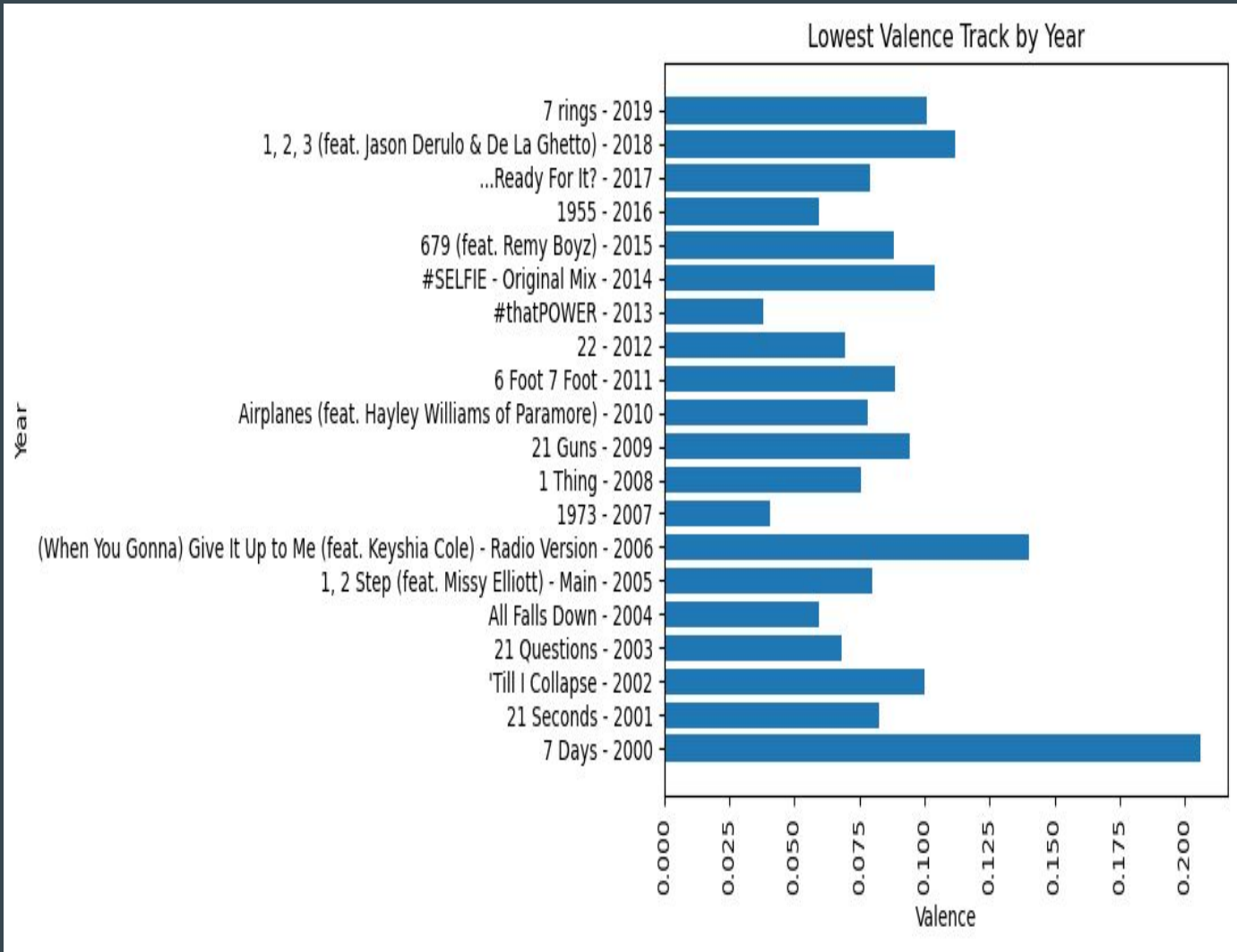
A:


Most Energetic yet Acoustic Songs
energy
acousticness
Energy and Acousticness scores
1.0
0.8
0.6
0.4
0.2
0.0
Not Afraid
Break the Ice
I Need Your Love (feat. Ellie Goulding)
My Band
The Fear
I'm a Slave 4 U
No More Drama
Can't Fight The Moonlight
Jesus Walks
Get Busy
I Feel It Coming
Drowning (feat. Kodak Black)
Mad Love
Secreto
I Will Never Let You Down
Rock Wit U (Awww Baby)
Ass Like That
Song titles

Q:

What is the lowest Valence track by year?

A:

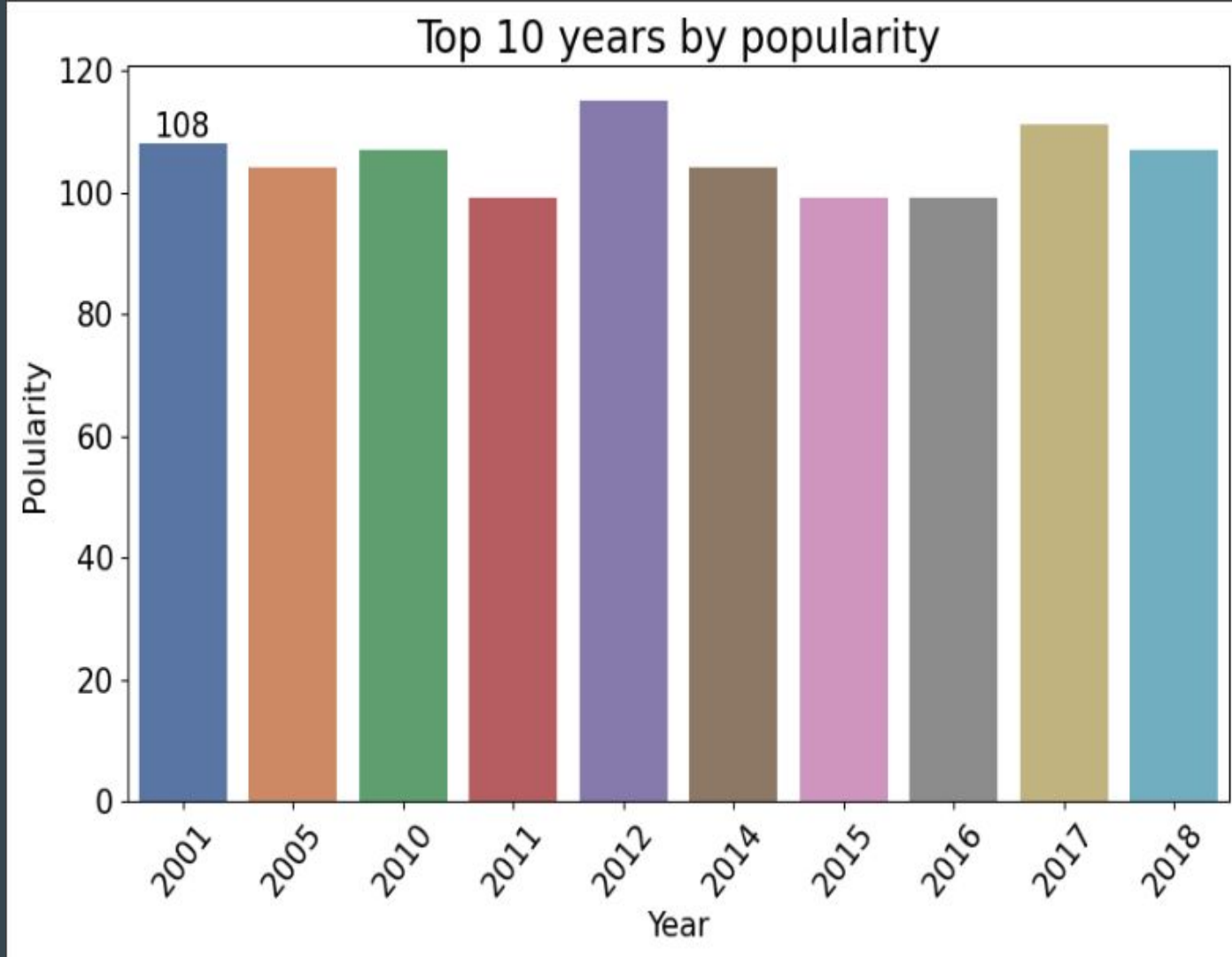

Lowest Valence Track by Year
7 rings - 2019
1, 2, 3 (feat. Jason Derulo & De La Ghetto) - 2018
...Ready For It? - 2017
1955 - 2016
679 (feat. Remy Boyz) - 2015
#SELFIE - Original Mix - 2014
#thatPOWER - 2013
22 - 2012
6 Foot 7 Foot - 2011
Airplanes (feat. Hayley Williams of Paramore) - 2010
21 Guns - 2009
1 Thing - 2008
1973 - 2007
(When You Gonna) Give It Up to Me (feat. Keyshia Cole) - Radio Version - 2006
1, 2 Step (feat. Missy Elliott) - Main - 2005
All Falls Down - 2004
21 Questions - 2003
'Till I Collapse - 2002
21 Seconds - 2001
7 Days - 2000
Year
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0.200
Valence

Brandon’s Analysis

Q:

What years had the most top songs?

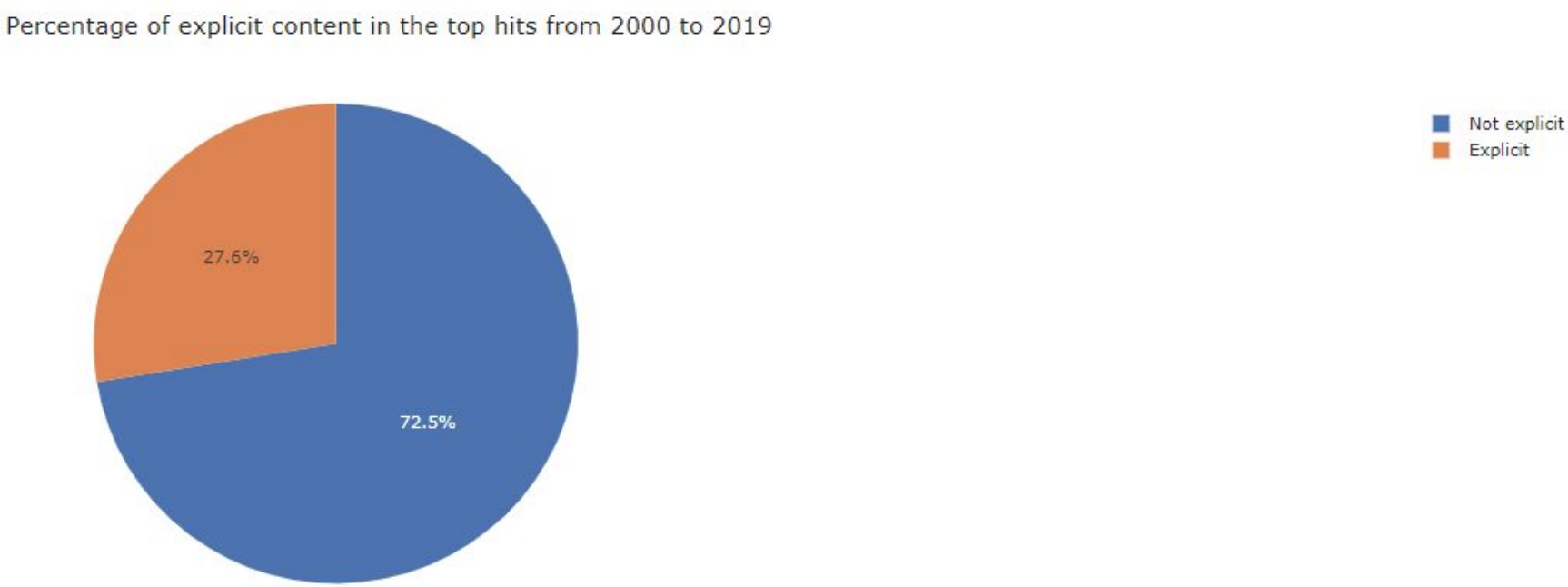
A:


Top 10 years by popularity
Polularity
Year
108
0
20
40
60
80
100
120
2001
2005
2010
2011
2012
2014
2015
2016
2017
2018

Q:

What was the ratio of Explicit vs Non Explicit Top songs?

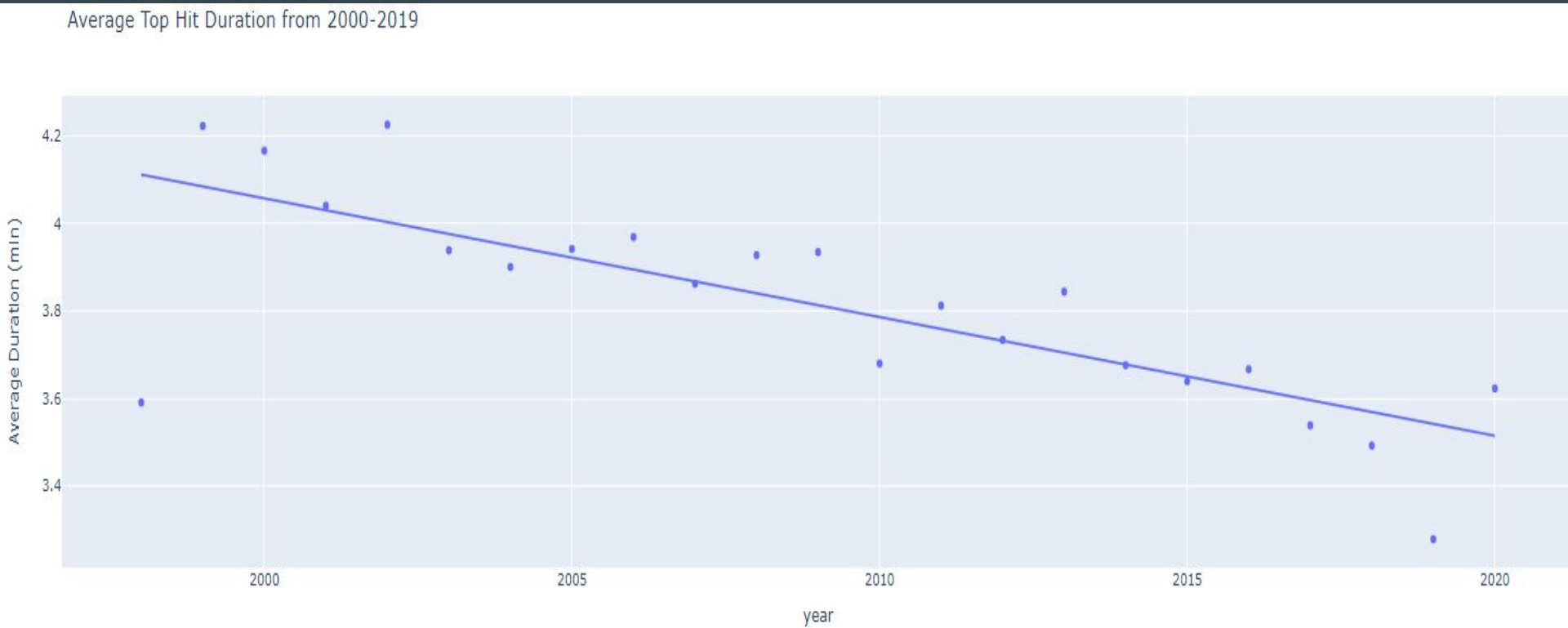
A:


Percentage of explicit content in the top hits from 2000 to 2019
27.6%
72.5%
Not explicit
Explicit

Q:

What was the average duration of the top songs?

A:

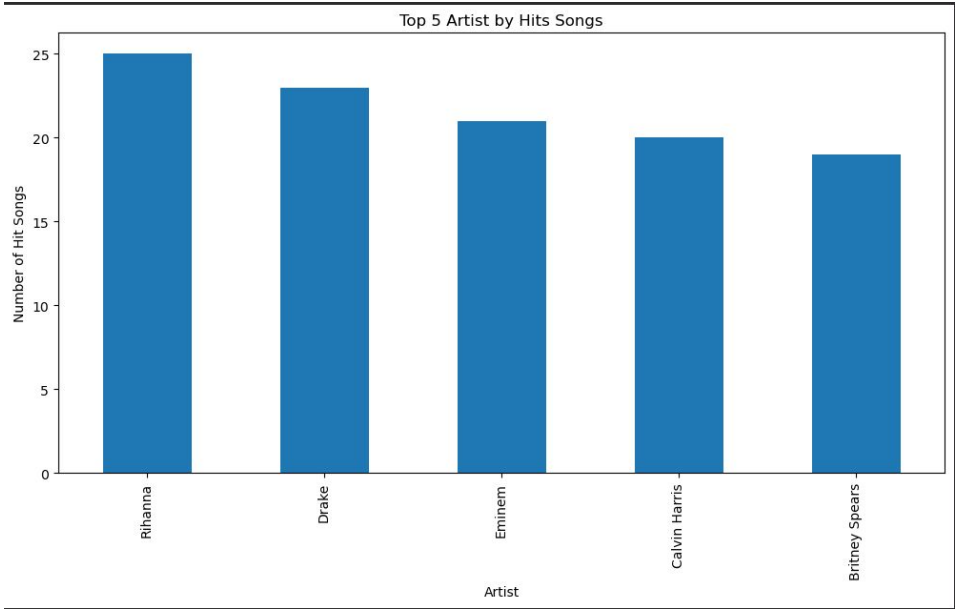

Average Top Hit Duration from 2000-2019
Average Duration (mIn)
4.2
4
3.8
3.6
3.4
2000
2005
2010
2015
2020
year

Lawrence’s Analysis

Q:

What are top 5 artists with most hit songs?

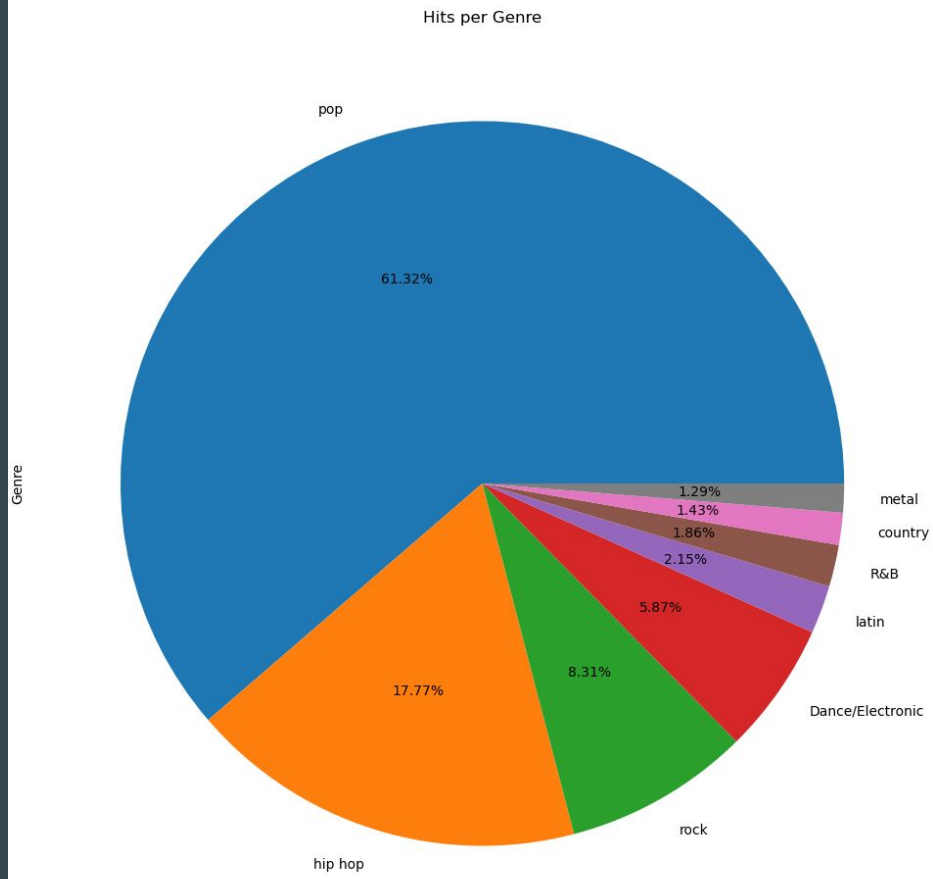
A:


Top 5 Artist by Hits Songs
Number of Hit Songs
0
5
10
15
20
25
Rihanna
Drake
Eminem
Calvin Harris
Britney Spears
Artist

Q:

What is the proportion of hits songs per genre in relation to each other?

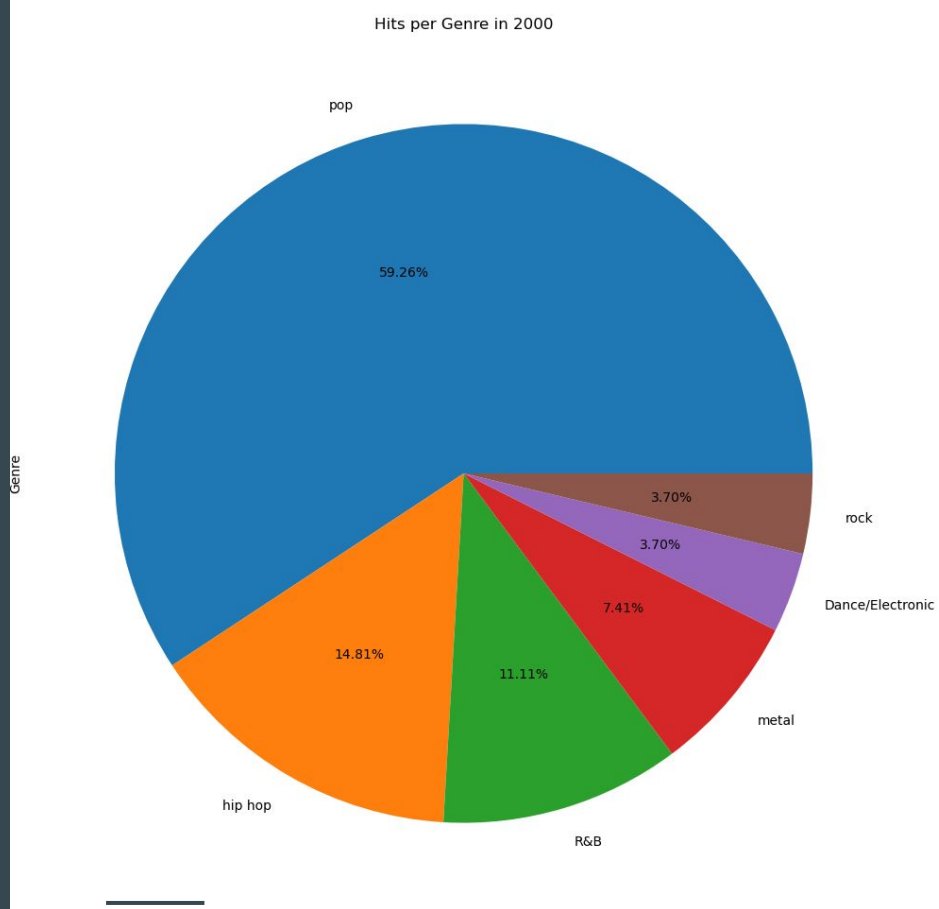
A:


Hits per Genre
Genre
pop
61.32%
hip hop
17.77%
rock
8.31%
Dance/Electronic
5.87%
latin
2.15%
R&B
1.86%
country
1.43%
metal
1.29%

Q:

What is the proportion of hits songs per genre in relation to each other in the year 2000?

A:


Hits per Genre in 2000
Genre
pop
59.26%
rock
3.70%
Dance/Electronic
3.70%
metal
7.41%
R&B
11.11%
hip hop
14.81%

Sources

- https://www.kaggle.com/code/lusfernandotorres/spotify-top-hits-2000-2019-eda