



SONG API

SONG CHARACTERISTICS AND PREDICTING POPULARITY

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PROBLEM STATEMENT

- Correlation between danceability and popularity.
- Relationship between tempo, liveliness, and popularity.
- Influence of acousticness and instrumentality on popularity.
- Impact of key and loudness on popularity.

DATA SOURCE

- Data Source: Kaggle - Song Popularity Dataset
- Details: Data from Spotify about the most popular/streamed songs listened to in 2018
- Dimensions: 18835 rows x 15 columns
- Key-Columns: song_name, song_popularity, acousticness, danceability, energy, instrumentalness, key, liveness, loudness, speechiness, tempo

GOALS

To develop predictive models that accurately estimate the popularity of songs based on their characteristics such as danceability, tempo, energy, acousticness, instrumentalness, key, liveliness, and loudness, thereby providing valuable insights for musicians, music producers, and stakeholders in the music industry to enhance their decision-making processes and optimize the success of future musical releases.

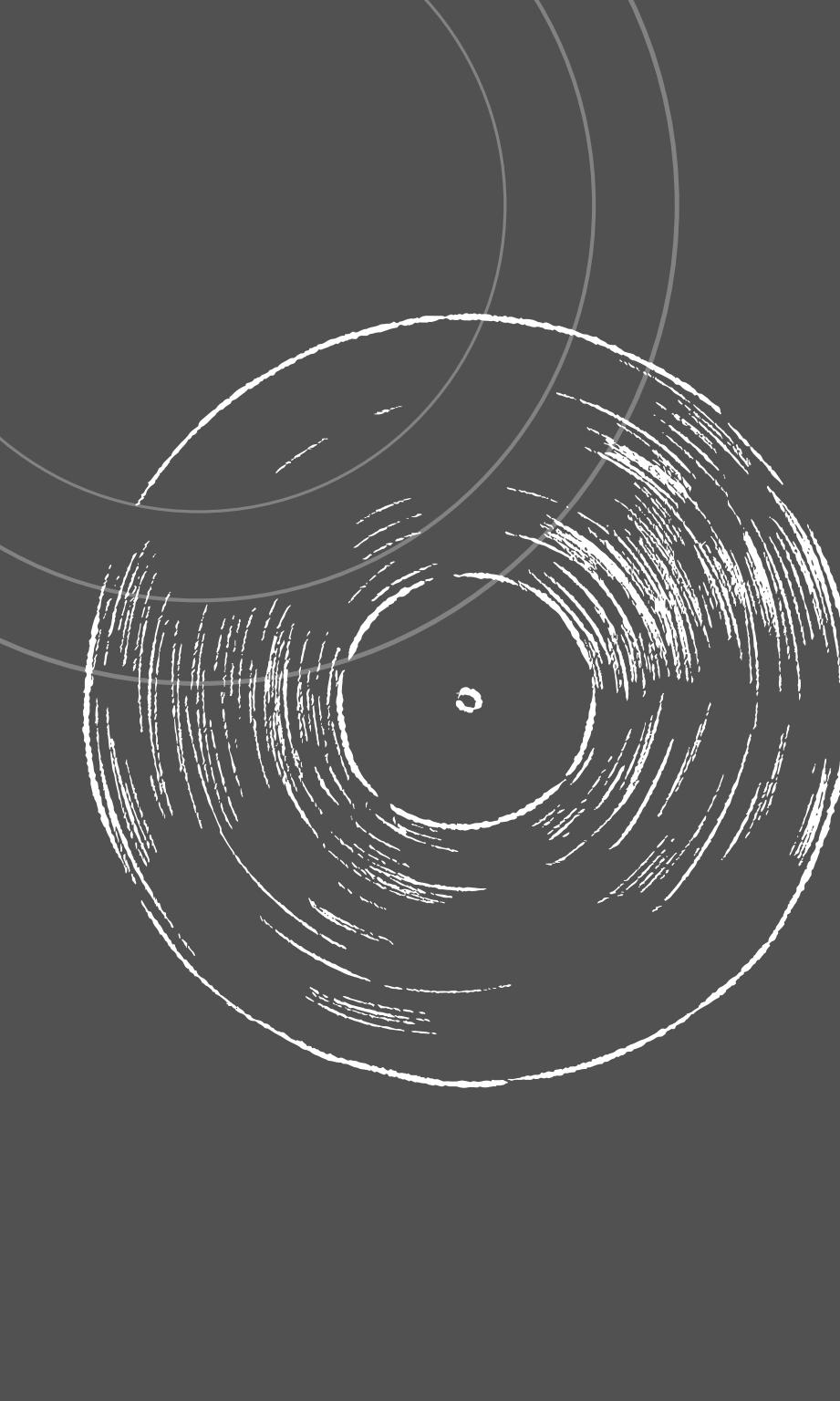




DATA CLEANING



- Removed 4 columns that were not useful for our analysis.
- Removed duplicates in the song_name column which reduced our dataframe rows from 18,835 to 13,070
- Final Dataframe size: 13,070 rows x 11 columns



DATA ANALYSIS

- Is there a correlation between danceability and song popularity?
- What is the correlation between tempo and liveliness, and how does it relate to song popularity?
- How do acousticness and instrumentalness correlate with song popularity?
- Is there a relationship between key and loudness of a song and its popularity?

SORT DATA

Sorted the data into the top 10 most popular songs so we can check for similarities

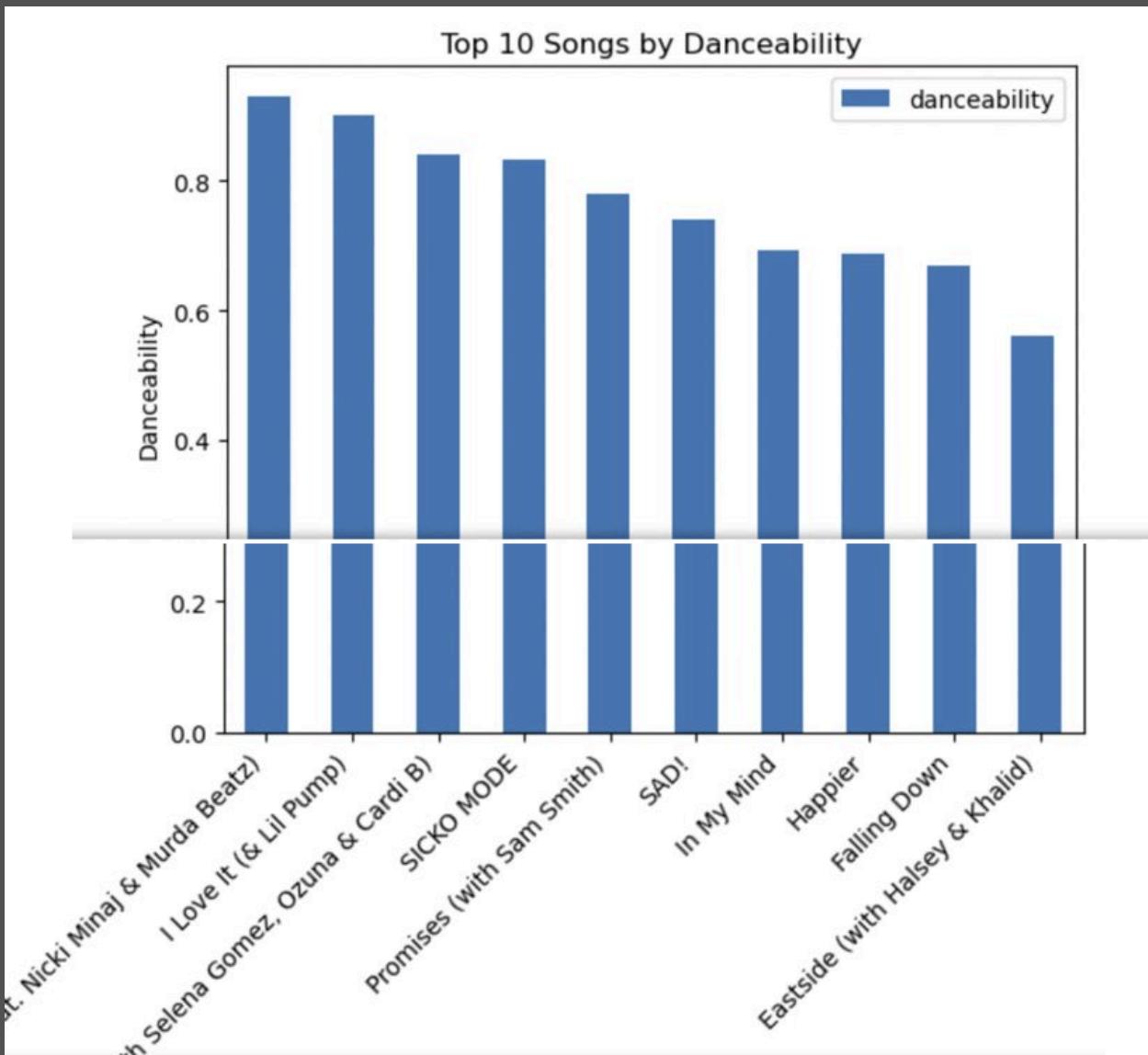
song_name	song_popularity	acousticness	danceability	energy	instrumentalness	key	liveness	loudness	speechiness	tempo
Happier	100	0.19100	0.687	0.792	0.000000	5	0.1670	-2.749	0.0452	100.015
I Love It (& Lil Pump)	99	0.01140	0.901	0.522	0.000000	2	0.2590	-8.304	0.3300	104.053
Promises (with Sam Smith)	98	0.01190	0.781	0.768	0.000005	11	0.3250	-5.991	0.0394	123.070
Eastside (with Halsey & Khalid)	98	0.55500	0.560	0.680	0.000000	6	0.1160	-7.648	0.3210	89.391
Taki Taki (with Selena Gomez, Ozuna & Cardi B)	98	0.15300	0.841	0.798	0.000003	1	0.0618	-4.206	0.2290	95.948
SICKO MODE	97	0.00513	0.834	0.730	0.000000	8	0.1240	-3.714	0.2220	155.008
In My Mind	97	0.17600	0.694	0.770	0.000011	6	0.1180	-5.335	0.1490	125.905
Falling Down	97	0.01750	0.669	0.574	0.002940	4	0.1460	-6.442	0.0286	120.013
FEFE (feat. Nicki Minaj & Murda Beatz)	96	0.08800	0.931	0.387	0.000000	1	0.1360	-9.127	0.4120	125.978
SAD!	96	0.25800	0.740	0.613	0.003720	8	0.1230	-4.880	0.1450	75.023

SORT DATA

Sorted the top 10 most popular songs by danceability

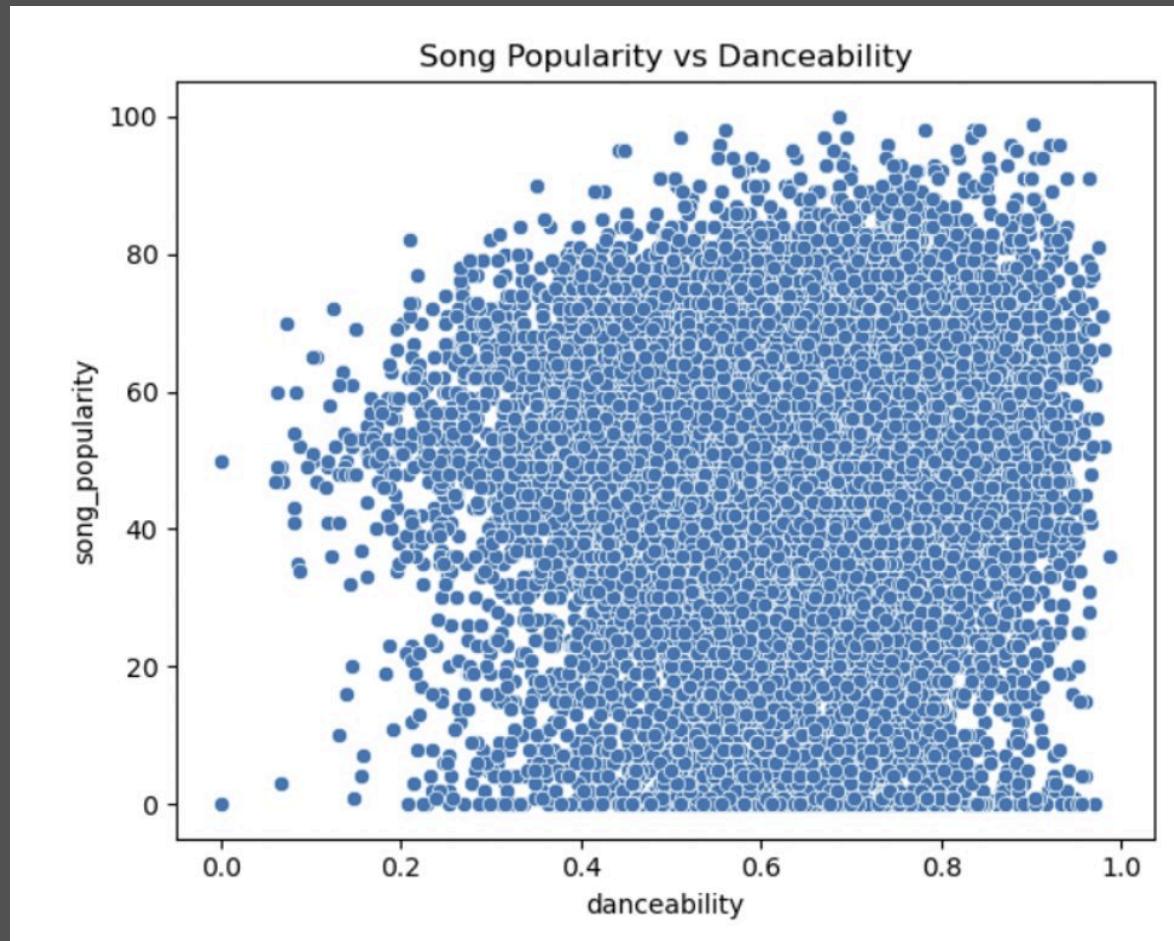
		song_name	song_popularity	danceability
1258		FEFE (feat. Nicki Minaj & Murda Beatz)	96	0.931
1229		I Love It (& Lil Pump)	99	0.901
61	Taki Taki (with Selena Gomez, Ozuna & Cardi B)		98	0.841
1250		SICKO MODE	97	0.834
4329		Promises (with Sam Smith)	98	0.781
3460		SAD!	96	0.740
7576		In My Mind	97	0.694
4299		Happier	100	0.687
1230		Falling Down	97	0.669
4302		Eastside (with Halsey & Khalid)	98	0.560

SORT DATA



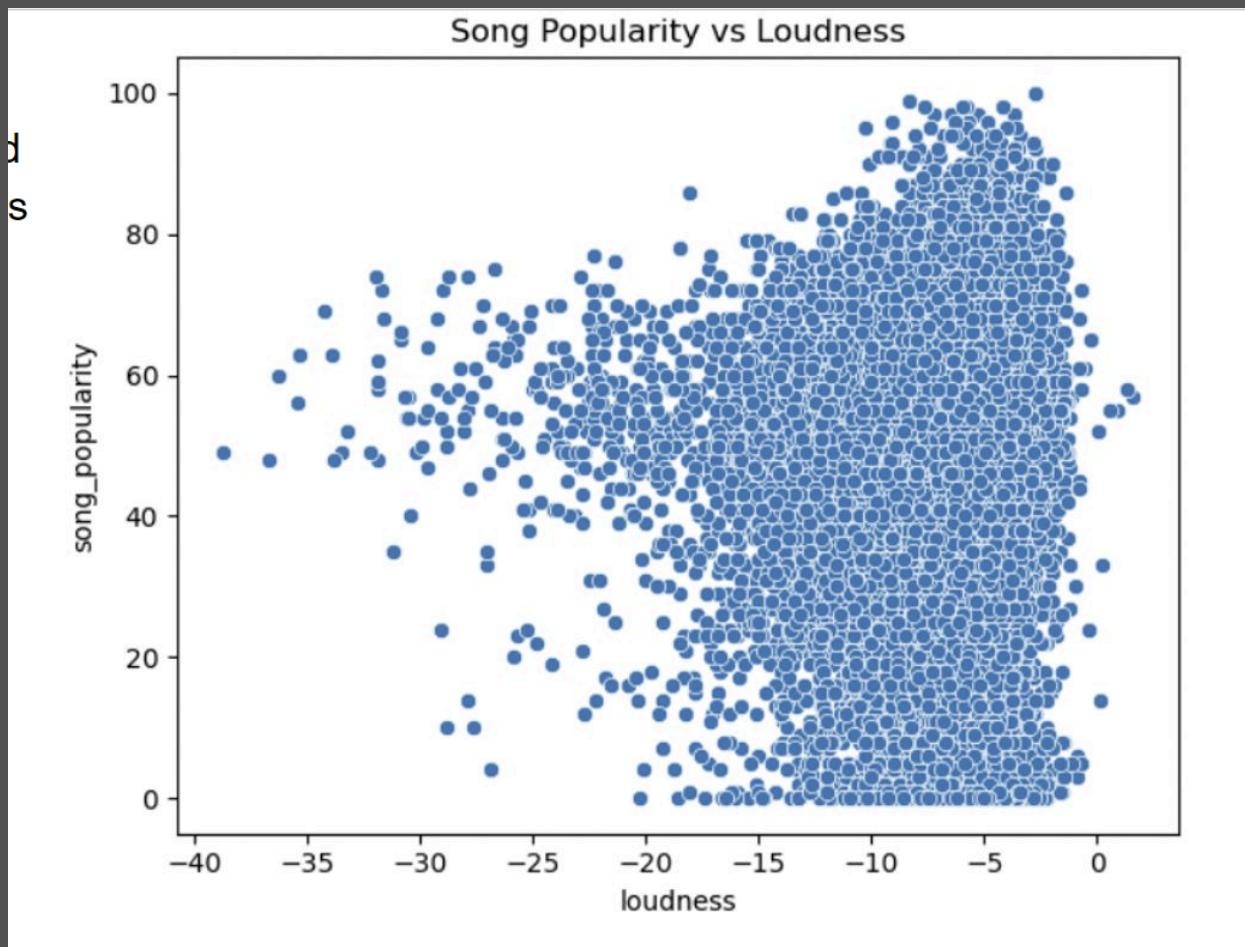
SONG POPULARITY VS DANCEABILITY

There seems to be a positive trend indicating that songs with higher danceability scores tend to have higher popularity.



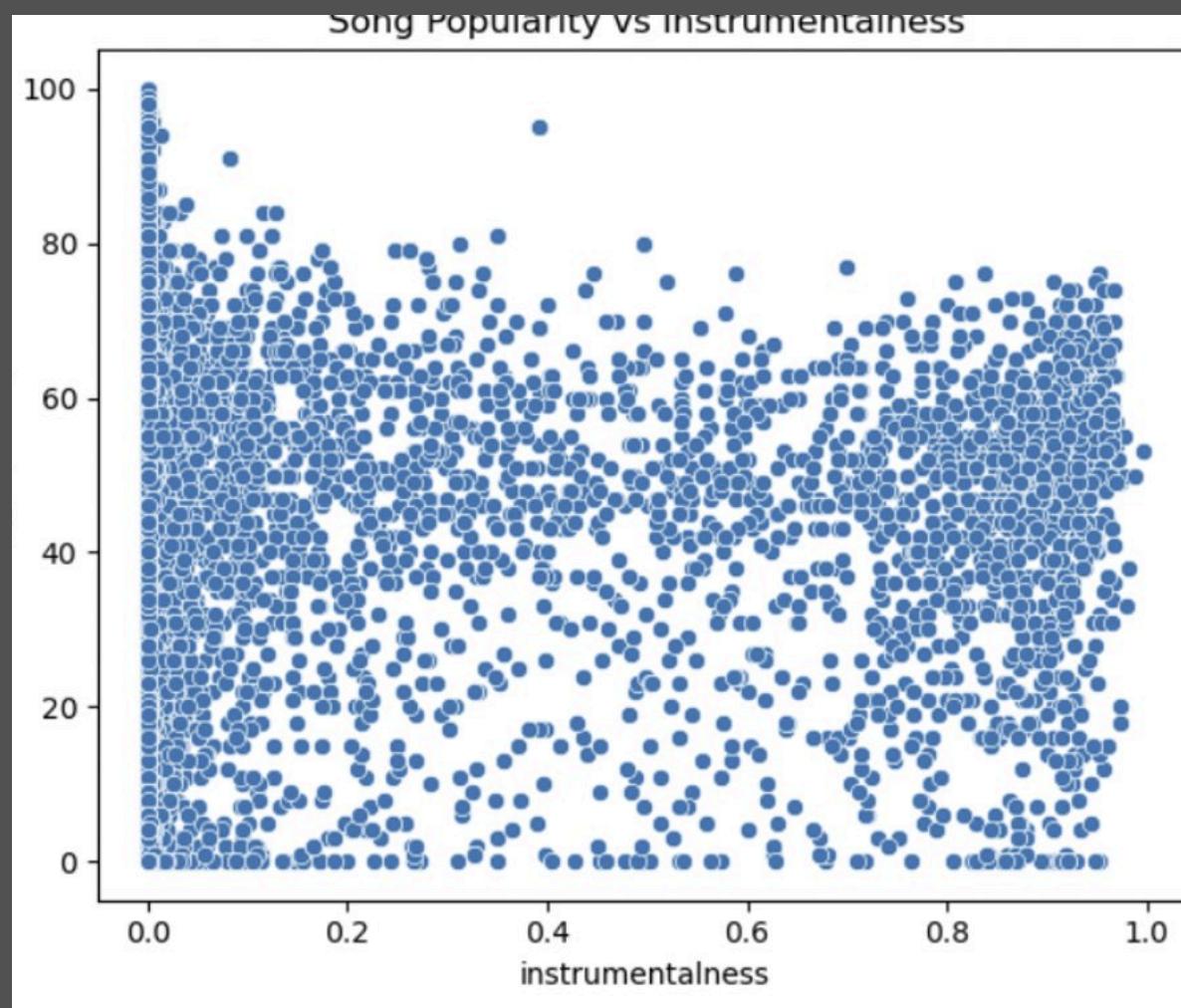
SONG POPULARITY VS LOUDNESS

There seems to be a positive correlation indicating that songs with loudness. Louder songs are more popular and it captures more attention to listeners.



SONG POPULARITY VS INSTRUMENTALNESS

Negative trend is seen when instrumentalness increases , song popularity tend to decrease.



CONCLUSIONS

- Significant correlations were found between certain song characteristics and popularity, providing insights into factors influencing song success.
- Danceability and tempo showed notable correlations with song popularity, suggesting their importance in determining a song's appeal.
- Acousticness and instrumentalness also exhibited correlations with popularity, indicating the influence of these factors on audience preference.
- Challenges such as data quality issues and limitations in feature representation were encountered but were mitigated through careful preprocessing and analysis.

DIFFICULTIES

- Data quality issues, including inconsistencies, posed challenges during analysis and required extensive cleaning.
- Limited availability of certain features or metadata for songs may have impacted the depth of analysis and model performance.
- Interpretation of correlations between song characteristics and popularity required careful consideration of potential confounding variables and external factors.

FUTURE IMPROVEMENTS

- Enhance data collection efforts to include more comprehensive features, enabling a more nuanced analysis of song characteristics and their impact on popularity.
- Incorporate additional external datasets, such as songs across various languages and genres.
- Observing the songs over a passage of time to track changes in song popularity over time and identify evolving trends in music consumption behavior.



THANK YOU