

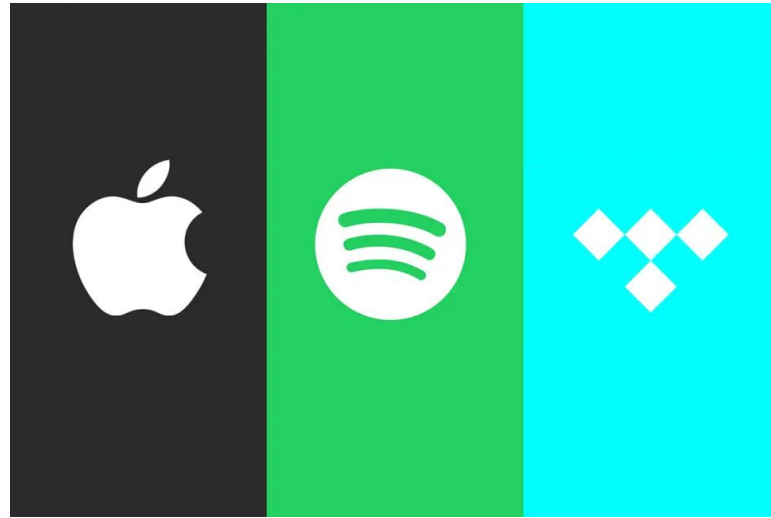


Music Streaming Wars: Predicting the Next Popular Songs

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Why is it important to predict which songs are going to be popular in the future?



Objectives & Data Analysis



- **Objective:** Provide 3 insights into what makes a song popular or not
- **Goal:** Increase the competitive advantage of Spotify
- Sample size of 232,725 tracks
- Data from 2019

Popular = ?

- Popularity scores = # of recent plays
- Popularity scores of songs on Spotify's Top 100 tracks playlist
- Cutoff for popularity score was established at 58
- Popular = Top 100 worthy



Methods

We developed 3 machine learning models

Random Forest

- 97% correct predictions on unpopular songs
- 60% correct predictions on popular songs

Logistic Regression

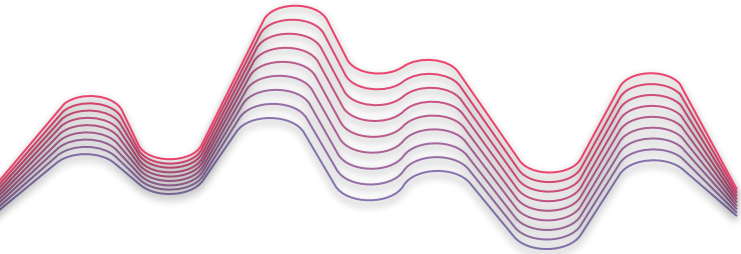
- 92% correct predictions on unpopular songs
- **66% correct predictions on popular songs**

eXtra Gradient Boosting

- 96% correct predictions on unpopular songs
- 65% correct predictions on popular songs



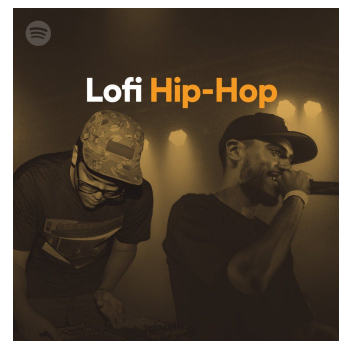
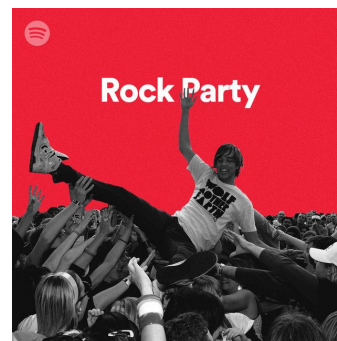
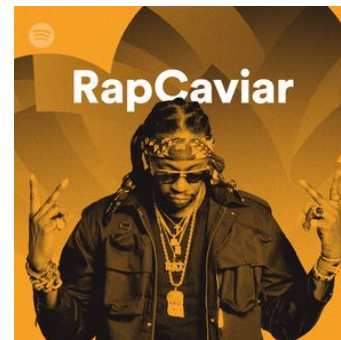
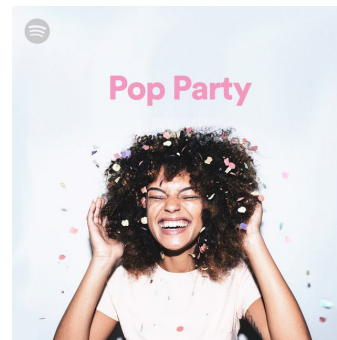
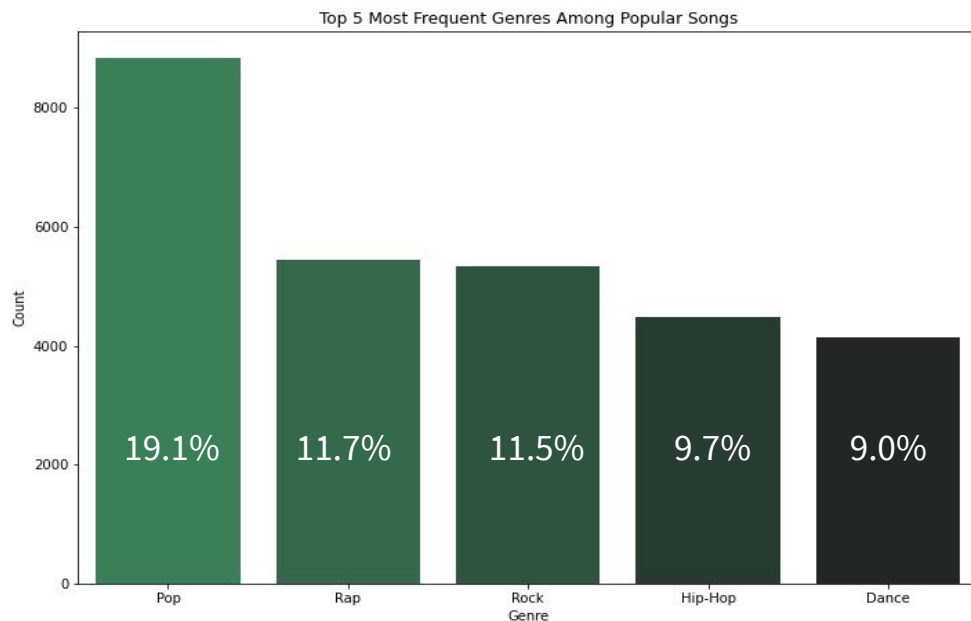
What were some of the most important attributes of a song according to our models?





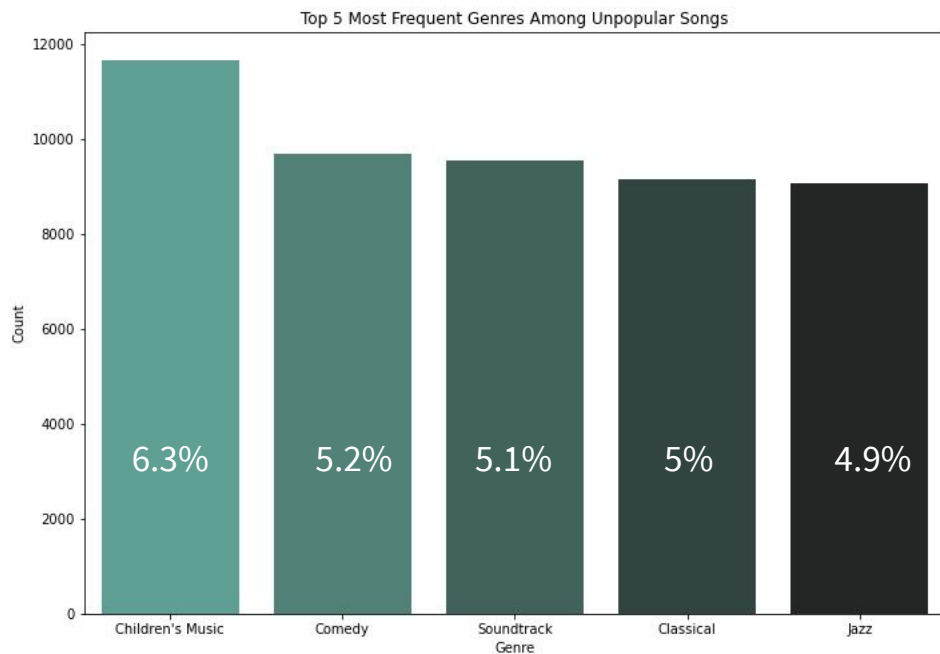
Genre

Top 5 Genres within Popular Songs

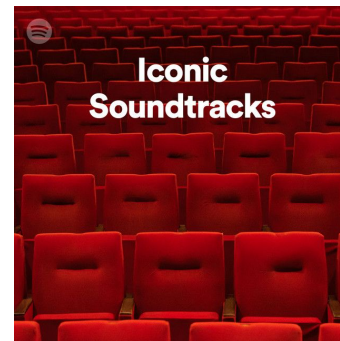
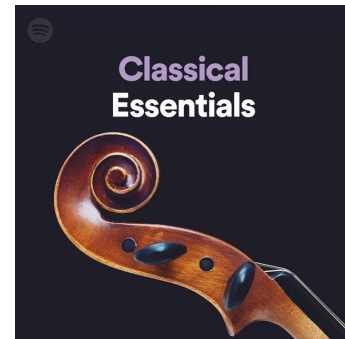
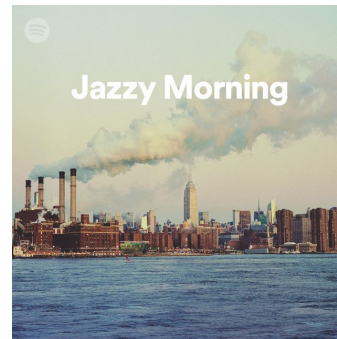


These account for 61% of all popular songs

Top 5 Genres within Unpopular Songs




These account for 26.5% of all unpopular songs



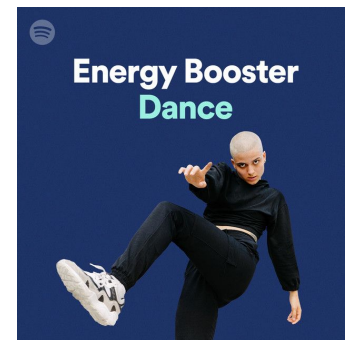
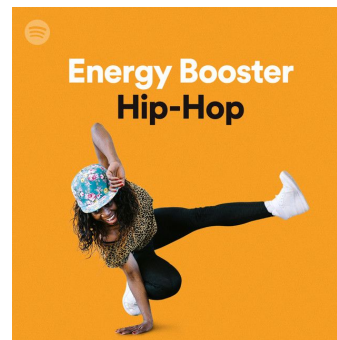
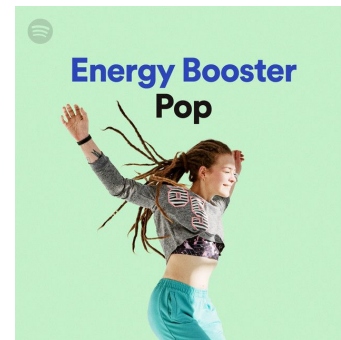
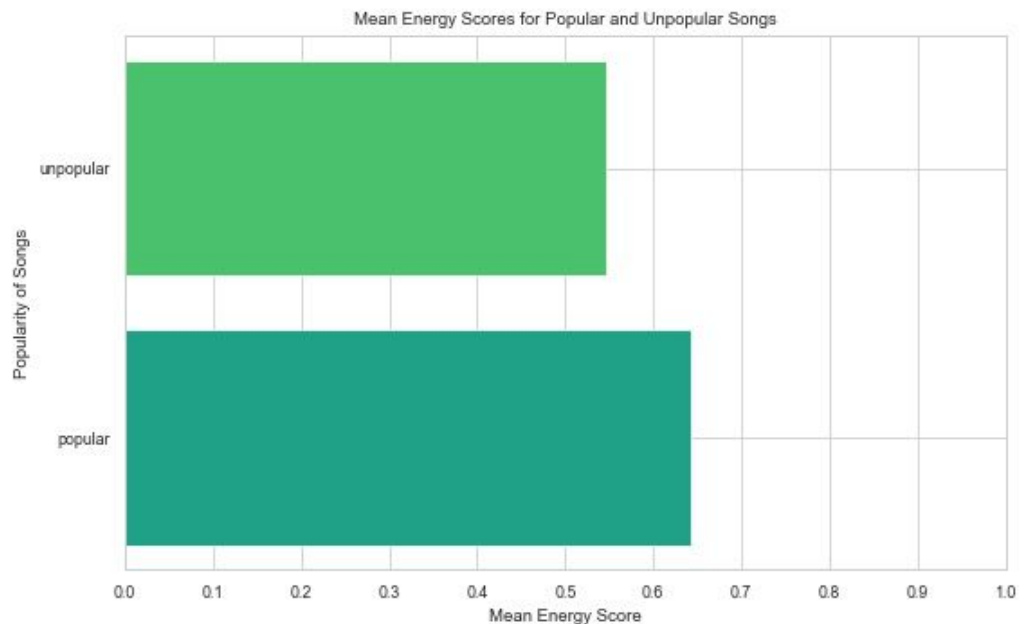


Energy

A perceptual measure of intensity and activity. Typically, energetic tracks feel fast, loud, and noisy.




Energy Scores of Songs by Popularity



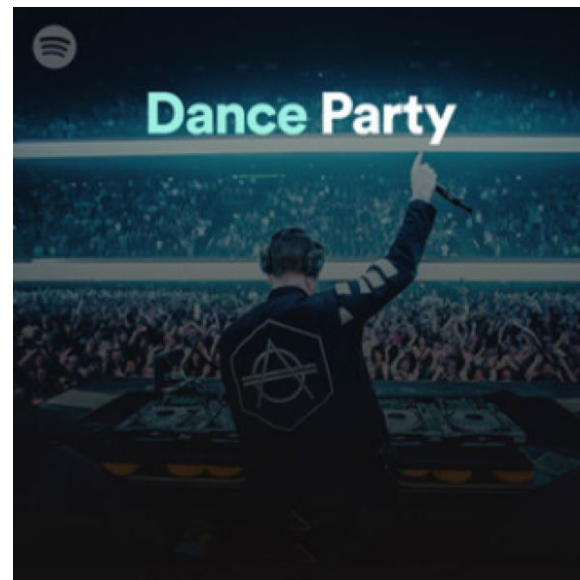
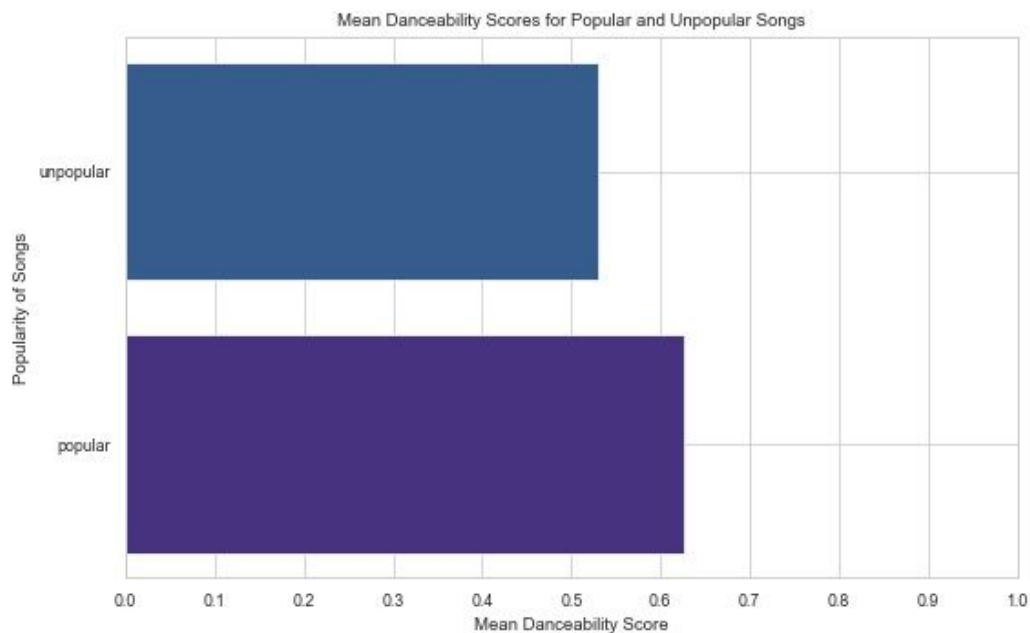
A decorative network diagram in the top-left corner, consisting of various sized circles (nodes) connected by thin lines. Some nodes are solid grey, while others are hollow with a grey outline. The network is dense and irregular, extending from the top-left towards the center.

Danceability

How suitable a track is for dancing based on a combination of musical elements including tempo, rhythm stability, beat strength, and overall regularity.

A decorative network diagram in the bottom-right corner, similar to the one in the top-left. It features a cluster of nodes connected by lines, with some nodes being solid grey and others hollow. The diagram is positioned in the bottom-right corner, extending from the right edge towards the center.

Danceability Scores of Songs by Popularity



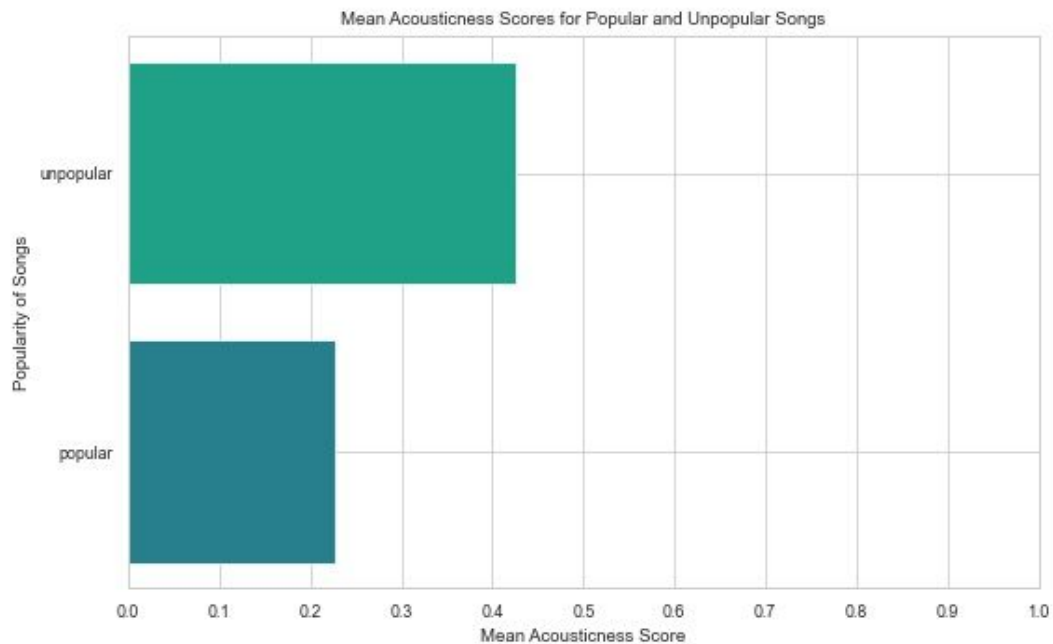
A decorative network diagram in the top-left corner, featuring a complex web of interconnected nodes and lines. The nodes are represented by small circles, some of which are larger and have concentric rings, suggesting a hierarchical or multi-layered structure. The lines are thin and gray, connecting the nodes in a non-linear fashion.

Acousticness

A measure of how much a song is electrically enhanced or modified.

A decorative network diagram in the bottom-right corner, similar to the one in the top-left. It consists of a cluster of nodes connected by lines. The nodes vary in size and some have concentric circles, creating a sense of depth and complexity in the network structure.

Acousticness Scores of Songs by Popularity



Conclusions

- Popular songs tend to have Pop, Rap, Rock, Hip-Hop and Dance as their genres.
- More niche genres such as Children's Music, Comedy, Soundtracks, Classical and Jazz were more frequent among unpopular songs.
- Generally, popular songs are higher energy, danceable, and less acoustic.



Recommendations

By predicting which songs are going to be popular next, Spotify can:

- Reach out to up-and-coming artists and sign exclusivity deals ahead of competition.
- Work with the artists of the future popular songs on additional exclusive content such as song commentary or behind the scenes recordings.
- Curate even better playlists for their current subscribers and market the platform to new subscribers using these playlists.



A decorative network diagram in the top-left corner, featuring a complex web of interconnected nodes and lines. The nodes are represented by small circles, some of which are larger and have concentric circles, while others are smaller. The lines are thin and gray, connecting the nodes in a non-linear fashion. The overall style is minimalist and technical.

Thank you!

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A decorative network diagram in the bottom-right corner, similar to the one in the top-left. It shows a cluster of nodes connected by lines, with some nodes being larger and more prominent than others. The diagram is rendered in a light gray color, blending into the white background.

Images from:

- <https://static.standard.co.uk/s3fs-public/thumbnails/image/2015/06/30/15/apple-music-spotify-tidal.jpg?width=968&auto=webp&quality=75&crop=968%3A645%2Csmart>
- https://i.gadgets360cdn.com/large/spotify_logo_1585741714525.jpg?downsize=950:*&output-quality=80
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