Spotify Song Popularity Analysis

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Project Name : Spotify Song Popularity Analysis

Objectives

The objective of this analysis is to **explore and understand the factors influencing song popularity on Spotify**. By analyzing various attributes such as artist, album, country, and audio features, the goal is to uncover trends and patterns that drive the success of popular tracks. This analysis aims to provide insights that can help:

1. **Identify Popular Trends** – Determine which songs, albums, and artists dominate Spotify charts.
2. **Understand Audio Characteristics** – Analyze the audio features (danceability, energy, loudness, etc.) of popular songs to identify common attributes.
3. **Regional Preferences** – Examine how song popularity varies across different countries and regions.
4. **Time-Based Trends** – Track how popularity evolves over time and identify seasonal or release-based patterns.
5. **Rank Movement Analysis** – Investigate daily and weekly ranking movements to understand the dynamics of rising and falling tracks.
6. **Correlation Analysis** – Explore the relationship between different song attributes and their impact on popularity.
7. **Artist and Album Insights** – Identify the artists and albums consistently producing popular tracks.

Problem statements

With millions of songs available on Spotify, understanding the key factors that drive **song popularity** is crucial for artists, producers, and marketers. By analyzing the provided dataset, which contains daily rankings of top songs across 73 countries, the objective is to:

- **Identify which songs, artists, and albums achieve the highest popularity.**
- **Understand the relationship between audio features (e.g., danceability, energy, loudness) and song popularity.**
- **Analyze how popularity varies across different countries and regions.**

- **Track how song rankings shift over time (daily and weekly movements).**
- **Determine the characteristics of songs that consistently rank at the top.**
- **Provide actionable insights to predict future trends and help stakeholders optimize their music for better engagement and chart performance.**

The goal is to uncover patterns that explain **why certain songs perform better than others** and how external factors like region and release date influence popularity. This analysis will help the music industry make data-driven decisions to maximize reach and success.

Data Description
The dataset was retrieved from **Kaggle** and contains detailed information about the **top Spotify songs** across **73 countries**,

Data Models
Entities and Attributes:

1. Song (Primary Entity):

- **spotify_id** – Unique identifier for each track.
- **name** – Song title.
- **artists** – Names of the performing artists.
- **album_name** – Name of the album.
- **album_release_date** – Date when the album was released.
- **duration_ms** – Length of the song in milliseconds.
- **is_explicit** – Indicates whether the song contains explicit content (True/False).

2. Popularity and Ranking:

- **popularity** – Popularity score of the song (range: 0-100).
- **daily_rank** – Rank of the song on the daily charts.

- **daily_movement** – Change in daily rank compared to the previous day.
- **weekly_movement** – Change in rank over the week.

3. Location (Country-Specific Data):

- **country** – The country in which the song is charting.
- **snapshot_date** – The date when the ranking data was collected.

4. Audio Features:

- **danceability** – Suitability for dancing (0-1).
- **energy** – Intensity of the song (0-1).
- **key** – Musical key of the track.
- **loudness** – Measured in decibels (dB).
- **mode** – Modality of the song (Major/Minor).
- **speechiness** – Amount of spoken words in the song.
- **acousticness** – Likelihood that the track is acoustic.
- **instrumentalness** – Predicts if the track is instrumental.
- **liveness** – Presence of live audience sounds.
- **valence** – Positivity of the track (0-1).
- **tempo** – Beats per minute (BPM).
- **time_signature** – Number of beats per bar.

Conclusion

The Spotify song popularity analysis provides valuable insights into the factors driving the success of tracks, artists, and albums on the platform. By examining attributes such as popularity, audio features, regional trends, and daily/weekly movements, the analysis highlights patterns in listener preferences and market dynamics. Key findings reveal that certain artists and genres consistently dominate, with audio characteristics like high energy and danceability contributing to a song's success. Popularity varies across countries, presenting opportunities for targeted releases and marketing strategies. This data-driven approach benefits music production, playlist curation, and promotional efforts,

enabling record labels, artists, and streaming platforms to make informed decisions and predict emerging trends. Ultimately, the analysis bridges the gap between data science and the music industry, fostering growth, audience engagement, and the discovery of new talent while amplifying the reach of popular tracks and artists.