



**Shaping the Sound: Key Trends in Popular Music
(2000–2019)**

Power BI Report User Manual

Group 9

MGSC 777

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Background

Spotify is a digital music, podcast, and video service that gives you access to millions of songs and other content from creators all over the world. In the digital music space, Spotify dominates with 31.7% of the market share as of the last quarter of 2024. Additionally, the company reported an addition of six million net premium subscribers for the year 2024. These figures underscore Spotify's significant influence and leadership in the digital music streaming industry.

The power BI report utilizes data containing elements of song analytics and popularity of 2000 songs ranging over the time period of 1999 to 2020 from Spotify. The dataset covers metrics like duration, danceability, energy, tempo, and popularity. It also includes categorical data such as artist names, song titles, and genres. These insights can help executives identify patterns in audience preferences, optimize artist investments, and guide strategic decisions in music production and marketing.

Link to the Report

[Spotify: Shaping the Sound](#)

Technical Summary:

Dataset

The power BI report utilizes data sourced from [Kaggle.com](#) containing elements of song analytics and popularity of 2000 songs ranging over the time period of 1999 to 2020 from Spotify. The table below outlines the metrics included in the dataset, explaining their relevance to music. The third column specifies any transformations or categorizations applied to enhance analysis.

Variable	Description	Changes Applied
artist	Name of the Artist.	-
song	Name of the Track.	-
duration_ms	Duration of the track in milliseconds.	Converted to minutes (duration(min)) for easier interpretation.
explicit	Indicates if a song contains explicit content.	-
year	Release Year of the track.	-
popularity	A score indicating the song's popularity.	Categorized into Low, Medium, and High for better analysis.
danceability	Measure (0.0–1.0) of how suitable a track is for dancing.	Categorized into Low, Medium, and High for better analysis.
energy	Measure (0.0–1.0) of intensity and activity.	Categorized into Low, Medium, and High for better analysis.
key	Musical key of the track using Pitch Class notation.	-
loudness	Average loudness of the track in decibels (dB).	-
mode	Indicates if the track is in major (1) or minor (0).	-
speechiness	Detects presence of spoken words in a track.	Categorized into Low, Medium, and High for better analysis.
acousticness	Confidence measure (0.0–1.0) of whether a track is acoustic.	-
instrumentalness	Predicts if a track contains no vocals.	-
liveness	Detects the presence of an audience in the recording.	-
valence	Measure (0.0–1.0) of musical positiveness.	-
tempo	Estimated tempo of a track in beats per minute (BPM).	-
genre	Genre of the track.	For tracks with multiple genres, the first listed genre was assigned, assuming it represents the primary genre

Data Overview & Transformations

1. **Enhanced Song Duration Interpretation**

The original duration_ms column (milliseconds) was converted into **duration_min (minutes)** using a new calculated column in Power BI for clearer readability and better insights into song lengths.

2. **Categorization for Better Analysis**

Popularity, Danceability, Energy, and Speechiness were categorized into **Low, Medium, and High levels** through new calculated columns to simplify analysis and highlight trends in musical characteristics.

3. **Interactive Dashboard with Dynamic Charts**

- To enable executive-level decision-making, we incorporated parameters in Power BI, allowing users to **dynamically switch between artist, genre, and song popularity metrics**.
- An additional category table was created to support these dynamic selections, ensuring greater flexibility in analysis.
- DAX measures were used to dynamically adjust visualizations based on user selections, enhancing interactivity.
- For tracks with multiple genres, the **first listed genre was assigned** through a new column, assuming it represents the primary genre.

Power BI Report

The visualizations in the report analyze music trends from the years 2000 to 2019, as there wasn't sufficient data for the years 1999 and 2020. Find below a list of visualizations displayed on each page of the report and their purpose.

1. **Overview**

- **Year Slicer**
Allows to further filter on the time period user is interested in.
- **Key Influencers Chart**
Displays influencers of Popularity – what elements might impact it to be high or low?
- **Change in Song Duration Overtime**
Shows how the length of a song as changed over time
- **Change in Energy and Danceability**
Shows and compare show energy and danceability features in song have changed over time.
- **Card Displays – song duration, energy and danceability**
Displays the average song duration, energy and danceability over the selected time-period

2. **Category Breakdown**

- **Year Filter**
Allows to further filter on the time period user is interested in.
- **Category Selector**
Grants the user the ability to control the Popularity Category bar graph (positioned below it) and have it display genre, artist and song popularity.
- **Popularity by Category**
Displays the most popular in the selected category through the category selector.
- **Key Influencers Chart**
Displays influencers of Energy – what elements might impact it to increase or decrease?
- **Card Displays – energy, danceability and speechiness level**
Displays the average energy, danceability and speechiness levels over the selected time-period

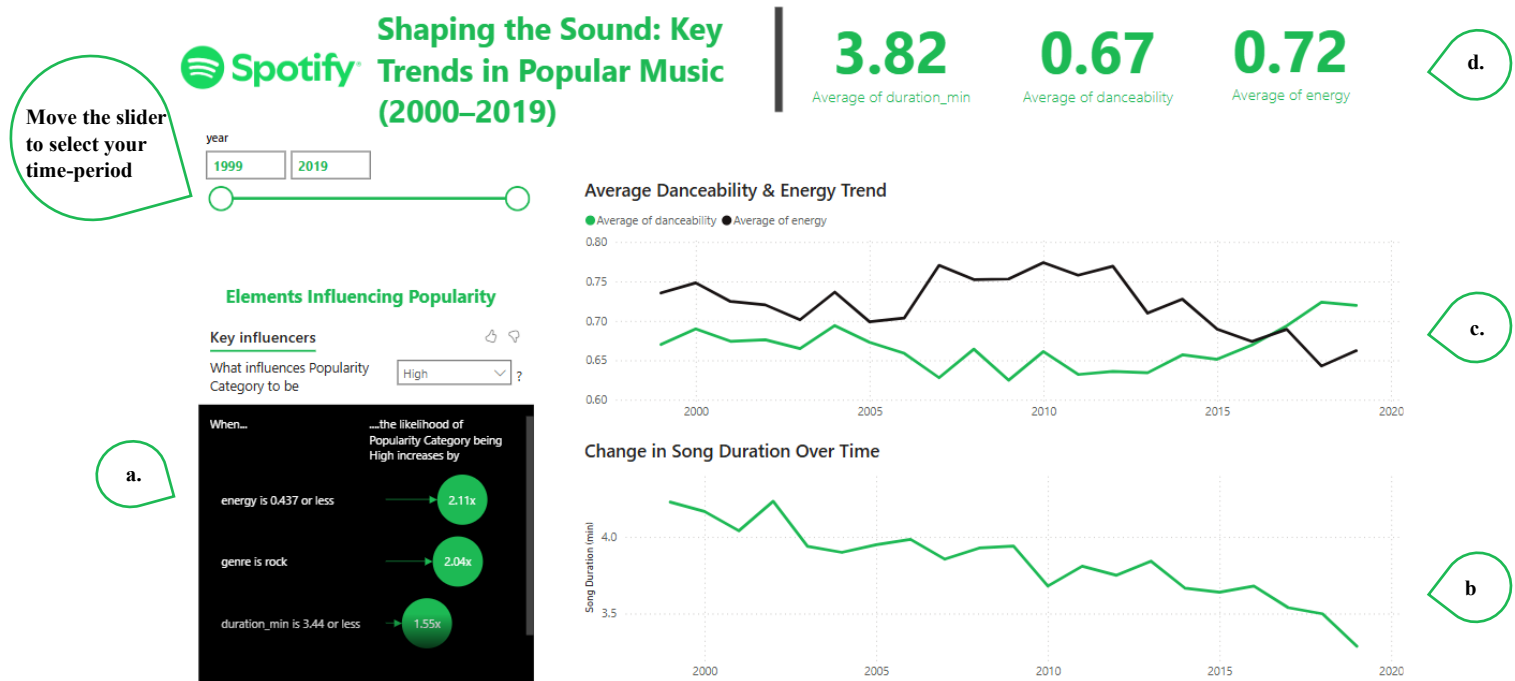
3. Artist Details

A simple report detailing artist details such as all song titles by the artist, popularity as well as metrics such as energy, danceability, instrumentalness, acousticness etc. Can be accessed through the Popularity By Category Chart.

Power BI Report – User Guide

1. Overview

Showcases High-Level Trends & Influencers



a. Key Influencers Chart

The Key Influencers Chart identifies which factors—such as danceability, energy, or speechiness—contribute to a song's popularity, helping executives recognize patterns in successful tracks.

b. Change in Song Duration Overtime

The Change in Song Duration Over Time visualization highlights how song lengths have evolved. A shift towards shorter songs may indicate changing listener habits or the influence of streaming platforms optimizing for repeat plays.

c. Change in Energy and Danceability

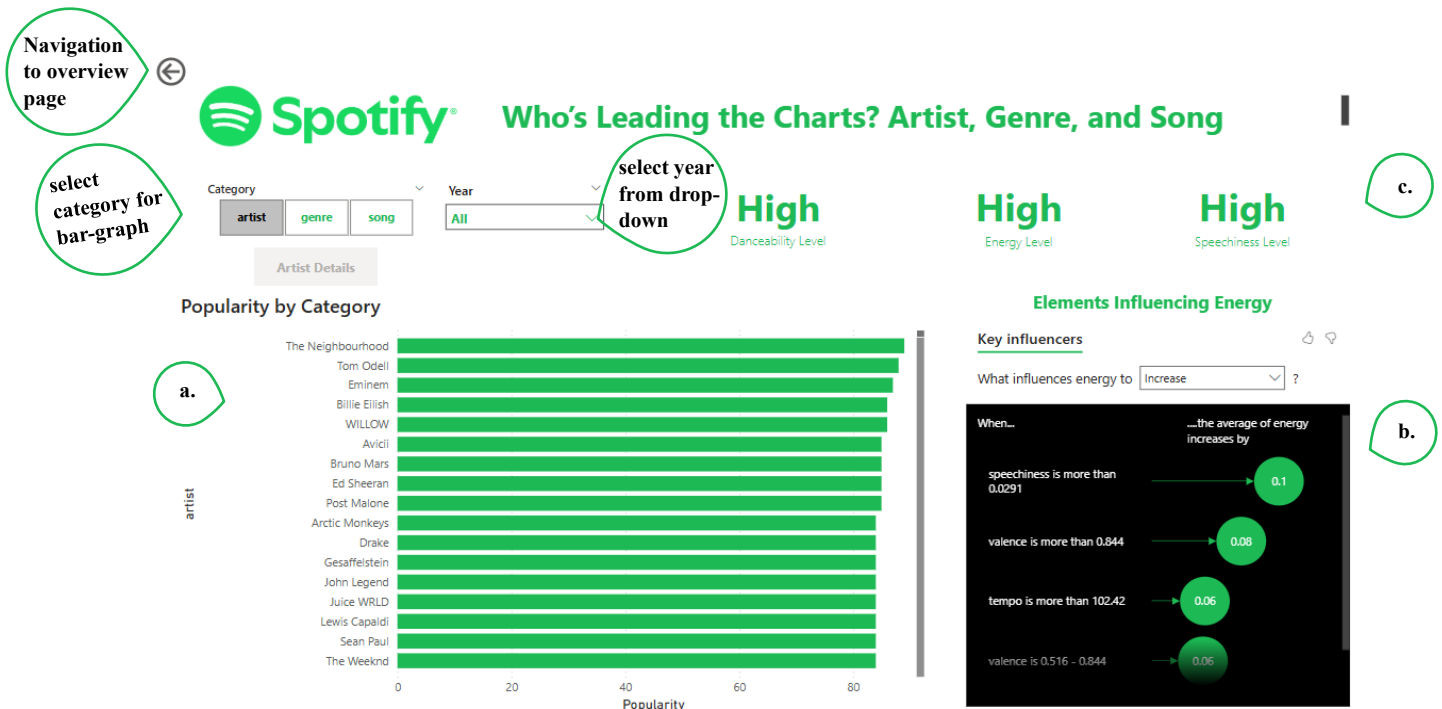
Change in Energy and Danceability chart visualizes how these features have fluctuated over time, revealing whether music trends are leaning toward more upbeat or relaxed styles.

d. Card Displays – song duration, energy and danceability

Card Displays summarize key metrics, providing a quick look at the average song duration, energy, and danceability for a selected time period.

2. Category Breakdown

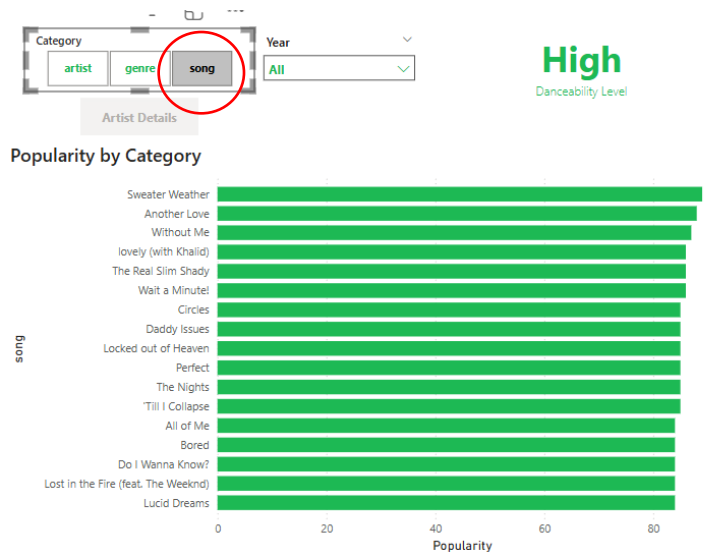
Exploring Popularity Across Different Dimensions



a. Category Selector & Popularity by Category

The Category Selector enables dynamic exploration of **Popularity by Category**, allowing users to view top-performing artists, songs, or genres within a chosen timeframe.

For example, clicking on song from the category selector will change your chart to show songs by popularity.



b. Key Influencers Chart

The Key Influencers Chart for Energy highlights which attributes—such as tempo, loudness, or instrumentalness—affect a song's energy, providing insights into production trends.

c. Card Displays – energy, danceability and speechiness level

Card Displays offer a comparative summary of these attributes, making it easy to assess overall music trends in different periods.

3. Artist Details

In-Depth Analysis of Individual Artists

Navigation
back to
Category
Breakdown



Details for Avicii

song	danceability	instrumentalness	genre	key	loudness	valence	liveness	energy	speechiness	tempo
Without You (feat. Sandro Cavazza)	0.66	0.00	pop	2	-4.84	0.30	0.05	0.86	0.04	133.99
Wake Me Up	0.53	0.00	pop	2	-5.70	0.64	0.16	0.78	0.05	124.08
Waiting For Love	0.58	0.00	pop	6	-3.86	0.61	0.20	0.74	0.05	128.00
The Nights	0.53	0.00	pop	6	-5.30	0.65	0.25	0.84	0.04	125.98
SOS (feat. Aloe Blacc)	0.80	0.00	pop	5	-6.18	0.38	0.12	0.65	0.07	100.00
Silhouettes - Original Radio Edit	0.61	0.06	pop	5	-6.24	0.84	0.12	0.80	0.05	128.07
Lonely Together (feat. Rita Ora)	0.66	0.00	pop	5	-5.31	0.27	0.07	0.67	0.06	102.98
Levels - Radio Edit	0.58	0.83	pop	1	-5.94	0.46	0.31	0.89	0.03	126.04
I Could Be The One (Avicii Vs. Nicky Romero) - Radio Edit	0.51	0.00	pop	6	-3.78	0.64	0.32	0.79	0.04	127.95
Hey Brother	0.55	0.00	pop	7	-4.87	0.46	0.08	0.78	0.04	125.01

The Artist Details Report presents a breakdown of an artist's discography, displaying popularity scores and key musical features like energy, danceability, instrumentalness, and acousticness.

The page is accessed through the Category Breakdown page, by first selecting the artist category from the category selector and the selecting the artist whose details the user wants to look into in-depth. After selecting the artist, clicking on the **Artist Details** button right below the Category Selector will automatically take the user to the selected artists details.

