

PYTHON FINAL PROJECT

DATA PRE-PROCESSING

DATA VISUALIZATION

MODELING

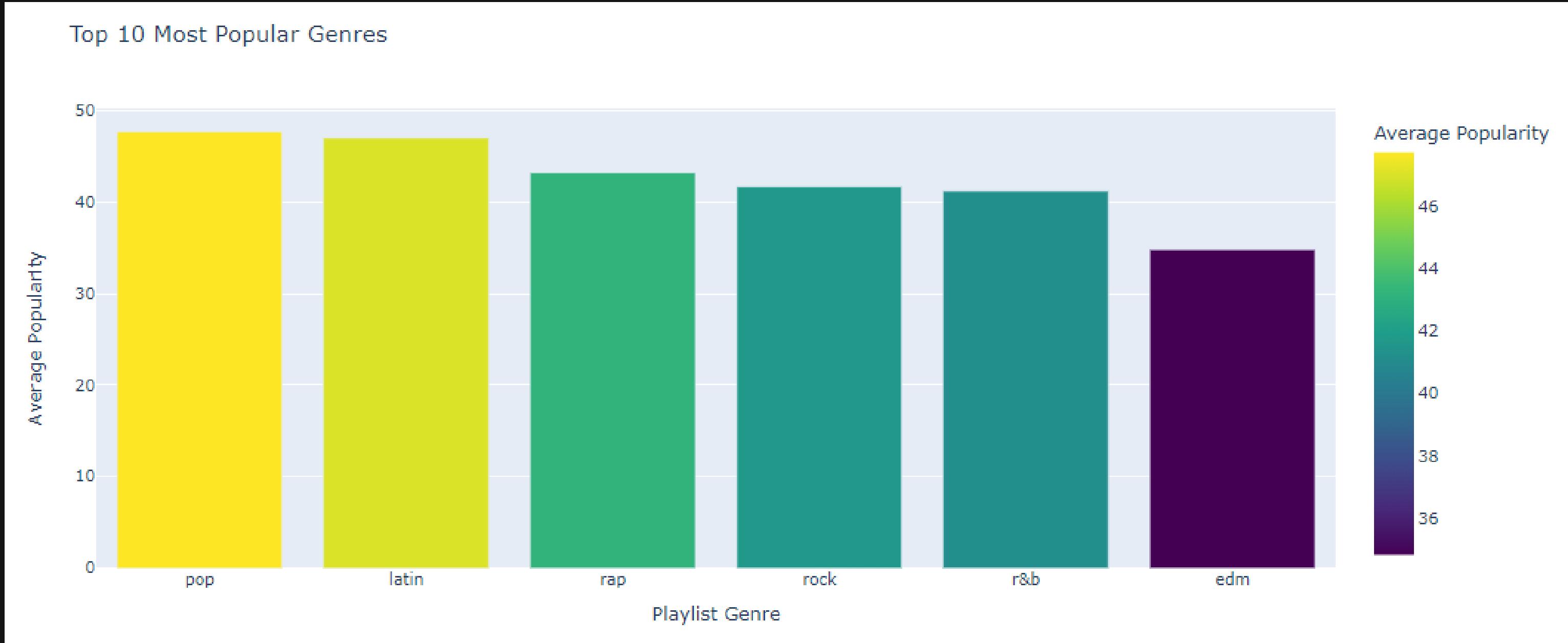


OBJECTIFS

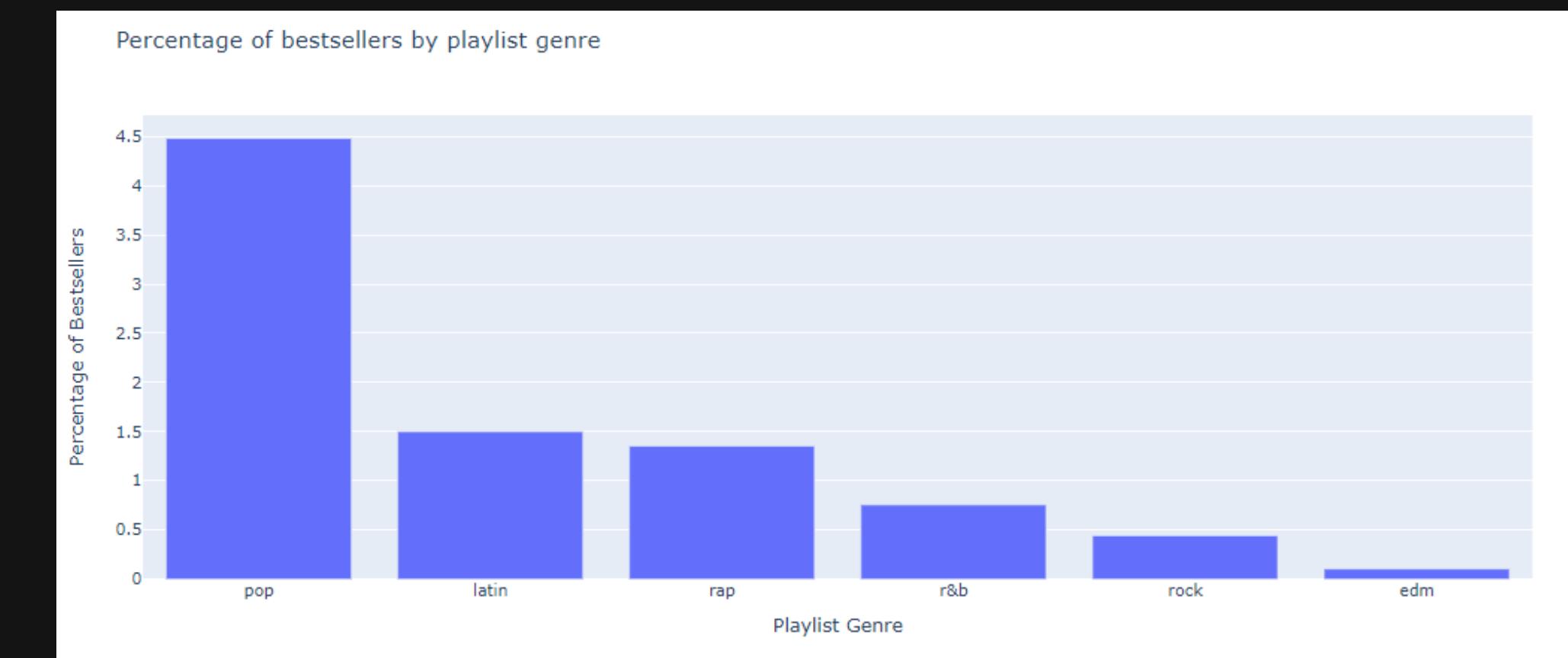
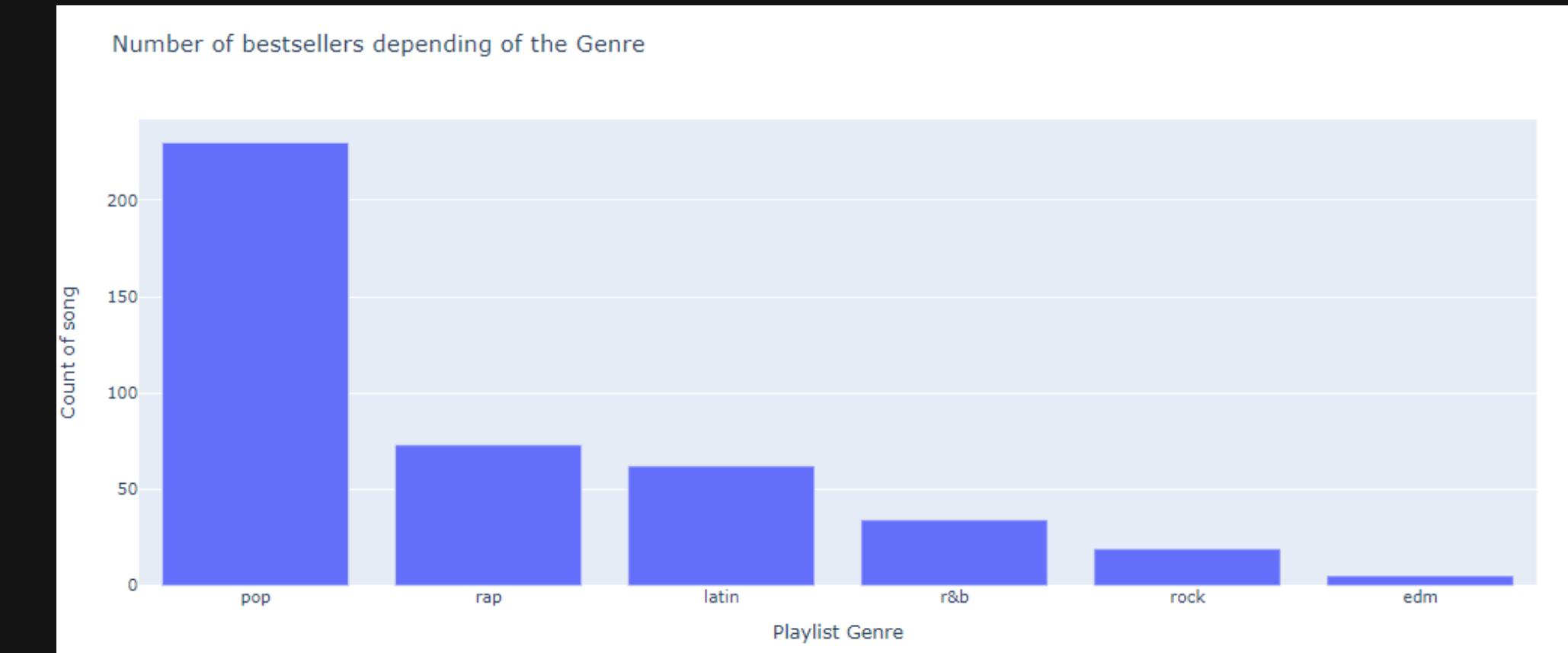


01 - TRANSFORM THE DATA :

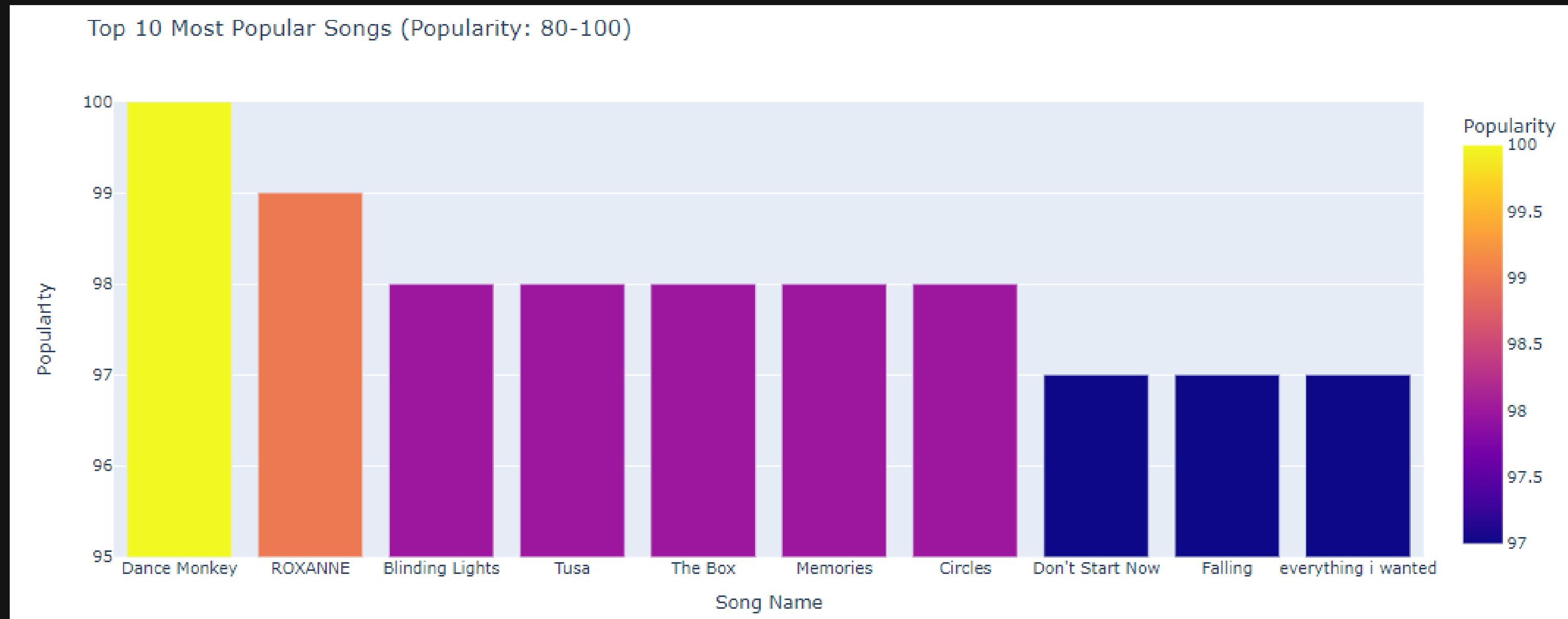
02 - BASICS GRAPHS :



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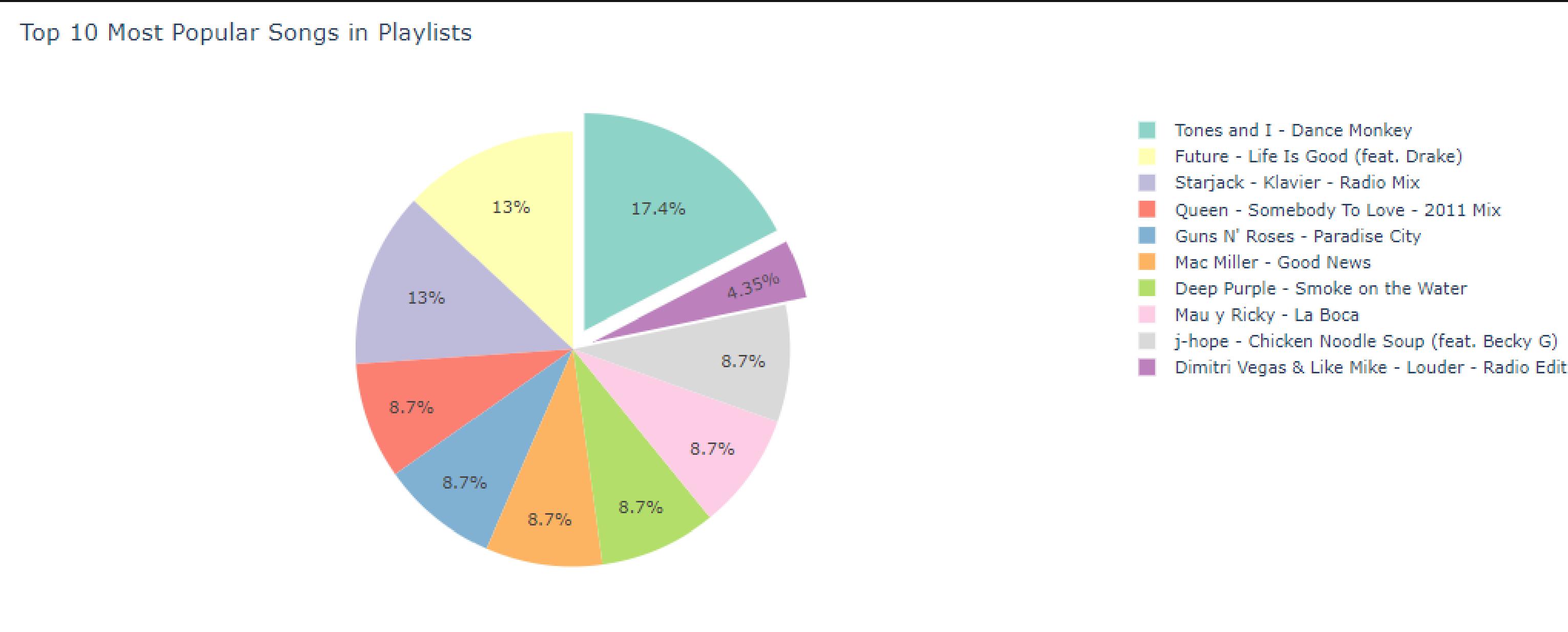
02 - BASICS GRAPHS :



02 - BASICS GRAPHS :

Playlist Name	
Indie Poptimism	308
2020 Hits & 2019 Hits – Top Global Tracks 🔥 🔥 🔥	247
Permanent Wave	244
Hard Rock Workout	219
Ultimate Indie Presents... Best Indie Tracks of the 2010s	198
Fitness Workout Electro House Dance Progressive House	195
Charts 2020 🔥 Top 2020 🔥 Hits 2020 🔥 Summer 2020 🔥 Pop 2020 🔥 Popular Music 🔥 Clean Pop 2020 🔥 Sing Alongs	189
Southern Hip Hop	189
Classic Rock 70s 80s 90s, Rock Classics - 70s Rock, 80s Rock, 90s Rock Rock Classicos	182
Urban Contemporary	170

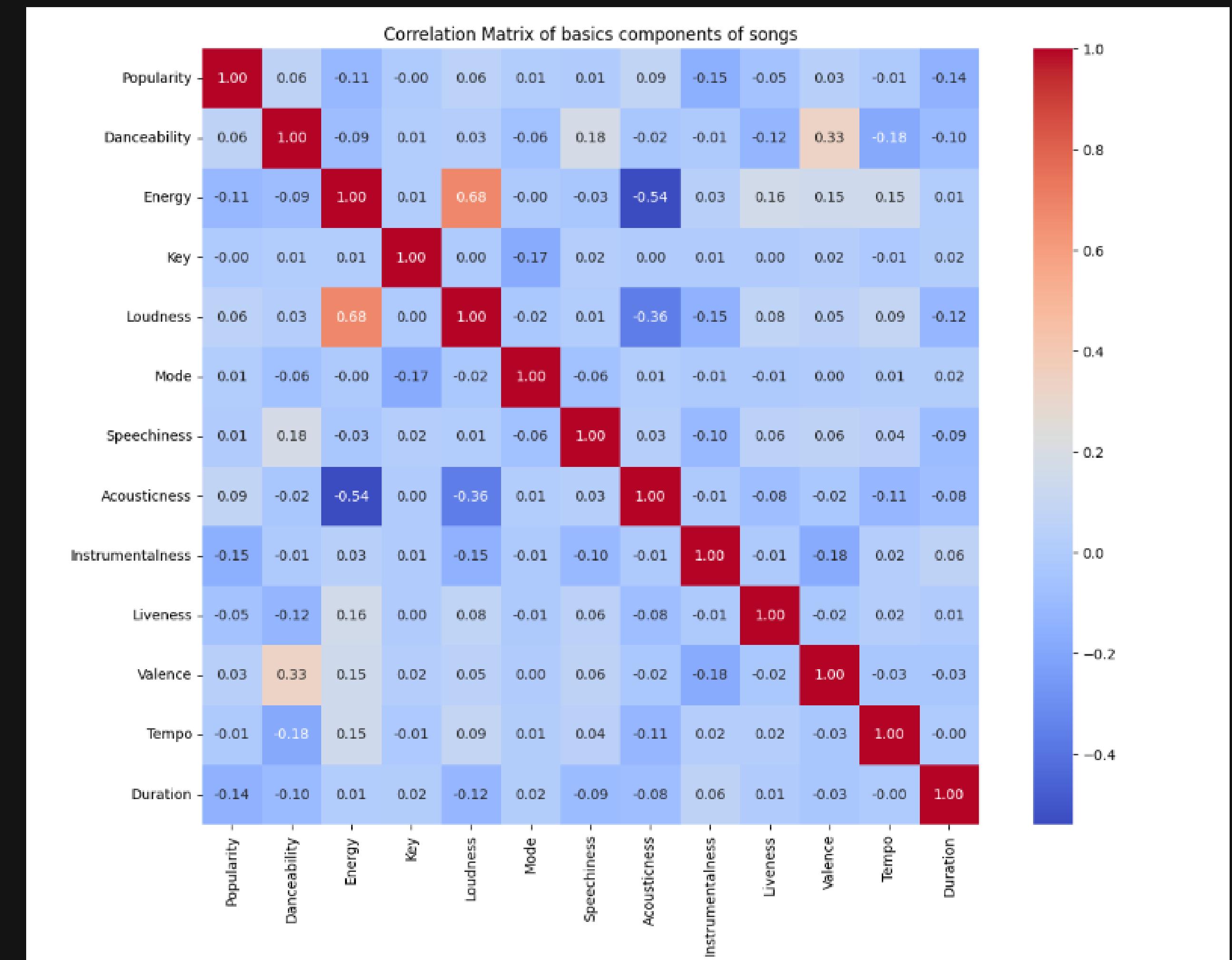
02 - BASICS GRAPHS :



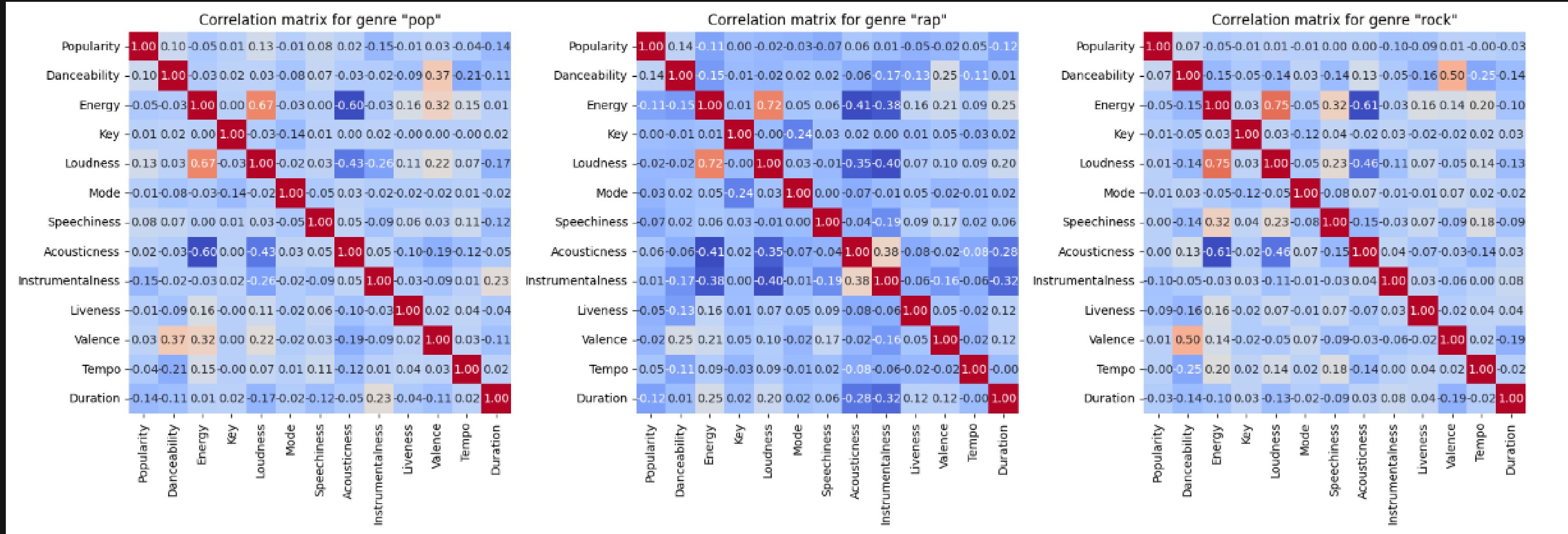
02 - BASICS GRAPHS :



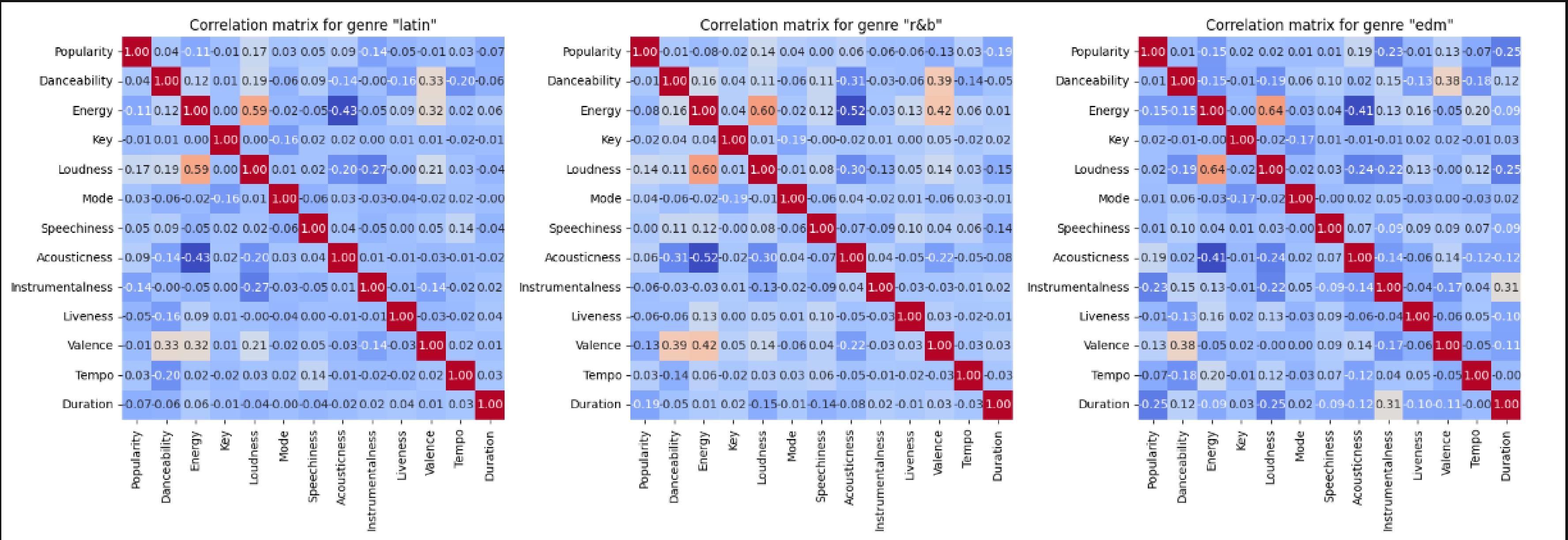
03 - CORRELATION :



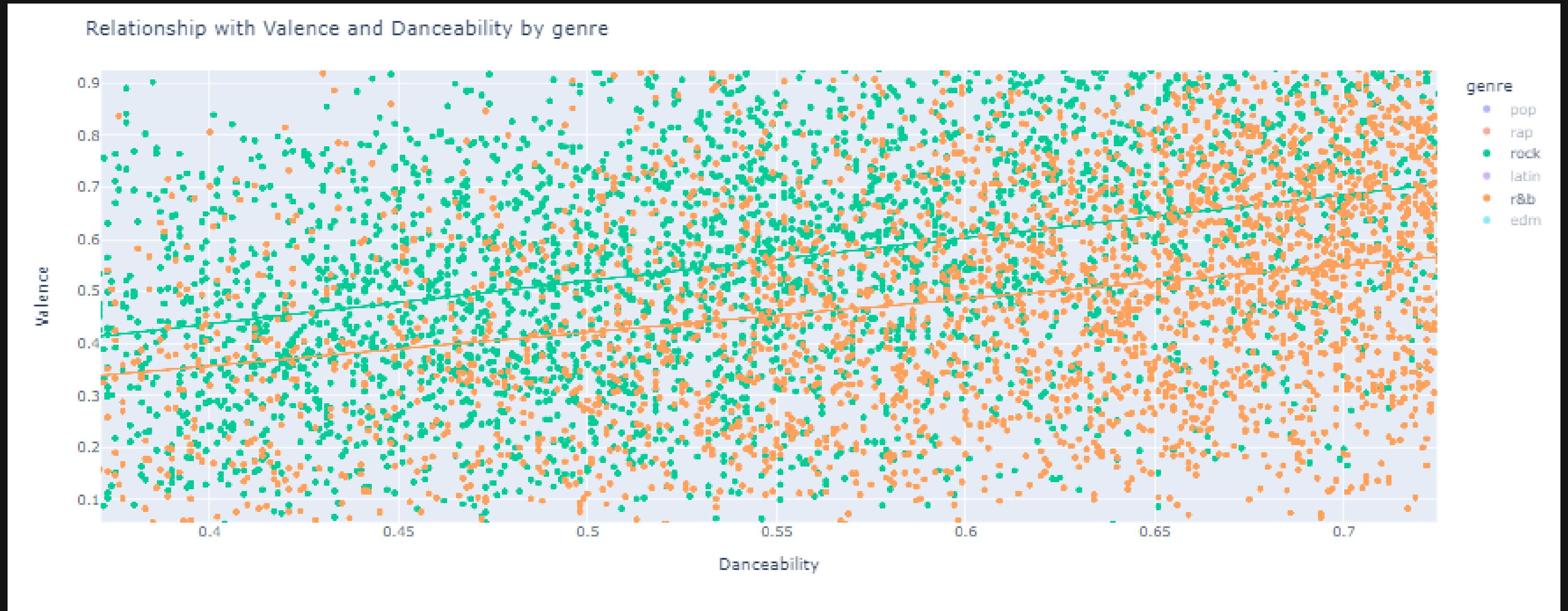
03 - CORRELATION :



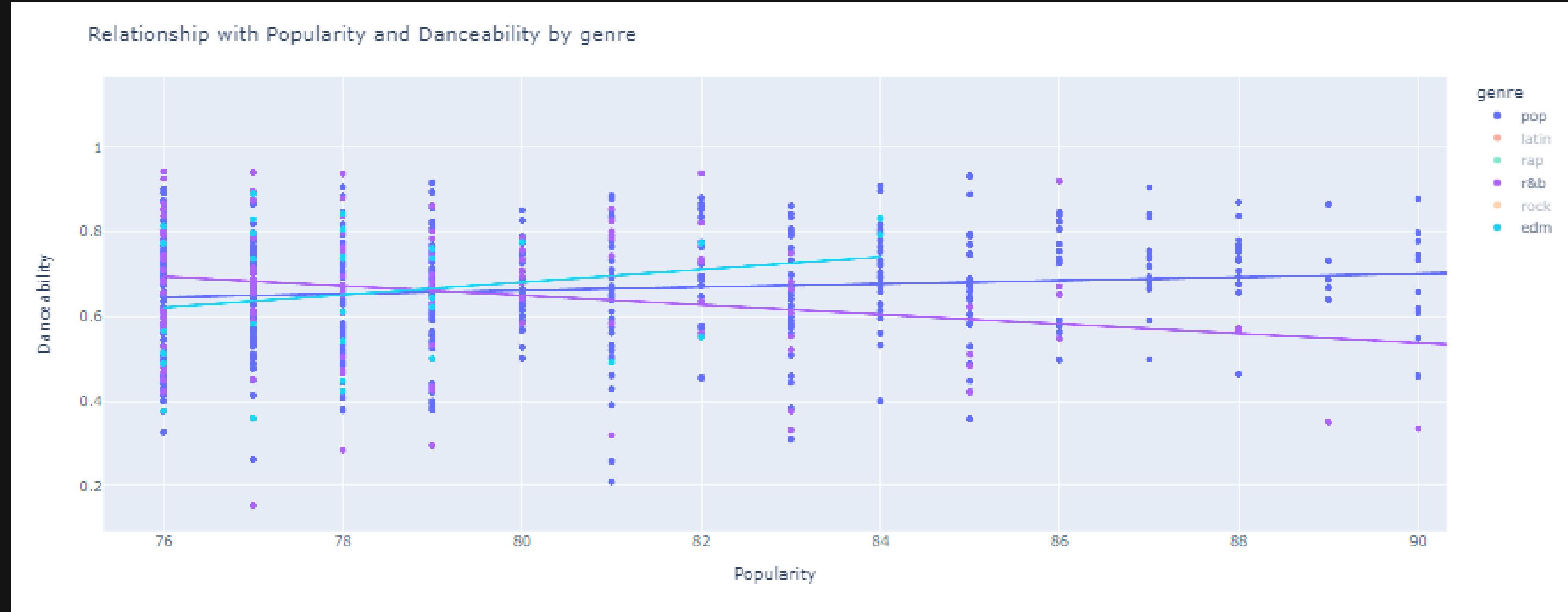
03 - CORRELATION :



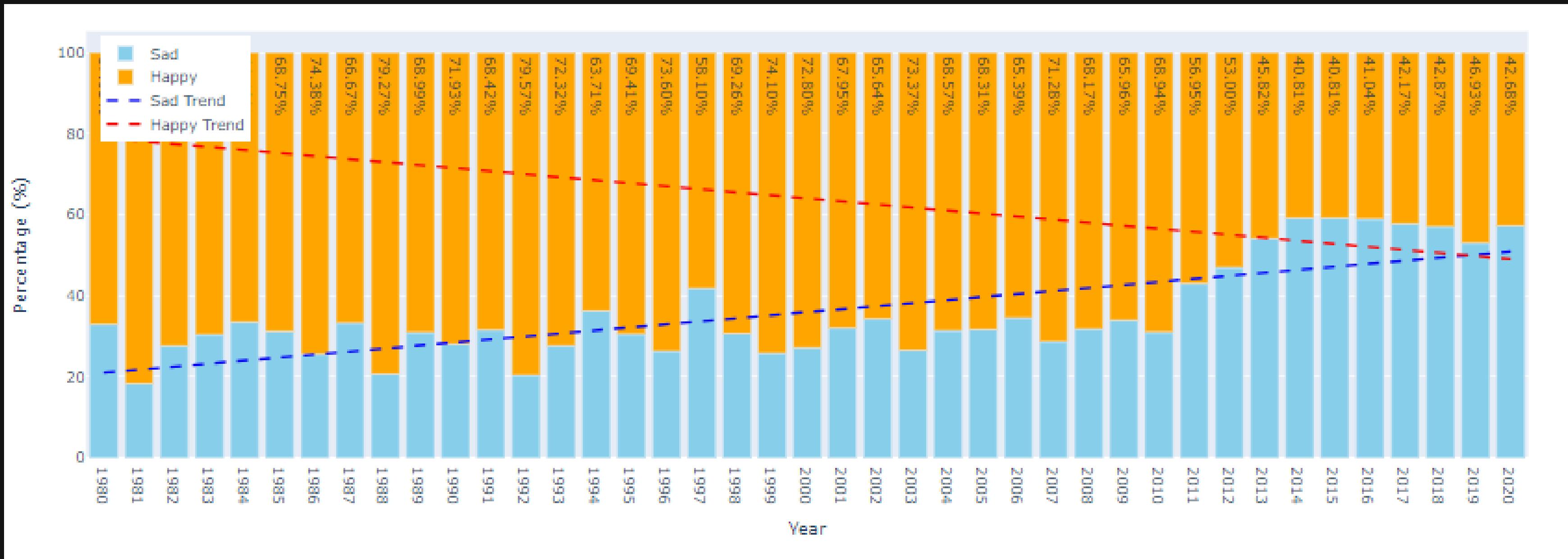
03 - CORRELATION :



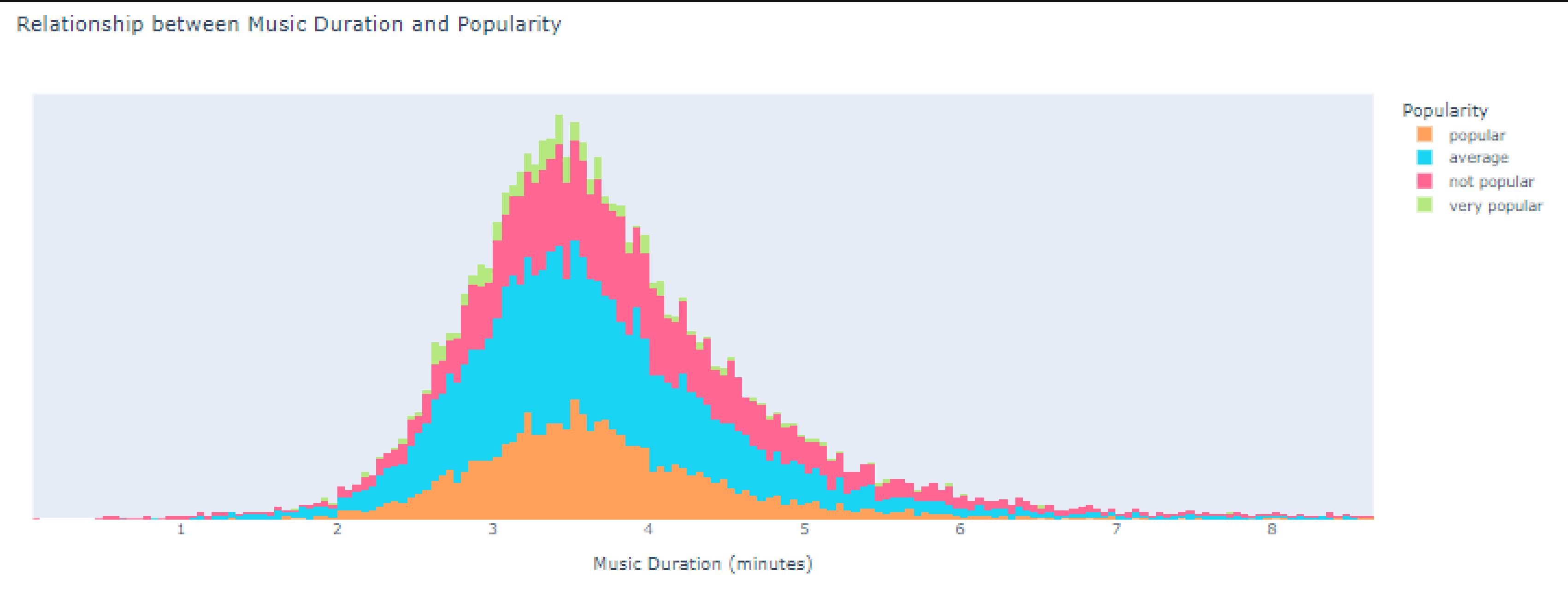
03 - CORRELATION :



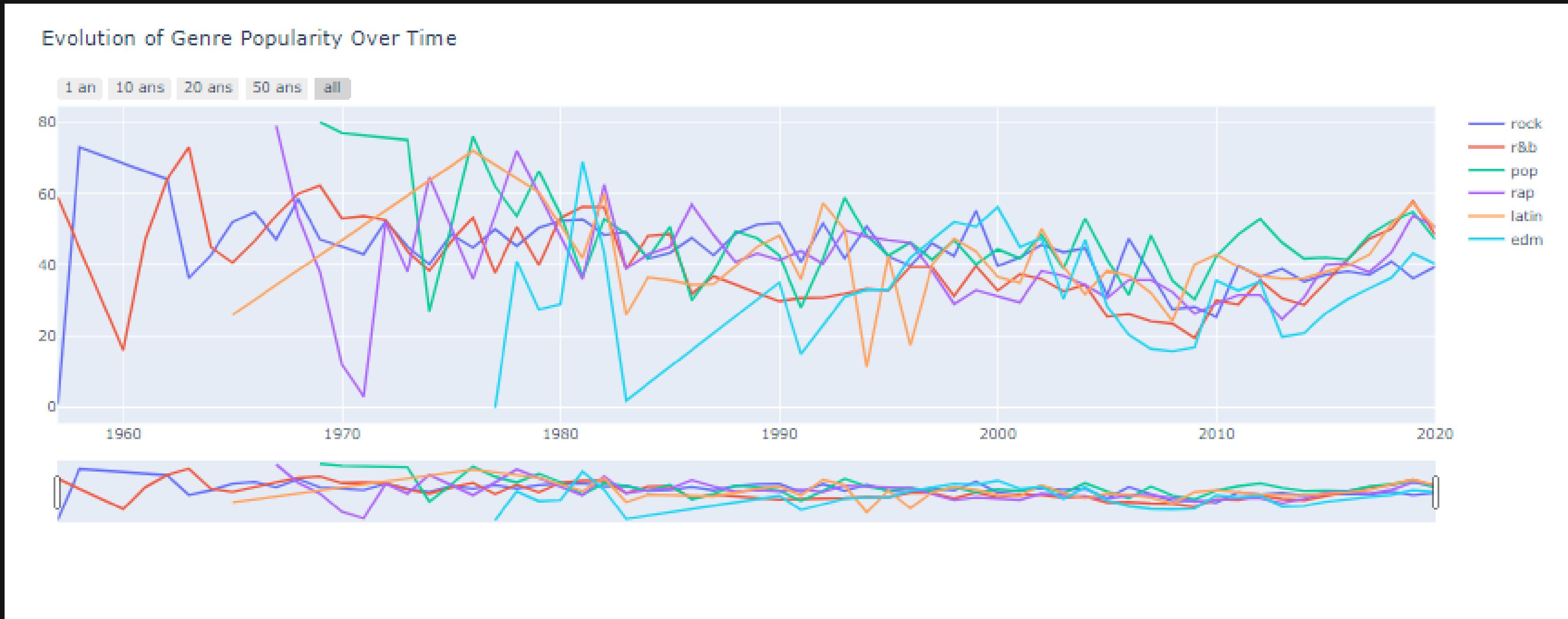
03 - CORRELATION :



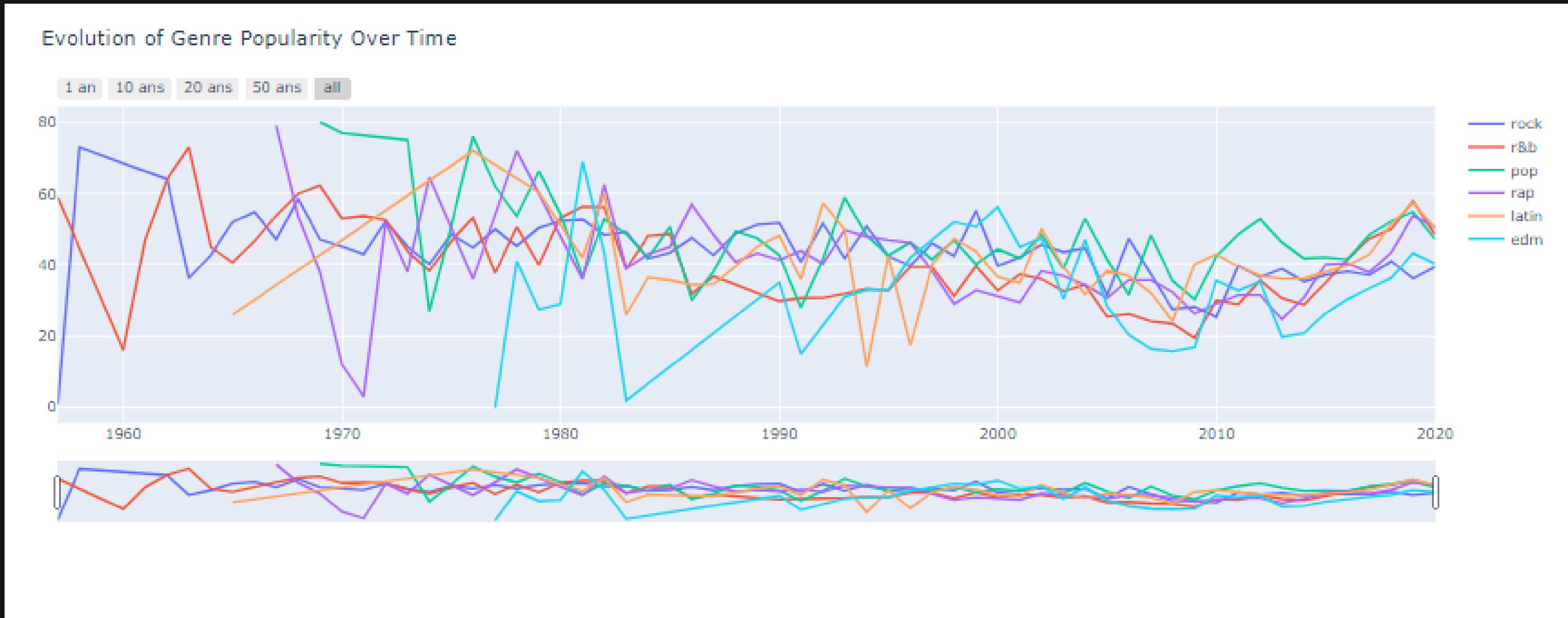
03 - CORRELATION :



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03 - CORRELATION :



04 - DJANGO: INDEX (PYTHON MANAGE.PY RUNSERVER)

Spotify Project's :

We're using advanced data analysis and machine learning to understand what makes a song popular. Our goal is to create a reliable tool that predicts a song's popularity based on factors like genres and lyrics. This tool will be valuable for artists, record labels, and streaming platforms, providing insights into the factors influencing a song's success in the music industry.

Notebook Visualiser les données

Prédiction de la popularité

Titre:	Dance Monkey
Artiste:	Tones and I
Date:	2019-06-14
Durée:	225000
Genre:	Pop
Sous-genre:	Dance pop
Danceability:	0.65
Energy:	0.69
Key:	5.4
Loudness:	-6.7
Mode:	0.57
Speechiness:	0.11
Acousticness:	0.18
Instrumentalness:	0.08
Liveness:	0.19
Valence:	0.51
Tempo:	120

Prédire

6°C Eclaircies

Rechercher

23:22 30/11/2023

04 - DJANGO:VISUALIZE DATA

Screenshot of a web browser showing a Django application for visualizing data. The URL is 127.0.0.1:8000/monapp/visualiser/. The page displays a table of track data with various search and filter options.

Track id: Track name: Track artist: Track popularity: Track album id: Track album name: Track album release date: Danceability: Energy: Key: Loudness: Mode: Speechiness: Acousticness: Instrumentalness: Liveness: Valence: Tempo: Duration ms:

Filtrer

Track Name Search: Track ID Search: Track Artist Search: Popularity Search:

Rechercher

track_id	track_name	track_artist	track_popularity	track_album_id	track_album_name	track_album_release_date	danceability	energy	key	loudness	mode	speechiness	acousticness	instrumentalness	liveness	valence	tempo	duration_ms
6f807x0ima9alj3VPbc7VN	I Don't Care (with Justin Bieber) - Loud Luxury Remix	Ed Sheeran	66	2oCs0DGTsRO98Gh5ZSI2Cx	I Don't Care (with Justin Bieber) [Loud Luxury Remix]	2019-06-14	0.748	0.916	6	-2.634	1	0.0583	0.102000	0.000000	0.0653	0.518	122.036	194754
0r7CVbZTWZgbTCYdfa2P31	Memories - Dillon Francis Remix	Maroon 5	67	63rPSO264uRjW1X5E6cWv6	Memories (Dillon Francis Remix)	2019-12-13	0.726	0.815	11	-4.969	1	0.0373	0.072400	0.004210	0.3570	0.693	99.972	162600
1z1Hg7Vb0AhHDiEmnDE79I	All the Time - Don Diablo Remix	Zara Larsson	70	1HoSmj2cLsrR0vE9gThr4	All the Time (Don Diablo Remix)	2019-07-05	0.675	0.931	1	-3.432	0	0.0742	0.079400	0.000023	0.1100	0.613	124.008	176616
75FpbthrwQmzIIIBJLuGdC7	Call You Mine - Keanu Silva Remix	The Chainsmokers	60	1nqYsOeflyKKuGOVchbsk6	Call You Mine - The Remixes	2019-07-19	0.718	0.930	7	-3.778	1	0.1020	0.028700	0.000009	0.2040	0.277	121.956	169093
1e8PAfcKUYoKlxPhrlIqw4x	Someone You Loved - Future Humans Remix	Lewis Capaldi	69	7m7vv9wlQ4i0LFuJiE2zsQ	Someone You Loved (Future Humans Remix)	2019-03-05	0.650	0.833	1	-4.672	1	0.0359	0.080300	0.000000	0.0833	0.725	123.976	189052
7fvUMiyapMsRRxr07cU8Hf	Beautiful People (feat. Khalid) - Jack Wins Remix	Ed Sheeran	67	2yi9cd2QktrNvWC2EUi0k	Beautiful People (feat. Khalid) [Jack Wins Remix]	2019-07-11	0.675	0.919	8	-5.385	1	0.1270	0.079900	0.000000	0.1430	0.585	124.982	163049
2OAylPUDDfwRGfe0lYqlCQ	Never Really Over - R3HAB Remix	Katy Perry	62	7INIYSeusaFlyrIISNxm8qII	Never Really Over (R3HAB Remix)	2019-07-26	0.449	0.856	5	-4.788	0	0.0623	0.187000	0.000000	0.1760	0.152	112.648	187675
6b1RNvAcJjQII73eZO4BLAB	Post Malone (feat. RANI) - GATTÜSO Remix	Sam Feldt	69	6703SRPsLkS4bPtMFFJes1	Post Malone (feat. RANI) [GATTÜSO Remix]	2019-08-29	0.542	0.903	4	-2.419	0	0.0434	0.033500	0.000005	0.1110	0.367	127.936	207619
7bF6tCO3gFb8INrEDcjNT5	Tough Love - Tiësto Remix / Radio Edit	Avicii	68	7CvAfGvq4RllwEbT9o8lav	Tough Love (Tiësto Remix)	2019-06-14	0.594	0.935	8	-3.562	1	0.0565	0.024900	0.000004	0.6370	0.366	127.015	193187
IIXGILkPm0tOCNcq00kCPa	If I Can't Have You - Gryffin Remix	Shawn Mendes	67	4QxzbISsVryEQwvPEEV5lu	If I Can't Have You (Gryffin Remix)	2019-06-20	0.642	0.818	2	-4.552	1	0.0320	0.056700	0.000000	0.0919	0.590	124.957	253040
3eFJI470ALfIEYjywPrsJy	Cross Me (feat. Chance the Rapper & PnB Rock) - M-22 Remix	Ed Sheeran	58	49bXZtlI5kQSqQMScnSaWO	Cross Me (feat. Chance the Rapper & PnB Rock) [M-22 Remix]	2019-06-21	0.679	0.923	6	-6.500	1	0.1810	0.146000	0.000005	0.1240	0.752	121.984	207894
3iJeF2izF1QcpCgUc97BLl	Hate Me - R3HAB Remix	Ellie Goulding	67	6e6RVFWdZaoTiLAZOCMnps	Hate Me (R3HAB Remix)	2019-08-16	0.437	0.774	8	-4.918	1	0.0554	0.148000	0.000000	0.1330	0.329	123.125	203733
6c0CvGZf7CouOpYF8toXHC	Body On My	Loud Luxury	67	2R66l0np3NnuUlzIGWQ5P	Body On My	2019-03-29	0.744	0.726	1	-4.675	1	0.0463	0.039900	0.000000	0.3740	0.687	121.985	192507
3eLdNmnrWr9gIyBcqTSSti	SOS - Laidback Luke Tribute Remix / Radio Edit	Avicii	68	7Al4TIo0c5twNLfdOh1yu	SOS (Laidback Luke Tribute Remix)	2019-05-17	0.572	0.915	5	-4.451	0	0.0625	0.011100	0.000000	0.3390	0.678	123.919	164516
55nMnifaQWKc3fbwOXwx	Summer Days (feat. Macklemore & Patrick Stump of Fall Out Boy) - Tiësto Remix	Martin Garrix	63	2vx3BtBMn8Ed3ygEg1OT2t	Summer Days (feat. Macklemore & Patrick Stump of Fall Out Boy) [Remixes]	2019-07-12	0.690	0.780	5	-4.446	0	0.0594	0.007330	0.001830	0.0729	0.238	126.070	255238
1EjgymgJHcjSOGSHcYaxvW	South of the Border (feat. Camila Cabello & Cardi B) - Andy Jarvis	Ed Sheeran	66	1imXAvLuowvPYIsFMYUPY0	South of the Border (feat. Camila Cabello & Cardi B) [Andy Jarvis Remix]	2019-12-11	0.805	0.835	0	-4.603	1	0.0896	0.130000	0.000005	0.3650	0.722	125.028	188230

04 - DJANGO: MASK OR SEACH DATA

Track id: Track name: Track artist: Track popularity: Track album id: Track album name: Track album release date: Danceability: Energy: Key:

[Filtrer](#)

Track Name Search: Track ID Search: Track Artist Search:

[Rechercher](#)

track_album_release_date	danceability	energy	key	loudness	mode	speechiness	acousticness	instrumentalness	liveness	valence	tempo	duration_ms
2019-06-14	0.748	0.916	6	-2.634	1	0.0583	0.102000	0.000000	0.0653	0.518	122.036	194754
2019-12-13	0.726	0.815	11	-4.969	1	0.0373	0.072400	0.004210	0.3570	0.693	99.972	162600
2019-07-05	0.675	0.931	1	-3.432	0	0.0742	0.079400	0.000023	0.1100	0.613	124.008	176616
2019-07-19	0.718	0.930	7	-3.778	1	0.1020	0.028700	0.000009	0.2040	0.277	121.956	169093
2019-03-05	0.650	0.833	1	-4.672	1	0.0359	0.080300	0.000000	0.0833	0.725	123.976	189052
2019-07-11	0.675	0.919	8	-5.385	1	0.1270	0.079900	0.000000	0.1430	0.585	124.982	163049
2019-07-26	0.449	0.856	5	-4.788	0	0.0623	0.187000	0.000000	0.1760	0.152	112.648	187675
2019-08-29	0.542	0.903	4	-2.419	0	0.0434	0.033500	0.000005	0.1110	0.367	127.936	207619
2019-06-14	0.594	0.935	8	-3.562	1	0.0565	0.024900	0.000004	0.6370	0.366	127.015	193187
2019-06-20	0.642	0.818	2	-4.552	1	0.0320	0.056700	0.000000	0.0919	0.590	124.957	253040
2019-06-21	0.679	0.923	6	-6.500	1	0.1810	0.146000	0.000005	0.1240	0.752	121.984	207894
2019-08-16	0.437	0.774	8	-4.918	1	0.0554	0.148000	0.000000	0.1330	0.329	123.125	203733
2019-03-29	0.744	0.726	1	-4.675	1	0.0463	0.039900	0.000000	0.3740	0.687	121.985	192507
2019-05-17	0.572	0.915	5	-4.451	0	0.0625	0.011100	0.000000	0.3390	0.678	123.919	164516
2019-07-12	0.690	0.780	5	-4.446	0	0.0594	0.007330	0.001830	0.0729	0.238	126.070	255238
2019-12-11	0.805	0.835	0	-4.603	1	0.0896	0.130000	0.000005	0.3650	0.722	125.028	188230
2019-05-03	0.694	0.901	1	-4.322	0	0.0948	0.070200	0.000000	0.4270	0.368	118.051	173548
2018-12-28	0.678	0.747	10	-5.289	0	0.1650	0.039500	0.000000	0.1740	0.516	120.002	189375
2019-03-08	0.746	0.557	1	-6.722	1	0.0542	0.103000	0.003600	0.1380	0.324	111.961	159404
2019-10-18	0.467	0.821	7	-5.466	1	0.0934	0.007910	0.000441	0.1310	0.232	122.676	185366
2019-08-23	0.572	0.934	6	-5.053	0	0.0446	0.002920	0.019800	0.1050	0.204	125.948	215238
2019-08-23	0.708	0.913	9	-4.329	0	0.0348	0.089000	0.081000	0.1130	0.707	135.016	170667
2019-05-08	0.684	0.818	4	-4.477	0	0.1280	0.046900	0.000003	0.1190	0.336	123.938	210968
2019-10-25	0.732	0.850	1	-5.999	1	0.0444	0.114000	0.000002	0.0388	0.372	124.024	193548
2019-05-24	0.620	0.889	11	-3.785	1	0.0352	0.016300	0.000019	0.3950	0.422	110.018	205093
2019-06-21	0.675	0.760	11	-7.037	1	0.0434	0.104000	0.000000	0.3300	0.468	124.933	172800
2019-08-09	0.682	0.851	1	-7.117	0	0.0363	0.014600	0.000834	0.0289	0.348	126.000	192381
2019-02-01	0.663	0.905	1	-3.781	0	0.0511	0.032500	0.000000	0.3330	0.397	125.996	175000
2019-05-23	0.625	0.938	6	-3.983	1	0.0517	0.004320	0.000260	0.0923	0.371	127.997	166875
2019-04-19	0.679	0.909	1	-2.929	1	0.1050	0.033400	0.000000	0.2690	0.819	119.885	155080
2019-11-01	0.641	0.869	11	-4.754	1	0.0423	0.031900	0.001310	0.4030	0.358	128.091	178125
2018-11-30	0.702	0.814	0	-7.510	0	0.0841	0.107000	0.000030	0.3740	0.503	121.993	172000
2018-11-23	0.723	0.837	11	-6.487	1	0.0389	0.010300	0.000477	0.0834	0.643	123.952	177097
2019-09-05	0.742	0.864	0	-5.060	1	0.0976	0.001410	0.004670	0.2410	0.727	125.032	169935

Track id: Track name: Track artist: Track popularity: Track album id: Track album name: Track album release date: Danceability: Energy: Key:

[Filtrer](#)

Track Name Search: Track ID Search: Track Artist Search: Popularity Search:

[Rechercher](#)

track_id	track_name	track_artist	track_popularity	track_album_id	track_album_name	track_album_release_date	danceability	energy	key	loudness	mode	speechiness	acousticness
3g1MMelMBxLjtKwcIVFe0N	Dance Monkey	Skylike	63	2iU9q30hhHCSN6Anlj3E5K	Dance Monkey	2019-09-06	0.781	0.855	8	-4.853	0	0.2320	0.327
5ZULALImTm80tzUbYQYM9d	Dance Monkey	Tones and I	92	2pJXQvY0YeDvVJ9gMU9G7j	The Kids Are Coming	2019-08-29	0.824	0.588	6	-6.400	0	0.0924	0.692
IrgnBhdG2JDFTbYkYRZAku	Dance Monkey	Tones and I	79	31IDBea3eEs57a0joX6TjN	Dance Monkey	2019-05-10	0.825	0.593	6	-6.401	0	0.0988	0.688
421leiR6jKIH5KDdwLYrOs	Dance Monkey	Tones and I	43	5i6CS5XeLZGLgaNCKlJvc2	Dance Monkey	2019-05-10	0.824	0.592	6	-6.400	0	0.0969	0.693
2XU0oxnq2qxCpomAAuY8K	Dance Monkey	Tones and I	100	0UywlDKYlyiu1b38DRzYD	Dance Monkey (Stripped Back) / Dance Monkey	2019-10-17	0.824	0.588	6	-6.400	0	0.0924	0.692
ILCG7BBh96DUUV6MuQhFad	Dance Monkey	Coopex	57	4bMaWB6yZh1ulaxHqRKh6Q	Dance Monkey	2019-12-23	0.566	0.767	6	-6.150	0	0.0817	0.106
0y3elN0Dm4b0bYQEgqTatE	Dance Monkey	Yann Muller	53	2aG4dcRRkElx1GhVq0Tfvb	Dance Monkey	2019-12-20	0.830	0.783	6	-5.202	0	0.0981	0.267

04 - DJANGO: PREDICT POPULARITY OR NOT (1 OR 0)

The screenshot shows a web browser window titled "Page de prédiction" with the URL "127.0.0.1:8000/monapp/prediction/". The main content is a prediction page for the song "Dance Monkey" by Tones and I. The page displays the following information:

- Titre de la chanson : Dance Monkey
- Artiste : Tones and I
- Date de sortie : 2019-10-17
- Durée : 209437.0
- Genre : pop
- Sous-genre : dance_pop
- Label de popularité prédit : 1
- Features utilisés pour la prédiction : [0.824, 0.588, 6.0, -6.4, 0.0, 0.0924, 0.692, 0.000104, 0.149, 0.513, 98.027, 209437.0]
- Score d'accuracy : 0.9770027413950655

The browser interface includes a tab bar with "Page de prédiction", "(1) WhatsApp", and a search bar at the top. The bottom of the screen shows a Windows taskbar with icons for Eclaircies, Rechercher, and various system status indicators.

04 - DJANGO: CONSULT NOTEBOOK

The screenshot shows a Jupyter Notebook interface running on a Windows 10 desktop. The title bar indicates the browser is Microsoft Edge, with tabs for 'Projet_PythonA4 (1)', '(1) WhatsApp', and 'Unveiling Soundscape - Présenta'. The main content area displays a notebook cell titled 'Final Project : Predict the popularity of a new song based on a dataset of 30'000 songs'. The first section, 'Libraries', contains Python code for importing various data science and visualization libraries. The second section, 'Introduction to Dataset Analysis', provides an overview of the dataset variables. The third section, 'Variable Descriptions:', lists detailed descriptions for each variable, such as 'track_id', 'track_name', and 'track_popularity'. The bottom status bar shows the weather as 6°C Eclaircies, a search bar, and system icons for battery, signal, and date/time (30/11/2023, 23:37).

Final Project : Predict the popularity of a new song based on a dataset of 30'000 songs

Libraries

```
In [1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import plotly.express as px
from collections import Counter
import plotly.subplots as sp
import json
import seaborn as sns
import plotly.graph_objects as go
from sklearn.linear_model import LinearRegression
import warnings
```

Introduction to Dataset Analysis

This study explores a dataset comprising several key variables related to music tracks and playlist characteristics. The dataset offers insights into numerous attributes, including the song's specifics, artist details, playlist information, and various musical features. Below is an overview of the essential columns and their descriptions:

Variable Descriptions:

- **track_id**: Unique ID for each song.
- **track_name**: Name of the song.
- **track_artist**: Artist(s) associated with the song.
- **track_popularity**: Song popularity score ranging from 0 to 100, where higher scores indicate higher popularity.
- **track_album_id**: Unique ID for the album associated with the song.
- **track_album_name**: Name of the album.
- **track_album_release_date**: Date of the album release.
- **playlist_name**: Name of the playlist.
- **playlist_id**: Unique ID for the playlist.
- **playlist_genre**: Genre of the playlist.
- **playlist_subgenre**: Subgenre of the playlist.
- **danceability**: Describes the suitability of a track for dancing based on various musical elements. Ranges from 0.0 (least danceable) to 1.0 (most danceable).
- **energy**: Represents the intensity and activity of a track, ranging from 0.0 to 1.0.
- **key**: Estimated overall key of the track mapped using standard Pitch Class notation.
- **loudness**: Overall loudness of the track in decibels (dB), with values typically between -60 and 0 dB.
- **mode**: Indicates the modality (major or minor) of the track, represented by 1 for major and 0 for minor.
- **speechiness**: Detects the presence of spoken words in a track, ranging from 0.0 to 1.0.
- **acousticness**: Confidence measure of whether the track is acoustic, ranging from 0.0 to 1.0.
- **instrumentalness**: Predicts whether a track contains no vocals, ranging from 0.0 to 1.0.
- **liveness**: Detects the presence of an audience in the recording, with higher values indicating a higher probability that the track was performed live.
- **valence**: Describes the musical positiveness conveyed by a track, ranging from 0.0 to 1.0.
- **tempo**: Estimated tempo of a track in beats per minute (BPM).
- **duration_ms**: Duration of the song in milliseconds.

