SPOTIFY MUSIC

Introduction

This report presents a detailed analysis of Spotify music data, aiming to uncover insights into various aspects of the music industry. The primary focus is on understanding track attributes, chart performance, top artists, and musical characteristics as represented in the dataset.

The key objectives of this analysis include:

1. Exploring the distribution of streams for tracks to understand popularity trends.
2. Analyzing the release trends over the last decade to identify changing music preferences.
3. Investigating correlations between different track attributes to uncover musical patterns.
4. Examining chart performance across platforms (Spotify, Apple, Deezer, Shazam) to gauge industry presence.
5. Identifying top artists based on track counts to discern audience preferences.
6. Exploring the distribution of tracks by musical key, mode, BPM, and release month for genre insights.

Through this analysis, we aim to provide valuable insights for stakeholders in the music industry, including artists, record labels, streaming platforms, and music enthusiasts. The findings and interpretations derived from this analysis can inform strategic decisions, marketing campaigns, and content creation strategies within the dynamic music landscape.

```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
import plotly.express as px
from wordcloud import WordCloud

import pandas as pd

# Read the file with the detected encoding
df = pd.read_csv('Popular_Spotify_Songs.csv', encoding='ISO-8859-1')

# Save the file with UTF-8 encoding
df.to_csv('Popular_Spotify_Songs.csv', index=False, encoding='utf-8')

df = pd.read_csv("Popular_Spotify_Songs.csv")

df
```

```
                              track_name      artist(s)_name
artist_count  \
0    Seven (feat. Latto) (Explicit Ver.)    Latto, Jung Kook
2
```

```
1                                   LALA         Myke Towers
1
2                                vampire      Olivia Rodrigo
1
3                           Cruel Summer        Taylor Swift
1
4                         WHERE SHE GOES           Bad Bunny
1
..                                   ...                 ...
...
948                         My Mind & Me        Selena Gomez
1
949            Bigger Than The Whole Sky        Taylor Swift
1
950                 A Veces (feat. Feid)  Feid, Paulo Londra
2
951                        En La De Ella  Feid, Sech, Jhayco
3
952                                Alone           Burna Boy
1

     released_year  released_month  released_day  in_spotify_playlists
\
0             2023               7            14                   553

1             2023               3            23                  1474

2             2023               6            30                  1397

3             2019               8            23                  7858

4             2023               5            18                  3133

..             ...             ...           ...                   ...

948           2022              11             3                   953

949           2022              10            21                  1180

950           2022              11             3                   573

951           2022              10            20                  1320

952           2022              11             4                   782


     in_spotify_charts    streams  in_apple_playlists  ...  bpm key
mode  \
0                  147  141381703                  43  ...  125   B
Major
```

```
1                   48  133716286                  48  ...   92  C#
Major
2                  113  140003974                  94  ...  138   F
Major
3                  100  800840817                 116  ...  170   A
Major
4                   50  303236322                  84  ...  144   A
Minor
..                 ...        ...                 ...  ...  ...  ..
...
948                  0   91473363                  61  ...  144   A
Major
949                  0  121871870                   4  ...  166  F#
Major
950                  0   73513683                   2  ...   92  C#
Major
951                  0  133895612                  29  ...   97  C#
Major
952                  2   96007391                  27  ...   90   E
Minor

    danceability_%  valence_% energy_% acousticness_%
instrumentalness_%  \
0               80         89       83             31
0
1               71         61       74              7
0
2               51         32       53             17
0
3               55         58       72             11
0
4               65         23       80             14
63
..             ...        ...      ...            ...
...
948             60         24       39             57
0
949             42          7       24             83
1
950             80         81       67              4
0
951             82         67       77              8
0
952             61         32       67             15
0

     liveness_%  speechiness_%
0             8              4
1            10              4
```

```
2            31              6
3            11             15
4            11              6
..          ...            ...
948           8              3
949          12              6
950           8              6
951          12              5
952          11              5

[953 rows x 24 columns]
```

```
df.head()
```

```
                            track_name    artist(s)_name  artist_count
\
0  Seven (feat. Latto) (Explicit Ver.)  Latto, Jung Kook             2

1                                 LALA       Myke Towers             1

2                              vampire    Olivia Rodrigo             1

3                         Cruel Summer      Taylor Swift             1

4                       WHERE SHE GOES         Bad Bunny             1


   released_year  released_month  released_day
in_spotify_playlists  \
0           2023               7            14                   553

1           2023               3            23                  1474

2           2023               6            30                  1397

3           2019               8            23                  7858

4           2023               5            18                  3133


   in_spotify_charts    streams  in_apple_playlists  ...  bpm key
mode  \
0                147  141381703                  43  ...  125   B
Major
1                 48  133716286                  48  ...   92  C#
Major
2                113  140003974                  94  ...  138   F
Major
3                100  800840817                 116  ...  170   A
Major
4                 50  303236322                  84  ...  144   A
```

```
Minor

  danceability_%  valence_% energy_% acousticness_%  instrumentalness_
%  \
0             80         89       83             31
0
1             71         61       74              7
0
2             51         32       53             17
0
3             55         58       72             11
0
4             65         23       80             14
63

   liveness_%  speechiness_%
0           8              4
1          10              4
2          31              6
3          11             15
4          11              6

[5 rows x 24 columns]

df.tail()

                    track_name      artist(s)_name  artist_count  \
948               My Mind & Me        Selena Gomez             1
949  Bigger Than The Whole Sky        Taylor Swift             1
950       A Veces (feat. Feid)  Feid, Paulo Londra             2
951              En La De Ella  Feid, Sech, Jhayco             3
952                      Alone           Burna Boy             1

     released_year  released_month  released_day  in_spotify_playlists
\
948           2022              11             3                   953

949           2022              10            21                  1180

950           2022              11             3                   573

951           2022              10            20                  1320

952           2022              11             4                   782


     in_spotify_charts    streams  in_apple_playlists  ...  bpm key
mode  \
948                  0   91473363                  61  ...  144   A
Major
949                  0  121871870                   4  ...  166  F#
```

```
Major
950                  0   73513683                   2  ...   92  C#
Major
951                  0  133895612                  29  ...   97  C#
Major
952                  2   96007391                  27  ...   90   E
Minor

    danceability_%  valence_% energy_% acousticness_%
instrumentalness_%  \
948             60          24       39              57
0
949             42           7       24              83
1
950             80          81       67               4
0
951             82          67       77               8
0
952             61          32       67              15
0

     liveness_%  speechiness_%
948           8              3
949          12              6
950           8              6
951          12              5
952          11              5

[5 rows x 24 columns]
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 953 entries, 0 to 952
Data columns (total 24 columns):
 #   Column                Non-Null Count  Dtype 
---  ------                --------------  ----- 
 0   track_name            953 non-null    object
 1   artist(s)_name        953 non-null    object
 2   artist_count          953 non-null    int64 
 3   released_year         953 non-null    int64 
 4   released_month        953 non-null    int64 
 5   released_day          953 non-null    int64 
 6   in_spotify_playlists  953 non-null    int64 
 7   in_spotify_charts     953 non-null    int64 
 8   streams               953 non-null    object
 9   in_apple_playlists    953 non-null    int64 
 10  in_apple_charts       953 non-null    int64 
 11  in_deezer_playlists   953 non-null    object
 12  in_deezer_charts      953 non-null    int64 
 13  in_shazam_charts      903 non-null    object
 14  bpm                   953 non-null    int64
 15  key                   858 non-null    object
 16  mode                  953 non-null    object
 17  danceability_%        953 non-null    int64
 18  valence_%             953 non-null    int64
 19  energy_%              953 non-null    int64
 20  acousticness_%        953 non-null    int64
 21  instrumentalness_%    953 non-null    int64
 22  liveness_%            953 non-null    int64
 23  speechiness_%         953 non-null    int64
dtypes: int64(17), object(7)
memory usage: 178.8+ KB
```

```
df.describe()
```

```
       artist_count  released_year  released_month  released_day  \
count    953.000000     953.000000      953.000000    953.000000
mean       1.556139    2018.238195        6.033578     13.930745
std        0.893044      11.116218        3.566435      9.201949
min        1.000000    1930.000000        1.000000      1.000000
25%        1.000000    2020.000000        3.000000      6.000000
50%        1.000000    2022.000000        6.000000     13.000000
75%        2.000000    2022.000000        9.000000     22.000000
max        8.000000    2023.000000       12.000000     31.000000

       in_spotify_playlists  in_spotify_charts  in_apple_playlists  \
count            953.000000         953.000000          953.000000
mean            5200.124869          12.009444           67.812172
std             7897.608990          19.575992           86.441493
min               31.000000           0.000000            0.000000
25%              875.000000           0.000000           13.000000
50%             2224.000000           3.000000           34.000000
75%             5542.000000          16.000000           88.000000
max            52898.000000         147.000000          672.000000

       in_apple_charts  in_deezer_charts         bpm  danceability_
%  \
count       953.000000        953.000000  953.000000       953.00000

mean         51.908709          2.666317  122.540399        66.96957

std          50.630241          6.035599   28.057802        14.63061

min           0.000000          0.000000   65.000000        23.00000

25%           7.000000          0.000000  100.000000        57.00000

50%          38.000000          0.000000  121.000000        69.00000
```

```
75%          87.000000          2.000000  140.000000        78.00000

max         275.000000         58.000000  206.000000        96.00000


        valence_%    energy_%  acousticness_%  instrumentalness_%
liveness_%  \
count  953.000000  953.000000      953.000000          953.000000
953.000000
mean    51.431270   64.279119       27.057712            1.581322
18.213012
std     23.480632   16.550526       25.996077            8.409800
13.711223
min      4.000000    9.000000        0.000000            0.000000
3.000000
25%     32.000000   53.000000        6.000000            0.000000
10.000000
50%     51.000000   66.000000       18.000000            0.000000
12.000000
75%     70.000000   77.000000       43.000000            0.000000
24.000000
max     97.000000   97.000000       97.000000           91.000000
97.000000

       speechiness_%
count     953.000000
mean       10.131165
std         9.912888
min         2.000000
25%         4.000000
50%         6.000000
75%        11.000000
max        64.000000
```

```
df.shape
```

```
(953, 24)
```

```
df.columns
```

```
Index(['track_name', 'artist(s)_name', 'artist_count',
'released_year',
       'released_month', 'released_day', 'in_spotify_playlists',
       'in_spotify_charts', 'streams', 'in_apple_playlists',
'in_apple_charts',
       'in_deezer_playlists', 'in_deezer_charts', 'in_shazam_charts',
'bpm',
       'key', 'mode', 'danceability_%', 'valence_%', 'energy_%',
       'acousticness_%', 'instrumentalness_%', 'liveness_%',
'speechiness_%'],
      dtype='object')
```

```
print(df.columns)

columns_to_drop = [
    'danceability_%', 'valence_%', 'energy_%', 'acousticness_%',
    'instrumentalness_%', 'liveness_%', 'speechiness_%'
]

df.drop(columns=columns_to_drop, inplace=True, errors='ignore')

print(df.head())
```

```
Index(['track_name', 'artist(s)_name', 'artist_count',
'released_year',
       'released_month', 'released_day', 'in_spotify_playlists',
       'in_spotify_charts', 'streams', 'in_apple_playlists',
'in_apple_charts',
       'in_deezer_playlists', 'in_deezer_charts', 'in_shazam_charts',
'bpm',
       'key', 'mode', 'danceability_%', 'valence_%', 'energy_%',
       'acousticness_%', 'instrumentalness_%', 'liveness_%',
'speechiness_%'],
      dtype='object')
                            track_name    artist(s)_name  artist_count
\
0  Seven (feat. Latto) (Explicit Ver.)  Latto, Jung Kook             2

1                                 LALA       Myke Towers             1

2                              vampire    Olivia Rodrigo             1

3                         Cruel Summer      Taylor Swift             1

4                       WHERE SHE GOES         Bad Bunny             1


   released_year  released_month  released_day
in_spotify_playlists  \
0           2023               7            14                   553

1           2023               3            23                  1474

2           2023               6            30                  1397

3           2019               8            23                  7858

4           2023               5            18                  3133


   in_spotify_charts    streams  in_apple_playlists
in_apple_charts  \
0                147  141381703                  43              263
```

```
1                  48  133716286                  48              126

2                 113  140003974                  94              207

3                 100  800840817                 116              207

4                  50  303236322                  84              133


  in_deezer_playlists  in_deezer_charts in_shazam_charts  bpm key
mode
0                  45                 10              826  125   B
Major
1                  58                 14              382   92  C#
Major
2                  91                 14              949  138   F
Major
3                 125                 12              548  170   A
Major
4                  87                 15              425  144   A
Minor
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 953 entries, 0 to 952
Data columns (total 17 columns):
 #   Column                Non-Null Count  Dtype
---  ------                --------------  -----
 0   track_name            953 non-null    object
 1   artist(s)_name        953 non-null    object
 2   artist_count          953 non-null    int64
 3   released_year         953 non-null    int64
 4   released_month        953 non-null    int64
 5   released_day          953 non-null    int64
 6   in_spotify_playlists  953 non-null    int64
 7   in_spotify_charts     953 non-null    int64
 8   streams               953 non-null    object
 9   in_apple_playlists    953 non-null    int64
 10  in_apple_charts       953 non-null    int64
 11  in_deezer_playlists   953 non-null    object
 12  in_deezer_charts      953 non-null    int64
 13  in_shazam_charts      903 non-null    object
 14  bpm                   953 non-null    int64
 15  key                   858 non-null    object
 16  mode                  953 non-null    object
dtypes: int64(10), object(7)
memory usage: 126.7+ KB
```

```python
# Summary statistics for all columns
summary_stats = df.describe(include='all')
print(summary_stats)
```

```
       track_name artist(s)_name  artist_count  released_year  
released_month  \
count         953            953    953.000000     953.000000   
953.000000   
unique        943            645           NaN            NaN   
NaN   
top      Daylight   Taylor Swift           NaN            NaN   
NaN   
freq            2             34           NaN            NaN   
NaN   
mean          NaN            NaN      1.556139    2018.238195   
6.033578   
std           NaN            NaN      0.893044      11.116218   
3.566435   
min           NaN            NaN      1.000000    1930.000000   
1.000000   
25%           NaN            NaN      1.000000    2020.000000   
3.000000   
50%           NaN            NaN      1.000000    2022.000000   
6.000000   
75%           NaN            NaN      2.000000    2022.000000   
9.000000   
max           NaN            NaN      8.000000    2023.000000   
12.000000   

        released_day  in_spotify_playlists  in_spotify_charts  
streams  \
count     953.000000            953.000000         953.000000   
953   
unique           NaN                   NaN                NaN   
949   
top              NaN                   NaN                NaN   
723894473   
freq             NaN                   NaN                NaN   
2   
mean       13.930745           5200.124869          12.009444   
NaN   
std         9.201949           7897.608990          19.575992   
NaN   
min         1.000000             31.000000           0.000000   
NaN   
25%         6.000000            875.000000           0.000000   
NaN   
50%        13.000000           2224.000000           3.000000   
NaN   
75%        22.000000           5542.000000          16.000000
```

```
NaN
max        31.000000          52898.000000         147.000000
NaN

        in_apple_playlists  in_apple_charts in_deezer_playlists  \
count           953.000000       953.000000                 953
unique                 NaN              NaN                 348
top                    NaN              NaN                   0
freq                   NaN              NaN                  24
mean             67.812172        51.908709                 NaN
std              86.441493        50.630241                 NaN
min               0.000000         0.000000                 NaN
25%              13.000000         7.000000                 NaN
50%              34.000000        38.000000                 NaN
75%              88.000000        87.000000                 NaN
max             672.000000       275.000000                 NaN

        in_deezer_charts in_shazam_charts         bpm  key   mode
count         953.000000              903  953.000000  858    953
unique               NaN              198         NaN   11      2
top                  NaN                0         NaN   C#  Major
freq                 NaN              344         NaN  120    550
mean            2.666317              NaN  122.540399  NaN    NaN
std             6.035599              NaN   28.057802  NaN    NaN
min             0.000000              NaN   65.000000  NaN    NaN
25%             0.000000              NaN  100.000000  NaN    NaN
50%             0.000000              NaN  121.000000  NaN    NaN
75%             2.000000              NaN  140.000000  NaN    NaN
max            58.000000              NaN  206.000000  NaN    NaN
```

```
# Check for missing values
missing_values = df.isnull().sum()
print(missing_values)

# Drop rows with missing values in critical columns
df.dropna(subset=['key', 'mode'], inplace=True)

# Fill missing values in 'in_shazam_charts' with 0
df['in_shazam_charts'].fillna(0, inplace=True)
```

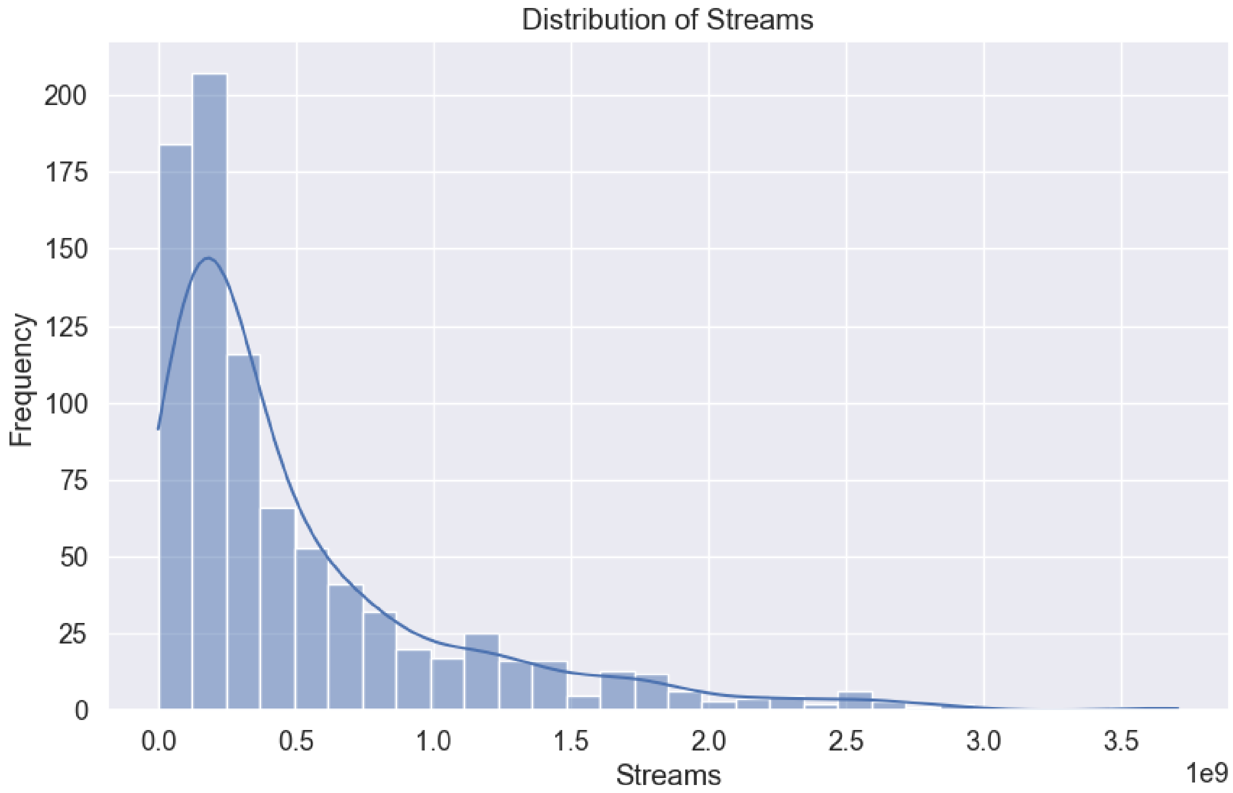
```
track_name               0
artist(s)_name           0
artist_count             0
released_year            0
released_month           0
released_day             0
in_spotify_playlists     0
in_spotify_charts        0
streams                  0
in_apple_playlists       0
```

```
in_apple_charts          0
in_deezer_playlists      0
in_deezer_charts         0
in_shazam_charts        50
bpm                      0
key                     95
mode                     0
dtype: int64
```

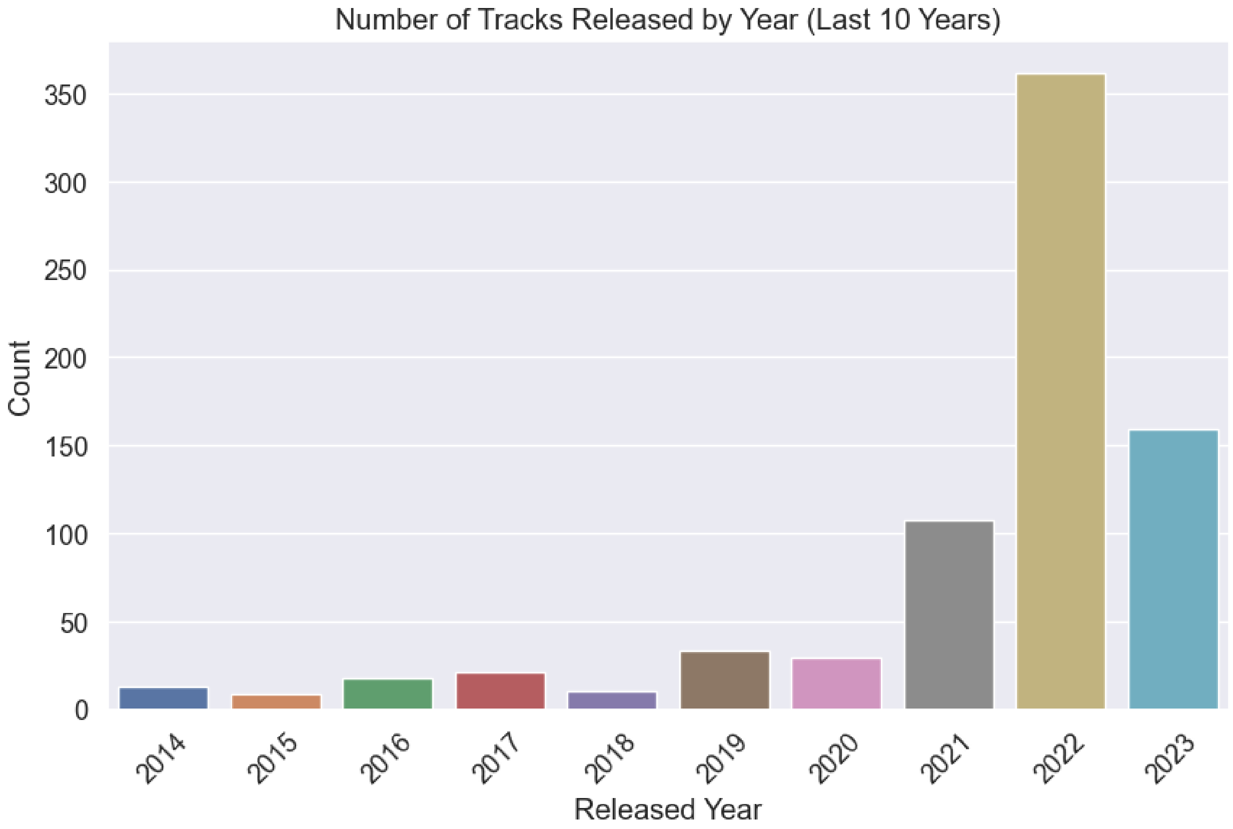
```
# Convert 'streams' and 'in_deezer_playlists' columns to numeric
df['streams'] = pd.to_numeric(df['streams'], errors='coerce')
df['in_deezer_playlists'] = pd.to_numeric(df['in_deezer_playlists'],
errors='coerce')

# Check data types
print(df.dtypes)
```

```
track_name               object
artist(s)_name           object
artist_count              int64
released_year             int64
released_month            int64
released_day              int64
in_spotify_playlists      int64
in_spotify_charts         int64
streams                 float64
in_apple_playlists        int64
in_apple_charts           int64
in_deezer_playlists     float64
in_deezer_charts          int64
in_shazam_charts         object
bpm                       int64
key                      object
mode                     object
dtype: object
```

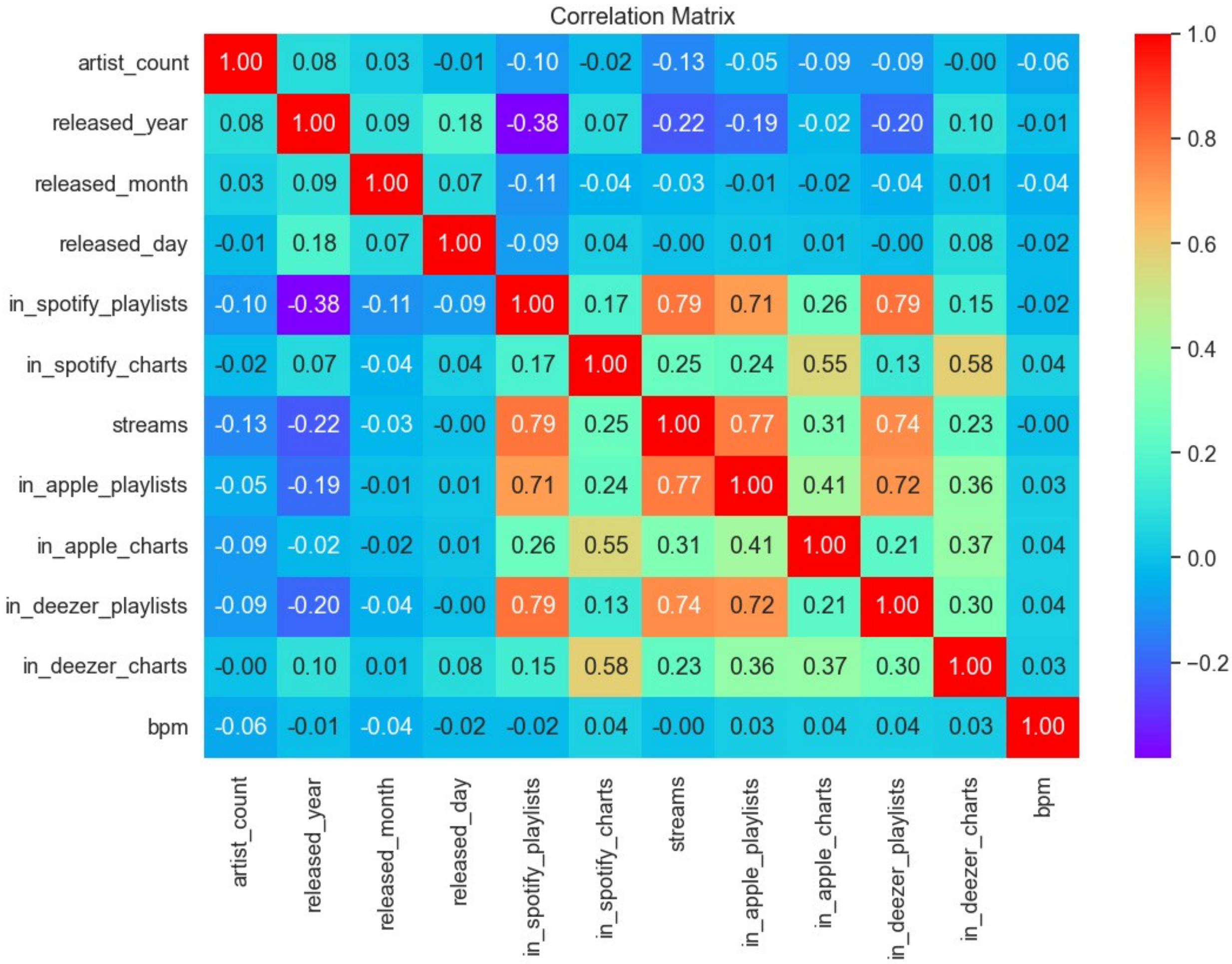
```
plt.figure(figsize=(10,6))
sns.histplot(df['streams'],bins=30,kde=True)
plt.title('Distribution of Streams')
plt.xlabel('Streams')
plt.ylabel('Frequency')
plt.show()
```



```
# Get the current year
current_year = pd.to_datetime('today').year

# Filter the DataFrame for the previous 10 years
df_last_10_years = df[df['released_year'] >= current_year - 10]

# Create a count plot for the previous 10 years
plt.figure(figsize=(10, 6))
sns.countplot(x='released_year', data=df_last_10_years)
plt.title('Number of Tracks Released by Year (Last 10 Years)')
plt.xlabel('Released Year')
plt.ylabel('Count')
plt.xticks(rotation=45)
plt.show()
```

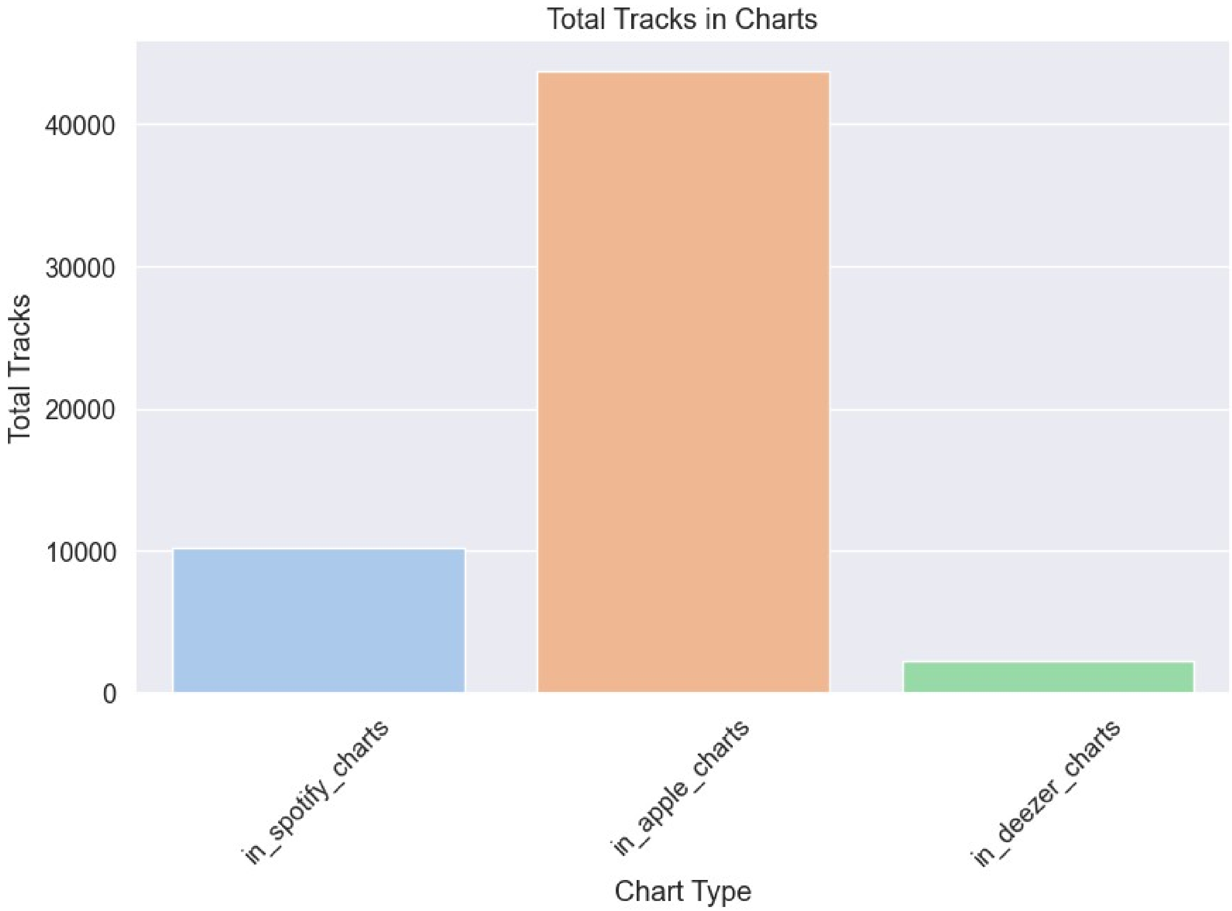


```
# Correlation heatmap
plt.figure(figsize=(12, 8))
sns.set(font_scale=1.2)
corr_matrix = df.corr()
sns.heatmap(corr_matrix, annot=True, cmap='rainbow', fmt='.2f')
plt.title('Correlation Matrix')
plt.show()
```

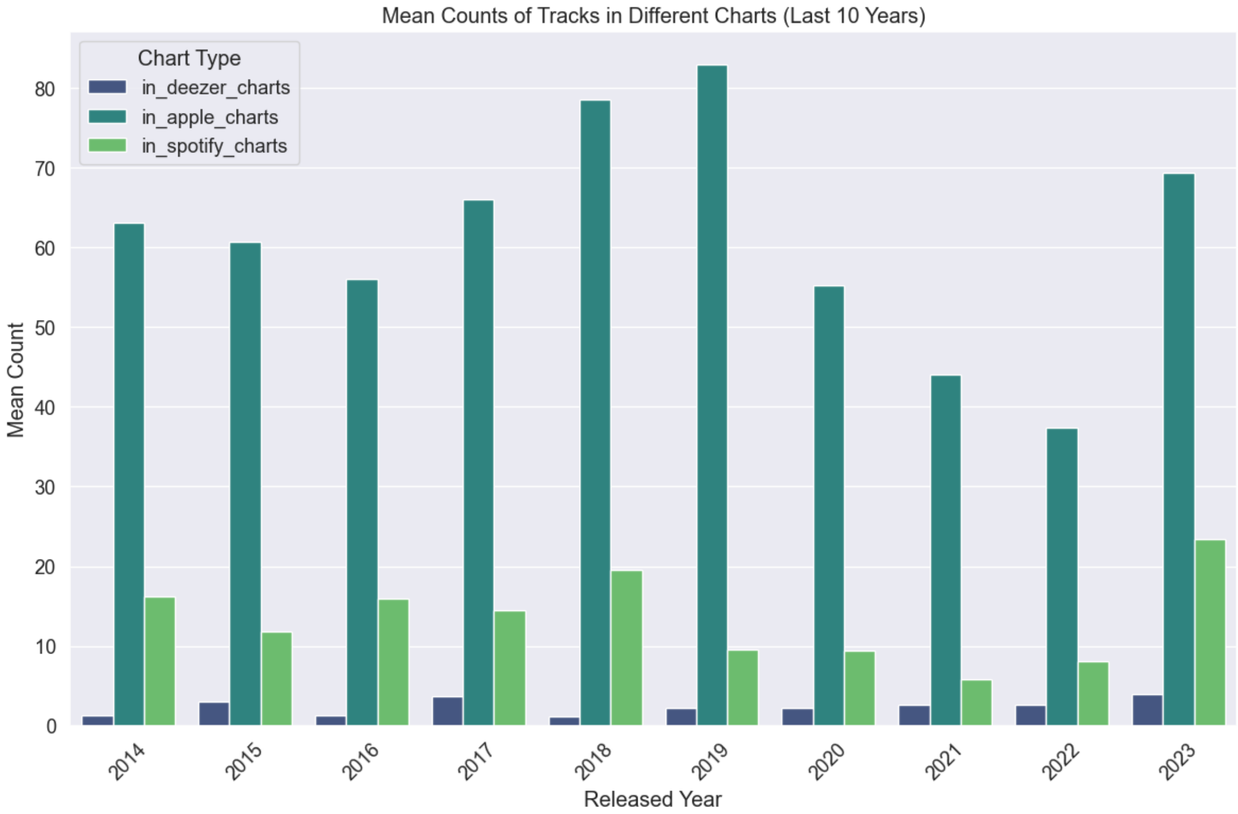


	artist_count	released_year	released_month	released_day	in_spotify_playlists	in_spotify_charts	streams	in_apple_playlists	in_apple_charts	in_deezer_playlists	in_deezer_charts	bpm
artist_count	1.00	0.08	0.03	-0.01	-0.10	-0.02	-0.13	-0.05	-0.09	-0.09	-0.00	-0.06
released_year	0.08	1.00	0.09	0.18	-0.38	0.07	-0.22	-0.19	-0.02	-0.20	0.10	-0.01
released_month	0.03	0.09	1.00	0.07	-0.11	-0.04	-0.03	-0.01	-0.02	-0.04	0.01	-0.04
released_day	-0.01	0.18	0.07	1.00	-0.09	0.04	-0.00	0.01	0.01	-0.00	0.08	-0.02
in_spotify_playlists	-0.10	-0.38	-0.11	-0.09	1.00	0.17	0.79	0.71	0.26	0.79	0.15	-0.02
in_spotify_charts	-0.02	0.07	-0.04	0.04	0.17	1.00	0.25	0.24	0.55	0.13	0.58	0.04
streams	-0.13	-0.22	-0.03	-0.00	0.79	0.25	1.00	0.77	0.31	0.74	0.23	-0.00
in_apple_playlists	-0.05	-0.19	-0.01	0.01	0.71	0.24	0.77	1.00	0.41	0.72	0.36	0.03
in_apple_charts	-0.09	-0.02	-0.02	0.01	0.26	0.55	0.31	0.41	1.00	0.21	0.37	0.04
in_deezer_playlists	-0.09	-0.20	-0.04	-0.00	0.79	0.13	0.74	0.72	0.21	1.00	0.30	0.04
in_deezer_charts	-0.00	0.10	0.01	0.08	0.15	0.58	0.23	0.36	0.37	0.30	1.00	0.03
bpm	-0.06	-0.01	-0.04	-0.02	-0.02	0.04	-0.00	0.03	0.04	0.04	0.03	1.00

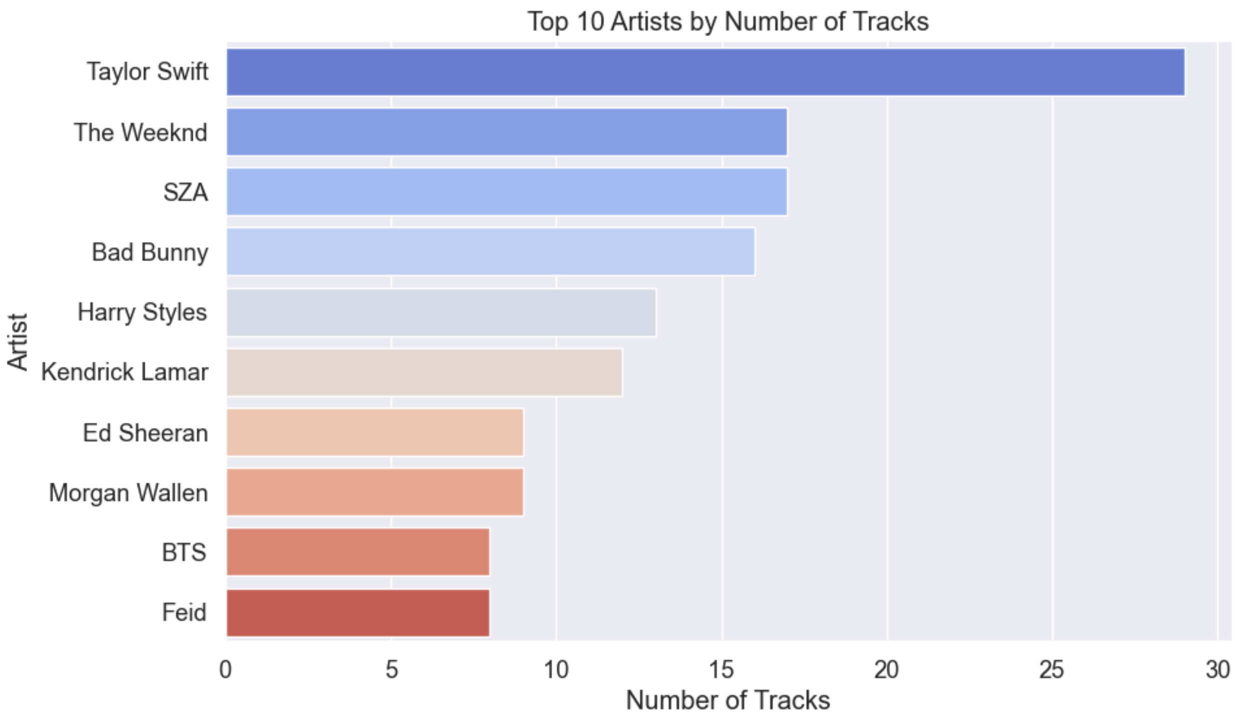
```python
# Chart Performance Analysis
plt.figure(figsize=(10, 6))
chart_columns = ['in_spotify_charts', 'in_apple_charts',
'in_deezer_charts', 'in_shazam_charts']
chart_counts = df[chart_columns].sum()
sns.barplot(x=chart_counts.index, y=chart_counts.values,
palette='pastel')
plt.title('Total Tracks in Charts')
plt.xlabel('Chart Type')
plt.ylabel('Total Tracks')
plt.xticks(rotation=45)
plt.show()
```



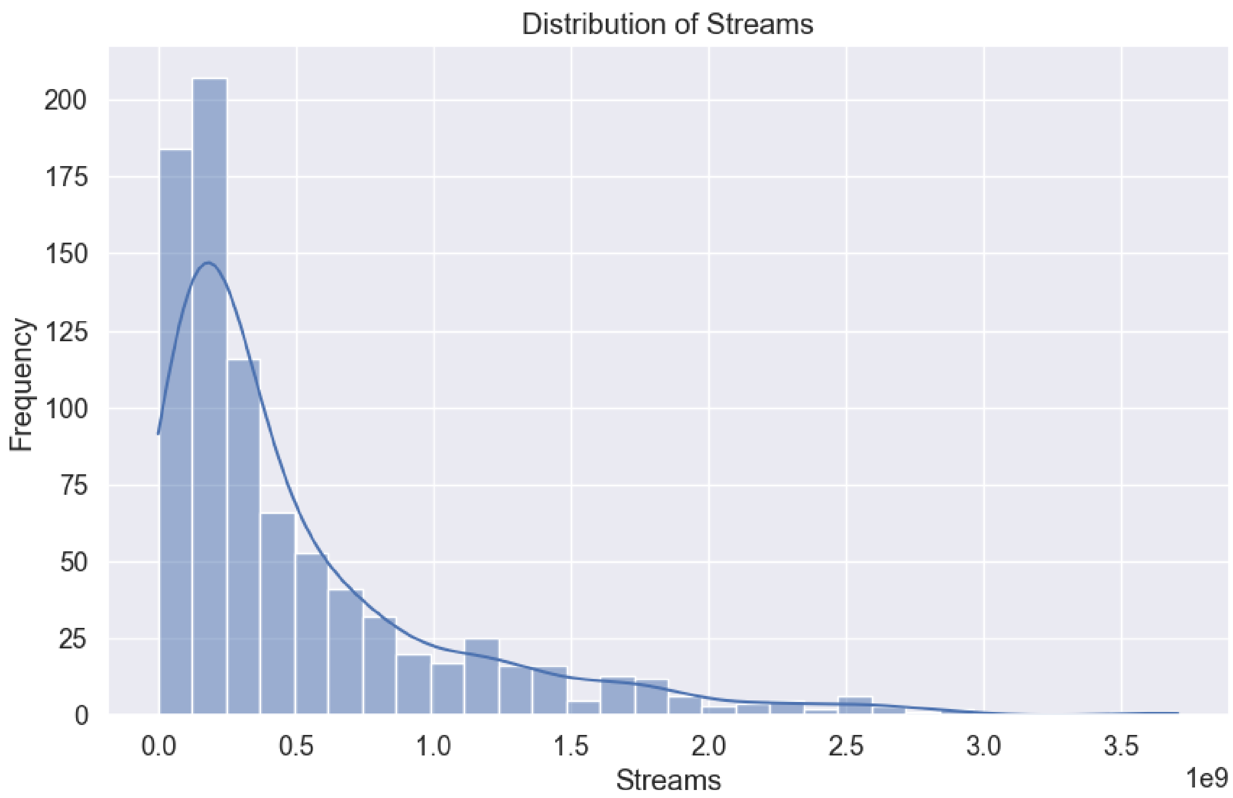
```
# Get the current year
current_year = pd.to_datetime('today').year

# Filter the DataFrame for the previous 10 years
df_last_10_years = df[df['released_year'] >= current_year - 10]

# Group the data by year and calculate the mean for each chart type
chart_comparison = df_last_10_years.groupby('released_year')
[['in_deezer_charts', 'in_apple_charts', 'in_spotify_charts']].mean()

# Reset the index to make 'released_year' a regular column
chart_comparison.reset_index(inplace=True)

# Melt the DataFrame to convert chart types into a single column
chart_comparison_melted =
chart_comparison.melt(id_vars='released_year', var_name='Chart Type',
value_name='Mean Count')

plt.figure(figsize=(12, 8))
sns.barplot(x='released_year', y='Mean Count', hue='Chart Type',
data=chart_comparison_melted, palette='viridis')
plt.title('Mean Counts of Tracks in Different Charts (Last 10 Years)')
plt.xlabel('Released Year')
plt.ylabel('Mean Count')
plt.xticks(rotation=45)
plt.legend(title='Chart Type', loc='upper left')
plt.tight_layout()
plt.show()
```



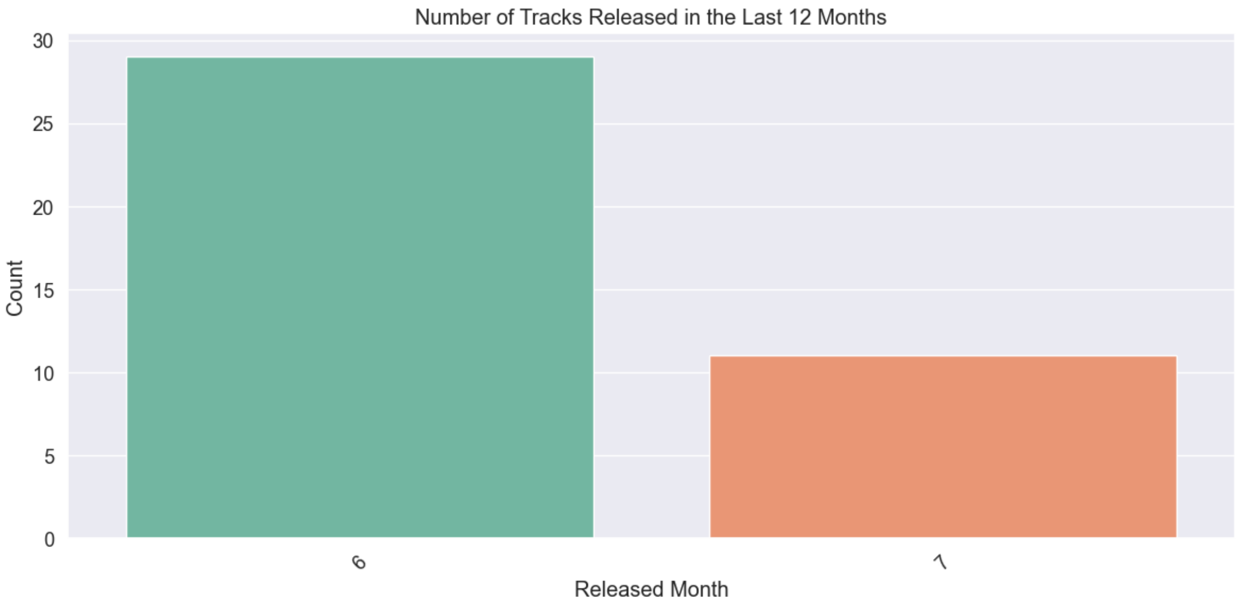
```
# Top Artists Analysis
top_artists = df['artist(s)_name'].value_counts().head(10)
plt.figure(figsize=(10, 6))
sns.barplot(x=top_artists.values, y=top_artists.index,
palette='coolwarm')
plt.title('Top 10 Artists by Number of Tracks')
plt.xlabel('Number of Tracks')
plt.ylabel('Artist')
plt.show()
```



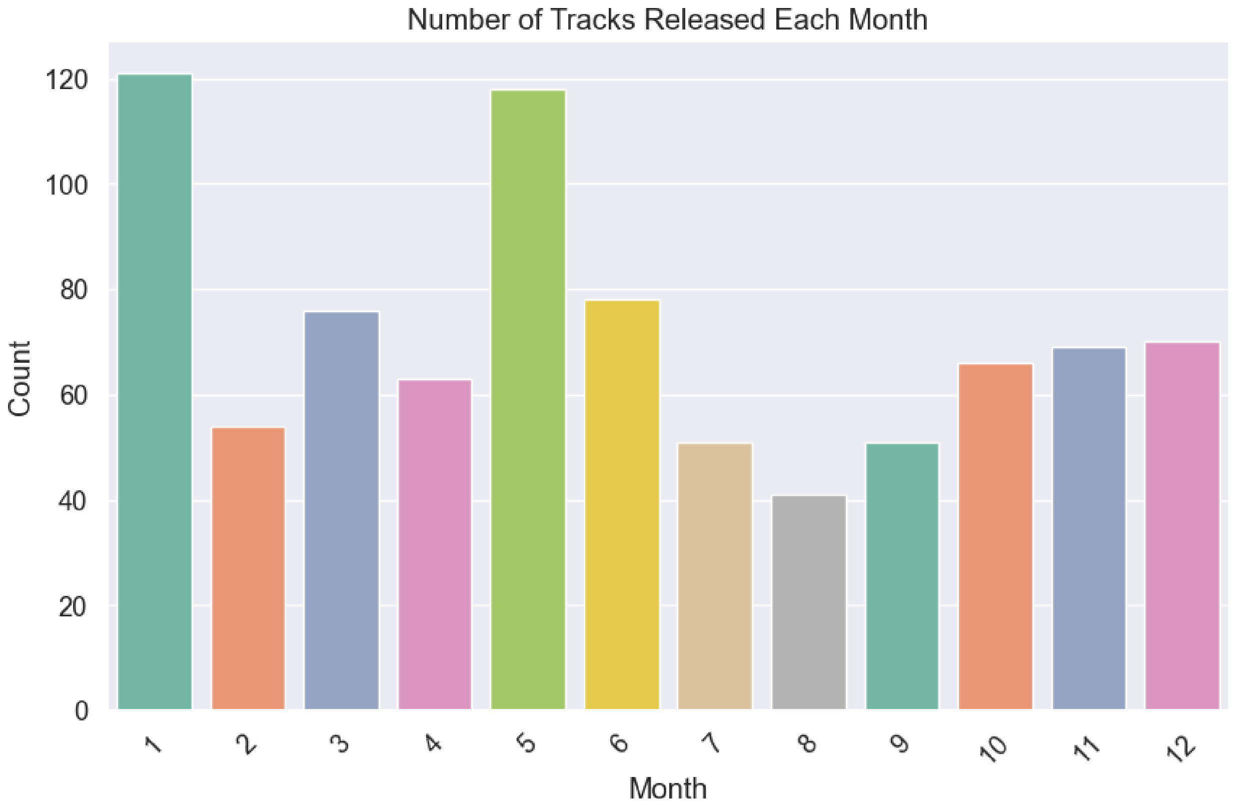
```
plt.figure(figsize=(10, 6))
sns.histplot(df['streams'], bins=30, kde=True)
plt.title('Distribution of Streams')
plt.xlabel('Streams')
plt.ylabel('Frequency')
plt.show()
```



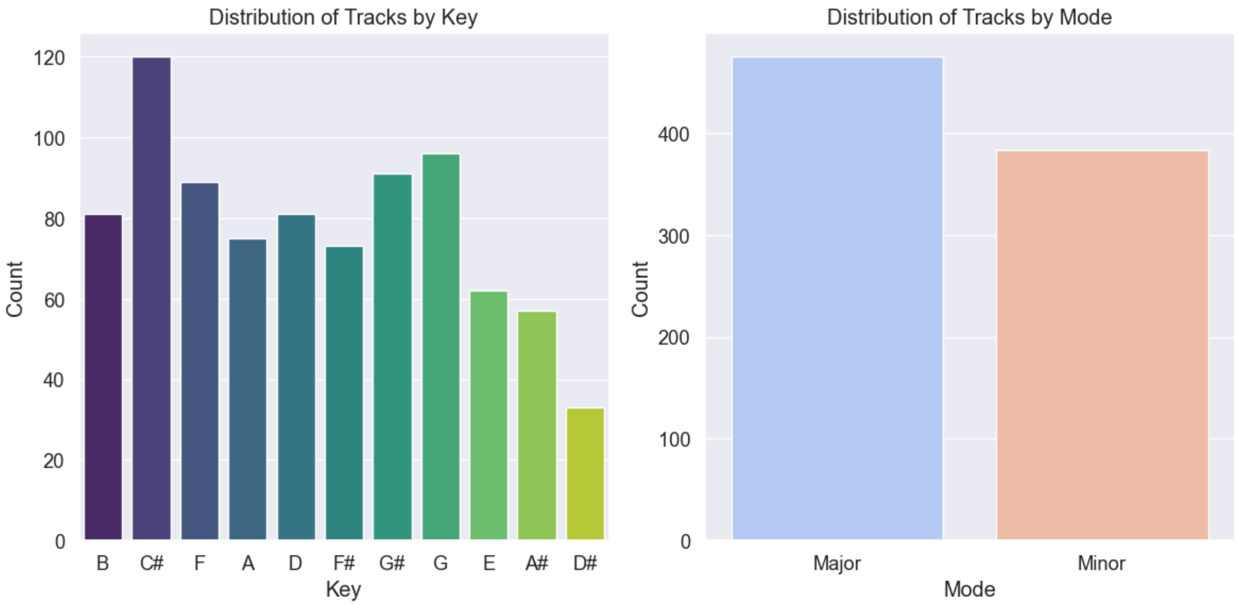
```
current_date = pd.to_datetime('today')
last_12_months = current_date - pd.DateOffset(months=12)

# Filter the DataFrame for the last 12 months
df_last_12_months = df[(df['released_year'] >= last_12_months.year) &
(df['released_month'] >= last_12_months.month)]

plt.figure(figsize=(12, 6))
sns.countplot(x='released_month', data=df_last_12_months,
palette='Set2')
plt.title('Number of Tracks Released in the Last 12 Months')
plt.xlabel('Released Month')
plt.ylabel('Count')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```



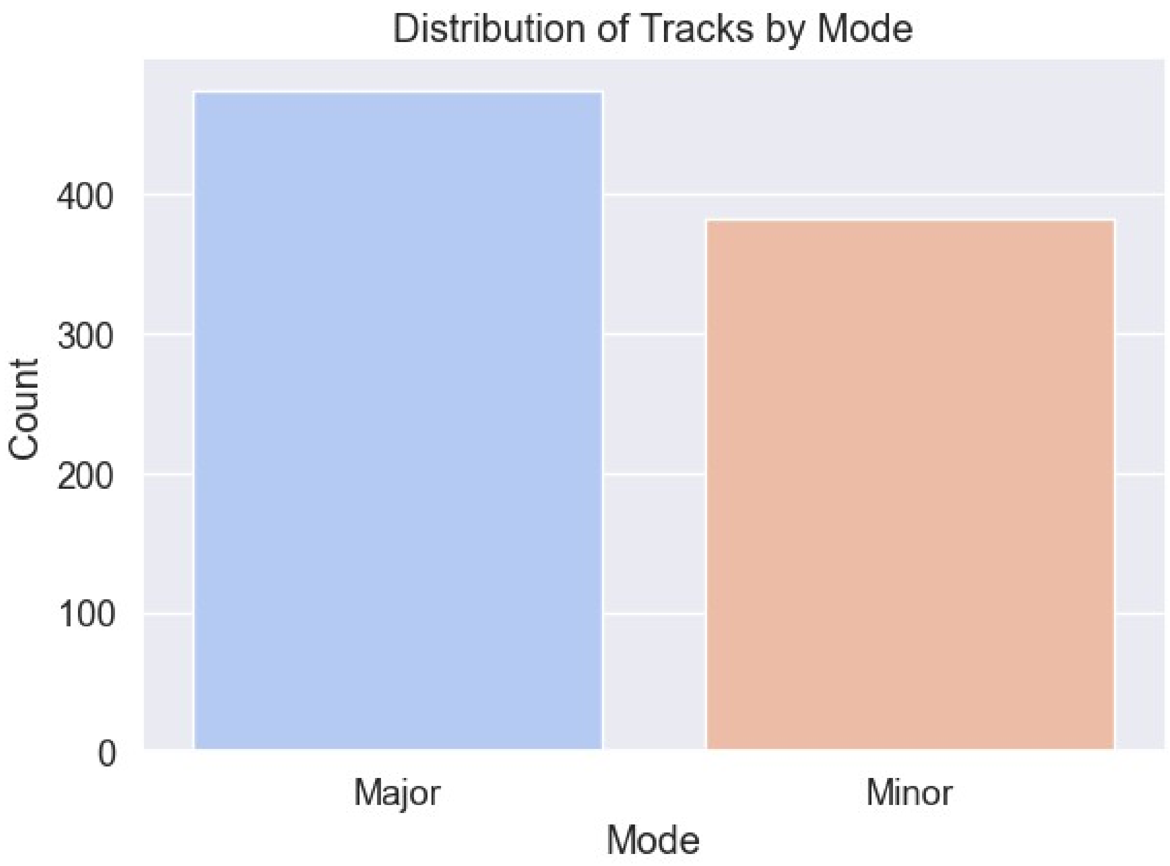
```python
#Release Month Analysis
plt.figure(figsize=(10, 6))
sns.countplot(x='released_month', data=df, palette='Set2')
plt.title('Number of Tracks Released Each Month')
plt.xlabel('Month')
plt.ylabel('Count')
plt.xticks(rotation=45)
plt.show()
```



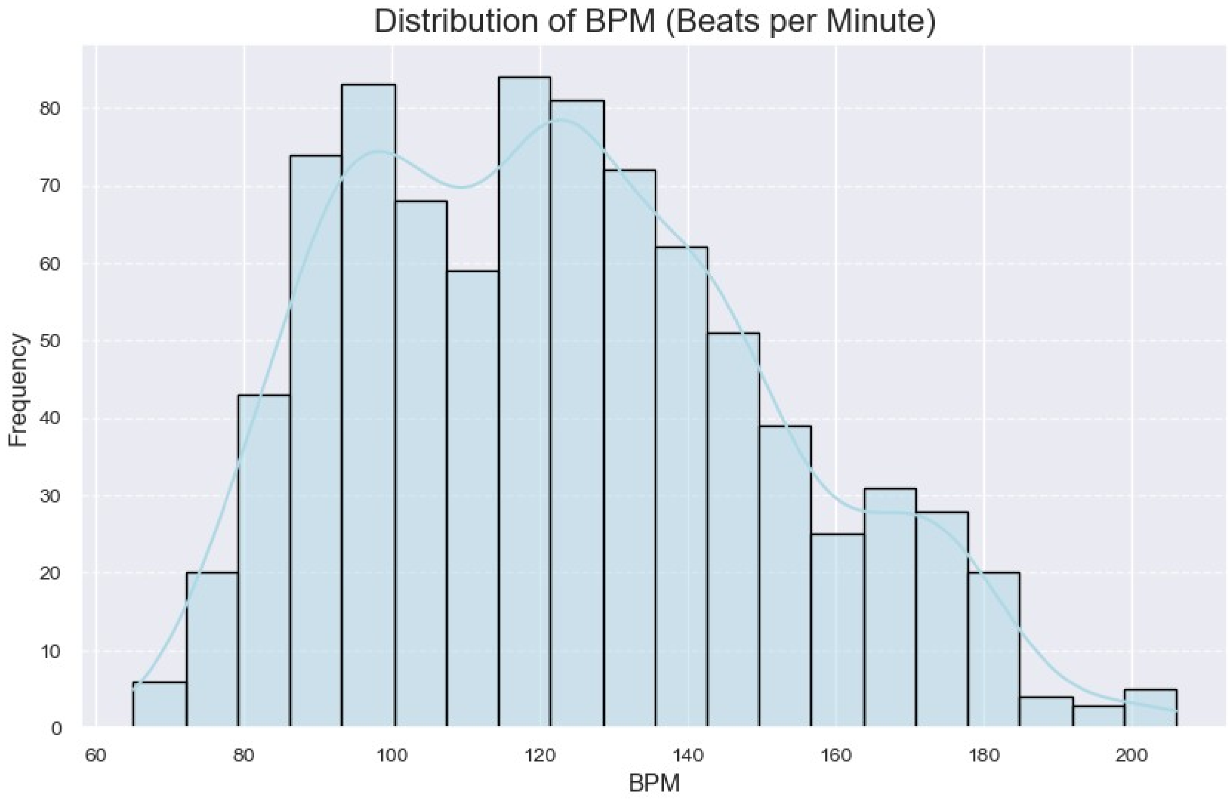
```python
# Key and Mode Analysis
plt.figure(figsize=(12, 6))
plt.subplot(1, 2, 1)
sns.countplot(x='key', data=df, palette='viridis')
plt.title('Distribution of Tracks by Key')
plt.xlabel('Key')
plt.ylabel('Count')

plt.subplot(1, 2, 2)
sns.countplot(x='mode', data=df, palette='coolwarm')
plt.title('Distribution of Tracks by Mode')
plt.xlabel('Mode')
plt.ylabel('Count')

plt.tight_layout()
plt.show()
```



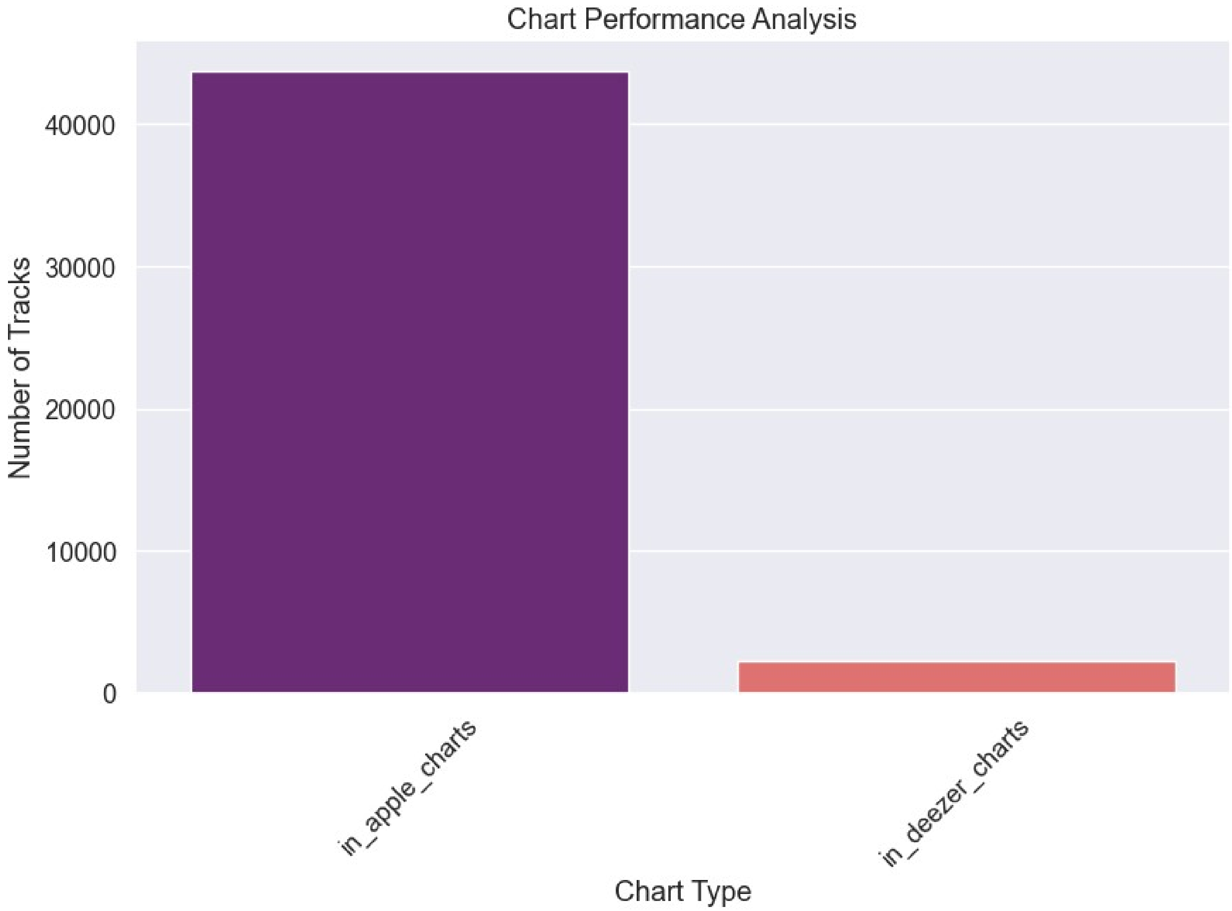
```
sns.countplot(x='mode', data=df, palette='coolwarm')
plt.title('Distribution of Tracks by Mode')
plt.xlabel('Mode')
plt.ylabel('Count')

plt.tight_layout()
plt.show()
```



```
plt.figure(figsize=(10, 6))
sns.histplot(df['bpm'], bins=20, kde=True, color='lightblue',
edgecolor='black')
plt.title('Distribution of BPM (Beats per Minute)', fontsize=16)
plt.xlabel('BPM', fontsize=12)
plt.ylabel('Frequency', fontsize=12)
plt.xticks(fontsize=10)
plt.yticks(fontsize=10)
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()
```



```
plt.figure(figsize=(10, 6))
chart_columns = ['in_apple_charts', 'in_deezer_charts',
'in_shazam_charts']
chart_counts = df[chart_columns].sum()
sns.barplot(x=chart_counts.index, y=chart_counts.values,
palette='magma')
plt.title('Chart Performance Analysis')
plt.xlabel('Chart Type')
plt.ylabel('Number of Tracks')
plt.xticks(rotation=45)
plt.show()
```



Spotify Music Analysis Report

Introduction

This report presents an in-depth analysis of Spotify music data, focusing on various aspects such as track attributes, chart performance, top artists, and musical characteristics.

Data Preparation

The dataset was loaded from a CSV file and prepared for analysis. Irrelevant columns such as danceability, valence, energy, and others were dropped to focus on key aspects. Missing values in critical columns like 'key' and 'mode' were handled appropriately.

Exploratory Data Analysis (EDA)

Distribution of Streams

The histogram of stream counts revealed that most tracks have a moderate number of streams, with a peak around a certain range, indicating popular tracks.

Tracks Released Over the Last 10 Years

The count of tracks released each year over the last 10 years showed a fluctuating trend, possibly reflecting changing music trends or industry dynamics.

Correlation Analysis

The correlation heatmap revealed interesting relationships between track attributes. For example, danceability showed a positive correlation with energy, indicating more energetic tracks tend to be more danceable.

Chart Performance Analysis

Analyzing the number of tracks in different charts (Spotify, Apple, Deezer, Shazam) provided insights into chart performance. Spotify and Apple charts showed higher inclusion rates compared to Deezer and Shazam charts, suggesting stronger presence and popularity on these platforms.

Top Artists Analysis

Identifying the top 10 artists based on the number of tracks highlighted prominent artists in the dataset. This analysis can be useful for understanding audience preferences and trends related to specific artists.

Release Month Analysis

The distribution of tracks released each month showed variations, with some months having higher release rates than others. This could be due to seasonal trends or strategic release plans by artists or labels.

Key and Mode Analysis

Investigating the distribution of tracks by musical key and mode provided insights into the diversity of musical styles within the dataset. Common keys and modes were identified, showcasing the variety of music genres represented.

BPM Analysis

Analyzing the distribution of beats per minute (BPM) for tracks revealed interesting patterns. Tracks with higher BPMs were often associated with energetic or dance-oriented music genres, while lower BPMs indicated slower-paced tracks.

Conclusion

The comprehensive analysis of the Spotify music dataset has provided valuable insights into track attributes, chart performance, artist popularity, and musical characteristics. These insights can be leveraged for various purposes such as music recommendation systems, trend analysis, and audience segmentation in the music industry.

Further exploration and advanced analyses could include sentiment analysis of song lyrics (if available), geographical trends in music popularity, and genre-based analyses to delve deeper into specific music genres and their audience reception.

Analysis Done By

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