Spotify Data Analysis - Executive Summary

Project Overview

This report presents a comprehensive exploratory data analysis (EDA) of Spotify music data to uncover insights about songs, artists, popularity trends, and listening patterns.

Key Performance Indicators (KPIs)

Based on the analysis, here are the main metrics:

- **Total Unique Songs**: 783 distinct songs
- **Distinct Artists**: 335 unique artists
- **Average Popularity Score**: 89.65 (out of 100)
- **Average Song Duration**: 3.28 minutes

Main Findings

1. **Song Popularity Analysis**

- **Average Popularity**: 89.65 out of 100 (highly popular dataset)
- Analyzed the distribution of popularity scores across all 783 songs
- Identified patterns in what makes songs more popular
- Most songs cluster in the high popularity range (80-100)

2. **Content Type Analysis**

Explicit vs Non-Explicit Content:

- **Non-Explicit Songs**: 16,524 tracks (59.7%)
- **Explicit Songs**: 11,171 tracks (40.3%)
- Comparative analysis shows how content rating affects popularity

Album Type Distribution:

- **Albums**: 17,160 tracks (62.0%)
- **Singles**: 10,492 tracks (37.9%)
- **Compilations**: 43 tracks (0.2%)
- Different album types show varying popularity levels

3. **Duration Patterns**

- **Average Song Length**: 3.28 minutes (196.8 seconds)
- Analyzed typical song lengths across all tracks
- Most songs fall within the standard 3-4 minute range
- This aligns with industry standards for optimal listener engagement

4. **Temporal Trends**

Monthly Patterns:

- Analyzed average popularity across all 12 months
- Identified seasonal trends in music performance
- Certain months show higher average popularity scores

Yearly Trends:

- Monitored the number of songs released over different years
- Observed growth patterns in music production
- Dataset spans multiple years showing music industry evolution

5. **Artist Performance**

Top 10 Most Popular Artists (by average popularity):

1. **Grupo Frontera & Bad Bunny** - Highest average popularity
2. **Jung Kook & Latto** - Second highest
3. **leftovermax** - Third highest
4. **Yng Lvcas & Peso Pluma**
5. **FIFTY FIFTY**
6. **Lady Gaga & Bruno Mars**
7. **iñigo quintero**
8. **Bizarrap & Peso Pluma**
9. **Mitski**
10. **David Kushner**

Artist Catalog Analysis:

- Examined how different artists distribute their releases across album types
- Most successful artists have a mix of albums and singles

Individual Artist Spotlight - Miley Cyrus:

- **Top Song**: "Angels Like You" (Popularity: 95)
- **Release Date**: November 27, 2020
- Analysis shows consistent high performance across her catalog

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Business Value

This analysis provides valuable insights for:

1. **Content Strategy**: Understanding what type of content performs better
2. **Artist Partnerships**: Identifying top-performing artists for potential collaborations
3. **Playlist Curation**: Using popularity and trend data to create engaging playlists
4. **Release Timing**: Leveraging seasonal trends for optimal release scheduling

5. **Market Understanding**: Gaining insights into listener preferences and behaviors

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Technical Approach

The analysis was conducted using:

- **Python** programming language
- **Pandas** for data manipulation
- **Matplotlib & Seaborn** for data visualization
- **Statistical Analysis** for trend identification

Data Quality

- Cleaned and processed data to handle missing values
- Converted date fields to proper formats for time-series analysis
- Removed inconsistent or invalid records
- Ensured data integrity throughout the analysis

Visual Assets Generated

The analysis includes the following visualizations (ready for presentation):

1. ✅ **Popularity Distribution Histogram** - Shows concentration in high popularity range
2. ✅ **Song Duration Distribution Histogram** - Displays typical 3-4 minute song length
3. ✅ **Explicit vs Non-Explicit Box Plot** - Compares popularity by content rating
4. ✅ **Album Type Count Plot** - Shows distribution across albums, singles, compilations
5. ✅ **Average Popularity by Album Type** - Bar chart comparing album formats
6. ✅ **Monthly Popularity Trend Line** - Seasonal patterns throughout the year
7. ✅ **Yearly Song Release Trend Line** - Growth patterns over time
8. ✅ **Top 10 Artists Bar Chart** - Horizontal bar chart of most popular artists
9. ✅ **Songs per Album Type by Artist** - Stacked bar showing artist catalog distribution

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Key Highlights for Client Presentation

📌 **Dataset Strength**: 783 songs from 335 artists with average popularity of 89.65/100 📌 **Top Performers**: Grupo Frontera & Bad Bunny, Jung Kook & Latto lead popularity rankings 📌 **Content Balance**: 60% non-explicit content, 40% explicit content 📌 **Format Preference**: Albums dominate (62%) over singles (38%) 📌 **Optimal Duration**: Average song length of 3.28 minutes aligns with industry standards

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Conclusion

This Spotify data analysis reveals important patterns in music popularity, artist performance, and content trends. With 783 songs from 335 artists maintaining an impressive 89.65 average popularity score, the dataset represents high-quality, well-received content.

Top performers like Grupo Frontera & Bad Bunny demonstrate the continued success of collaboration tracks, while temporal analysis reveals strategic insights for release timing and content planning.

The insights can guide strategic decisions in content curation, artist partnerships, and platform optimization to better serve listeners and maximize engagement.

Analysis Date: January 2026 Data Source: Spotify Dataset *Songs Analyzed: 783 | Artists: 335 | Avg. Popularity: 89.65/100isons (if geographic data available) 5. Audio feature analysis (tempo, key, energy, etc.)

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