SPOTIFY STREAMING TRENDS

2023: A Year in Rewind

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INFS 5116 – DATA VISUALISATION

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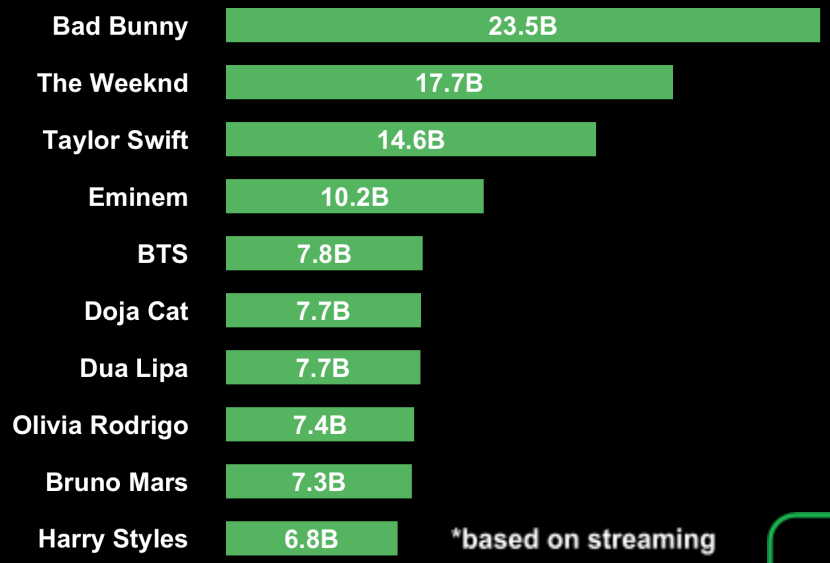
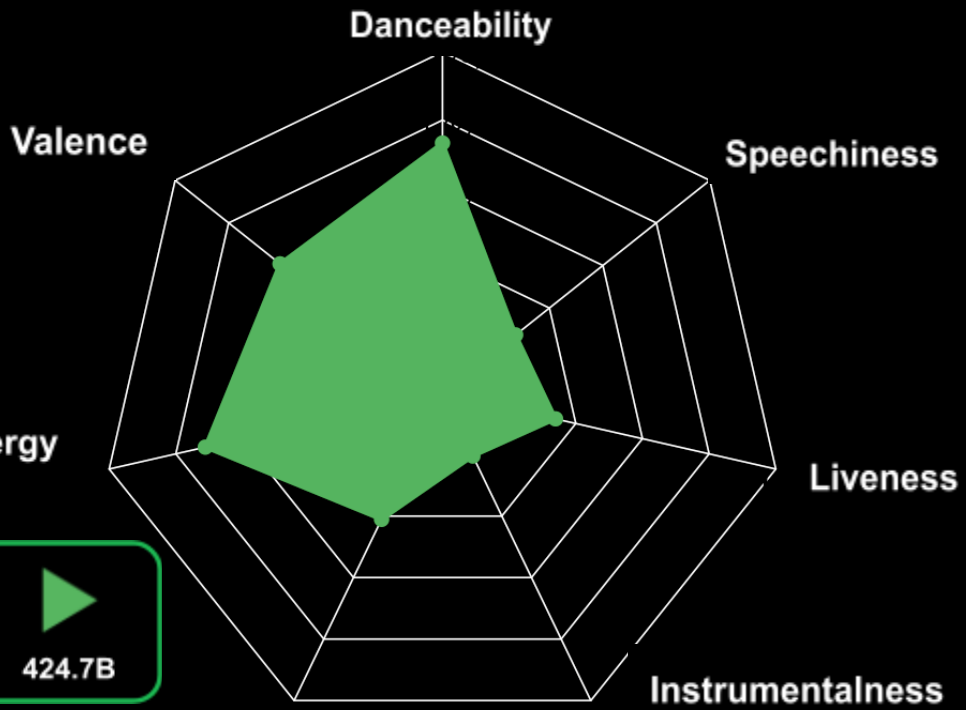


*based on streaming

Song Attributes Radar Chart



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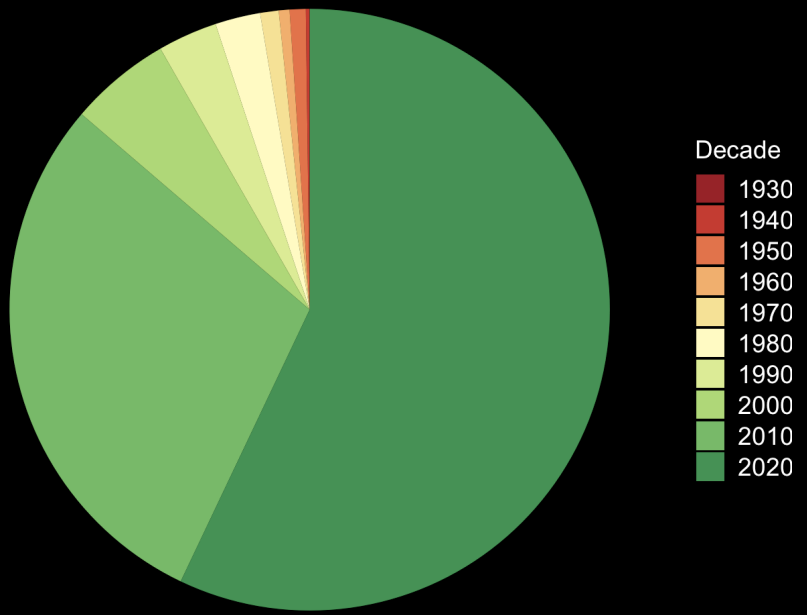
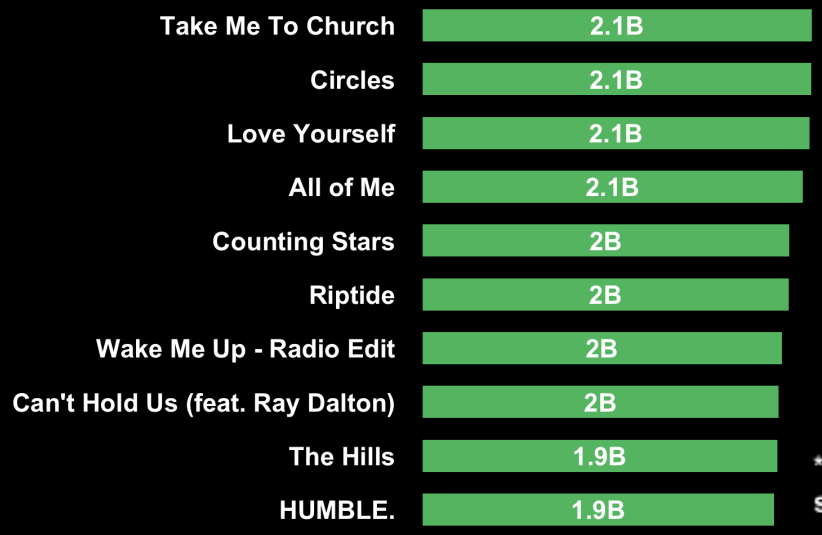
Streams by Decade of Release



Top 10 Songs*



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Introduction

With billions of streams and an expansive global reach, Spotify's platform has become synonymous with discovering new music and enjoying favorite tracks. The context for the proposed visualizations is to provide insights into the characteristics and popularity of the most famous songs of 2023 as listed on Spotify. This dataset encompasses information about track names, artists, release dates, and their presence in playlists and charts on Spotify, Apple Music, Deezer, and Shazam. Additionally, it includes key musical attributes such as BPM, key, mode, and various metrics related to danceability, valence, energy, and more. Key questions to address include: What are the trends in music popularity across different streaming platforms? How do musical characteristics correlate with streaming success? Are there noticeable patterns in the release dates of hit tracks? Visualizing the release dates of songs can reveal temporal trends in how the number of streams for different songs evolves over the years. This analysis will also help us identify which artists have the highest number of overall streams and the most streamed songs across different platforms. Analyzing the distribution of artist counts for popular songs can also provide insights into the prevalence of solo artists versus collaborations in the music industry. By addressing these questions, we aim to understand the dynamics of music consumption in 2023 and identify the factors that contribute to a track's success on various streaming services.

A Deep Dive into Spotify's Streaming Data for 2023

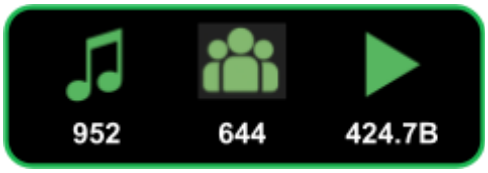

Figure 1: Overview of Spotify's Music Streaming Landscape in 2023

Spotify's vast collection for the year 2023 encompasses 952 songs performed by 644 unique artists, amassing a staggering 425 billion streams worldwide. This monumental streaming figure reflects the platform's immense reach and the diverse, captivating music that resonates with listeners across the globe.

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Music Titans of 2023: Leaders of the Charts

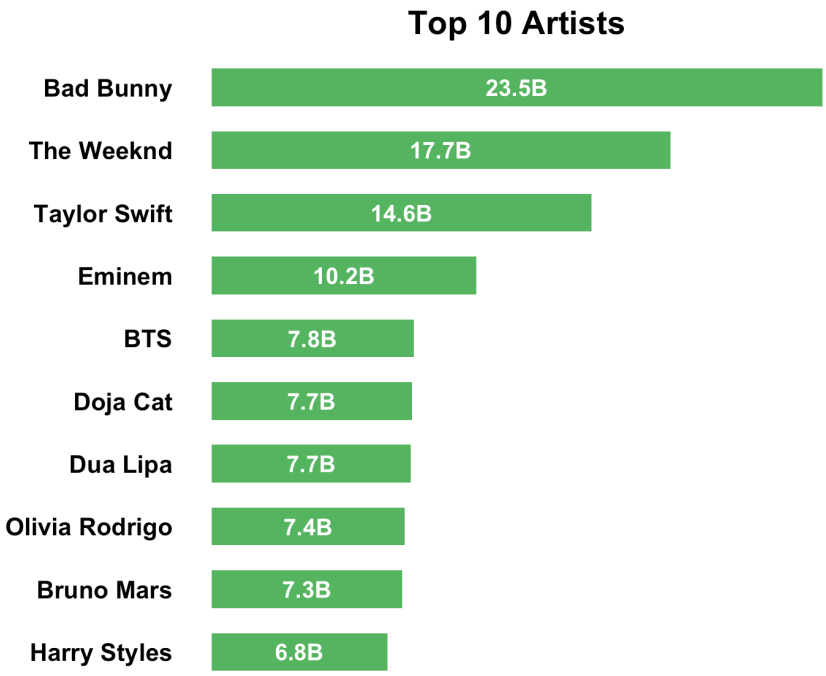

Figure 2: Overview of Top Artists and Their Streaming Numbers in 2023

Leading the charts in Figure 2, Bad Bunny reigns supreme with an astounding 23.5 billion streams. This is a testament to his global appeal and consistent release of hit tracks. Trailing behind are The Weeknd with 17.7 billion streams and Taylor Swift with 14.6 billion streams, showcasing their massive fan bases and musical prowess. Their high streaming numbers indicate a loyal and engaged audience that frequently returns to their music, solidifying their positions as top artists.

Eminem secures his spot in the top tier with 10.2 billion streams, highlighting his enduring influence and relevance in the music world. Despite being in the industry for decades, he continues to attract significant listenership, reflecting his timeless appeal and the lasting impact of his music. Other notable artists include BTS, Doja Cat, Dua Lipa, Olivia Rodrigo, and Bruno Mars, each amassing around 7 billion streams. This group spans various genres, from K-pop and pop to R&B and alternative, indicating a broad spectrum of preferences among Spotify users. Harry Styles rounds out the list with 6.8 billion streams, showing sustained success and continued relevance. Olivia Rodrigo's rapid rise to popularity highlights the impact of new talent, while the continued success of artists like Bruno Mars and Harry Styles demonstrates the ability to maintain relevance over time.

Chart-Toppers of 2023: Heartfelt Lyrics and Energetic Beats

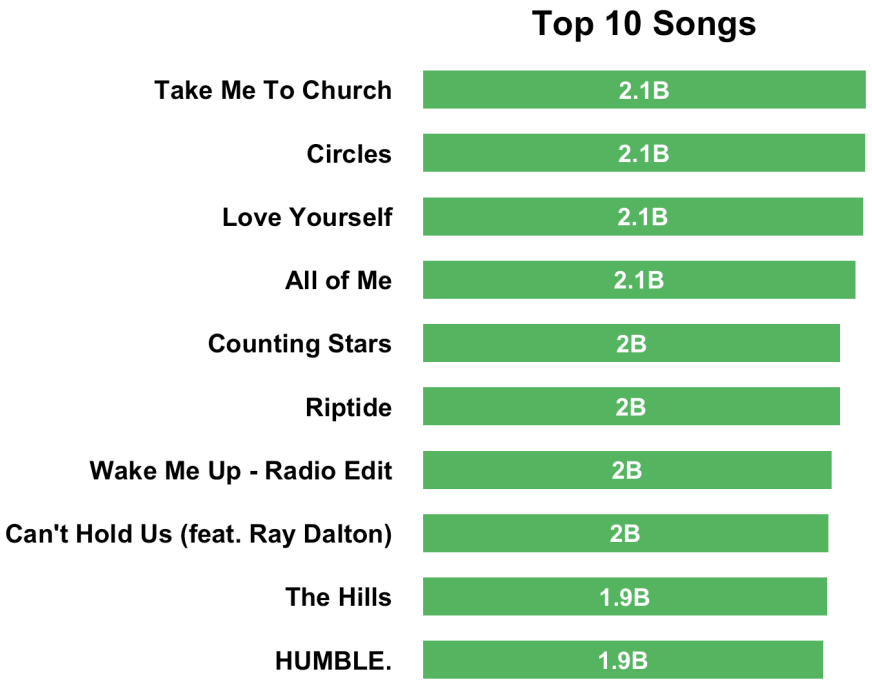

Figure 3: Overview of Top Songs and Their Streaming Numbers in 2023

From Figure 3, we can see that songs like "Take Me To Church," "Circles," "Love Yourself," and "All of Me," each boasting 2.1 billion streams, indicate a strong affinity for emotionally resonant and lyrically rich tracks. These songs, known for their powerful lyrics and memorable melodies, have struck a chord with a wide audience, making them highly popular. Following closely are "Counting Stars," "Riptide," "Wake Me Up," and "Can't Hold Us," each with 2 billion streams. These tracks, known for their upbeat and energetic vibes, suggest that listeners also have a penchant for lively, feel-good music that can lift their spirits and provide a sense of excitement. Lastly, "The Hills" and "HUMBLE," each with 1.9 billion streams, reflect a preference for tracks that blend catchy beats with deeper, often introspective lyrics. These songs highlight a trend where listeners appreciate music that not only sounds good but also delivers meaningful messages and storytelling.

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Decades of Hits: How 2020s Lead and Nostalgia Drives Streams

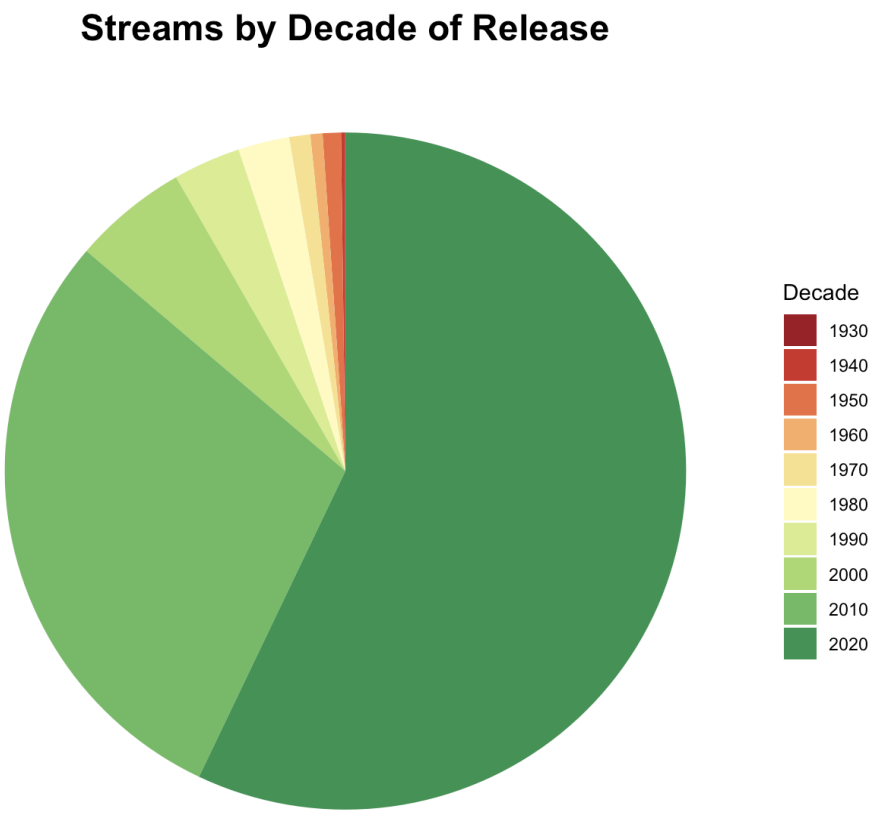

Figure 4: Streaming Trends Across Decades of Music Releases

The analysis of streaming data in Figure 4 reveals compelling insights into listener preferences across different decades of music releases. Notably, songs launched in the decade of 2020 have emerged as the frontrunners in terms of streaming numbers, indicating a strong affinity and engagement from global audiences towards recent music releases. This trend underscores the importance of focusing promotional efforts and strategic releases around newer content to capitalize on heightened listener interest and consumption habits.

Concurrently, while 2020 releases lead in streams, there's a noticeable continuum of streaming activity across previous decades, including the 2010s, 2000s, 1990s, and even the 1980s. This broader engagement suggests a robust blend of contemporary preferences alongside enduring nostalgia-driven listening habits. Artists and labels can leverage these insights by exploring opportunities to reintroduce or reinterpret older hits or themes that resonate with listeners' sentimental attachment to music from various eras.

Strategically, understanding these streaming patterns enables music industry stakeholders to refine their release schedules and promotional strategies. By aligning releases with historical peaks in streaming activity across different decades, artists and labels can effectively optimize visibility and reach a broader audience.

Unlocking Listener Preferences: The Power of Energy, Danceability, and Musical Authenticity

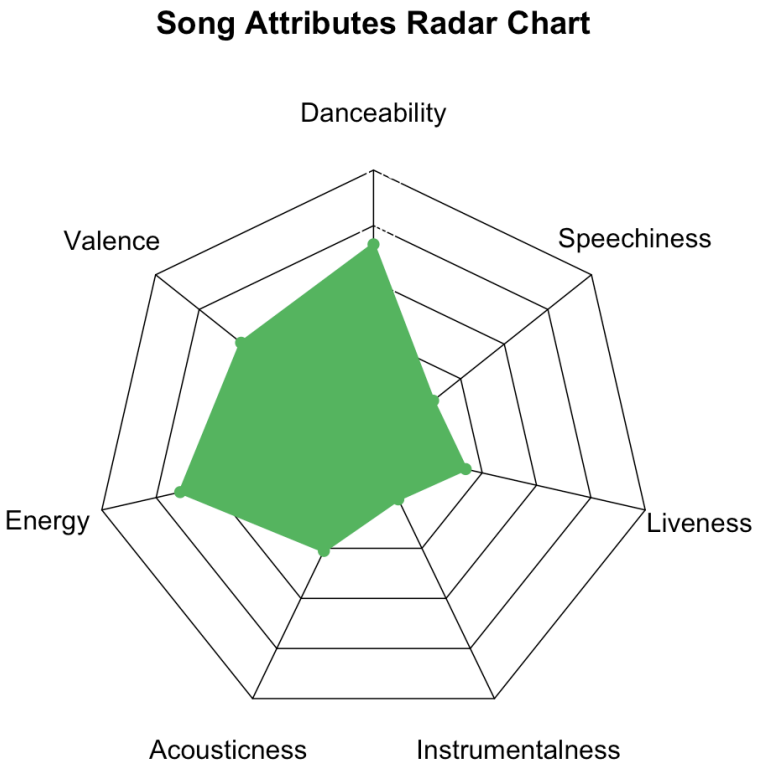

Figure 5: Musical Attributes Influencing Listener Preferences

From Figure 5, the prominence of high energy and danceability among the most streamed songs suggests a strong preference among listeners for upbeat and rhythmically engaging tracks. For artists and producers, this insight underscores the importance of crafting music that not only resonates emotionally but also encourages physical movement and a sense of vitality. By focusing on these attributes, artists can potentially increase their chances of attracting and retaining listener attention in a competitive music landscape. Secondly, the emphasis on valence, acousticness, and instrumentalness indicates a significant appreciation for songs that evoke positive emotions and showcase musical authenticity. This finding suggests that incorporating elements of acoustic instrumentation and maintaining a balance between electronic and

natural sounds could enhance the appeal of compositions. Artists can leverage these insights to refine their production techniques and create music that strikes a chord with listeners seeking both emotional depth and musical richness.

Conversely, the lower emphasis on speechiness highlights a preference among listeners for songs that rely less on spoken words or vocal dominance. This insight encourages artists to consider the role of vocal delivery and lyrical content in their compositions, potentially exploring instrumental breaks, melodic interplay, or creative use of vocal effects to maintain listener engagement while minimizing reliance on verbal communication.

Strategic Timing: Maximizing Music Releases for Impact and Engagement

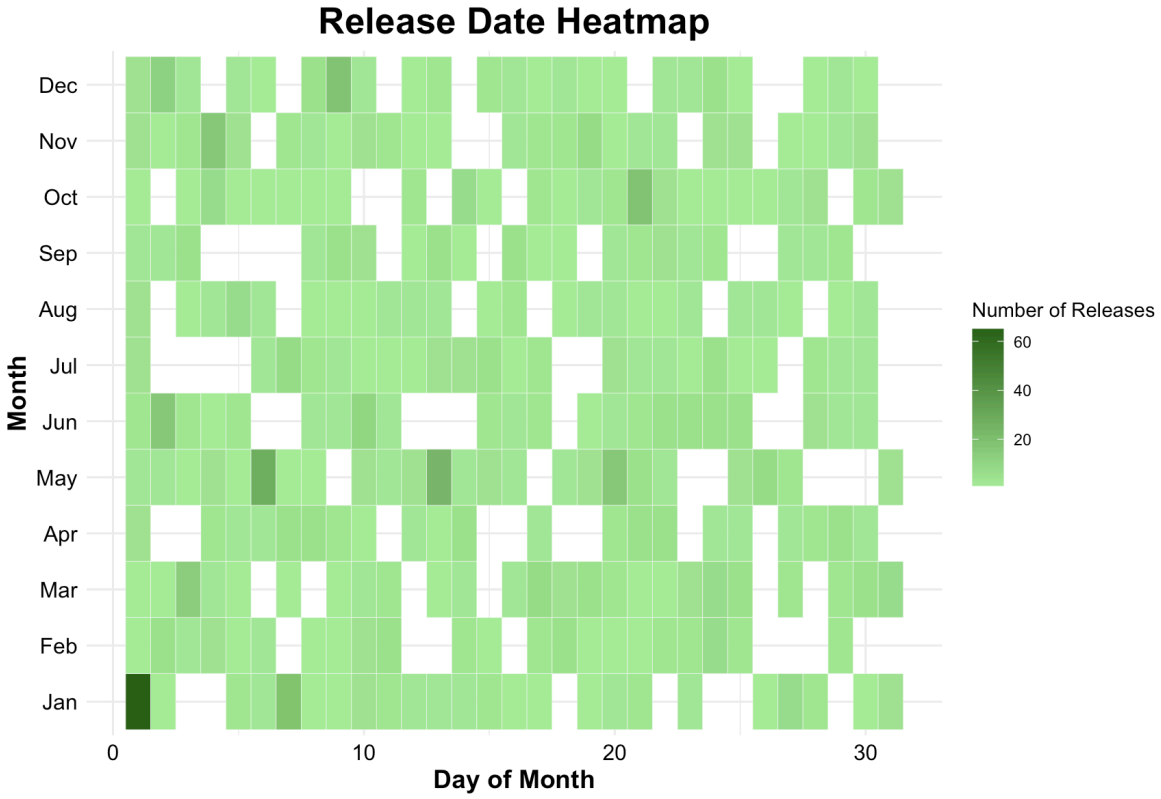

Figure 6: Strategic Release Periods for Maximum Impact

Firstly, the concentration of releases in Figure 6 in the first week of the year signifies a strategic opportunity for artists seeking maximum visibility and impact. Launching new music during this period, when listeners are often engaged and exploring fresh content after the holiday season, can capitalize on heightened streaming activity. For artists planning releases, this insight suggests the potential benefits of aligning promotional efforts with the start of the year to capture the attention of a receptive audience.

Secondly, the prominence of the first and second weeks of May as another peak period for releases highlights a seasonal trend that may coincide with energy and increased leisure activities. This period could represent a favorable window for artists aiming to reach audiences preparing for summer festivities or seeking new music as seasonal moods evolve. Planning releases around this time could enhance visibility and engagement, leveraging the seasonal uplift in listener interest.

Additionally, the activity observed in the third week of October underscores a potential opportunity for strategic releases leading up to the holiday season. Artists and labels could explore launching music during this period to build momentum ahead of year-end celebrations and capitalize on listeners' anticipation for new content.

Decoding Song Dynamics: Leveraging Characteristics for Engaging Music Experiences

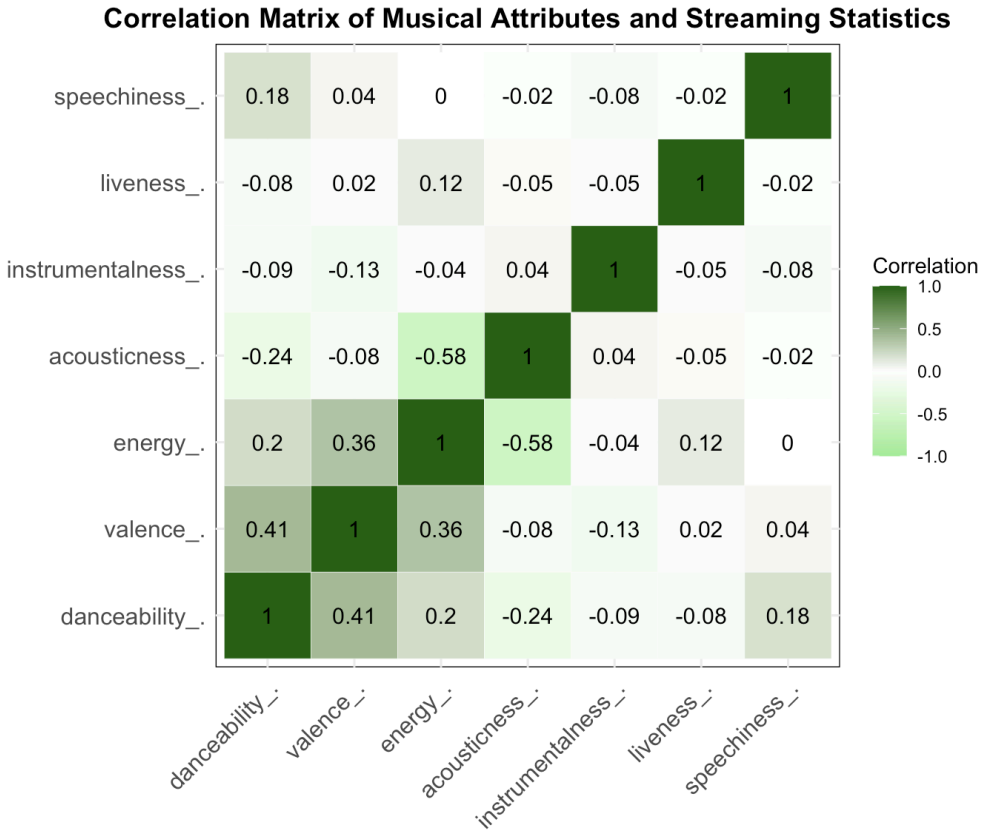

Figure 7: Correlation Analysis of Song Characteristics and Listener Engagement

Figure 7 provides valuable insights into the interplay between song characteristics and listener engagement, offering actionable insights for artists, producers, and music marketers. The notably negative correlation of -0.58 between acousticness and energy suggests a distinct relationship where songs with higher acoustic elements tend to exhibit lower energy levels. For artists aiming to craft high-energy tracks that resonate strongly with audiences, minimizing acoustic components or exploring ways to balance acoustic elements with energetic instrumentation could enhance the overall appeal and impact of their music.

Conversely, the moderate positive correlation of 0.41 between valence (the musical positivity conveyed by a track) and danceability underscores an opportunity for artists to create upbeat, emotionally positive songs that are also danceable. This correlation indicates that songs with higher valence scores often tend to be more danceable, presenting an opportunity for artists to cater to listeners seeking both uplifting emotional content and rhythmic engagement.

The lower correlations observed, such as the negative correlation of -0.24 between acousticness and danceability, indicate that while acoustic elements may reduce overall danceability, this relationship is not as strong as in the case of acousticness and energy. Artists incorporating acoustic elements can thus aim to maintain danceability by strategically balancing acoustic instrumentation with rhythmic components or exploring acoustic genres that inherently encourage movement.

Additionally, the positive correlations of 0.2 between energy and danceability, 0.18 between speechiness (the presence of spoken words in a track) and danceability, and 0.12 between liveness (the presence of live performance elements) and energy highlight pathways for artists to enhance the dynamic and engaging qualities of their music. Incorporating energetic instrumentation, clear vocals, and elements that convey live performance authenticity can contribute to creating music that resonates strongly with audiences seeking immersive and lively listening experiences.

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Exploring Music Market Dynamics: Solo Artists vs. Collaborative Endeavors

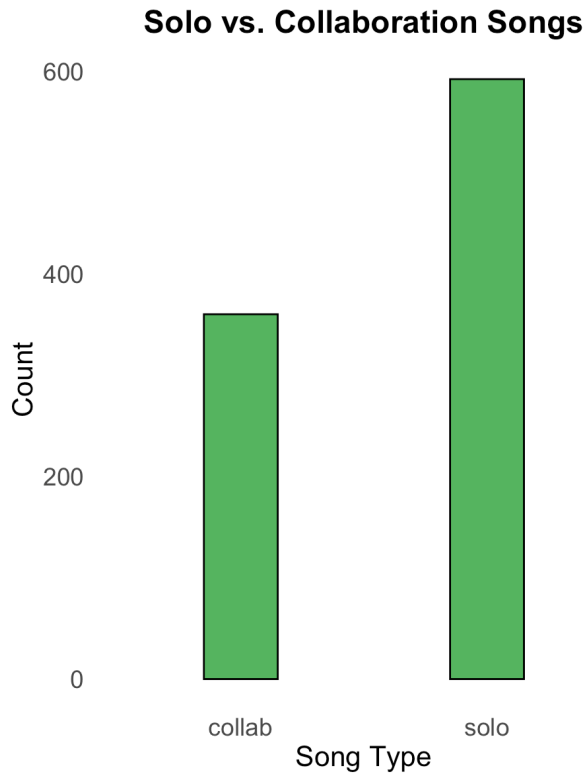

Figure 8: Distribution of Songs by Artist Type (Solo vs. Collaboration)

With approximately 600 songs performed by solo artists and 400 songs as collaborations in Figure 8, it's evident that solo performances dominate the dataset. This insight suggests that solo artists may still hold a significant share of the music market, retaining a strong presence in listeners' preferences and streaming habits.

For artists and labels, this information underscores the enduring appeal and influence of individual performers. It suggests that investing in solo artists with unique voices and styles can yield substantial engagement and streaming numbers. Moreover, solo artists may benefit from targeted marketing strategies that highlight their individuality and connect directly with audiences who appreciate personal narratives and artistic expression. Conversely, the popularity of collaborative efforts, with 400 songs featuring multiple artists, indicates a thriving culture of musical partnerships. Collaborations often bring together diverse fan bases and create opportunities for cross-promotion, expanding reach and engagement across different segments of the music market.

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Diving Deep into Key Preferences: Insights for Crafting Chart-Topping Music

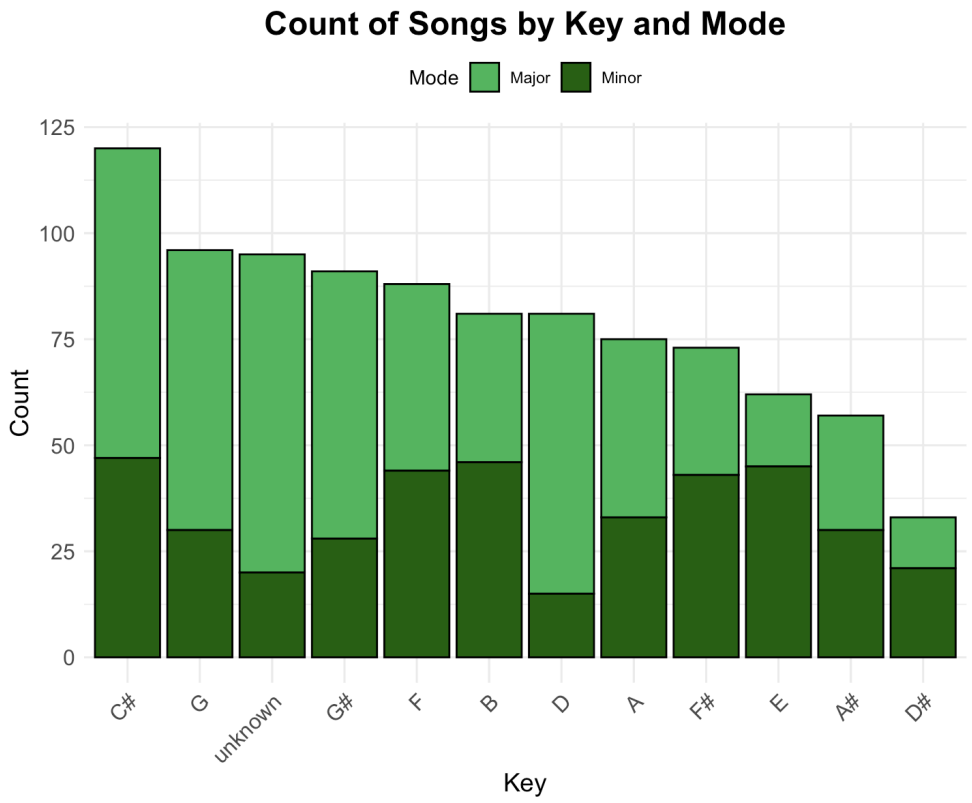

Figure 9: Distribution of Songs by Key and Mode

The graph in Figure 9 reveals that approximately 125 songs are in the key of C#, with around 50 of those being in minor mode. This concentration suggests a significant preference for C# among artists, possibly due to its musical characteristics that resonate well with listeners or fit current trends in popular music genres.

For artists and composers, this insight suggests considering the popularity of C# when selecting keys for new compositions. Creating songs in this key, particularly in minor mode, could potentially align with current listener preferences and increase the likelihood of attracting engagement and streams. Artists exploring new compositions or seeking to connect with broader audiences might find it advantageous to experiment with C# and explore its potential for creating emotive and impactful music.

Additionally, the prevalence of songs in G scale and those categorized as 'unknown' highlights opportunities for further exploration and experimentation. Artists may benefit from exploring these less-charted territories to differentiate their sound and stand out in

a crowded music landscape. For instance, creating songs in the G scale could offer a fresh perspective while appealing to listeners who favor this musical tonality.

Moreover, music producers and labels can use this data to inform their artist development strategies and repertoire planning. Understanding key and mode preferences can guide decisions on which songs to promote heavily based on their alignment with current market tastes. It also provides insights into potential gaps in the market where new compositions in less common keys or modes could fill a niche and attract a dedicated audience.

Conclusions

The year 2023 on Spotify has been marked by an impressive array of musical achievements and insights, as depicted through a series of comprehensive visualizations. Across 952 songs performed by 644 unique artists, listeners worldwide have engaged deeply, amassing an incredible 425 billion streams. This monumental figure not only underscores the platform's global reach but also highlights the diverse and captivating music that resonates with audiences across cultures and demographics.

Bad Bunny emerges as the leading artist of the year with a staggering 23.5 billion streams, showcasing his unparalleled popularity and consistent delivery of hit tracks. He is closely followed by The Weeknd and Taylor Swift, each surpassing 14 billion streams, illustrating their enduring influence and massive fan bases. Key songs of the year such as "Take Me To Church," "Circles," "Love Yourself," and "All of Me," each surpassing 2 billion streams, underscore a preference for emotionally resonant tracks with powerful lyrical narratives. Meanwhile, songs like "Counting Stars," "Riptide," "Wake Me Up," and "Can’t Hold Us" demonstrate the appeal of energetic, uplifting compositions that resonate widely.

Examining the release dates of these songs reveals strategic peaks in activity, particularly in the first week of January and May, suggesting optimal periods for maximizing visibility and engagement. Insights from the correlation matrix highlight significant relationships between musical attributes and listener engagement, guiding artists towards crafting high-energy, danceable tracks that resonate emotionally.

Solo artists dominate the landscape, with around 600 songs, while collaborations account for 400 songs, showcasing the enduring appeal of individual artistic voices alongside the collaborative spirit driving innovation and diversity in music. Lastly, the analysis of songs by key and mode emphasizes trends favoring the C# scale, particularly in major mode, indicating a preferred tonality among artists and listeners. This data empowers

artists, producers, and labels to strategically align their creative efforts with current trends and audience preferences.

In conclusion, the visualizations presented offer a nuanced understanding of music consumption trends in 2023, highlighting the intersection of artistic creativity, audience engagement, and strategic decision-making in the dynamic landscape of music streaming platforms. These insights not only celebrate the achievements of top artists and songs but also provide actionable guidance for future music production, promotion strategies, and audience engagement initiatives in an ever-evolving industry.

References

1. Nelgiriye, W. A. (2023). Top Spotify Songs 2023. Kaggle. https://www.kaggle.com/nelgiriyewithana/top-spotify-songs-2023
2. Pratt Institute School of Information. My Own Spotify Wrapped Visualized. Pratt Institute. https://studentwork.prattsi.org/infovis/visualization/my-own-spotify-wrapped-visualized/

Appendix

For the visualisation project, the dataset collected from Kaggle to be used contains information about the most famous songs of 2023 as listed on Spotify. The dataset has been web scraped from Spotify For Developers using WebAPI. There are 953 rows and 24 columns in this dataset. Each row corresponds to individual songs and their attributes.

There are mainly two data types.

Information that contain numerical values are:
Number of artists, Release date, Presence and popularity on various platforms (Spotify, Apple Music, Deezer, Shazam), Audio features (bpm, danceability, valence, energy, acousticness, instrumentalness, liveness, speechiness), Streaming statistics, Chart rankings on different platforms.

Information that contain categorical values are:
Track Name, Artist(s) Name, Key, Mode