Breaking Down the 90s Hit Formula

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Introducing the Dataset

The dataset we analyzed features over 900 classic 1990s songs and their detailed audio features pulled from Spotify– factors like tempo, danceability, loudness, valence, and more. With over 500 artists represented, this dataset gave us the chance to explore not only what made music in the 90s sound the way it did, but to also ask:

- What made certain songs hits?
- How did musical features vary between artists?
- Do technical features like speed, volume, or instrumentalness actually affect popularity?

Source:

This dataset, titled "1990s Classic Hits (with Spotify Data)," was uploaded to Kaggle by retired computer programmer and music fanatic, The Bumpkin, in August 2024.

https://www.kaggle.com/datasets/thebumpkin/1990s-classic-hits-with-spotify-data

Top 10 Artist Hit Songs Count
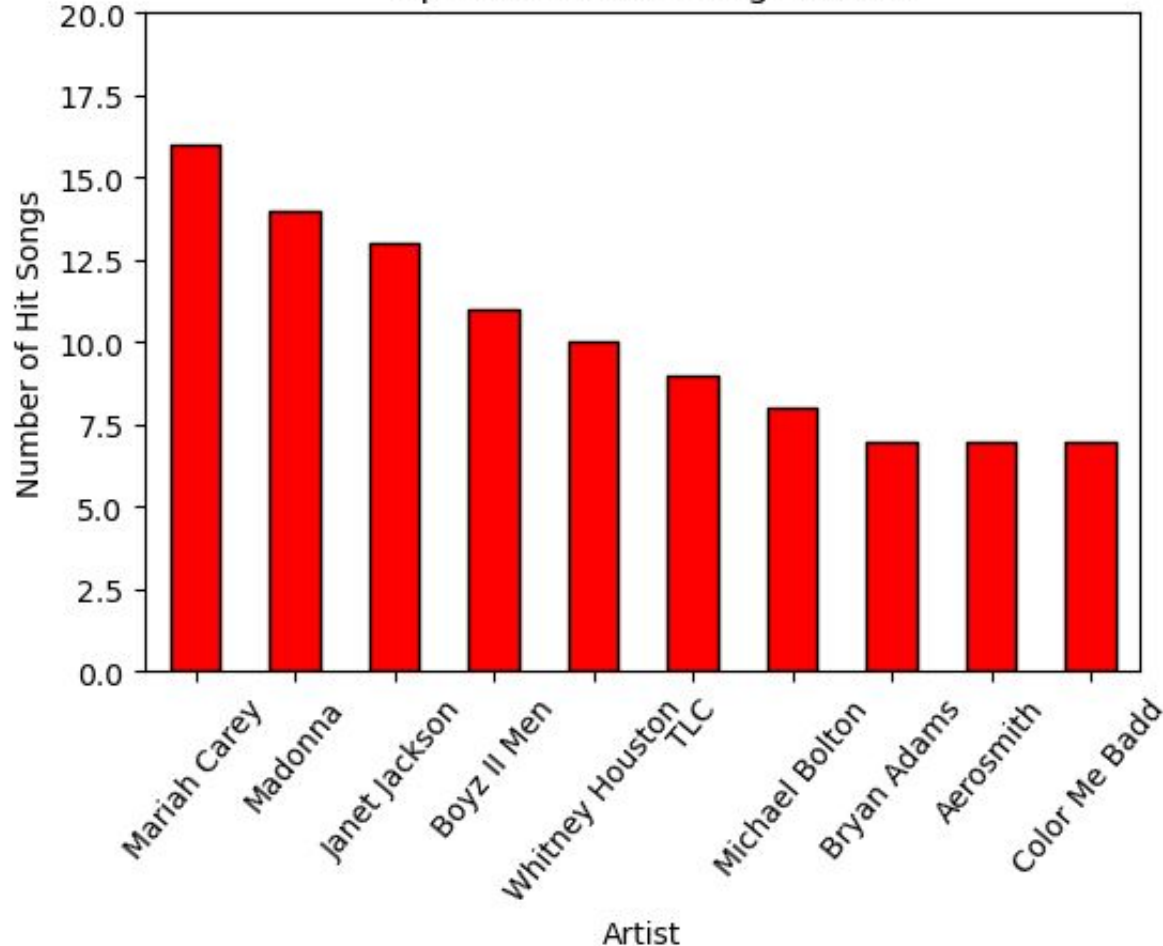
This bar chart shows the top 10 artists with the highest number of hit songs in the dataset. Each bar represents the number of hit songs associated with an artist. An observation I noticed is that there's a sharp drop in hit count from the top 3 artists to the others in the top 10. This suggests that there is a steep popularity curve in the artists, where only a few of the most popular dominated the charts in the 1990s and defined the decade.

Lewis

How does average popularity compare with danceability across the most prominent artists?

This grouped bar chart compares the average popularity and danceability of the 10 most frequently featured artists in the dataset.


Top 10 Most Featured Artists: Popularity vs Danceability

Average Danceability of Top 5 Most Featured 90s Artists
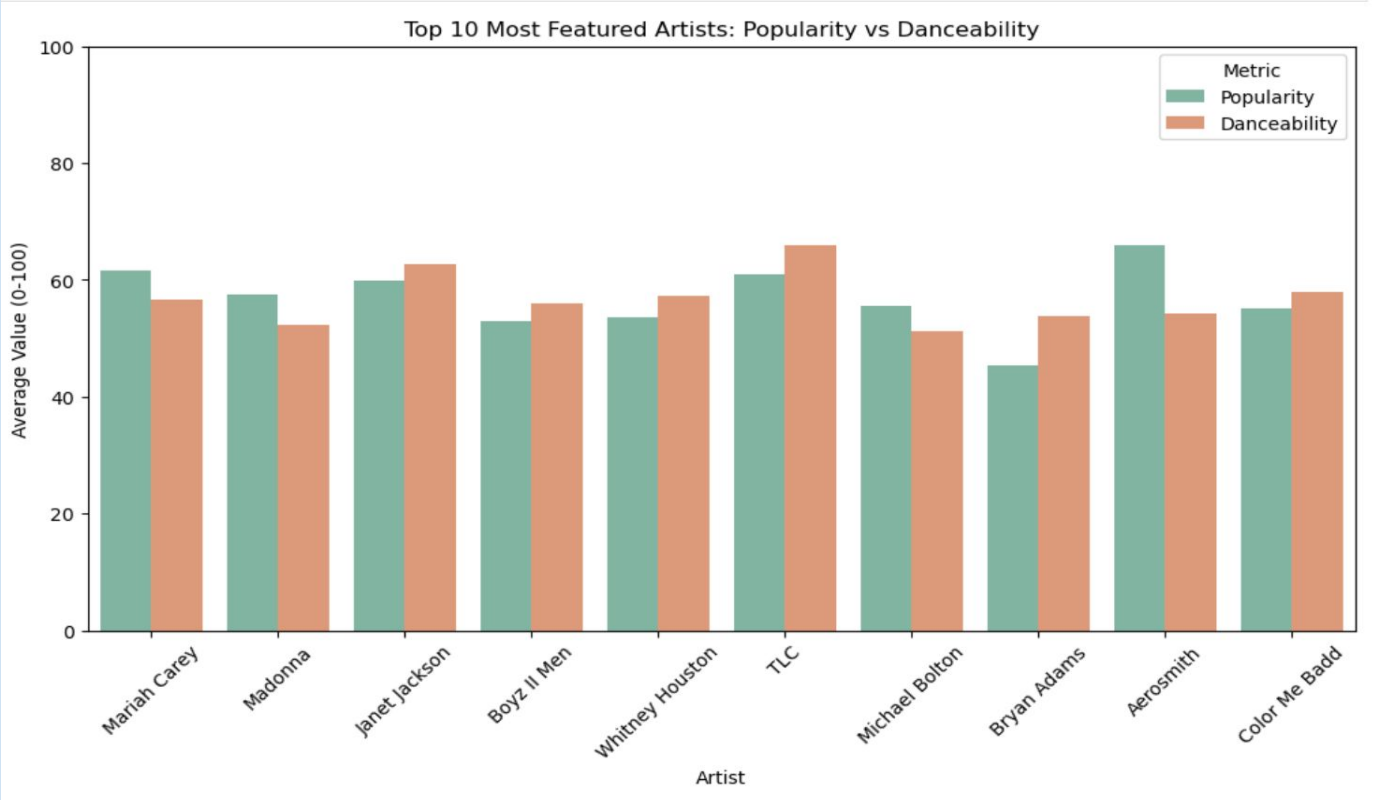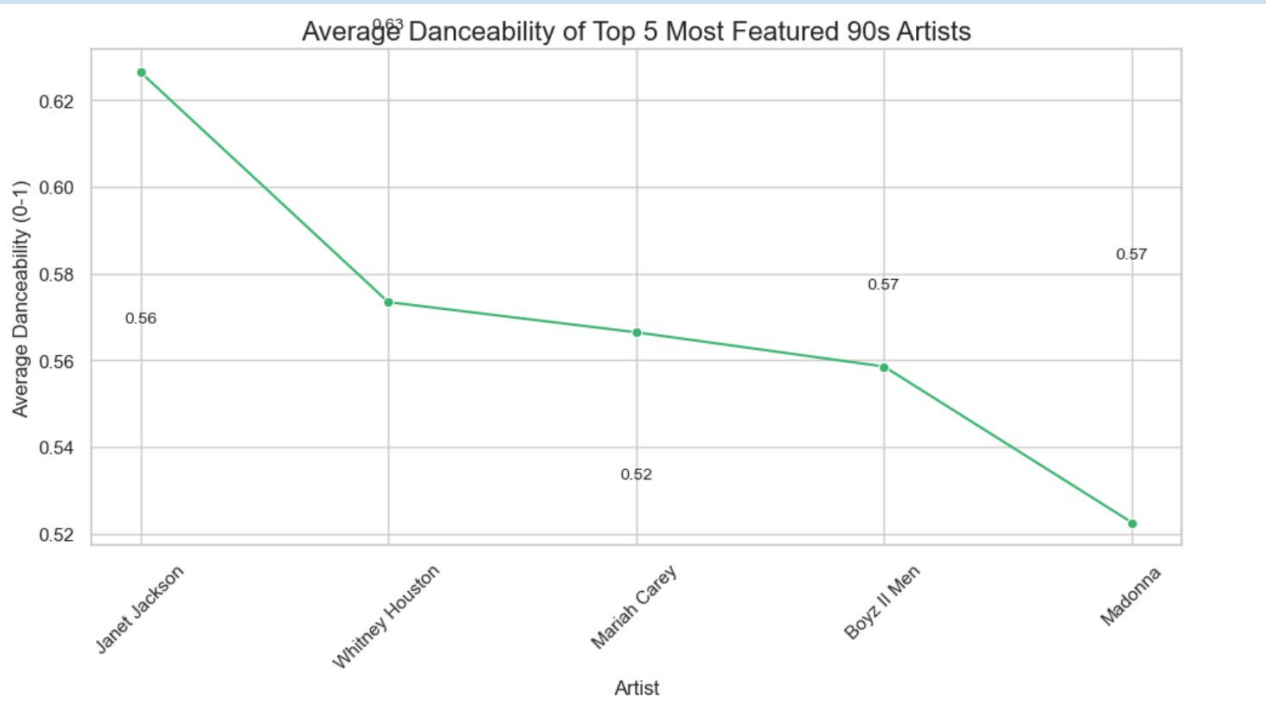
Visualization

Line plot ranking top 5 most featured artists by Danceability. Labeled each data point for clarity.

Key Insight:

This line plot confirms that danceability was not a defining trait for artists. The result highlights clear stylistic divisions in 90s hit music, where danceability did not shape audience but the individuals artist's sound.

Top 10 Tracks by Average Danceability and Valence
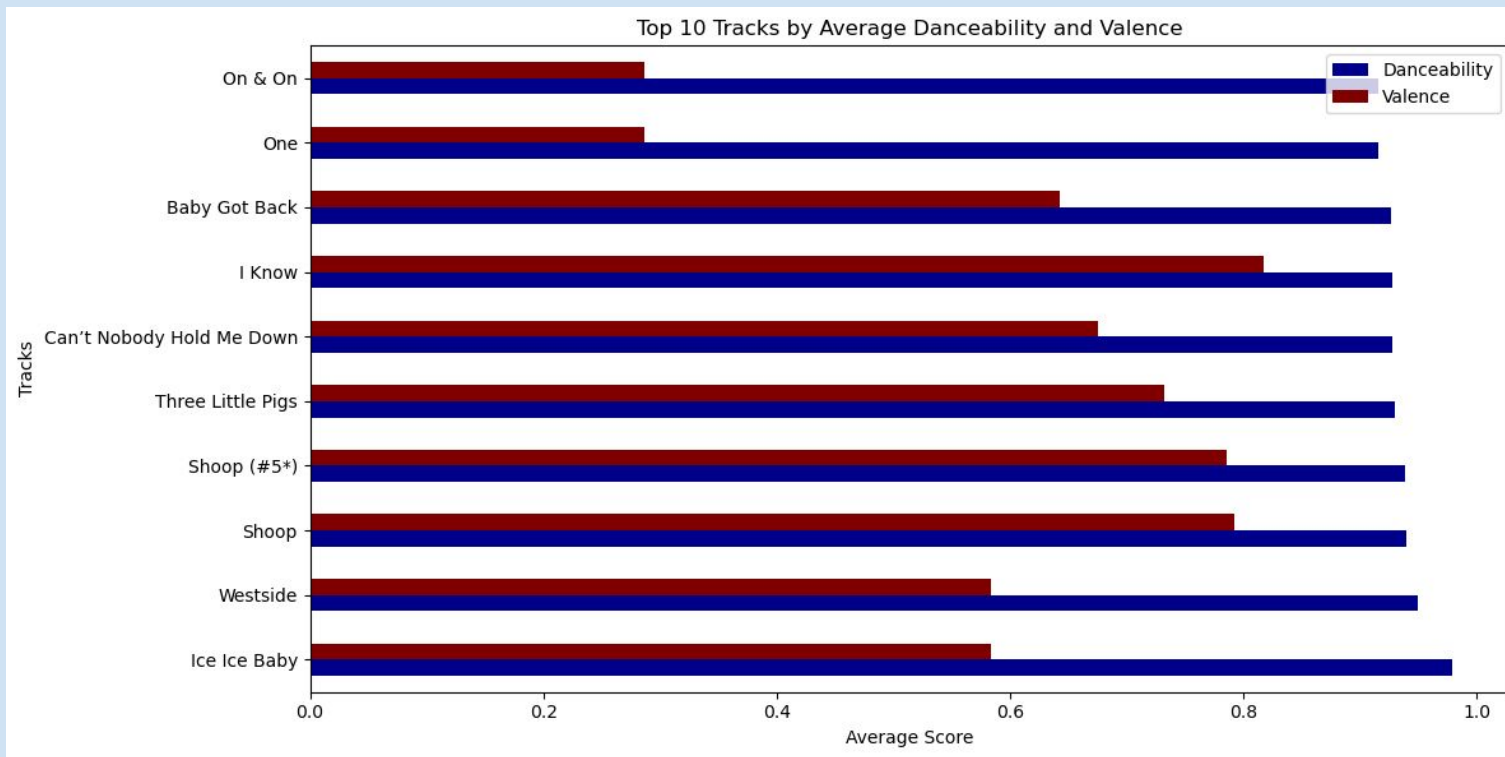
- Tracks with high Danceability often also show high Valence, implying that upbeat danceable songs also tend to sound happier.
- Some tracks with slightly lower Valence in this top 10 may be highly danceable but carry a more neutral or even melancholic tone.

Lewis

How does tempo differ across the most prominent artists of the 90s?

Tempo Distribution by Top 10 Most Featured 90s Artists
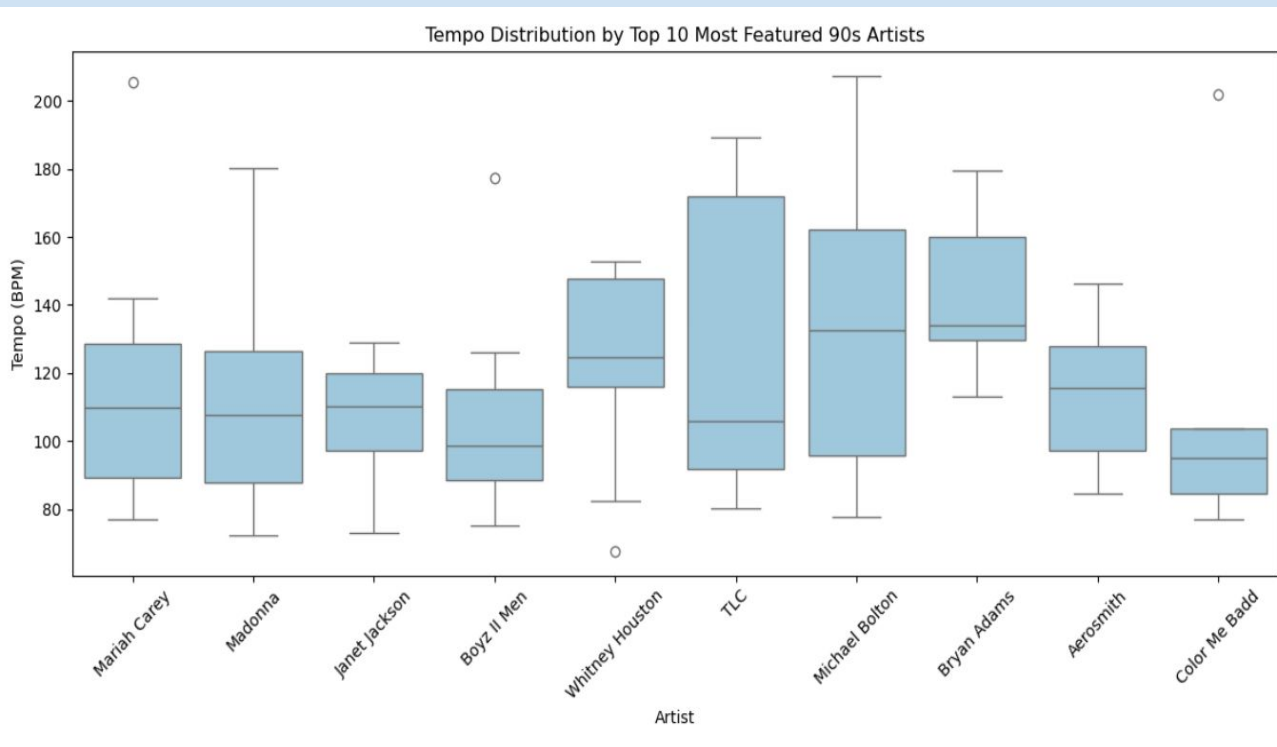
This boxplot shows the distribution of tempo (in BPM) for the 10 most frequently featured artists in the dataset.

- Highest spreads: TLC and Michael Bolton
- Lowest spreads: Color Me Badd and Janet Jackson
- Even among the most prominent artists of the decade, there was significant variation in how tempo was used

Correlation Between Audio Features (Top 10 Artists)
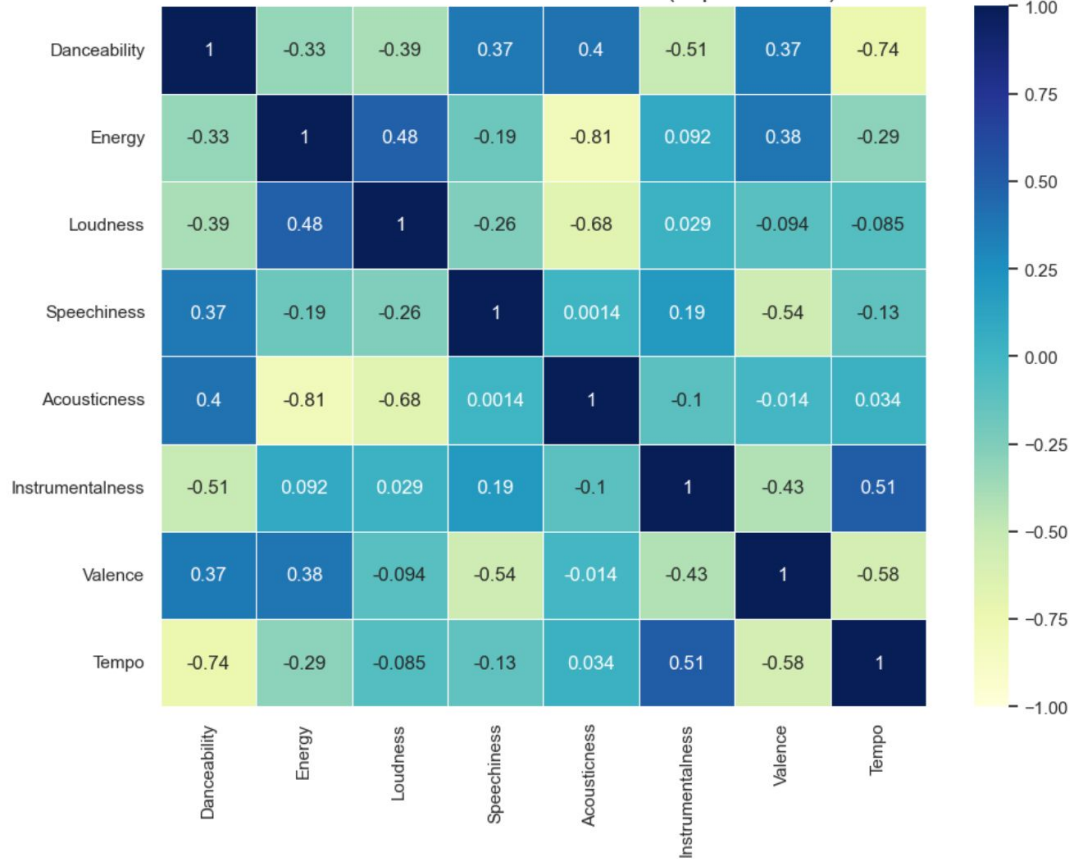
Visualization:

Heatmap showing how the audio features from top 10 correlate.Strong positive and moderate relationships highlighted in color.

Key Insight:

The heatmap reveals strong, predictable relationships between core audio features, with Energy and Loudness moving together across all artists. It also confirms that danceable, upbeat songs tended to be faster and more positive in tone. Importantly, the weak correlation between these traits and popularity suggests that while technical sound design shaped a track's character, other forces like artist visibility, radio trends, and cultural influence were stronger drivers of chart success.

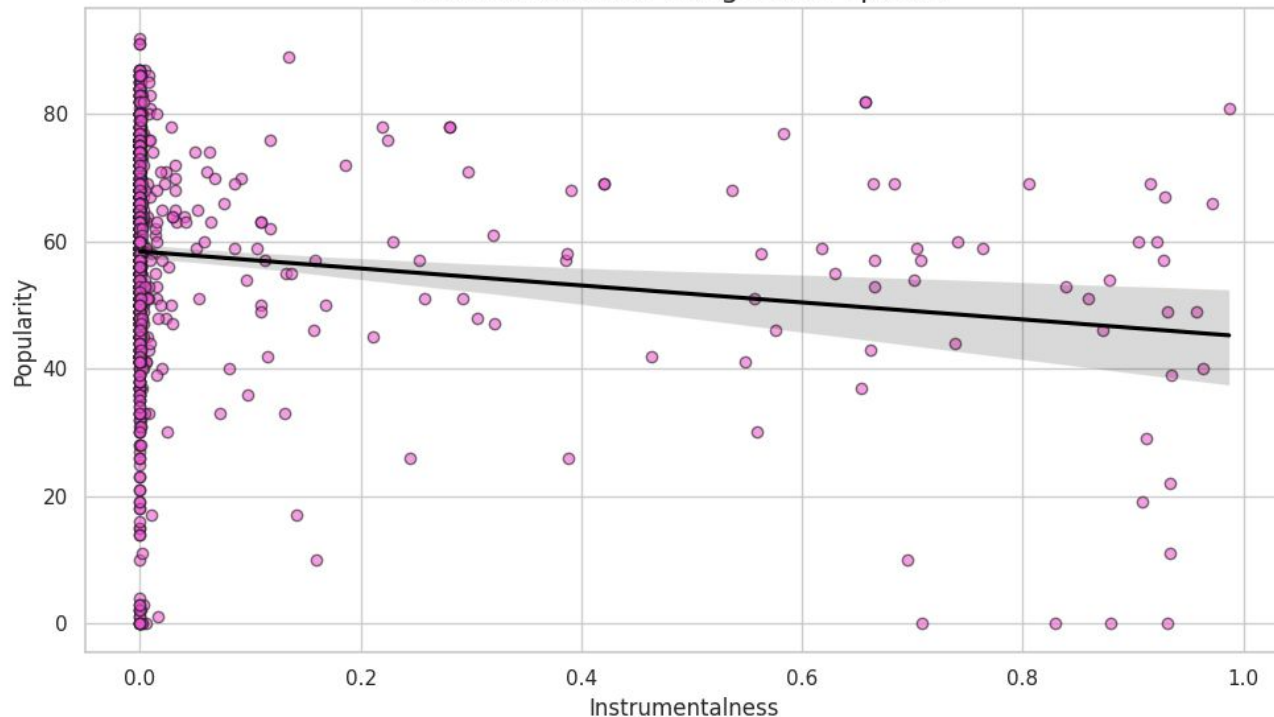**Does the speed and volume of a song affect its popularity?**

These two scatterplots examine whether a track's tempo (BPM) or loudness (dB) are meaningfully related to its popularity.
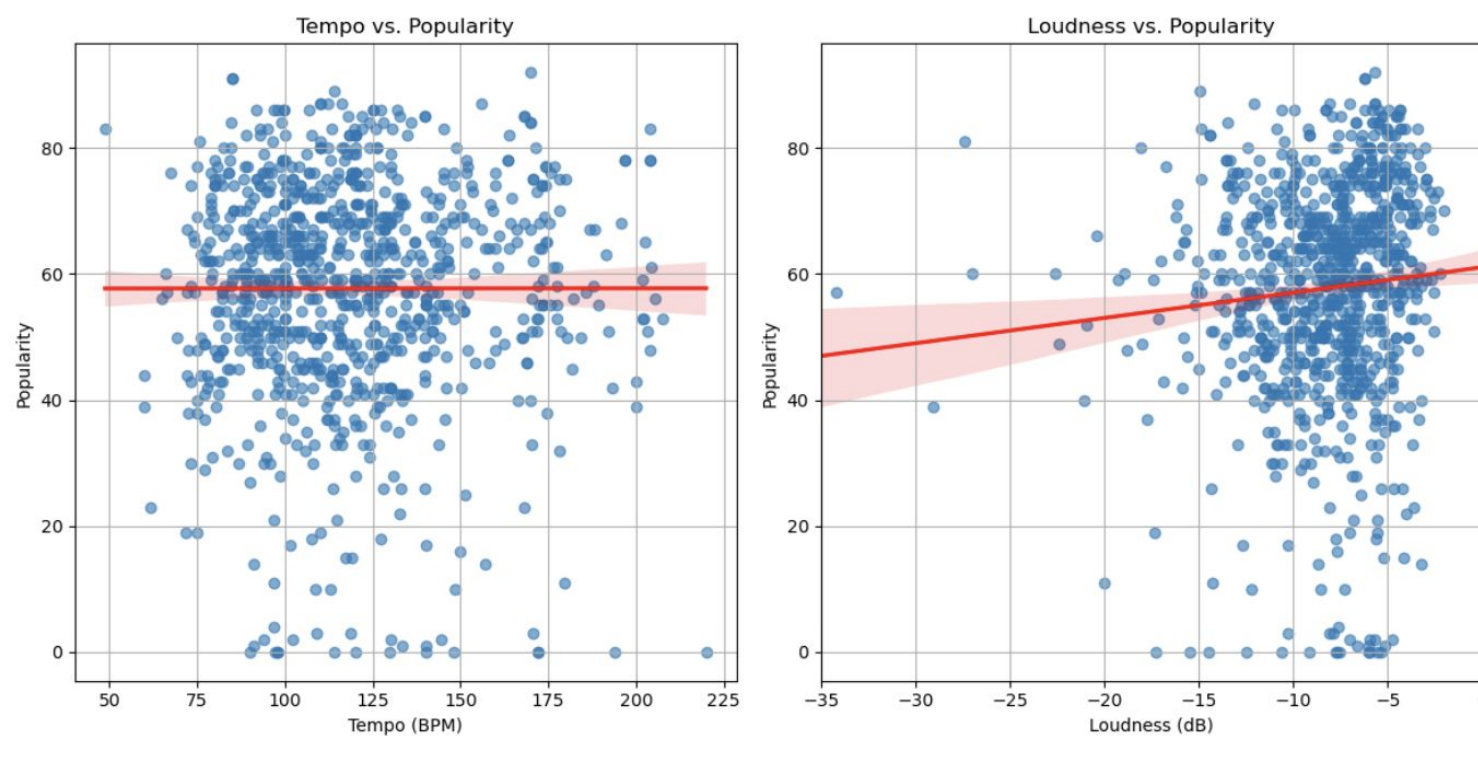
Tempo: no relationship (r=0.0003)

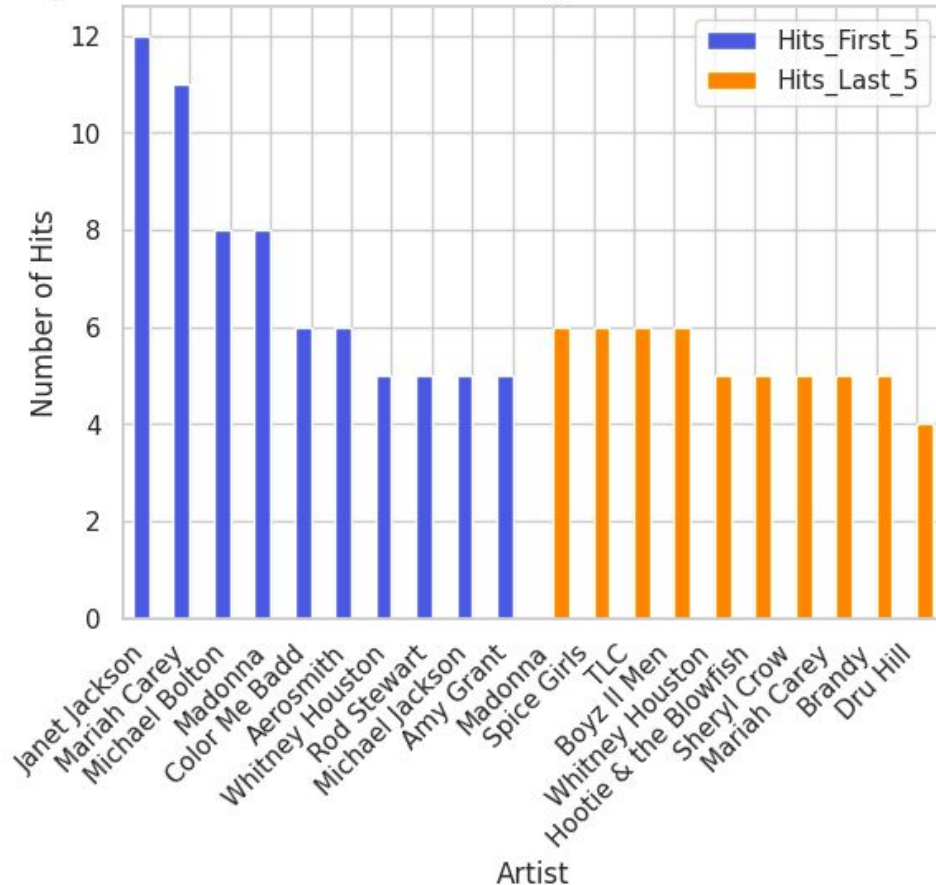Loudness: slight positive relationship (r=0.089)

Do Instrumental Songs Get Popular?

Key Insights:

- Most songs had low instrumentality (i.e., vocals present)
- Highest popularity scores were tied to vocal-driven tracks
- Few instrumental songs made it into the top hits
- Trend line suggests: More instrumental » Less popular

Top 10 Artists with Most Hits (1990–1994 vs 1995–1999)

Key Insights

- Early 90s: Dominated by Pop and R&B (e.g., Whitney Houston, Mariah Carey, Janet Jackson).
- Late 90s: Rise of Hip-Hop, R&B, and Pop-Rock (e.g., TLC, Boyz II Men, Hootie & the Blowfish).
- Genre Blending: Artists fused Pop, R&B, and Hip-Hop to appeal to wider audiences (e.g., Mariah Carey).
- Cultural Shift: Late 90s marked the youth-driven pop culture with boy bands and R&B icons.

Conclusion

This Dataset reveals that 90s hits were dominated by a few top artists like Mariah Carey, Madonna, and Janet Jackson, who defined the decade with their chart-topping success.

Danceability and valence were closely linked, with upbeat tracks often sounding happier, while instrumental songs tended to be less popular.

Tempo and loudness showed minimal direct impact on popularity, suggesting that cultural trends and artist influence played larger roles.

The shift from early 90s pop/R&B to late 90s hip-hop and genre-blending highlights the evolving musical landscape.

Ultimately, technical features shaped a song's character, but broader cultural forces drove its success.