



Echoes Through Time

How Pop Music Has Changed Over 60 Years (1958–2019)

Billboard
HOT 100



Introduction

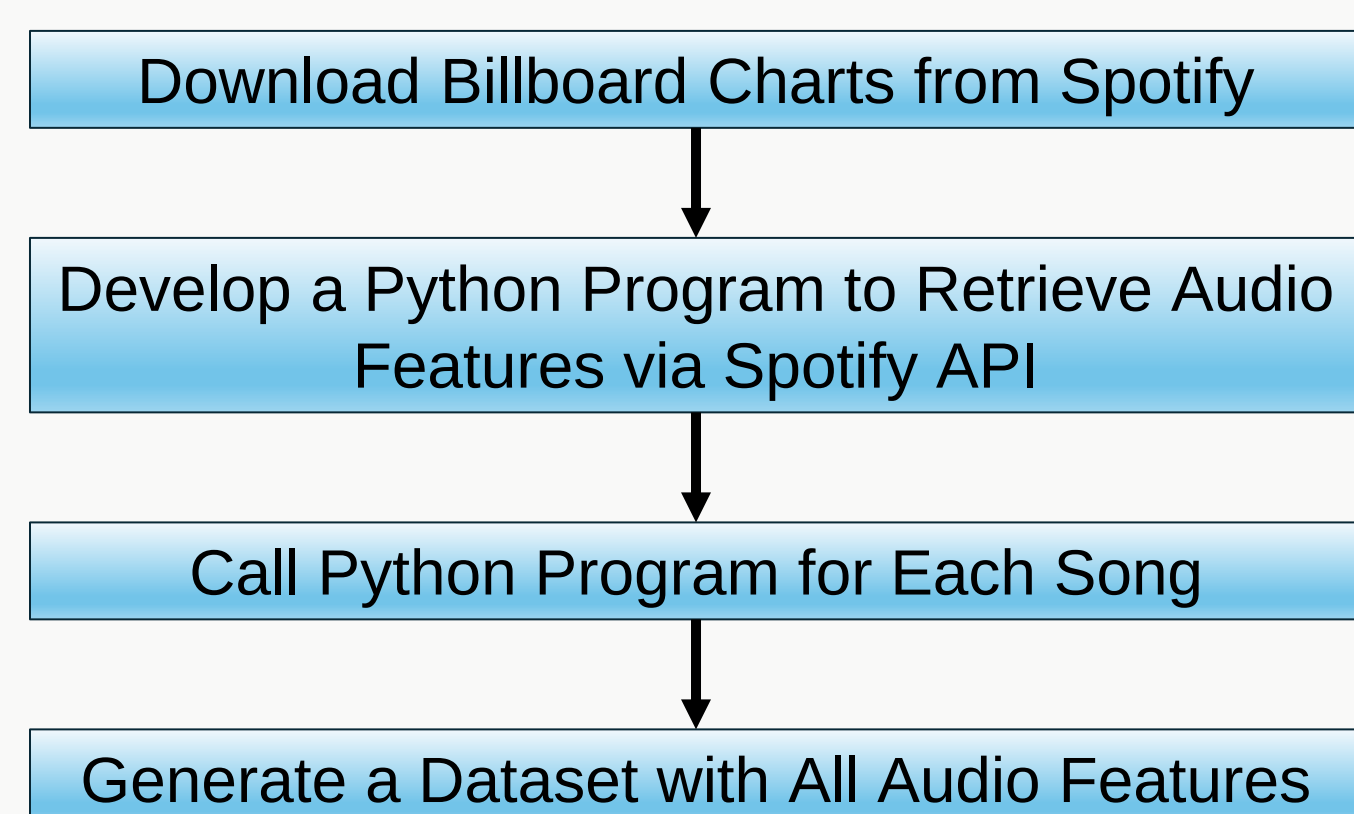
Since its debut in 1958, the Billboard Hot 100 has seen pop music evolve in both sound and meaning, with each change reflecting shifts in culture, technology, and artistic expression.

? Statistical Question:

Can we understand how pop music has changed over time by analyzing patterns in Spotify audio features across 60 years of Billboard Hot 100 hits?

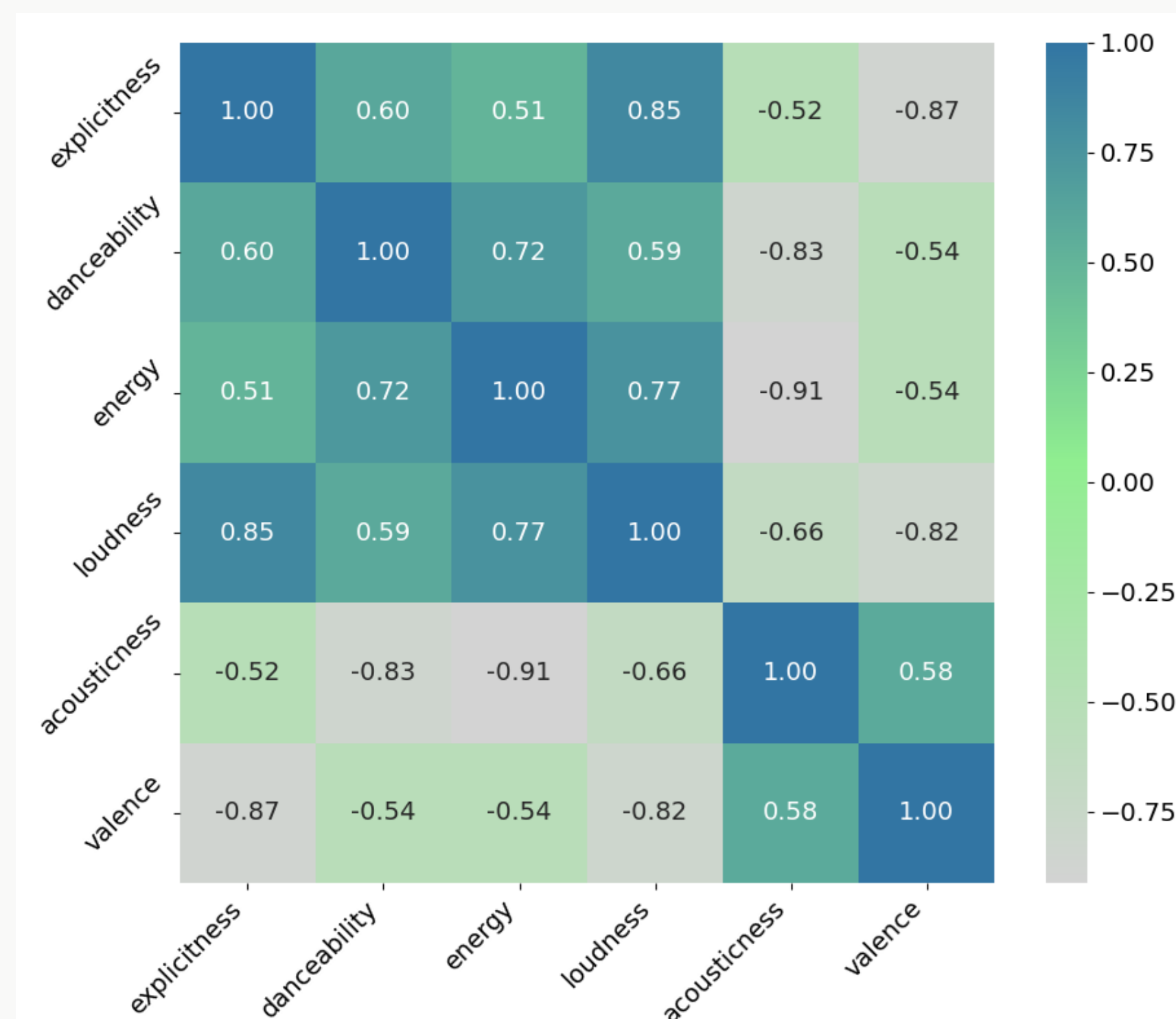
Data Collection

A dataset was created by combining Billboard Hot 100 charts with Spotify audio features on hit songs from 1958 to 2019.



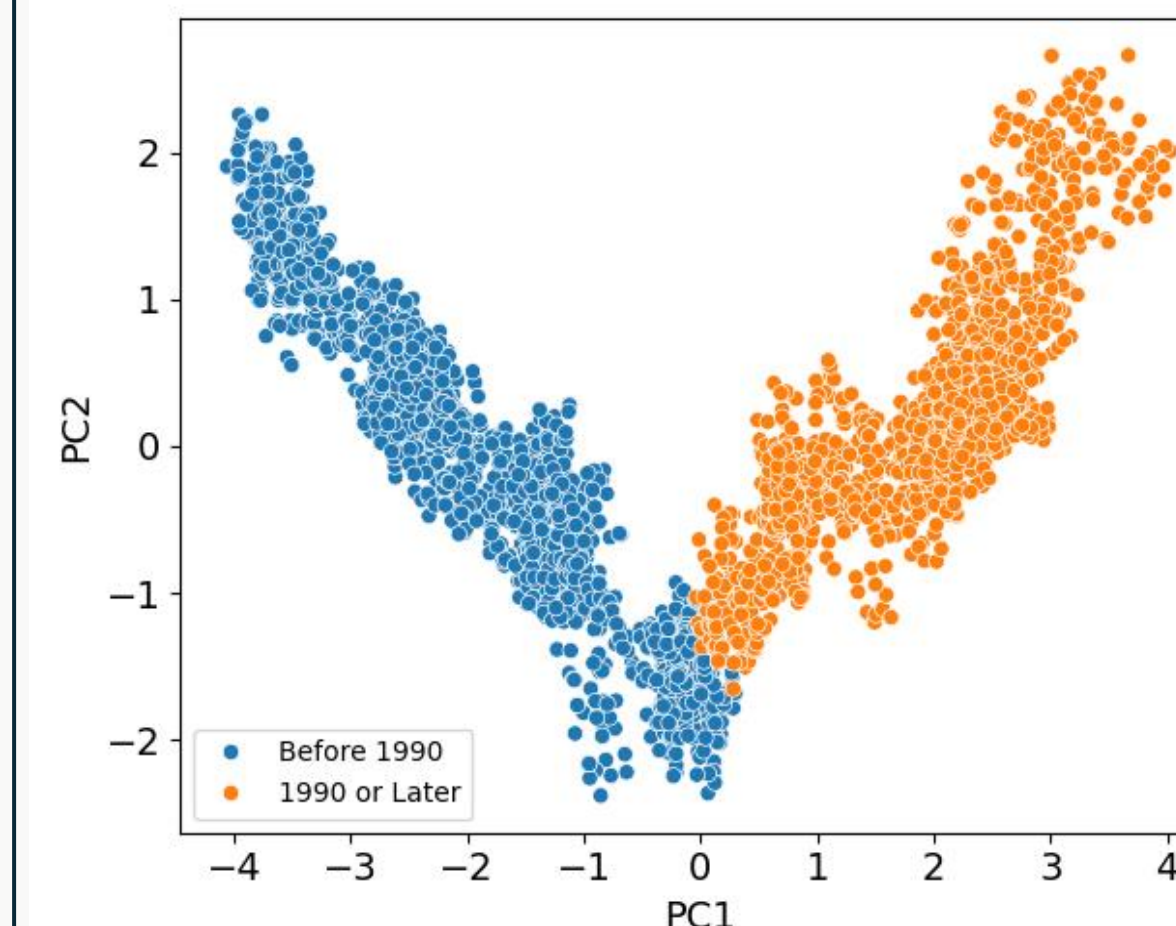
Audio Features Strongly Interlinked

- Strong positive correlations:
 - Explicitness** and **Loudness** (0.85) suggest that songs labeled as more explicit also tend to be louder.
 - Acoustic-ness** and **Valence** (0.58) suggest that happier songs rely more on acoustic instrumentation.
- Strong negative correlations: **Explicitness** and **Valence** (−0.87) indicates more explicit songs tend to have darker or sadder moods.

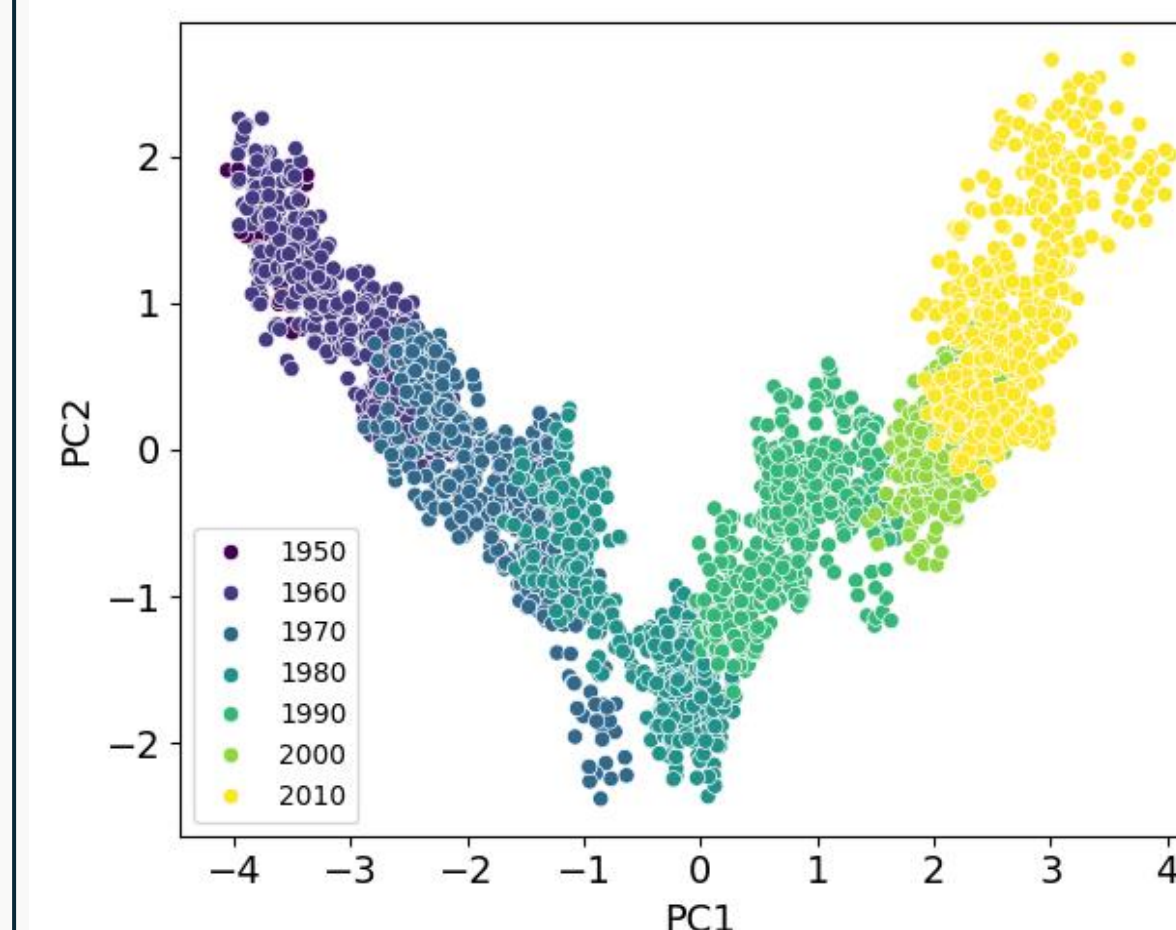


Continuous Evolution

These two plots show the weekly averages of audio features using results from Principal Component Analysis



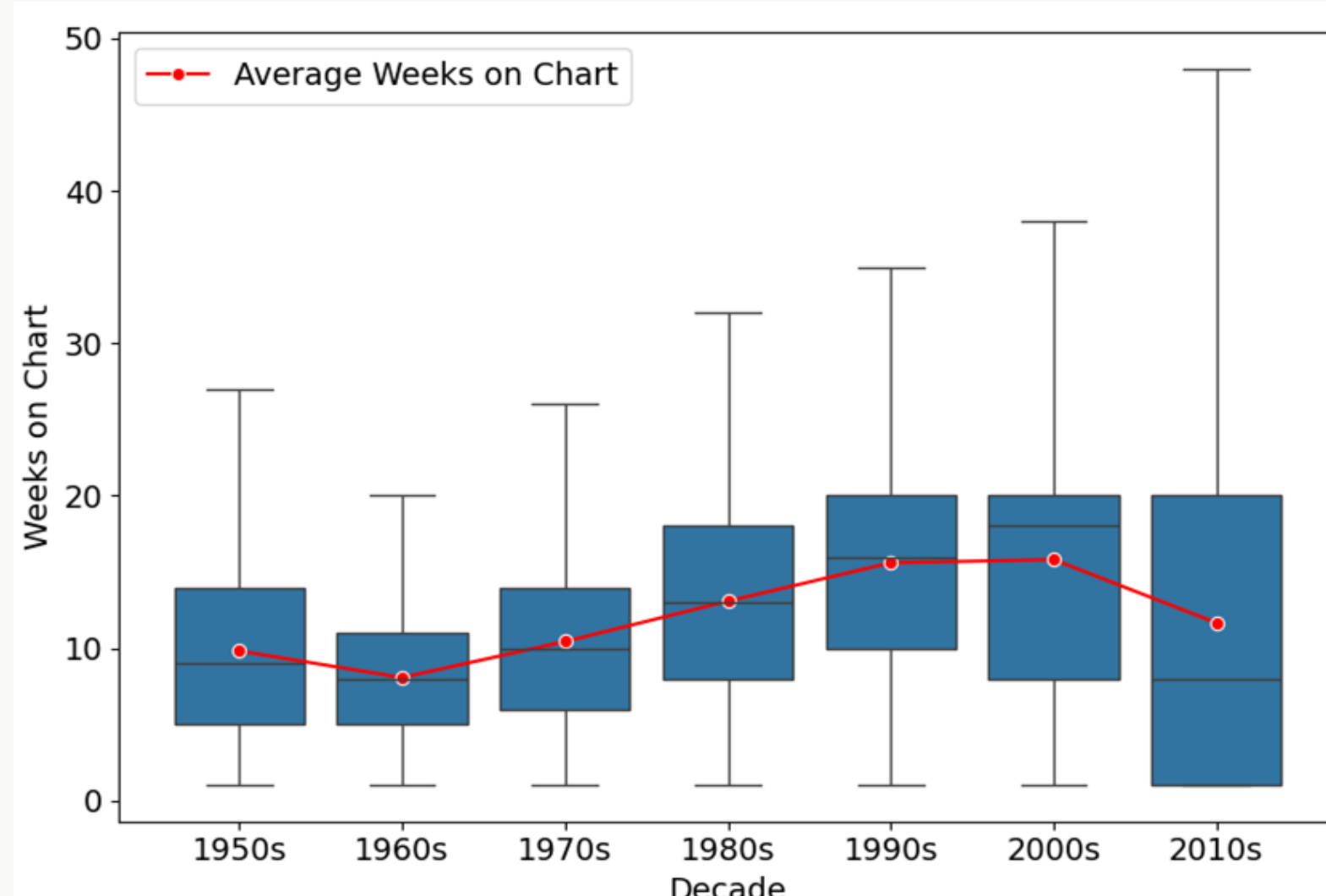
Dots are colored based on whether they are before or after 1990. The distinct shift along PC1 indicates a major change in pop hits' sound and production after 1990.



Dots are colored by decades. There is a clear chronological shift: earlier decades cluster on the left, while newer decades move to the right—demonstrating an ongoing evolution in pop hits.

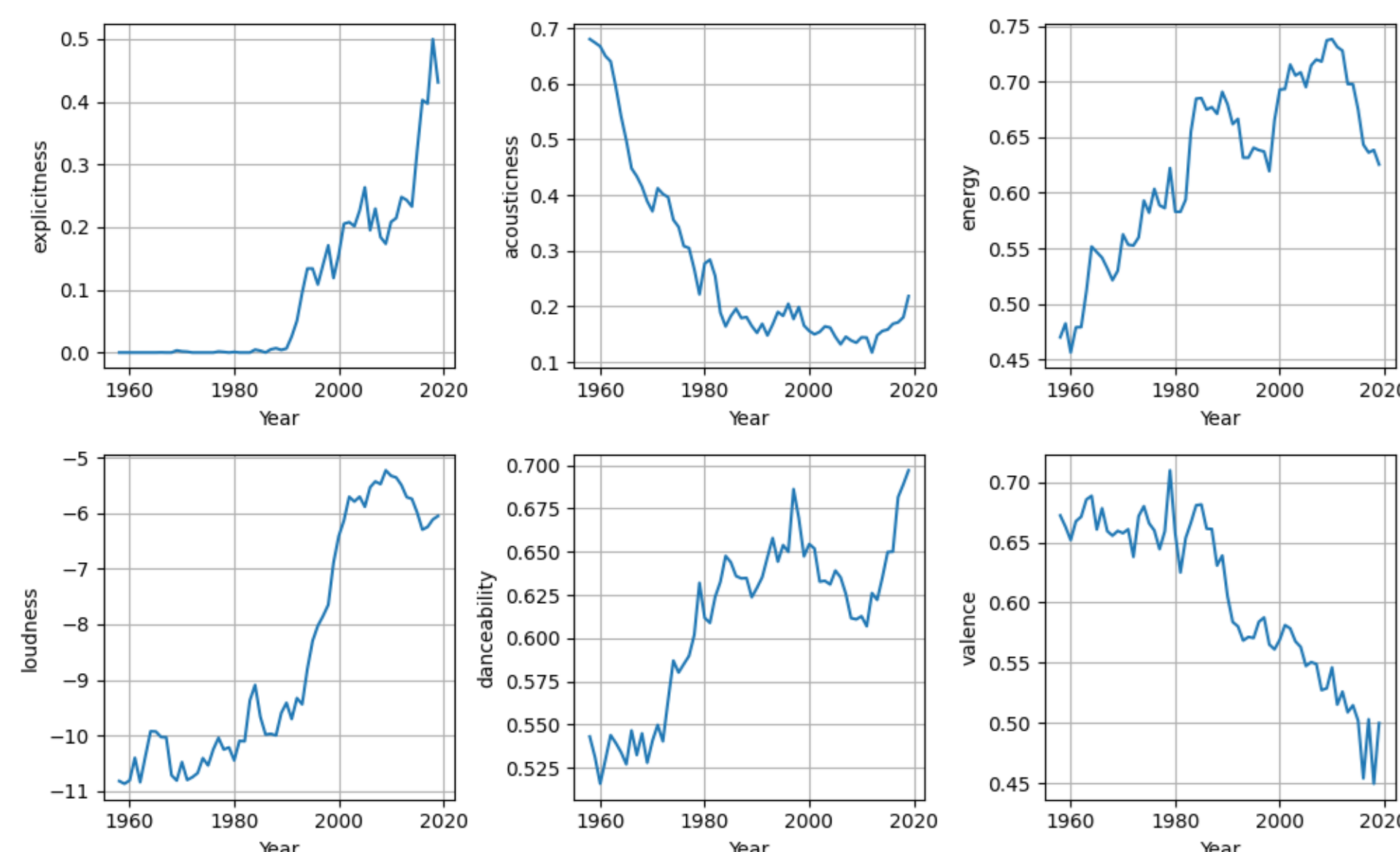
Weeks on Charts

The median and spread increased steadily from the 1950s to the 2000s, indicating that hits continuously lasted longer on the charts. The 2010s show a wider range but a drop in the average, suggesting faster turnover in the streaming era.



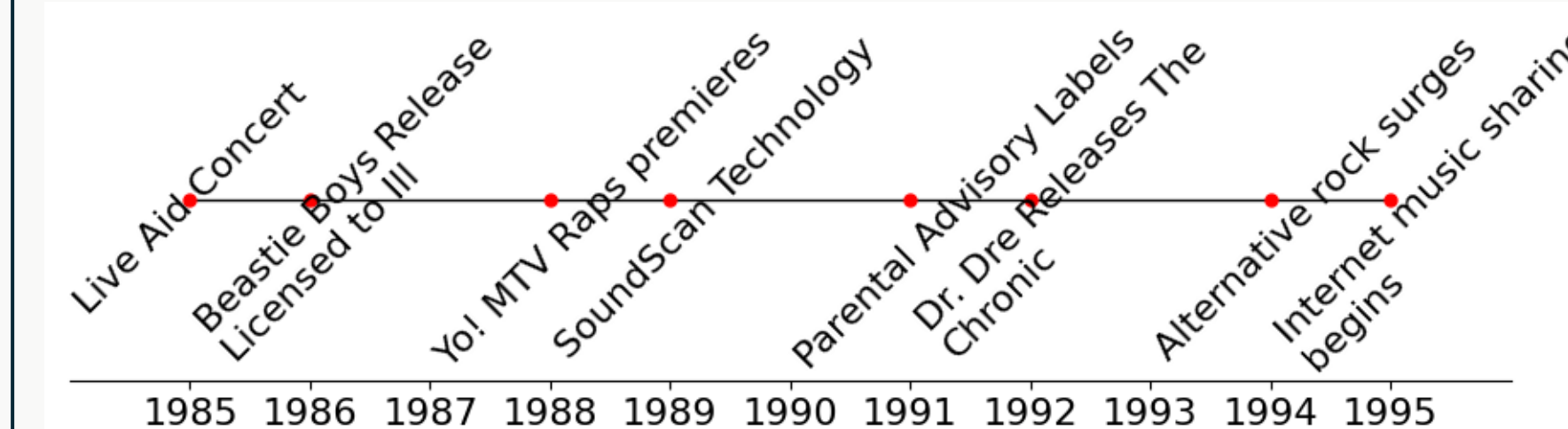
Audio Features Across Decades

Pop music has become louder, more energetic, more explicit, and less acoustic over the past 60 years, with a major turning point around 1990. This reflects shifts in production, style, and lyrical content.



Major Events Around 90s

Eight events between 1985 and 1995 may have triggered the shifts in 1990s pop hits.



Conclusion

Over six decades, pop music transitioned from mellow, acoustic arrangements to high-energy, beat-driven production. Since the 1990s, hits have featured **stronger bass, sharper dynamics, more lyrical boldness**, and fewer acoustic elements. These changes reflect a move toward **digitally produced, rhythm-forward, and emotionally complex music**, shaped by evolving technology, genre fusion, and cultural trends. Data reveals that music doesn't just sound different—it evolves with time.