Using Spotify Audio Features to Study the Evolution of Pop Music

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Abstract

Popular music is a symbol of culture, and is often looked at as a symbol of a time period or a generation. While there is much research on the evolution of pop music, most such research is anecdotal rather than scientific in nature.[3] We investigate the top 5 songs on the Billboard Hot 100 in the first week of September of the years 2018, 2008, 1998, and 1988.[1] Nine audio features were taken from Spotify's API.[2] Initial observations show that on average, popular songs are becoming more dance-able, louder, and shorter in length. Notably, tracks are showing more variety after a heavy similarity across all features in 2008.

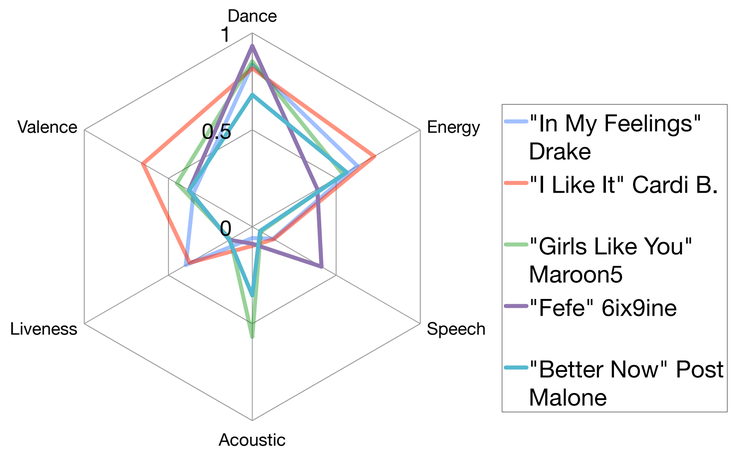
Discussion

Each of the first 6 features is scaled [0, 1] where 0.5 is the average amount of that quality across all tracks on Spotify. Looking at these sonic footprints, the five top tracks are rather varied in 1988, 1998, and 2018, but shockingly similar in 2008. The 'Valence' and 'Energy' of top tracks seems to be decreasing as time progresses, but the 'Danceability' is increasing. Values of 'Liveness,' 'Acousticness, and 'Speechiness' are low across all tracks.

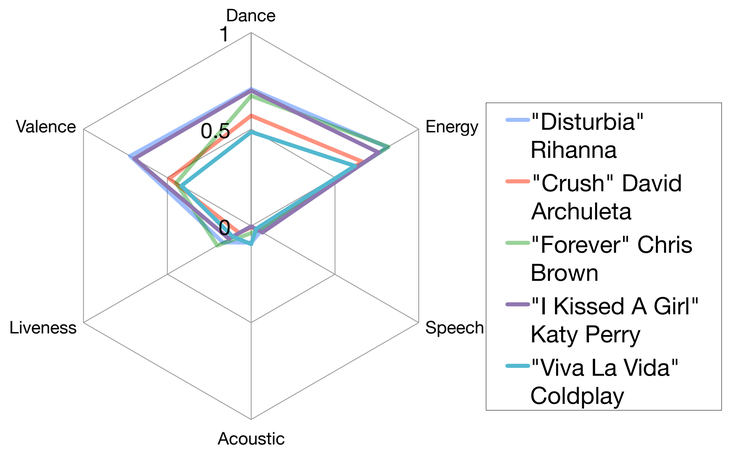
The last 3 features are quantitative: Tempo (BPM), song length, and average loudness (dB). Song length of top tracks has been steadily decreasing over the years, while loudness increased until 2008, but calmed down somewhat in 2018. Song tempo values varied very little in 2008, when tracks seemed to be most similar.

Data

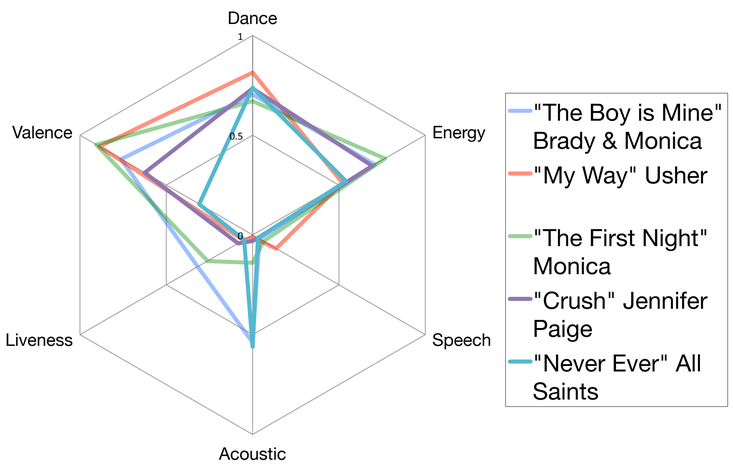
Top Songs: September 2018



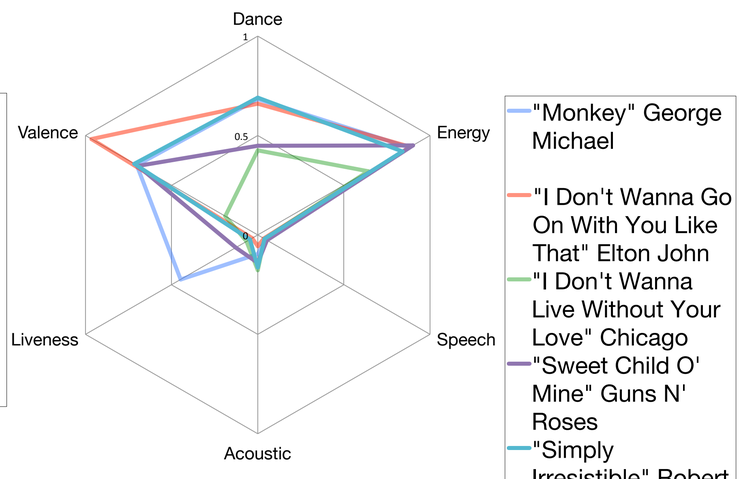
Top Songs: September 2008



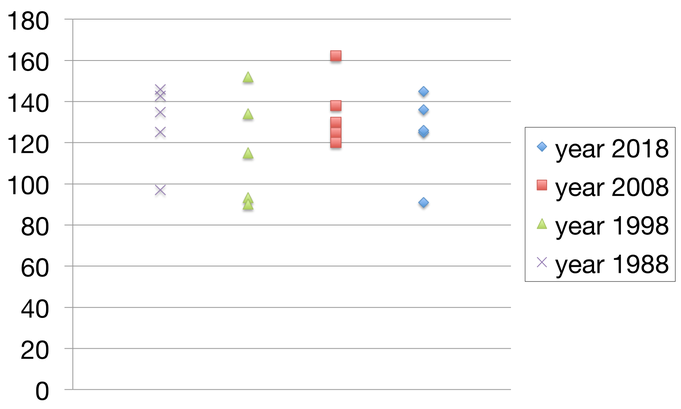
Top Songs: September 1998



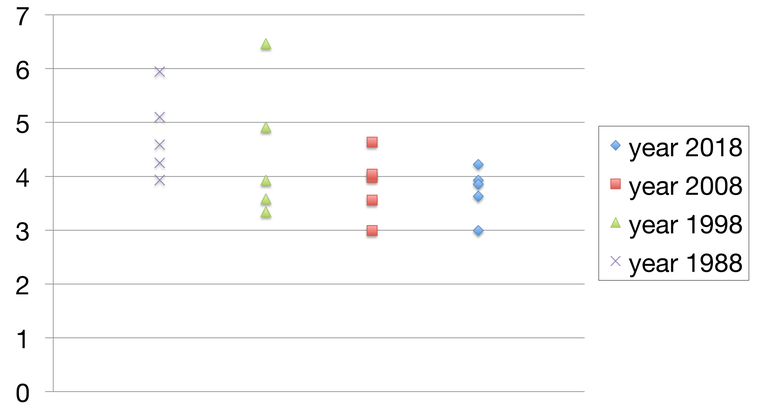
Top Songs: September 1988



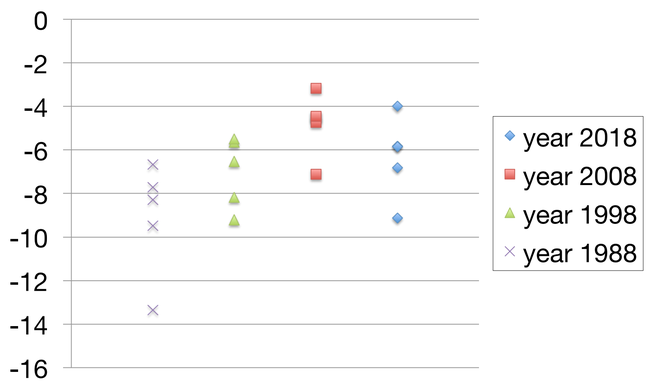
Song Tempo (BPM)



Song Length (Minutes)



Loudness (dB)



Further Research

In the future, we will look at the initial observations more in-depth, and investigate potential causes and repercussions of the observed trends. Furthermore, we will look at top songs in 5 year increments and dating back further to the 1960s.

This research can have potential to predict trends in future popular music, as well as predict what styles and recorded tracks will be commercially successful.

References

1. Billboard. (2018). Billboard Hot 100 Chart. Retrieved from: https://www.billboard.com/charts/hot-100
2. Chinoy, S. and Ma, J. (2018). *Why Songs of the Summer Sound the Same*. Nytimes.com. Retrieved from: https://www.nytimes.com/interactive/2018/08/09/opinion/do-songs-of-the-summer-sound-the-same.html
3. Mauch, M., MacCallum, R. M., Levy, M., and Leroi, A. M. (2015). The Evolution of Popular Music: USA 1960–2010. R. Soc. open sci.

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