Exploration on NIKI's Music in Spotify*

Increasing song durations and positive emotional shifts in NIKI's music from 2018 to 2024.

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Data tools

The dataset was analyzed using R (R Core Team (2023)) and downloaded using the R package, Tidyverse (Wickham et al. 2019), Knitr (Xie (2024)). Ggplot(Wickham (2016)) package was used to generate the graph. Data are extracted from Spotify Devlopers API (Thompson et al. (2022)). Additional packages such as `here` (Müller 2020), `usethis` (Wickham et al. 2024), and `spotifyr` (Thompson et al. 2022) were used. Special thanks to (Alexander (2023)) for guidance and templates!

Findings

The box plot (Figure 1) illustrates the duration of songs (in milliseconds) from various albums released between 2018 and 2024. Here are some key observations and findings based on the graph

The valence graph (Figure 2) displays the valence of songs released by the artist NIKI from 2020 to 2024. Valence is a measure of the musical positiveness conveyed by a track, with values closer to 1 indicating a more positive sentiment and values closer to 0 indicating a more negative sentiment. Here are the key observations and findings based on the graph:

*Code and data are available at: https://github.com/jeno0403/Explore_Spotify_Data.git

Box Plot

The box plots (Figure 1) reveal changes in song durations over the years, with a notable increase in the median length from 2018 to 2024. In 2018, the median duration was about 200,000 ms, rising significantly by 2022, before stabilizing in 2024. The year 2022 exhibited the greatest variation in song lengths, likely due to shifts in listener preferences and artist experimentation. By 2024, song durations appeared to return to levels similar to 2018, indicating a potential normalization after the variability of 2022.

Valence Graph

The graph (Figure 2) indicates an overall increase in valence from 2020 to 2024, suggesting that NIKI's music has become more positively perceived, reflecting her artistic evolution. Starting lower in 2020, valence gradually rises, indicating a positive shift in emotional content. The shaded area around the trend line shows the confidence interval, with greater variability in earlier years, suggesting a wider range of emotional expressions in her songs. Over time, this variability decreases, indicating more consistent emotional themes in her recent work.

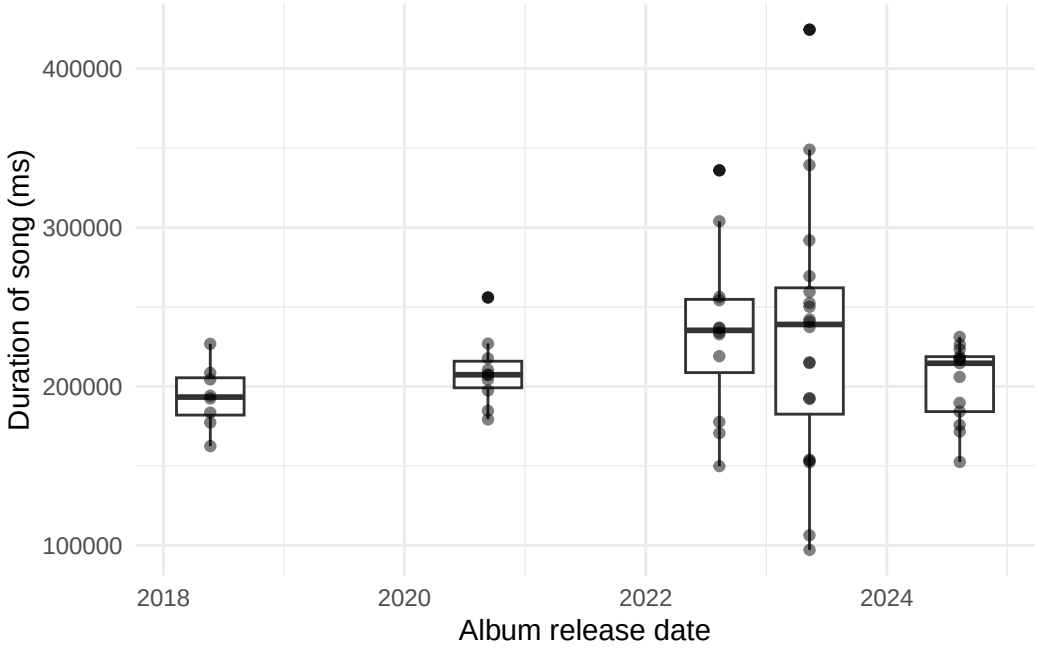

Figure 1: Relationship Between Duration and Release Date of Songs from NIKI

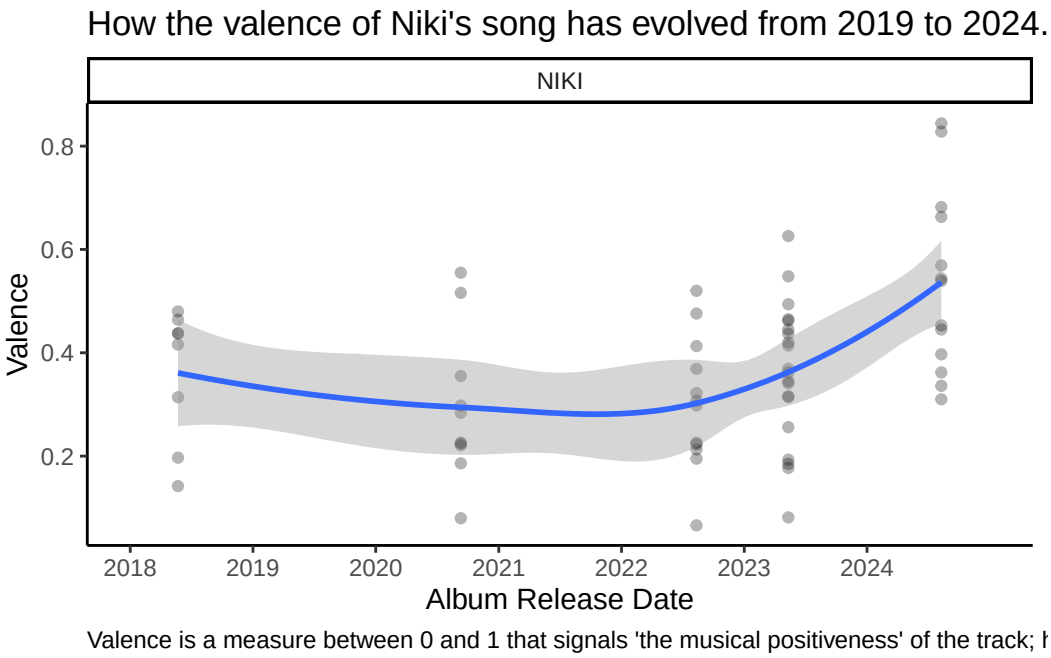

Figure 2: Valence with Respect Album Release Date showing valence

Appendix

How to Extract Data From Spotify API

To download data from the Spotify API using R, first create a Spotify Developer Account and accept the Developer Terms of Service. Obtain your "Client ID" and "Client Secret," and store these credentials securely in your system's environment variables by modifying the .Renviron file with the usethis package. After saving the credentials, we install and load the spotifyr package, which serves as a wrapper for the Spotify API. Then retrieve the artist data, and save it for future use. To analyze the data, convert it to a tibble and create visualizations like boxplots to explore trends in song durations over time. Additionally, investigating the "valence" of songs, which measures their emotional positivity, allowing for comparisons across multiple artists to uncover patterns in musical expression.

References

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