

Analysis of Radiohead’s Music Factors Affecting Danceability*

A weak correlation between valence and danceability.

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November 21, 2024

This paper investigates the factors influencing the danceability of Radiohead’s tracks by analyzing two key musical features: tempo and valence. The analysis reveals that tempo has no statistically significant relationship with danceability, indicating that variations in a song’s speed do not substantially affect its ability to engage listeners and encourage movement. In contrast, valence demonstrates a weak positive correlation with danceability, suggesting that songs with higher valence—reflecting a more positive emotional tone—tend to have slightly higher danceability scores. These results highlight that while tempo does not meaningfully contribute to danceability, valence plays a modest role, offering insights into how emotional tone may influence listener engagement.

1 Introduction

This paper investigates the factors influencing the danceability of Radiohead’s tracks by analyzing key musical features: tempo and valence. Tempo refers to the speed of the music, while valence measures the perceived positivity or emotional quality of a song, with higher values reflecting more cheerful and energetic tones, on a scale of 0.0 to 1.0. By examining the relationship between these variables and the danceability of Radiohead’s songs, we seek to identify the musical elements that enhance or hinder the ability of a track to engage listeners and encourage movement.

The relationship between tempo and danceability shows no statistically significant correlation, indicating that variations in tempo do not meaningfully predict the danceability of Radiohead’s songs. In contrast, valence exhibits a weak positive correlation with danceability, suggesting

*Code and data are available at: <https://github.com/sarahdingg/SpotifyProject/tree/main/SpotifyAPI>.

that songs with a more positive emotional tone tend to have slightly higher danceability scores. However, this relationship is not particularly strong, suggesting that valence alone is not a dominant factor in determining the danceability of a track. Other factors could also affect a track’s danceability but are not included in this current analysis.

These findings provide a deeper understanding of how tempo and valence influence danceability, demonstrating that while tempo appears to play a negligible role, valence may contribute modestly to a track’s ability to engage listeners. The remainder of the paper is structured as follows: Section 2 discusses the data preparation process, and two linear regression models are presented to explore the relationships between danceability and valence, as well as danceability and tempo.

2 Data

The original data is obtained from Spotify (Spotify Developers 2024), using spotifyr (Thompson 2023), we used the statistical programming language R (R Core Team 2023), tidyverse (Wickham et al. 2023), and dplyr (Wickham, François, et al. 2023) to assist with cleaning and analyzing the data. The data was plotted using ggplot2 (Wickham, Chang, et al. 2023).

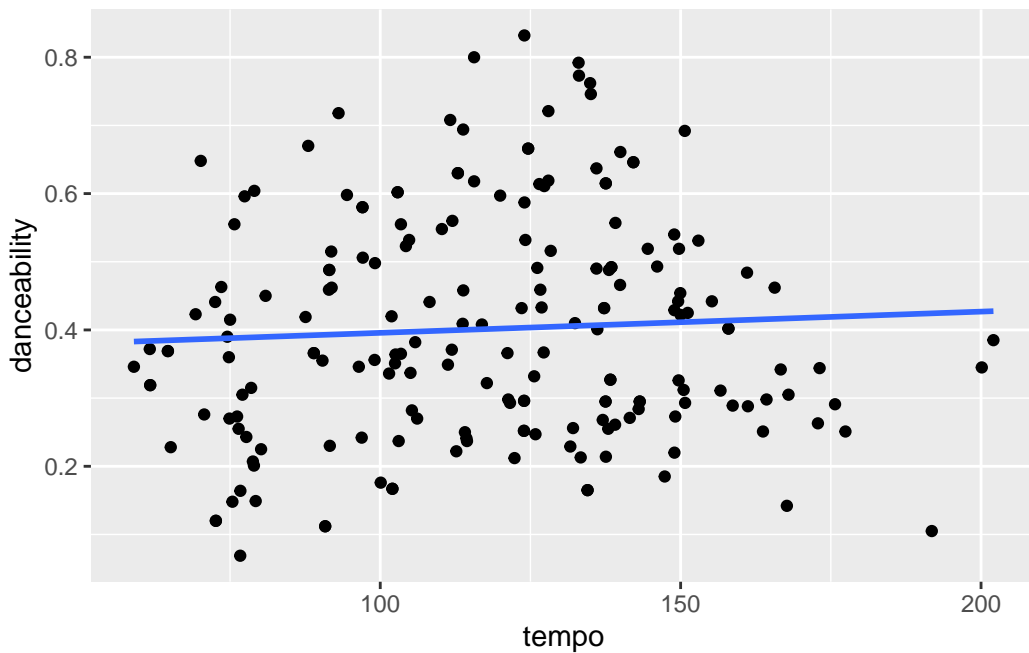


Figure 1: Tempo vs Danceability: The relationship between tempo and danceability shows no statistical significance between tempo and danceability, indicating that variations in tempo do not meaningfully predict the danceability of the songs.

Figure 1 shows a linear regression between tempo (x-axis) and danceability (y-axis) for a set of songs. Each dot represents an individual song, with the blue line indicating the trend from the regression model. The regression line is almost flat, suggesting a weak positive relationship between tempo and danceability. However, the spread of the data points reveals that tempo is not a strong predictor of danceability. The regression model indicates no statistically significant relationship between the two variables, meaning changes in tempo do not substantially affect a song's danceability.

2.1 Relationship between valence and danceability

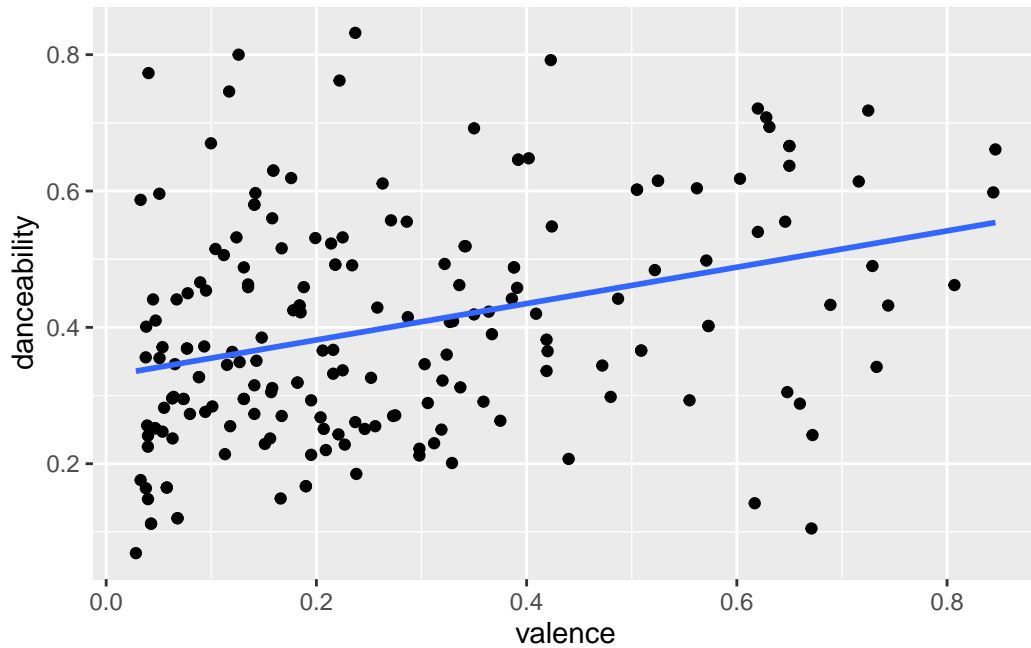


Figure 2: Valence vs Danceability: The relationship between valence and danceability reveals a weak positive correlation, indicating that while songs with higher valence—reflecting a more positive emotional tone—tend to have slightly higher danceability scores, the relationship is not particularly strong.

The upward slope in Figure 2 displays a weak positive correlation between valence and danceability for Radiohead's songs. Each point represents an individual song, with the blue line showing the trend from the regression model. Songs with higher valence—representing a more positive emotional tone—tend to have slightly higher danceability scores. However, the spread of the points indicates that the relationship between valence and danceability is not particularly strong.

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