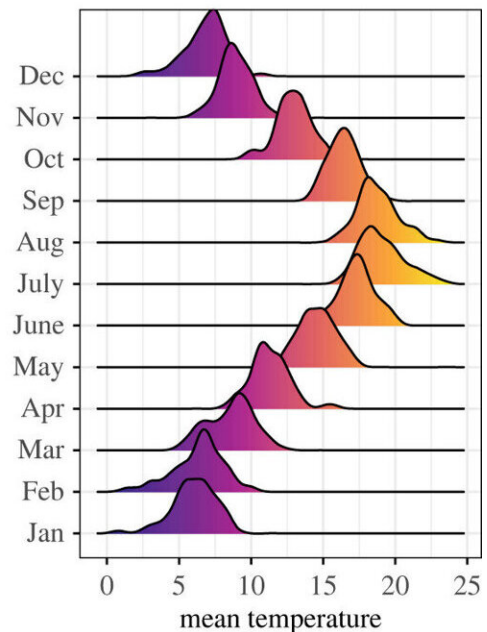
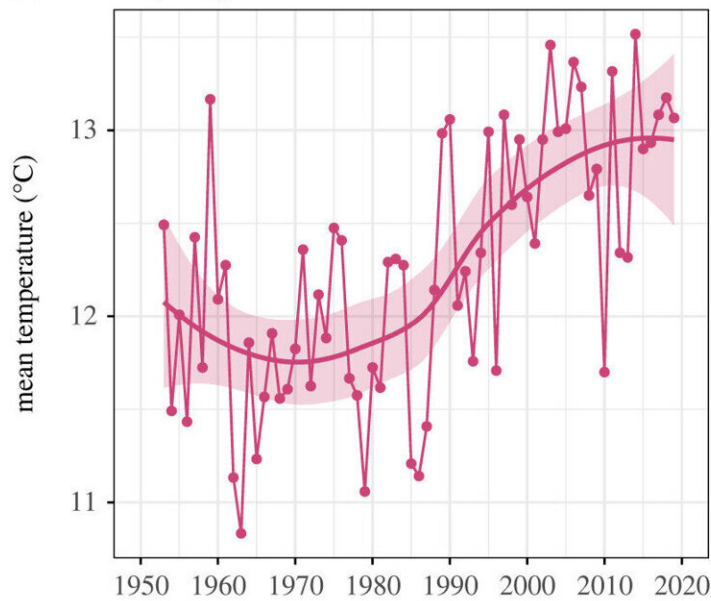


# Here comes the sun: New study shows how UK weather conditions influence music success in the markets

May 4 2023

(a) daily temperature



(b) hours of sunshine



Weather variables used in the study (summarized at the year and month level). (a) Mean daily maximum air temperature (in degrees Celsius). (b) Total duration of bright sunshine (in hours). (c) Days in the month with precipitation amounts greater than 1 mm. Note: Each point in the left column plots is a yearly average and the smooth line was estimated with local polynomial regression fitting (loess). Distributions in the right column plots were estimated for each month

collapsing over the 67 years and using kernel smoothing. Credit: *Royal Society Open Science* (2023). DOI: 10.1098/rsos.221443

Music is an integral part of our daily lives, but what makes a song successful in the competitive music market remains a mystery to even the most experienced experts. A new study, led by researchers at the University of Oxford, suggests that environmental factors such as weather conditions and seasonal patterns can play a significant role in shaping listener preferences and choices, potentially impacting a song's success in the market.

The research, which analyzed over 23,000 songs that reached the UK weekly top charts in the last 70 years, found that songs that were energetic, danceable, and evoked positive emotions such as joy and happiness were positively associated with warm and [sunny weather](#) and negatively associated with rainy and cold months. Similarly, energetic and positive music varied according to expected [seasonal patterns](#) in the UK, increasing in summer and decreasing in winter.

However, the study also found that these results depended on the popularity of the music: While hyper popular songs in the top 10 of the charts exhibited the strongest associations with weather fluctuations, less [popular songs](#) showed no relationship at all. This suggests that a song's fit with prevailing weather may be a factor pushing a song into the top of the charts.

Lead researcher Dr. Manuel Anglada-Tort (Faculty of Music, University of Oxford), said, "These findings challenge the traditional notion that success in the music market is solely based on the quality of the music itself. Instead, our study suggests that favorable environmental conditions, such as warm and sunny weather, induce positive emotional

states in listeners, which in turn, leads them to choose to listen to energetic and positive music, potentially to match their current mood."

Overall, the study highlights the importance of considering broad [environmental factors](#) when analyzing the success of songs in the music market, and provides insight into how music choices are influenced by external factors beyond the music itself.

Nevertheless, Dr. Anglada-Tort added: "this is a correlational study so the results must be interpreted with caution. Correlation is not causation. Although we perform control analyses to account for temporal and seasonal dynamics, but we cannot establish any causal effect between weather and music preferences."

To study this large dataset, the research used machine learning techniques to extract music features from the audio of all songs. They found that audio features varied along two musical dimensions. The first musical dimension corresponded to audio features reflecting [high intensity](#) and positive emotions, such as happiness and joy. For example, Temperature by Sean Paul (2005). The second dimension corresponded to audio features reflecting low intensity and negative emotions, such as sadness. For example, Never Gonna Fall in Love Again by Dana (1976).

Interestingly, not all combinations of music features were related to weather conditions. The researchers found that only music features reflecting high intensity and [positive emotions](#) were associated with [weather conditions](#), whereas [music](#) features reflecting low intensity and [negative emotions](#) were not related to weather at all. This suggests that negative emotional states may be more influenced by individual situational factors rather than general environmental conditions.

The study is published in the journal *Royal Society Open Science*.

**More information:** Manuel Anglada-Tort et al, Here comes the sun: music features of popular songs reflect prevailing weather conditions, *Royal Society Open Science* (2023). [DOI: 10.1098/rsos.221443](https://doi.org/10.1098/rsos.221443)

Provided by University of Oxford

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