

A statistical study of the hot streak

July 12 2018, by Bob Yirka



Credit: CC0 Public Domain

An international team of researchers has conducted a statistical analysis of hot streaks to learn more about this mysterious facet of human nature. In their paper published in the journal *Nature*, the group describes how they conducted their study and what they found.

A hot streak is a commonly used term to describe a series of successful ventures—for example, winning hand after hand in poker, making multiple three-point shots in a basketball game, or winning several games in a row. It is generally tied to human achievement and is steeped in folklore—particularly in sports and gambling. But is it a real thing? And if so, are there characteristics involved with it that could help explain how and why they occur?

To learn more about hot streaks in general, the [researchers](#) studied them as they occurred in three fields with measurable data: artistry, filmmaking and scientific research. Artistic hot streaks, they figured, could be measured by sales price and volume. Filmmaking hot streaks could be measured using box office tallies—and scientific hot streaks could be measured by looking at citation numbers. The researchers obtained data from art auctions, the IMDb database and research paper databases, respectively.

After applying a number of statistical techniques to their data, the researchers came away with several conclusions. The first is that the hot streak does appear to be a real phenomenon. And it happened to most of those individuals they studied—91 percent of artists who sold their work at auctions, for example, experienced a hot streak. The same was true for 92 percent of movie directors and 90 percent of research scientists. But they also found that it was rare for people in any of the three fields to experience more than one hot streak. They also found that the span of time for hot streaks across the three fields was relatively similar—5.7 years on average for artists, 5.2 for directors and 3.7 for [research scientists](#).

Interestingly, the researchers found that having a hot streak did not seem to be tied to productivity—very few of those studied produced any more than they did during times when they were not experiencing a hot streak. Also, hot streaks could occur at almost any time during a person's career.

The researchers note also that they could find no measurable data that might help explain why hot streaks occurred.

More information: Lu Liu et al. Hot streaks in artistic, cultural, and scientific careers, *Nature* (2018). [DOI: 10.1038/s41586-018-0315-8](https://doi.org/10.1038/s41586-018-0315-8)

Abstract

The hot streak—loosely defined as 'winning begets more winnings'—highlights a specific period during which an individual's performance is substantially better than his or her typical performance. Although hot streaks have been widely debated in sports, gambling and financial markets over the past several decades, little is known about whether they apply to individual careers. Here, building on rich literature on the lifecycle of creativity, we collected large-scale career histories of individual artists, film directors and scientists, tracing the artworks, films and scientific publications they produced. We find that, across all three domains, hit works within a career show a high degree of temporal regularity, with each career being characterized by bursts of high-impact works occurring in sequence. We demonstrate that these observations can be explained by a simple hot-streak model, allowing us to probe quantitatively the hot streak phenomenon governing individual careers. We find this phenomenon to be remarkably universal across diverse domains: hot streaks are ubiquitous yet usually unique across different careers. The hot streak emerges randomly within an individual's sequence of works, is temporally localized, and is not associated with any detectable change in productivity. We show that, because works produced during hot streaks garner substantially more impact, the uncovered hot streaks fundamentally drive the collective impact of an individual, and ignoring this leads us to systematically overestimate or underestimate the future impact of a career. These results not only deepen our quantitative understanding of patterns that govern individual ingenuity and success, but also may have implications for identifying and nurturing individuals whose work will have lasting impact.

© 2018 Phys.org

Citation: A statistical study of the hot streak (2018, July 12) retrieved 19 April 2024 from <https://phys.org/news/2018-07-statistical-hot-streak.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.