

The Era of Streaming's Effect on Song Length

As you've grown up, you've witnessed the music industry transform alongside advancements in technology. Think about it: from tuning into the radio, to popping in your favorite CD, to purchasing songs on iTunes, and now having millions of tracks at your fingertips via Spotify or Apple Music for just \$5.99 a month as a student.

Have you ever wondered how these technological changes have influenced the production of songs?

Take the Billboard Top 100, a prestigious weekly chart that ranks the most popular songs based on sales, airplay, and, more recently, streaming. The rise of streaming platforms has reshaped the trajectory of the Billboard Top 100, enabling songs to remain on the chart longer due to the continuous accumulation of streams—something that wasn't possible when chart positions depended largely on one-time purchases [1].

Consider *Old Town Road* by Lil Nas X, the longest-running number-one song in Hot 100 history at 17 weeks. A key to its success? Its “streamability” [2]. At just 1 minute and 52 seconds long, its brief length contributed to repeated plays and higher streaming numbers.

So, here's the big question: Are shorter songs becoming more common in the Billboard Top 100 as streaming continues to favor these quick, repeatable tracks?

Deliverable:

Envision you are a data scientist recently hired by a major record label with a strong presence in the Billboard Hot 100. As the label prepares to launch new songs, they are seeking insights into how song length influences streaming numbers and chart performance in the streaming era. Streaming became the dominant source of music industry revenue in 2016, accounting for 51% of total revenue that year [3]. Your task is to analyze how the average length of songs on the Billboard Hot 100 has evolved since streaming's rise to dominance and to forecast future trends in song lengths for the next 10 years.

To achieve this, you will develop a time series forecasting model using song length and chart date as features. You'll also implement a changepoint at 2016-01-01 to detect any shifts in trends associated with the onset of streaming's dominance.

References:

- [1] Trust, G. (2019, September 17). Hit Songs Stay Longer on Radio Airplay Charts. Billboard.
<https://www.billboard.com/pro/hit-songs-are-staying-on-the-radio-airplay-charts/>

- [2] Molanphy, C. (2019, July 29). How ‘Old Town Road’ became the longest-running No. 1 in Hot 100 history. *Slate*.
https://www.slate.com/articles/arts/culturebox/2019/07/old_town_road_longest_running_number_one_single.html

- [3] Wilson, S. (2017, March 31). Streaming overtakes downloads and physical sales for first time ever in bumper year for music industry. Fact Magazine.
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