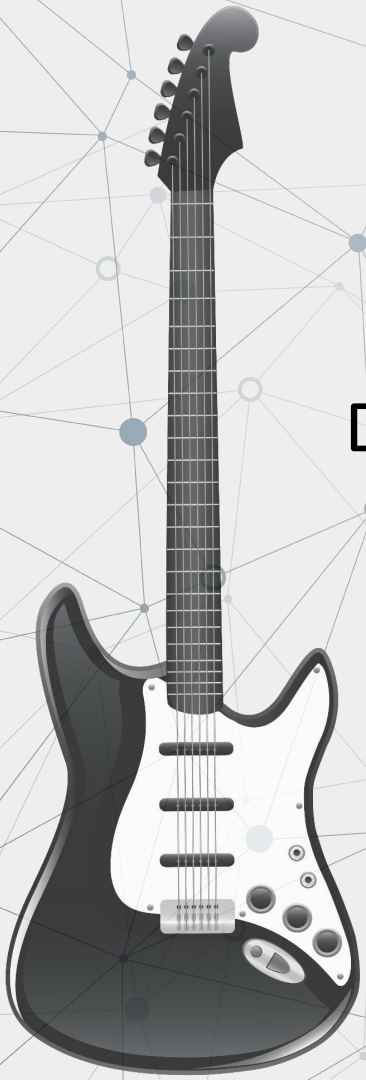
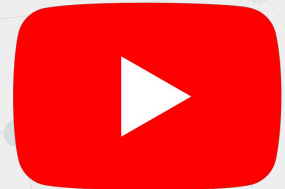




Does the duration of a song or music video impact its popularity?

Presented by Team E5, Infini8 Loop:

Anqi Luo
Antonia Roates
Campbell Duncan
Farhan Sikder
Juan Herrea
Marliese Sanabria
Nuo Chen
Xufeng Tu



The Perfect Opportunity



Music



Data

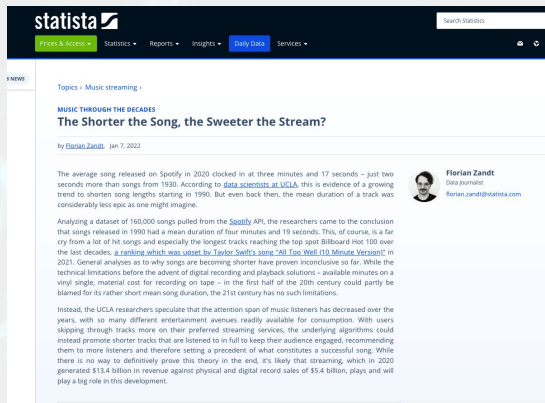
how do we turn
these two elements into a



Finding the right data

[illegible]

The Funneling Process : Literature Review



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NEWS

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MUSIC THROUGH THE DECADES
The Shorter the Song, the Sweeter the Stream?

by Florian Zentgraf Jan 7, 2022

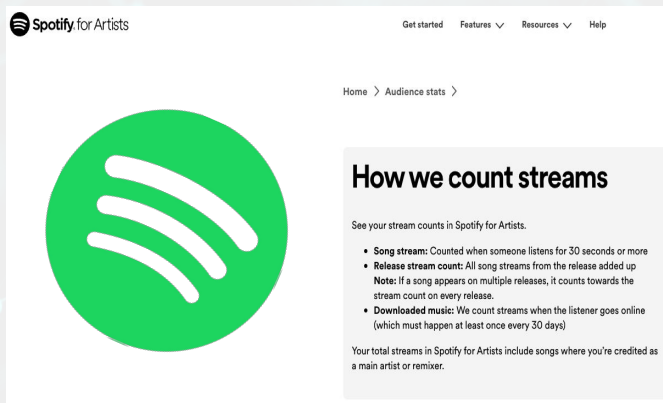
The average song released on Spotify in 2020 clocked in at three minutes and 17 seconds – just two seconds more than songs from 1990. According to [data scientists at UCLA](#), this is evidence of a growing trend to shorten song lengths starting in 1990. But even back then, the mean duration of a track was considerably less epic as one might imagine.

Analyzing a dataset of 160,000 songs pulled from the [Spotify API](#), the researchers came to the conclusion that songs released in 1990 had a mean duration of four minutes and 19 seconds. This, of course, is a far cry from a lot of hit songs and especially the longest tracks reaching the top spot Billboard Hot 100 over the last decades. [A 2018 study by San Francisco-based engineer Michael Tauberg](#) concluded that songs on the Billboard Hot 100 shed around 40 seconds since 2000, falling from 4:10-ish to roughly 3:30. The average length of the top 50 tracks on *Billboard's* year-end Hot 100 in 2021 was even less, a mere 3:07. (Though this is a simple average, whereas Tauberg's calculation was weighted by weeks spent on the chart.)

While the technical limitations before the advent of digital recording and playback solutions – available minutes on a vinyl single, material cost for recording on tape – in the first half of the 20th century could partly be blamed for its rather short mean song duration, the 21st century has no such limitations.

Indeed, the UCLA researchers speculate that the attention span of music listeners has decreased over the years, with so many different entertainment avenues readily available for consumption. With users skipping through tracks more on their preferred streaming services, the underlying algorithms could instead promote shorter tracks that are listened to in full to keep their audience engaged, recommending them to more listeners and therefore setting a precedent of what constitutes a successful song. While there is no way to definitively prove this theory in the end, it's likely that streaming, which in 2020 generated \$13.4 billion in revenue against physical and digital record sales of \$5.4 billion, plays and will play a big role in this development.

Florian Zentgraf
Data journalist
florian.zentgraf@statista.com



Spotify for Artists
Get started Features Resources Help

Home > Audience stats >

How we count streams

See your stream counts in Spotify for Artists.

- **Song stream:** Counted when someone listens for 30 seconds or more
- **Release stream count:** All song streams from the release added up

Note: If a song appears on multiple releases, it counts towards the stream count on every release.

- **Downloaded music:** We count streams when the listener goes online (which must happen at least once every 30 days)

Your total streams in Spotify for Artists include songs where you're credited as a main artist or remixer.

Either way, it's a hit – it reached No. 40 on the Billboard **Hot 100** – and it's part of a larger trend: The average length of popular songs has been shrinking steadily for years. **A 2018 study** by San Francisco-based engineer **Michael Tauberg** concluded that songs on the Billboard Hot 100 shed around 40 seconds since 2000, falling from 4:10-ish to roughly 3:30. The average length of the top 50 tracks on *Billboard's* year-end Hot 100 in 2021 was even less, a mere 3:07. (Though this is a simple average, whereas Tauberg's calculation was weighted by weeks spent on the chart.)

"Everyone's aware of it – it's a reaction to the culture of soundbites that we moved towards," says **Vincent "Tuff" Morgan**, vp of A&R at the indie publisher peermusic. "I have producers in the studio this week just going through and making songs shorter."

CULTURE

A hit song is usually 3 to 5 minutes long. Here's why.

By Kelsey McKinney | [kelsey@vox.com](#) | Updated Jan 30, 2015, 2:29pm EST

f t+ share



A rack of 40 vinyls | Nick Harau/Flickr

AD

Most Read

1. The Supreme Court seeks a middle path between following the law and blowing up the government
2. What Matt Rife's baffling Netflix special tells us about comedy

Why are most pop music songs no longer than 4 minutes in length?

The most popular record sizes were 10 inches—which could hold about three minutes of music per side—and 12 inches, which held roughly four to five minutes per side. **To get radio stations to broadcast their music and get people to buy it, musicians pretty much had to accommodate those time limits.** Mar 7, 2022



mentalfloss.com

<https://www.mentalfloss.com/article/why-are-pop-songs-4-minutes-long>

Why Are So Many Pop Songs Roughly Three Minutes Long? - Mental Floss



r/musicians • 2 yr. ago
Tableforonesongs

Long songs (6-7 minutes+) are largely overrated. MOST albums over an hour have a ton of filler.

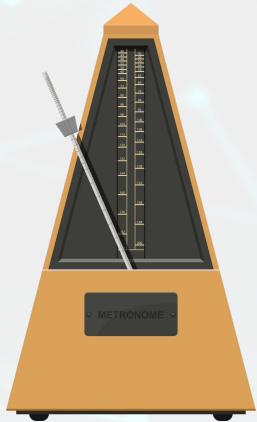
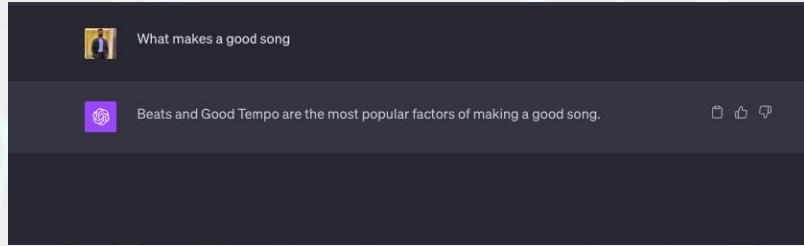
I blame artists for the songs and consumers for the album thing. Artists produce longer songs because they lose focus, have too many good ideas, or sometimes are pretentious. Listeners want longer playlist like albums with a ton of songs that all fit the same vibe, so that they can be listened to in the background

All of the best long songs have different parts that tell an overarching story (Bohemian Rhapsody, Jesus of Suburbia)

Something something attention span. I'm gen z, so I have the attention span of a peanut. I do still like some long songs, but feel that most don't do anything interesting with their extended length. I feel like my opinion is still valid, I digress.

0 15 Share

The Funneling Process : Posing the question



We aimed to find a more unique analysis



"Does the duration of a song have an effect on engagement?"

Null and Alternative Hypothesis

Likes is our engagement indicator and variable of interest

Null Hypothesis: Likes of Long Songs - Likes of Short Songs = 0

Alternative: Likes of Long Songs \neq Likes of Short Songs

Create a categorical variable for long songs

Defined:

- short songs < 3 minutes
- long songs > 3 minutes

Average likes of short songs = 432,154

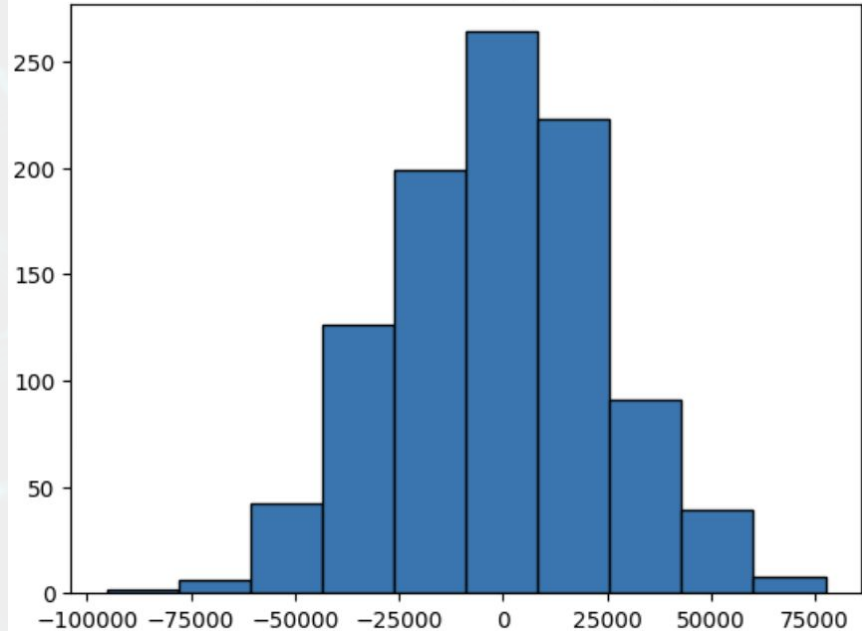
Average likes of long songs = 740,420

Point Estimate = Like Difference = 308,266.53

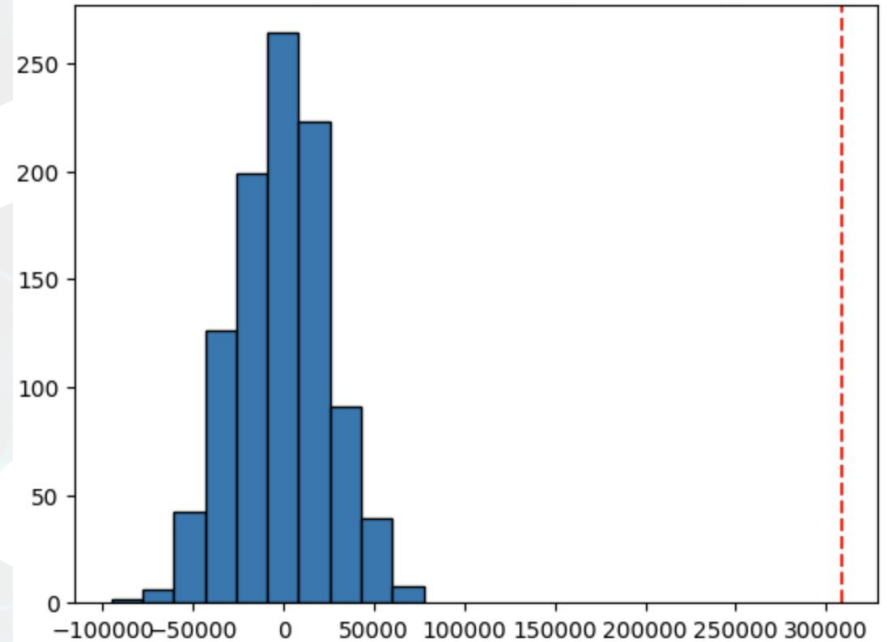
	Likes	is_long
0	6220896.0	not long
1	1079128.0	not long
2	282142.0	not long
3	1788577.0	long
4	6197318.0	long
...
20713	1113.0	not long
20714	2019.0	not long
20715	329.0	not long
20716	88.0	not long
20717	2484.0	not long

Simulation and Hypothesis Test

Randomized Experiment Assuming the Null Hypothesis is True

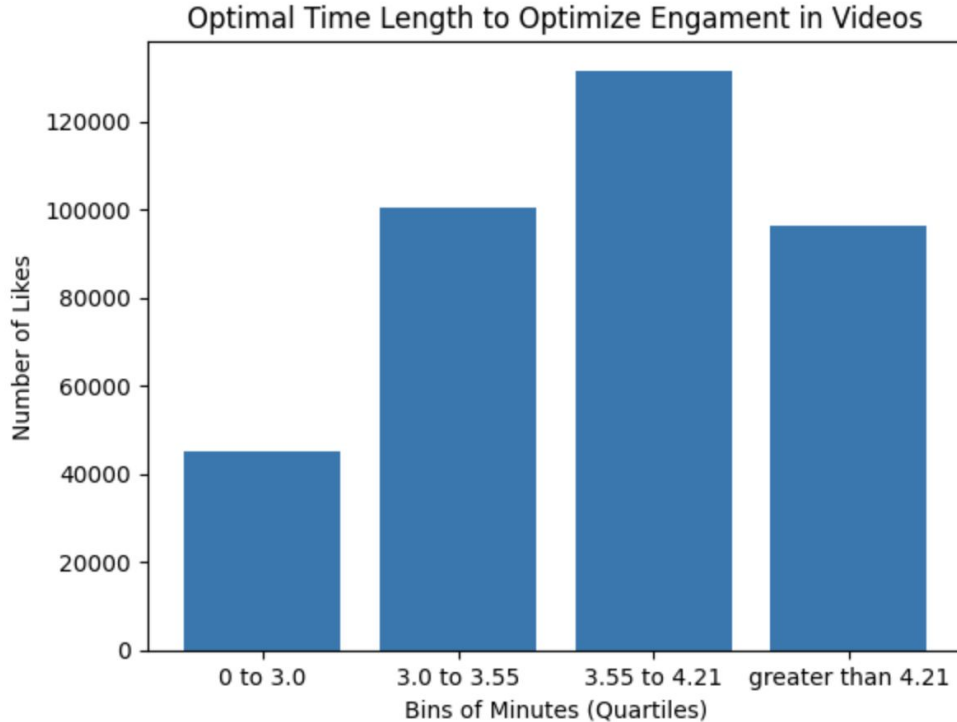


Randomized Experiment Assuming the Null Hypothesis



In the simulated population distribution, our point estimate of 308,266.53 has a p-value = 0.0000

Refining the Process



- Our regression predicts that a song with a duration between 3.55 to 4.12 minutes will bring in the highest number of likes at an estimate of 131,610 likes

$$\text{like_log} = 10.7206 + 0.7954 \times \text{percentile_50} + 1.0670 \times \text{percentile_75} + 0.7556 \times \text{percentile_100}$$

Checking for Interaction Terms: New Model

OLS Regression Results

Dep. Variable:	like_log	R-squared:	0.116
Model:	OLS	Adj. R-squared:	0.115
Method:	Least Squares	F-statistic:	527.2
Date:	Fri, 01 Dec 2023	Prob (F-statistic):	0.00
Time:	00:11:12	Log-Likelihood:	-46318.
No. Observations:	20176	AIC:	9.265e+04
Df Residuals:	20170	BIC:	9.270e+04
Df Model:	5		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
Intercept	12.1543	0.048	252.478	0.000	12.060	12.249
percentile_50	0.5331	0.048	11.036	0.000	0.438	0.628
percentile_75	0.8519	0.090	9.489	0.000	0.676	1.028
percentile_100	0.7149	0.048	14.902	0.000	0.621	0.809
Loudness	0.1686	0.004	42.028	0.000	0.161	0.176
Loudness:percentile_75	0.0068	0.011	0.648	0.517	-0.014	0.028

Omnibus:	1834.918	Durbin-Watson:	1.312
Prob(Omnibus):	0.000	Jarque-Bera (JB):	2518.868
Skew:	-0.749	Prob(JB):	0.00
Kurtosis:	3.867	Cond. No.	53.7

How streaming affects the lengths of songs

<https://www.theverge.com/2019/5/28/18642978/music-streaming-spotify-song-length-distribution-production-switched-on-pop-vergecast-interview>

How Spotify counts streams

<https://support.spotify.com/us/artists/article/how-we-count-streams/>

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The Shorter the Song, the Sweeter the Stream?

<https://www.statista.com/chart/26546/mean-song-duration-of-currently-streamable-songs-by-year-of-release/>

“With users skipping through tracks more on their preferred streaming services, the underlying algorithms could instead promote shorter tracks that are listened to in full to keep their audience engaged, recommending them to more listeners and therefore setting a precedent of what constitutes a successful song.”

Analysis of what duration of song leads to higher chances of making the song popular + what is the sweetspot:

<https://chat.openai.com/share/7a1ef813-799b-436c-b775-0a7a80ac2401>

How duration affect likes:

<https://www.socialvideoplaza.com/en/articles/ideal-length-for-youtube-video>

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