

Shelter-in-place, connect online: What trending TikTok content reveals about social media use during the early days of the U.S. COVID-19 pandemic

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Abstract

TikTok has gained widespread usage in the United States, specifically among teens, which has intensified with the onset of the Coronavirus pandemic. This mixed methods study is a systematic investigation of the themes in Coronavirus-related trending TikToks and how those themes changed over a two-month period. These analyses are based on an original dataset of 2675 TikToks (529 unique videos) across 68 COVID-relevant hashtags. TikToks were tracked and logged for 65 days following the beginning of U.S. stay-at-home orders (March 17 - May 20, 2020). Thematic analysis was conducted using 28 content codes and 9 subject codes. Chi-square tests and line graphs were formulated to analyze changes over time. Results demonstrate five major content categories: documenting Pandemic Life, Spreading Positivity, Healthy and Unhealthy Practices, Business as Usual, and Curated Content. TikToks related to COVID-19 most often documented details of everyday life and/or shared relatable commentary on the circumstances of Pandemic Life. Public Health information was more common in TikToks early in the pandemic and declined during the second month of data collection. TikToks promoting public health outnumbered those exhibiting bad health practices (58:13). This study, which also features TikToks created by families and/or encouraging health and fitness, arguably challenges common stereotypes of social media. Overall, the data show that viral TikToks most prominently reflect how people connected online by sharing experiences and stories. Results are analyzed and discussed with prior studies based on viral content, TikTok, and social media in relation to the COVID-19 pandemic

Genesis and Motivation for Research

My research was motivated by my profound interest in how adolescents use social media, and TikTok in particular, which stemmed from my own personal experience with the platform and my previous scientific research in this area. I had already begun to conduct research on TikTok during my junior year, so I knew that there was very little scientific literature about this youth-dominated platform. My junior year research project was focused on the socioemotional well-being of adolescent TikTok users, and was conducted to satisfy my personal concern about how my usage might be impacting my own moods. After I completed the research in 2019, the app was even more popular, so there was more to learn about how it was being used and what impact it was having. In early 2020, I began to search for mentors that could guide me. When my school went remote due to the pandemic, my research mentor and I were already exploring potential dimensions for a study and concluded independently that we had to capture this moment while it was happening. I began data collection almost immediately, without a clear research question, because we had no idea about the scope or duration of the pandemic. I was eager to collect as much data as possible about how people were posting about Coronavirus on TikTok to see where the data would lead me and what insights it could offer. The results of the final research contribute to our burgeoning knowledge of trending content by offering a snapshot of the social media landscape during a crisis, showcasing the connection social media provides, and exposing its commercial facets.

Conducting Research During the COVID-19 Pandemic

My high school and extracurricular activities all went remote or were cancelled due to the shelter-in-place orders stemming from Coronavirus, starting on March 12, 2020. My family quarantined alone until August 2020, visiting only my grandparents, and even then through a closed window. Accordingly, I conducted research from home. Because my research topic was based upon social media, I was able to collect my data online using the TikTok app and conduct

the analysis using software on my home computer without the need for expensive lab equipment. Though I'm sure it would have been a richer learning experience to work alongside my mentor in person, I am very lucky that I was still able to meet her on Zoom weekly and communicate through text and email almost daily.

My Passion for Math and Science

Completing this research has deepened my enthusiasm for math and science. In my previous research study, I applied a regression analysis to the data, employing concepts I had learned in school from AP statistics. Reading other studies and conducting my own has reinforced my commitment to acquiring advanced statistical skills. In the current study, I created line graphs to plot my data trajectory, and I learned how to conduct chi-square testing as well. By using the scientific method and mathematical tools, I was able to contribute meaningful findings to existing scholarship.

This research study has also reminded me of the need for basic math literacy for everyone. Understanding of math and statistics is critically important throughout education and in comprehending basic information about the world. I have dedicated myself to spreading my love of math through volunteer tutoring of low-income girls of color at my local community center over the summer and during the school year. This helps improve their individual math skills but more importantly it boosts confidence to see another girl of color reveling in math. It is very rewarding to help girls develop their math ability and conviction.

Advice for High School Students

Chase your own curiosity! I was chasing mine when I first decided to investigate how TikTok was making teens feel by sleuthing for the answers to questions that I had encountered in my own life. It took resilience to find a scientist to mentor me. Many were too busy or unfamiliar with youth social media platforms like TikTok. When working on my research project, that resilience

carried me through tough days when data collection took six straight hours, but I had to continue without breaks in order to guarantee the most reliable and thorough data. Ingenuity was indispensable for conducting the chi-square statistical test, because I had to troubleshoot through this novel dilemma by searching online for tutorials, reading other studies that applied the formula, and consulting with my mentor. Ultimately, I was able to endure these many challenges because of my genuine interest in my research subject.

Know that teen perspectives are valuable, and arguably critical. As younger people, less experienced in our fields of research, we often assume that we are inherently inferior to our guiding scientists. It is important to learn from those people because they have a lot to offer and teach. It is also imperative that we recognize our own individual skills and contributions. As a teen qualitatively studying social media, I came into my research with a lot of preexisting knowledge about how my platform (TikTok) works mechanically and about the social norms and references used on it. I often had different insights than my mentor because she didn't use TikTok. In order to conduct a true ethnographic study, the researcher must reach insider status in the community they are wishing to document; that is a quality that teens can achieve most fully as the true insiders of social media. Accordingly, adults often lack this knowledge which makes teen conducted studies all the more valuable and cutting-edge.

Layperson's Summary

The spectacular surge in usage of TikTok, a social media app favored by teens, has further escalated during the COVID-19 pandemic. This study gathered over 2000 TikTok posts during the period where many were forced indoors and deprived of social interaction and normal routines, between March 17 and May 20, 2020. To determine how users were communicating and expressing themselves about the pandemic on TikTok, the study focused on the top trending, coronavirus-related posts and then analyzed both the content and frequency of themes using statistical analysis and content coding. This study examined two research

questions and two hypotheses and found five major themes in the data. The most popular content theme was *Pandemic Life*, or posts chronicling everyday life navigating the restrictions on ordinary activities and habits. Statistical analysis showed that TikTokers posted more frequently about *Healthy and Unhealthy Practices*, or adherence to public health guidelines, in the early data collection period whereas the *Business as Usual*, or typical TikTok posts, and *Curated Content* were significantly more frequent in the later data collection period. This study compiles and measures communication on a youth-dominated social media app during the most profound disruption in our lifetimes.

Study Overview and Key Components

Data Collection

For 65 days, I tracked top TikToks on trending COVID-relevant hashtags (n=2675 total TikToks; 529 distinct TikToks). Data collection spanned March 17-May 20, 2020. The aim was to identify and track trending TikTok content related to the COVID-19 pandemic. Each day at 3:30pm, I tracked the top five TikToks on each of five COVID-specific hashtags (#coronavirus, #corona, #socialdistancing, #quarantine, and #coronacare), as well as the top five TikToks on any of the top 10 trending hashtags platform-wide that related to the pandemic and/or its conditions (e.g., #safehandshygiene, #boredathome, #onlineclass). Each post was logged with date trending and date posted; a written description (including verbatim transcription of audio); URL, song/audio name, caption, and metrics (i.e., number of views, likes, comments, shares).

Qualitative Coding and Analysis

I coded my data following the six phases of thematic analysis defined by Nowell et al. (2017) with the aim of creating a full set of codes to capture themes in (a) content of each video (e.g., *Healthy and Unhealthy Practices*, *Milestones*) and (b) video subjects (e.g., *Solo*, *Family*). The final codebook included code name, definition, examples, and application notes for each of the

study’s 28 “Content” codes (grouped into the five overarching categories reported below) and nine “Subject” codes. To ensure each code was clear and consistently in use, I completed an inter-rater reliability process with my mentor using Dedoose (a qualitative analysis software).

Quantitative Analysis

Chi-square tests facilitated my analysis of differences in code prevalence between the first (March 17 - April 20; “Month 1”) and second half (April 21st - May 20; “Month 2”) of data collection. To add a quantitative aspect to my research, I decided to separate my data into two different time periods (each approximately 1 month long). I then determined the prevalence of application of different codes and major code categories within each period. I conducted chi-square testing of these values in relation to total posts coded within each period. Chi-square is a statistical hypothesis test of the significance of differentiation of data sets. Chi-square testing only requires expected and observed values of a dataset.

Chi-square equation

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Frequency of code categories overall and by month (with chi-square test results)

Code Category	Frequency			χ^2	p-value
	n	Month 1	Month 2		
Pandemic Life	344	69%	60%	1.708	.19123
Life at Home***	162	72%	28%	20.225	.00001
TimelyToks***	129	81%	19%	37.281	.00000
There@Home *	76	41%	59%	5.875	.01536
Milestones***	75	23%	77%	30.918	.00000

Lifefore	21	38%	62%	2.317	.12798
Still at Work*	19	32%	68%	4.074	.04356
Spreading positivity	82	16%	15%	0.002	.96421
Healthy and Unhealthy Practices***	71	19%	7%	14.935	.00011
Public Health***	58	83%	17%	18.513	.00002
Bad Practices	13	54%	46%	0.003	.95465
Business as usual**	276	44%	62%	7.588	.00588
Curated content***	185	22%	51%	31.605	.00000

*p<.1,**p<.01,***p<.001

In order to analyze the data in an even more detailed way, I tracked the theme category and *Pandemic Life* code application frequencies across the different weeks of data collection. For the theme categories, I compiled the frequencies of applications of individual codes within the theme categories (accounting for double coding). I then separated the theme category and *Pandemic Life* application prevalences by week in relation to the amount of coded posts per week to provide frequency percentages.

Figure A.
Theme categories frequency

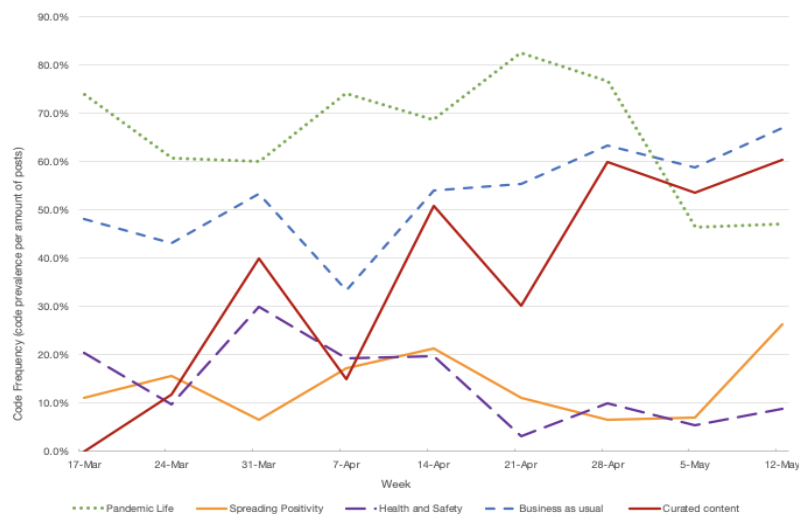


Figure B.
Pandemic Life codes prevalence

