An Analysis of TikTok's Platformization Impact and Social Media Marketing Strategies

An Interactive Qualifying Project
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by

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Abstract

After the Covid-19 pandemic, TikTok became a large social media platform influencing the opinions of over a billion users. Sponsored by CloudYo Technology (云哟科技), the goal of our project was to determine key variables for businesses to prioritize to increase viewership of their content on TikTok. The results from our experiment provided evidence that certain variables had a larger relationship to viewership than others, although each was significant. However, due to oversight and procedural roadblocks, our findings and project better serve as a pilot study for future topic endeavors.

Acknowledgments

Executive Summary

Having a user base surpassing one billion, combined with its easily digestible content, has made TikTok's platform a prime asset for businesses large and small (TikTok, 2021). In the case of social media advertising, the literature emphasizes benefits including lower costs and wider audience reach (Chu et al., 2022). Unlike most other social media platforms that are photo and text centralized, TikTok revolves around short videos. As such, businesses have to switch to more innovative means of marketing. Rather than posting the typical photo and text overlay advertisements, brands often compose a wide variety of dynamic video content to highlight their products and services to users: partaking in trends or concocting online challenges to engage with users. However, there exists a difference in understanding its marketing potential and understanding how to best *utilize* TikTok in marketing.

For this Interactive Qualifying Project (IQP), our team investigated how potential variables affect viewership on TikTok via the platform's algorithm, with the intention of providing insights on how to increase in-app content interactions with users. Using TikTok's algorithm, we evaluate the platform governance system used to curate the content shown to users, which is crucial in the context of targeted advertisements. Understanding *how* such underlying algorithms react to the alteration of certain in-app variables would ultimately provide the sponsor with a better understanding of how to optimize posted content so that it may reach relevant audiences.

TikTok Video Posting Experimentation

This project was completed as a two-part project to satisfy the two objectives that we set forth. Our first objective was to determine what variables would most significantly impact the viewership of content on TikTok. After researching how the TikTok algorithm curates a user's For You Page (FYP), we came up with a list of potential variables to further test. After discussing with the project sponsor, we decided to focus on the following variables: internet connectivity, hashtags, and background audio. Since there is a lack of prior research regarding the effect of internet connectivity on the effect of viewership, this was a variable that our sponsor was especially interested in, since connectivity is a critical

measure of user experience for online platforms (e.g. Berman and Katona, 2020; Rhiu and Yun, 2018). In addition to the independent variables that we chose above, content and followers were additional extraneous variables that we identified and planned to isolate the impact of during our project.

After identifying the key variables in our project, we were able to design and begin our data collection process. Each internet connection type would have a phone only linked by one type of connection to ensure that switching connection types on a phone would not affect the data. Wi-Fi and cellular data would be tested by the Worcester Polytechnic Institute (WPI) team, and VPN and IP-Box connection would be tested by the Hangzhou Dianzi University (HDU) team. In order to gather enough data, we planned to create and upload 100 unique posts in the span of approximately a month. Four posts would be uploaded daily, with two in the morning and two in the afternoon. Each unique post would be posted on all eight accounts, with the key variables varying between each connection type—representing an experimental condition. Each account's followers were recorded before postings, and after 48 hours had elapsed, the current views and likes on each post was recorded onto Google Sheets.

However, due to unforeseen circumstances, our data collection process had to be altered in various ways. One underlying issue was the HDU team not receiving the necessary equipment to collect the data for VPN and IP connections—requiring a first major adjustment to this study. We then could then only experiment with data collection and comparison between Wi-Fi and Cellular data with respect to internet connectivity. Another alteration was updating our daily posting methodology towards the end of the data collection process. All four videos would be posted around noon in order to enable us to prioritize the data analysis. This experimental redesign was eventually reduced to two daily posts, as we encountered a blocker that we were trying to avoid: *shadow banning*. All of the accounts besides Account 1 were shadow-banned, which essentially removes an account using TikTok's algorithm—this situation resulted in zero views for each of the shadow-banned accounts. We reduced the daily posts to two on Account 1 because we still wanted to track the growth but didn't want to potentially have TikTok flag the account for posting too many similar videos a day. We planned to continue posting on the remaining

seven accounts after the shadow ban was lifted, but unfortunately the shadow bans didn't get lifted by the time the project ended.

Video Posting Experimental Analysis and Reflections

We performed a correlation analysis, using Statistical Package for the Social Sciences (SPSS) software, to determine the magnitude of correlation to increases in views for each variable. SPSS is a statistical analytic tool the HDU team used to execute the correlation analysis. The data was coded as zero-one for the three key factors. A zero was assigned for key factors *with Wi-Fi connection*, *with audio*, and *with hashtags* key factors. A value of one was assigned to *cellular connection*, *no audio*, *no hashtags*. The major correlations we were considering were the number of views versus each of the key variables.

The correlation analysis in Table 3 shows there is a negative correlation for each of the three variables when compared to views. Thus, given the coding, in each case the key factor that was assigned a lower value (the zero valued key factors) had greater views.

Each experimental variable shows a statistically significant relationship at the $p<0.01$ level. The negative correlations mean that when Wi-Fi, audio, and hashtags were present, viewership had a larger value. The results initially pointed towards posts gaining more views while on Wi-Fi, background audio, and hashtags. Using the Pearson Correlation method, we were able to find specific magnitudes of correlation for each variable. From smallest to largest the correlation order was connection mode, audio, and hashtags. An important detail to note is that the magnitude of correlation for hashtags was almost double the magnitude of correlation for connection. In turn, this means hashtags relate the strongest to an increase in views.

A regression analysis is also performed to determine the magnitude across multivariable relationships between views (the dependent variable) and each key (independent) variable. For multivariate regression analysis to be an acceptable methodology two tests were needed: (1) a test for multicollinearity between each independent variable and (2) the residual of the data (error term) to be normally distributed with a mean of zero.

In Table 4, Table 5, and Figure 25, the data analysis shows that regression analysis is relatively reliable due to R being above 0.4 with acceptable Variance Inflation Factors (VIF) being below five, and normal probability plots (normal P-P plot) showing in Figure 25 showing normality of residual distributions. The R of the overall regression is significant with F values greater than 10 (Tables 6, 7, and 8), representing a significance of $p<0.0001$.

Overall, based on the data analysis, we can then conclude that having hashtags, background audio, and a Wi-Fi connection can lead to increased views on a post. Additionally, hashtags are the most important followed by background audio and then connection type.

Overall, it is important to note that this experiment was a success as a *pilot* study for future in-depth testing but not a deep enough study to alone.

Unsuccessful TikTok LIVE Experimentation

Due to many unforeseen project blockers, we were not able to perform the live streaming experiments. One blocker we did not anticipate was that TikTok has a 1,000 follower requirement to have the LIVE button enabled on an account, as it was not publicly detailed on their own website. The live streams would also frequently stop themselves due to both phone software problems on the cellular data phone provided by the sponsor, as well as poor Wi-Fi connection on the Wi-Fi phone. While our sponsor was able to resolve the software problems and help purchase the 1,000 followers, it proved futile as we proceeded to receive zero viewers still. We believe that this was due to the followers only consisting of *bot* accounts (a bot is an autonomous program on the internet or another network that can interact with systems or users). TikTok's algorithm also may have noticed that we had a huge spike in followers on a new account, thus shadow banning them.

We hope that by identifying these blocks, future projects that utilize TikTok LIVE are able to design a better study to avoid these blockers and gain valuable data.

Final Recommendations

Based on the findings and results from this project, we have produced a list of recommendations that may be useful for businesses or normal users of TikTok to more effectively utilize TikTok's algorithm to increase their viewership

We highly recommend prioritizing hashtags on posts. As seen in Table 3 in Section 4, *Findings*, hashtags had the highest correlation to viewership. As a result, we recommend that posts be tagged with the most popular hashtags that relate to the type of content being posted. Sites like tiktokhashtags.com can be used to generate additional popular hashtags relating to a singular hashtag, allowing businesses to maximize the potential coverage.

We also recommend focusing on background audio for posts as a secondary focus to increase viewership. As seen in Table 3, views had the second highest correlation to viewership. We believe that hashtags were higher because the algorithm wants to give users content that they want to see, rather than background audio that they enjoy. However, background audio is still important, as the algorithm tends to push out general content with viral sounds, which can still help businesses with reaching a wider audience. Picking background audio that fits post content also greatly enhances the quality. In designing posts various audio can be tested in focus groups before use to get an initial perspective on preferences.

We recommend placing a lower emphasis on internet connectivity for video upload, but higher for live streams. Out of the three independent variables that we tested for video uploads, internet connectivity had the lowest correlation and beta coefficient (although significant) out of the three with regard to viewership. It matters the least for video uploads. Once content gets uploaded, connectivity on the uploader's end no longer plays a role. However, internet connectivity can affect the quality of live streaming. It is especially important for the provider (in this case TikTok) to have good enough internet quality to the point where it doesn't detract from the live stream quality.

Businesses should stick with Wi-Fi, and switch to cellular data only if Wi-Fi remains too unstable. We recommend speeds of at least 6-10 Mbps upload for good live stream quality.

We recommend that more consideration and effort be placed into the content of the posts. For the given amount of time, we had to generate many posts to analyze, we chose to keep the content all related to Zodiac sign posts. It was simpler to rapidly create these posts for experimentation and control for a number of variables. However, we believe that was one of the reasons that led to the majority of our accounts getting shadow banned, as the content was too similar between the accounts and between the posts themselves. We recommend considerably more time and effort be placed into creating unique content to more effectively attract new viewers, as well as ensuring that the content remains fresh so current viewers don't believe your content is getting stale and leaving. The difficulty in these situations is that content may play a role and needs to be carefully evaluated and included in the experimental design.

Authorship

Maya Liao, Jacob Schools, Edison Zhang, and Eric Zhou all contributed to the research and data collection of this project, as well as creating all the presentation slides. The following is a breakdown of the individual responsibilities in writing this report.

Maya Liao was responsible for the report introduction, Background Section *2.3 TikTok* as well as the final report conclusion in Section 5.3. Maya also aided in the proofreading and editing of the report in its entirety.

Jacob Schools was responsible for the introduction and *Expanding into TikTok* section of the Executive Summary, the first draft of the acknowledgments, half of the draft for the Methods section, all of Section 4 *Findings*, and *Appendices*.

Edison Zhang was responsible for the *TikTok Video Upload Experiment* and *Final Recommendations* section of the Executive Summary, the abstract, half of the draft for the Methods section, the final version of Section 3.2 *Data Collection*, the final version of Section 3.3 *Data Collection Alterations*, the draft for Section 3.4 *Livestreaming on TikTok*, and Section 5.1 *Recommendations for Increasing Viewership*. Edison also created the diagrams for Figure 14 and Figure 16 used to illustrate a physical representation of our data collection process.

Eric Zhou was responsible for writing the first two sections of the Background, as well as Section 5.2 *Challenges and Recommendations*. Eric also helped with the final versions of Section 3.5 *Livestreaming on TikTok* and the Executive summary, as well with general formatting and editing of the paper.

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1. Introduction

The day you've been waiting for is rapidly approaching: the official launch of your new business. The inventory is prepped for immediate shipments, as is your website for the long-anticipated arrival of e-commerce traffic. The only thing that stands in your way now is the lack of product exposure–how will you advertise? TikTok seems to be the new trend in marketing; however, even after investing time and money into creating high resolution product content and developing a well-curated business account, you only have two views to show for it. With all this investment into TikTok, how is your business not famous yet? Why haven't you "gone viral"?

Well, the problem may not be that your videos are not visually appealing or interesting enough, as there exist other variables aside from the content itself that influence success on TikTok. Additional factors such as the content's category, appended hashtags, and background audio are each considered by the underlying algorithms that govern content viewership.

As TikTok's social platform has grown, it has proven itself unique in its ability to "hook" users such that emerging research has investigated the addictive qualities leading Millennial and Centennial generations to return to the app (Cuesta-Valiño et al., 2022). A user base surpassing one billion, combined with its easily digestible content, has made the app a prime asset for businesses large and small (TikTok, 2021). In the case of social media advertising, the literature emphasizes benefits including lower costs and wider audience reach (Chu et al., 2022). More consumers utilize social media to learn about unfamiliar products (Naylor et al., 2012). Unlike platforms that are photo and text centralized, such as Instagram and Facebook, TikTok relies on short videos to garner user interactions. As such, companies are forced to resort to more innovative means of marketing. Rather than posting the typical photo and text overlay advertisements, brands often compose a wide variety of dynamic video content to highlight their products and services to users: partaking in trends or concocting online challenges to engage with users. However, there exists a difference in understanding its marketing potential and understanding how to best *utilize* TikTok in marketing. Thus, CloudYo Technology—our project sponsor—is looking to acquire insights

on optimal TikTok content design as well as methods of internet connectivity for TikTok marketing.

CloudYo Technology is a Chinese cloud-computing solutions company, which has recently invested its resources into researching the utilization of live streaming for e-commerce on Douyin (抖音). Douyin is a platform similar to TikTok: it is a Chinese social media platform with a monthly active user base of approximately 613 million as of December 2021 (Thomala, 2022). From their investigation into Douyin, CloudYo Technology hopes to expand their marketing operations globally, starting with Douyin's international counterpart: TikTok. CloudYo Technology's primary objective with TikTok is to begin testing the development of global e-commerce marketing through social media by providing businesses with a way to effectively build brand awareness for a low cost. This includes identifying the key factors, methods, and hardware necessary for effectively running targeted advertisements on the platform.

For this Interactive Qualifying Project (IQP), we investigate how potential content variables may affect viewership on TikTok via the platform's algorithm, with the intention of providing insights on how to increase in-app content interactions with users. Using TikTok's algorithm, we evaluate the platform governance system used to curate the content shown to users, which is crucial in the context of targeted advertisements. Understanding *how* such underlying algorithms react to the alteration of certain in-app variables would ultimately provide the sponsor with a better understanding of how to optimize posted content so that it may reach relevant audiences.

The remainder of this report begins with a background section which provides the context and background literature that influences our study's design, execution, and analysis. We then present a methods section that outlines our data collection and analysis procedures. From this point, we delve into our experiment findings, where we introduce the raw data gathered, quantitative analyses, and any limitations that might have impacted our results. Finally, we offer our overall sponsor recommendations, project challenges, and concluding remarks.

2. Background

The purpose of this section is to provide an understanding of how social media–more specifically, TikTok–can be valuable in business applications. The section begins with information on our project's sponsor and his company's goals, followed by a brief history of social media and how businesses and companies have utilized these virtual networks to expand their influence. We then transition into the IQP's objectives through a segment dedicated to the TikTok platform, where we provide background on the app's user interface and other features central to our study. We then conclude with our final reasons for investigating TikTok and why the app is of increasing relevance in the social media marketing world.

2.1 CloudYo Technology (云哟科技)

Our project sponsor liaison, Felix Xia, holds degrees in Electrical Engineering and Economics from renowned universities across China and Europe. In 2016, Felix Xia co-founded CloudYo Technology (云哟科技) with William Lee, which focuses on providing cloud computing solutions.

CloudYo Technology's goal on TikTok is to expand their global e-commerce marketing. Their mission is to provide businesses with a low-cost solution to effectively build brand awareness. To accomplish this mission, CloudYo Technology plans to deploy numerous internet traffic distribution terminals, otherwise known as *IP Boxes*, in local areas. The IP Boxes help to improve overall network connectivity and facilitate remote access to overseas devices.

The IP Boxes are expected to be relatively inexpensive to manufacture and easy to set up, requiring only an Ethernet and power cable. Additional software currently being developed by CloudYo Technology could grant businesses with analysis software and real-time monitoring and maintenance systems. With this potential software, the IP Box could provide businesses with an efficient and intelligent custom hardware solution for overseas internet traffic distribution. These systems are meant to improve connectivity, providing the companies with an advantage for their users. The future software can also be marketed as Software as a Service (SaaS). A prototype of the IP Box can be seen below (Figure 1).

Figure 1: CloudYo's IP Box

Since the IP Box is still in early development, our sponsor seeks to identify necessary components. One variable they tasked our team with investigating is the effect of different internet connection types. The connection type variable will include Wi-Fi, Cellular, Virtual Public Networks (VPN), and Ethernet via the IP (Internet Protocol) Box. Additional information on these variables are detailed in our Methods section. Knowing which, if any, of the connections make a significant impact can help CloudYo Technology determine what pieces of hardware to include in the IP Box.

2.2 The Rise of Social Media and its Business Potential

Widely considered to be the first social networking site, Six Degrees was founded in 1996 and amassed 3.5 million registered users before being sold off to YouthStream Media Networks in 1999 for $125 million (Read, 2015). Seeing the success of Six Degrees' "social

media network model", other sites like MySpace emerged, becoming the first site to hit a million monthly active users in 2004 (Opsina, 2019). Since then, many other social networking sites have risen to prominence, further bringing in new users from all over the world. As of October 2022, analysis from Kepios showed that there are 4.74 billion social media users around the world, which accounts for 59.3% of the population (Data Reportal, 2022).

With the potential audience businesses can reach on social media, it is unsurprising that many have invested resources into expanding their marketing influence on every major social media platform. As of 2021, the global Social Media Market size was approximately $153.7 billion, accounting for 33% of the total Digital Advertising market. Furthermore, the United States' Social Media Advertising market is the largest, generating $56.7 billion in 2021 and making up 29.8% of the total United States Digital Advertising market (Statista, 2021). With this investment, United States social media giants have been able to increase their platform to large audiences. In a 2022 survey conducted by Statista in the United States, 1,200 individuals between the ages of 18 and 64 years were asked to identify if they recognized a given brand, even if only by name. Results showed that YouTube and Facebook had a brand awareness percentage of 92%, with Instagram and TikTok having a brand awareness of 88% and 86% respectively (Statista, 2022).

It is crucial then for businesses to promote, market, and advertise to build reputation. A research study conducted in 2021 analyzed the connection between brand content on social media and consumer interaction: specifically, luxury brand Manolo Blahnik's content on Facebook. The study concluded that brand content significantly facilitates consumer sharing and positive comments. Findings additionally showed that Manolo Blahnik's followers held optimistic assessments of the brand's content, which provoked more positive reactions (Castillo, 2021).

In order to obtain positive reactions on social media and capture this new audience, businesses require consumer connection and engagement. Social media is a place where such types of options can be pursued. Storytelling has been used by businesses to promote brand awareness. The goal of this communication strategy is to establish online relationships with consumers by either revealing the company's history or some symbolic event. For example, on January 22nd, 2020, American snack company Planters tweeted the

"death" of their mascot Mr. Peanut at the age of 104 on Twitter, garnering 122.9K likes and 27.4K retweets to this day (see Figure 2).

Figure 2: Mr. Peanut's Death Tweet

The company then showed a Super Bowl ad later with the rebirth of Peanut Jr, which additionally received nearly 40K likes on Twitter (see Figure 3).

Figure 3: Peanut Jr.'s Debut Tweet

Using a social media statistics tracker and analytics site such as Social Blade, Mr. Peanut's Twitter account grew from approximately 47,000 followers in December 2019 to 83,500 by February 2020 and 136,000 at the end of March 2020, nearly tripling their initial follower count. The number of followers is an important metric for determining success of social media (Kim, 2020).

Alternatively, some businesses have enabled consumers to direct the narratives in a similar strategy known as *storygiving*. By giving consumers an effective narrative tool, companies facilitate the formation of communities that can converse about the brand indirectly through user-generated stories. One such example of this is luxury jewelry and specialty retailer Tiffany & Co. 's *What Makes Love True (WMLT)* campaign, where they launched a microsite in 2011 asking their current and prospective customer base to share how, where, and when they experienced true love (Hughes, 2016).

In recent years, creating collaborations with influencers has also been a successful strategy in brand growth– "influencers" referring to individuals with significant followings on social media. In a 2020 study published by MIT, the authors concluded that overall marketing strategies may vary depending on the business's objective. If the objective was to increase brand awareness, brands can sponsor top-tier influencers and celebrities to build up initial hype; then once it's reached a certain level of popularity, they expand to include more influencers to reach an even larger range. However, if the objective was to increase consumer trust in their brand, businesses should seek influencers whose expertise are aligned with consumer interests (Mou, 2020).

Social media growth has become even more important to brands, following the increase in online activity from the COVID-19 pandemic. In a survey published by eMarketer, every major social media platform saw a substantial increase in the average time spent per day by American users between 2019 and 2020. TikTok and Twitter saw the most notable growth, with TikTok going from 25 minutes a day to 33 and Twitter following similarly from 26 minutes a day to 33 (eMarketer, 2021). TikTok especially has seen explosive growth in the past few years, with approximately 508 million global monthly active users (Reuters, 2021) in December 2019 around the beginning of the COVID-19 outbreak to breaking a billion global monthly active users on September 27th, 2021

(TikTok, 2021).

Many of these new users come from younger generations who have begun entering the workforce and subsequently bringing in an increasing amount of disposable income. If consumer-based businesses want to survive, it is necessary that they maintain appeal to present and future generations. In a study conducted by Microsoft, it was found that, from the year 2000 to 2015, the average attention span dropped from 12 seconds to 8 seconds (McSpadden, 2015). This decline can be attributed to Gen. Z growing up in a world where they are surrounded by technology with readily accessible information. Gen. Z also has the highest number of daily active social media users, with 50% reporting they use it daily, compared to Millennials at 44% and Boomers at 26% (Morning Consult, 2022). With this consistent decline, businesses are adapting to shorter ads that efficiently catch viewers' attention while trying to incorporate additional factors such as trending topics (Ranieri & Co, 2021). This is where TikTok comes into play, being known for its shorter content and booming popularity in recent years.

2.3 TikTok

Our study focuses on investigating the various features offered on TikTok's platform as factors for successful content. For the sake of our project's purpose, "successful content" shall be categorized as videos that receive a relatively high number of views and interactions (e.g. likes, comments, shares, etc.) from other TikTok users. With this goal in mind, this section begins with a brief overview of the platform's history, followed by a comparison between its Chinese counterpart, Douyin. Because our sponsor is based in China, we'd like to emphasize the application precedents set there and how they might differ internationally for the sake of offering a broader perspective on potential platform value to businesses. We then shift focus to explain TikTok's user interface to provide a better understanding of the content layout and creator tools for those who are unfamiliar with the application. Furthermore, to indicate how we determined factors of interest to our study, we offer a high-level understanding of the content algorithm employed by TikTok that is responsible for determining the videos shown to each user. Collectively, both the user interface and algorithm background guide development of the final project

methodology and sponsor recommendations. The section then concludes with examples showcasing the unique utility of TikTok for businesses, which is valuable information for providing longer term marketing recommendations to our sponsor.

2.3.1 Platform History

Launched by Chinese information technology company ByteDance in 2016, TikTok is a social media platform that allows users to create and interact with short-form video content (D'Souza, 2022). From beauty advice to personal finance, the 15 to 180 second videos posted onto the platform satisfy a wide array of user interests. Due to this, the app has garnered an ever-growing audience, having hit one billion monthly active users just five years after its initial release (TikTok, 2021).

TikTok's success as a platform can be attributed in part to ByteDance's strategic acquisition of Musical.ly in 2018. Similar to TikTok, Musical.ly was a short-video based social platform where users could lip-synch to music. By purchasing the platform in 2018, ByteDance combined "TikTok's [Artificial Intelligence]-fed streams and monetization track record with Musical.ly's product innovation and grasp of users' needs and tastes in the West" (Fannin, 2019). As of September 2022, Shopify reports TikTok as the sixth most popular social media platform worldwide, estimating a total of 1.02 billion users (Shopify Staff, 2022).

This makes TikTok a valuable channel for companies to market their goods and increase brand exposure. The sponsor could consider TikTok as a prime part of its campaign to help businesses and users—globally—connect by harnessing its unique social media model.

2.3.2 TikTok Vs Douyin (抖音)

Around the same time TikTok was launched internationally, the platform's parent company, ByteDance, also released a China-specific variation called Douyin (抖音) (see Figure 4).
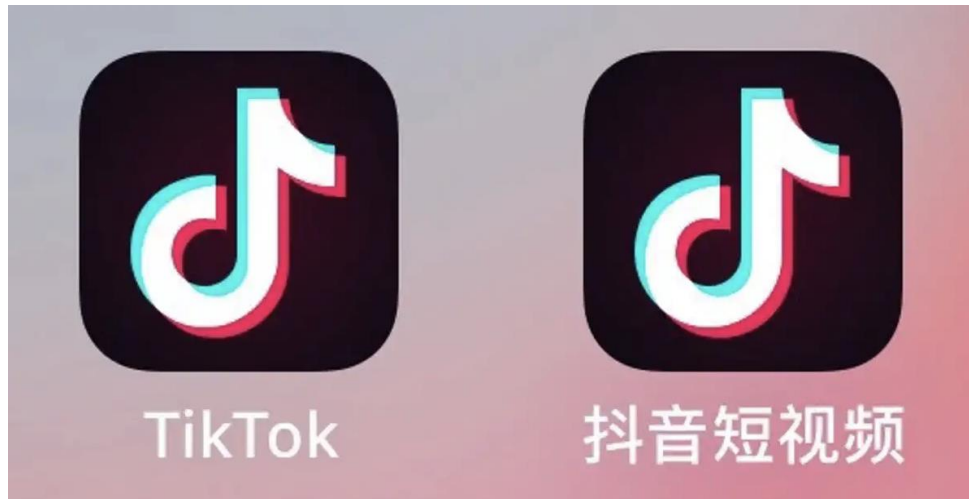
Figure 4: TikTok App Icon (left) and Douyin App Icon (right)

Though ByteDance attempts to market the two platforms as identical, TikTok and Douyin operate on entirely separate systems. This means that content is platform exclusive: Douyin users cannot see TikTok posts and vice versa. The reasons for such partitioning vary; however, one of the primary motives is China's strict social media policies – something which consequently meant different governing policies on in-app activities. This discrepancy, combined with other socioeconomic and cultural factors, has led to each platform's development being slightly different, despite occurring simultaneously. This phenomenon, coined as "parallel platformization", pertains to "practices of platforms that are developed by the same entity, offer nearly the same features, but differ in their infrastructures, governance, and market" (Kaye et al., 2022).

Upon initial access to each mobile platform, they appear nearly identical. Both apps have the same home page layout (also called a "For You Page" on TikTok): buttons linking to user options at the base of the screen and a large video set in the center of the screen for vertical navigation (see Figure 5).

Figure 5: TikTok Home Screen (left) and Douyin Home Screen (right)

Additionally, the two platforms share: video length restriction times (15-180 seconds), video creation and editing tools, captioning options (hashtags, @mentions, etc.), external sharing availability (e.g. sharing to other platforms or saving videos to camera roll), and in-app connections with other account holders via friend requests/follows (Kaye et al., 2022). These attributes are later shown to be critical to attracting the content interactions investigated in this study.

However, despite the functional parallels between TikTok and Douyin, one of the primary differences are their platform monetization capabilities. Both platforms have a coin system that serves as in-app currency for virtual creator gift-giving. Such coins purchased and awarded through the app translate to real currency for creators to redeem overtime. However, Douyin compounds upon this system by offering an additional "Daihuo" (带货) feature that allows for iconized product links to be appended to creator

live streams. This practice enables creators to advertise multiple products in a single recording session to their audience–essentially turning their viewer's experience into one that merges entertainment *and* online shopping (Kaye et al., 2022). Douyin's strategy takes advantage of China's flourishing e-commerce environment and capitalizes upon it with the increasingly popular "live-streamer" subset of online content creators. In this way, Douyin's creator business infrastructure is far more robust and aggressive than those employed on TikTok, which primarily limits advertisements to sponsored ads posted in users' home screens (see Figure 6). Should the sponsor plan to monetize TikTok content, it is important that this discrepancy between each platform's available resources be taken into account.
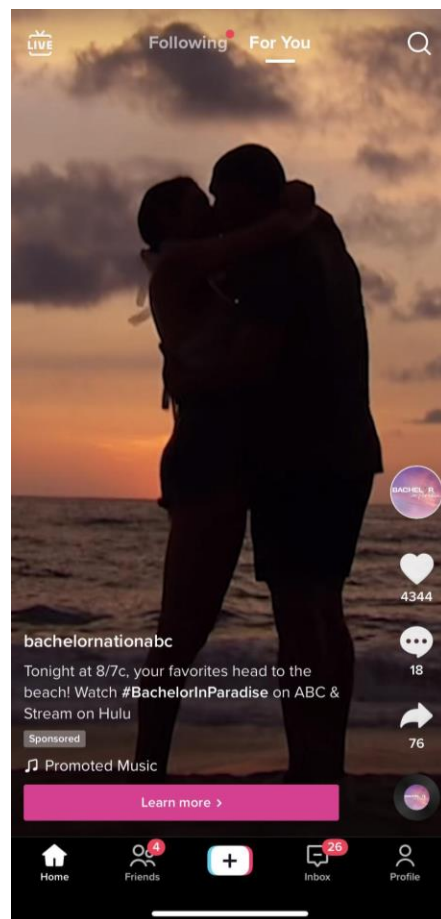
Figure 6: TikTok Advertisement for a TV Series

2.3.3 User Interface

When users first initialize the app, they are automatically directed to their *For You Page*. The For You Page contains a string of videos compiled based on previous user activities or categories the user has demonstrated interest in. From this point they are then able to navigate to different tabs in the app:

1. The Following Feed

    Located left of the For You Page, users' Following "feed" is identical to their For You Page layout, except it displays content produced exclusively by content creators they follow (unlike the For You Page, which can feature videos from any creator– regardless of whether the user follows them).

2. The Friends Page

    To the right of the Home page, users can find their "Friends" page (see Figure 7). Here, one can see a list of their "friends" on TikTok – friends in this case refers to users that follow each other on the app. This page has dedicated sections for users to see the following: who can view their content (if it is a private account), suggested accounts based on users' phone contacts/mutual friends, and a separate feed for content posted by friends.
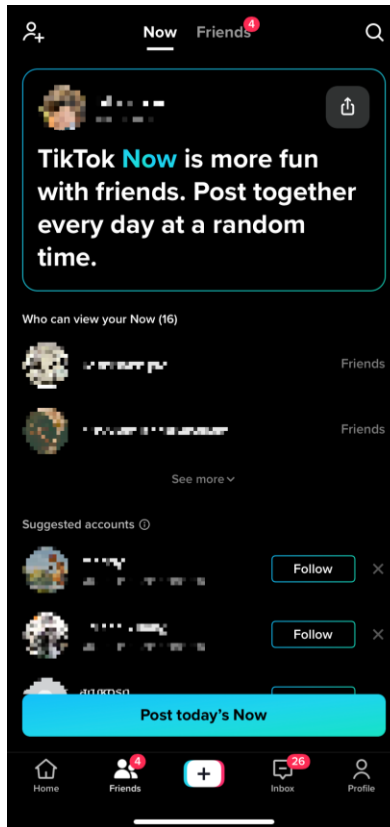
Figure 7: TikTok Friends Page

3. Content Creation Tab

The plus icon located in the center of the screen directs users to a screen that allows them to capture content for video uploads, stories (short videos that are available only for 24 hours after posting), and utilize video templates (see Figure 8). It also has options on the side of the red recording button for users to add video effects or upload media from their personal camera rolls. Furthermore, on the right hand side of the screen, it has a taskbar for users to choose from a variety of extra features to apply to their content, as well as a top button that enables sound selection (e.g. music or other short clips) to add over videos.
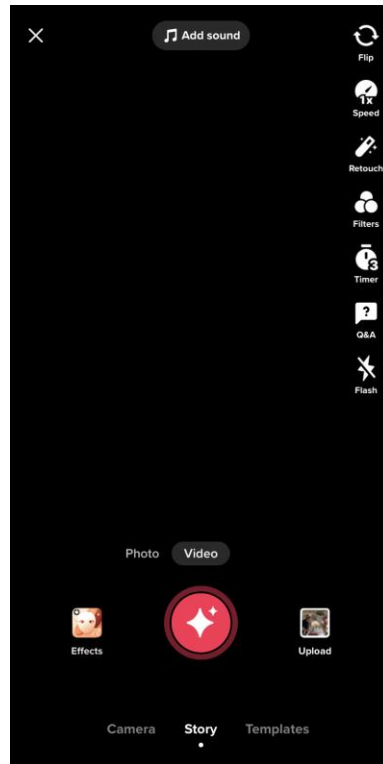
Figure 8: TikTok Content Creation Tab

4. The Inbox

   Users' inboxes allow for the sending and receiving of direct messages from other users as well as monitoring account activity notifications (see Figure 9). These notifications can include alerts for video likes and comments, as well as any special TikTok events. It also displays a banner at the top of the screen, which features the "stories" of people users' follow.
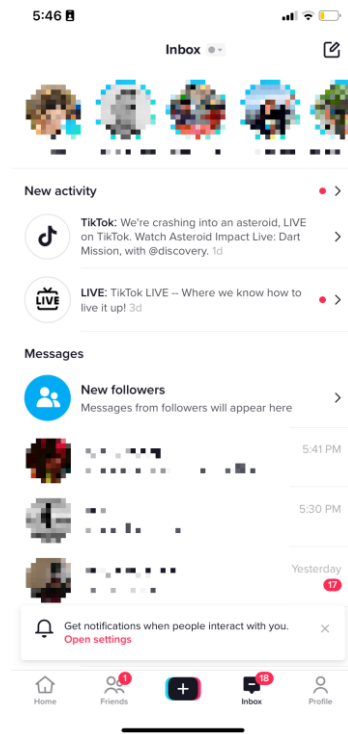
Figure 9: TikTok User Inbox

5. The User Profile Page

User profile pages display all personal account information. This includes the list of creators the user follows, the number of followers the user has, the total number of likes awarded to the user's account, a collage of all posts made, a tab for privatized user videos, bookmarked content, as well as liked content (see Figure 10). This page also contains a small, three-barred button at the top where users can access creator tools and settings; next to it is also an eye icon that provides users with profile view history (see Figure 11 and Figure 12).
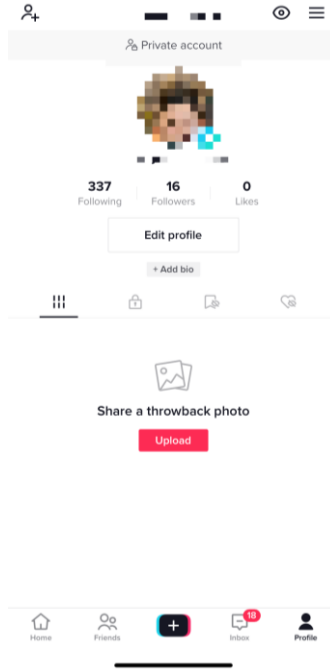
Figure 10: TikTok User Profile Page
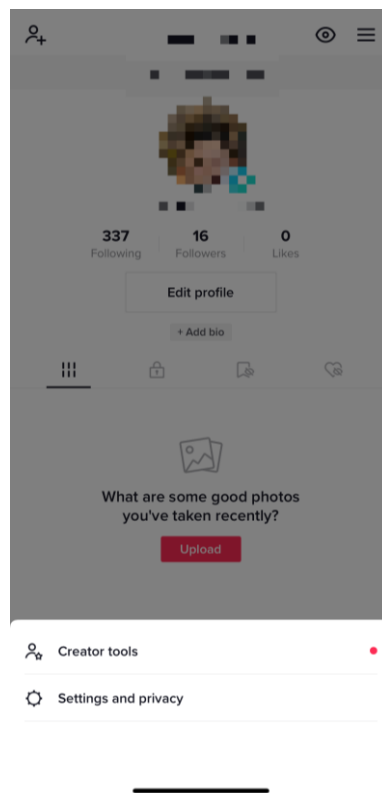
Figure 11: User Creator Tool and Settings Tab
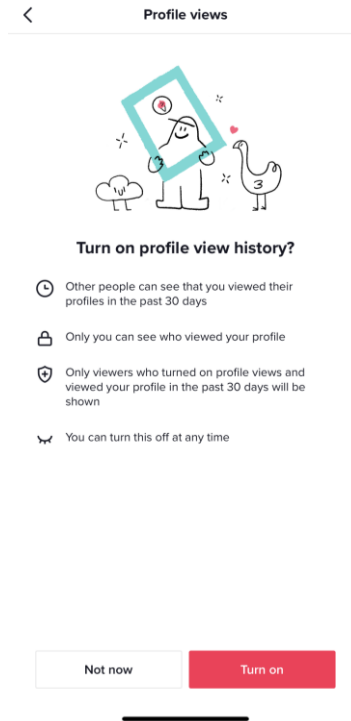
Figure 12: TikTok Profile View History

2.3.4 "For You Page" Content Algorithm

The *For You Page* on TikTok is a stream of videos selected for users to watch. *For You Page* content is not limited to creators that users follow–any creator producing a public video can appear on someone else's *For You Page*. Though an exact mathematical algorithm for the *For You Page* is not available for public view, TikTok has released insights into attributes that are considered by its recommendation system. While each of these attributes can be investigated, we selected a specific subset that will be focused upon in this project. Attributes of interest were determined based on two primary factors: ease of quantifiability and their priority to the sponsor. Below, we identify and provide an overview of these factors and how they are utilized by the algorithm.

The company outlined that a user's interactions (e.g. the videos liked, shares, accounts followed, etc.), video information (e.g. hashtags, sounds, and captions), and device/account settings (e.g. language preference, location, device type, etc.) are the primary factors taken into account when curating a For You Page (TikTok, 2020). The algorithm then assigns each factor a weight based on its value to user interests, awards the

video a number, and then ranks its performance against other videos to decide which one to display on the For You Page. As for how users' platform sizes factor in, while users with larger platforms *are* more likely to be seen, TikTok states that "neither follower count nor whether the account has had previous high-performing videos are direct factors in the recommendation system" (TikTok, 2020).

While this algorithm is the primary means by which pages are curated, TikTok also employs other methods in its recommendation process. For example, new users are prompted to select video categories of interest during their registration process. Additionally, users are also given the option to indicate if they want to see less of a certain type of video. The algorithm also intersperses videos apart from categories not usually viewed by the user to break content patterns and add diversity to users' feeds (TikTok, 2020).

2.3.5 Current Platform Business Utilizations

TikTok has recently seen massive growth in its marketing sector—reaching $840 million in global consumer spending during Q1 of 2022–the highest single-quarter global consumer spend ever recorded among apps and games (Bikker, 2022). For this reason, companies have demonstrated greater interest in platform marketing participation. Rather than posting blatant ads for products, companies often use creative forms of advertisements, like hopping on the latest dance trend or creating a challenge to get other users involved.

Studies have shown the reason for such innovative tactics are partially associated with the platform's algorithm, which makes it possible for "big data and artificial intelligence help show consumers more relevant content that results in stronger liking and engagement" (Chu et al., 2022). As such, by participating in trends and creating more consumer-oriented content, businesses increase their odds of reaching audiences that have demonstrated similar in-app interests.

Companies such as Chipotle and E.L.F. Cosmetics have taken advantage of this aspect to connect with consumers (D'Souza, 2022). For example, in 2020, Chipotle launched their "Chipotle Royalty" campaign on TikTok, which challenged users to create a

video proving why their Chipotle order is the best for the chance to win $10,000 and have their order featured on the menu for a limited time (Williams, 2020). Videos that utilized "#chipotleroyalty" to enter garnered a total of 86.4 million views to date, with nearly 250,000 video submissions in the 6-day challenge window (Pittman, 2020).

However, content creation isn't the only form of advertisement on TikTok. With the development of TikTok for Business, businesses both large and small can find resources for producing and marketing their services and projects on the platform (see Figure 13).
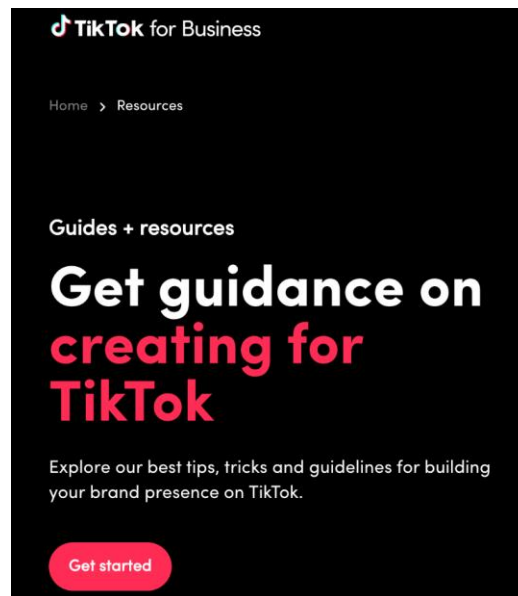
Figure 13: TikTok for Business Guidance and Resources Page

TikTok for Business resources detail information relating to topics like brand safety, guides for setting up TikTok campaigns, trend reports, and more.

2.3.6 What Makes TikTok Unique

Unlike other social media platforms that are falling out of favor with digital influencers, TikTok's short video format continues to propel its popularity in millennial and centennial populations (Cuesta-Valiño, 2022). Its unique ability to provide users with an experience that balances algorithm-generated content with a self-directed feed has revolutionized social media algorithms (Herrman, 2019). The continuous stream of videos that slide across the screen is uniquely addictive and fosters a user experience that facilitates constant exploration of new content that is designed to pique users' interests.

However, in doing so, it also promotes the practice of digitized communication–perhaps less based on words and more on direct sharing, which attributes to its addictiveness (Cuesta-Valiño, 2022). These unique TikTok affordances are summarized by Guinaudeau (2022: 467):

> "TikTok represents the synthesis of three powerful trends in social media: the televisual medium that has always been the most broadly popular and powerful; algorithmic recommendation that structures the user's experience to a greater extent than any major social media platform to date; and a mobile-only interface designed to take advantage of a smartphone's user-facing camera."

For these reasons, it is apparent that TikTok is a platform that proves incredibly valuable in business applications: a colossal user base and increasing marketing opportunities mean that it poses immense potential value to corporations. However, in order to utilize TikTok's marketing potential to its fullest, it is imperative that these companies understand the underlying algorithms that govern the platform's content streams.

3. Methods

Despite previous research conducted on web 2.0 platform-consumer interactions, there is little information pertaining to how one might utilize innate platform algorithms to facilitate viewership growth on TikTok (Lee et al., 2018). In our study, we use mobile firmware to create content and collect data on how various web 2.0 platform factors (e.g. hashtags, audio, connectivity) impact the amount of content interactions had in US regions from October till December 2022. The results of this study might help our sponsor determine what factors to prioritize when providing marketing services for future clients. We have come up with the following objectives to help facilitate this research:

1. Determine the magnitude of the effect of internet connectivity, hashtags, and background audio on a video post's total viewership.
2. Determine if any extraneous variables can significantly affect viewership, and how to minimize their effects.

In this section, we cover the main method for our data collection: video uploads on TikTok. Referencing our background research, we specify key variables for video uploads and explain our data collection and analysis procedures. Limitations to each method are also described. Additionally, we introduce the multivariate statistical analysis approach that will provide insights into the statistical significance of our study's dependent and independent variables. Lastly, we also detail any alterations made to the original methodology.

3.1 Identifying Key Variables

For video uploads, we primarily focused on the effect of internet connectivity (Wi-Fi, cellular data, virtual private network [VPN], and internet protocol [IP] connection), as well as hashtags and background audio on viewership. There were also additional variables that we had to monitor and prevent from influencing our data: follower count, the video content of each post, and how long the post has been uploaded. These variables directly influence the viewership of posts but are not factors that we plan to test. There were three independent variables, any relationships between each independent variable are accounted for in the design.

We collected data by utilizing four phones: one phone solely connected via Wi-Fi, one phone via cellular data, one phone via VPN, and one phone via the IP Box. As seen below in Figure 14, each phone also had four unique accounts with the following combinations of the aforementioned variables: no hashtags and no background audio, no hashtags and background audio, hashtags and no background audio, and hashtags and background audio. In total, these 16 accounts covered all possible combinations of the independent variables and represented the core of our experimental design. Even though the number of followers was different for each account, we analyzed the effect of followers on the number of viewers and isolated that factor from the rest of the data, which we will further elaborate on in Section 3.4. Below is a quick overview of our variables grouped by their type:

- Independent variable: Internet Connectivity, Hashtags, Background Audio
- Extraneous variable: Followers
- Dependent variable: Viewership
- Control variable: Content, Time
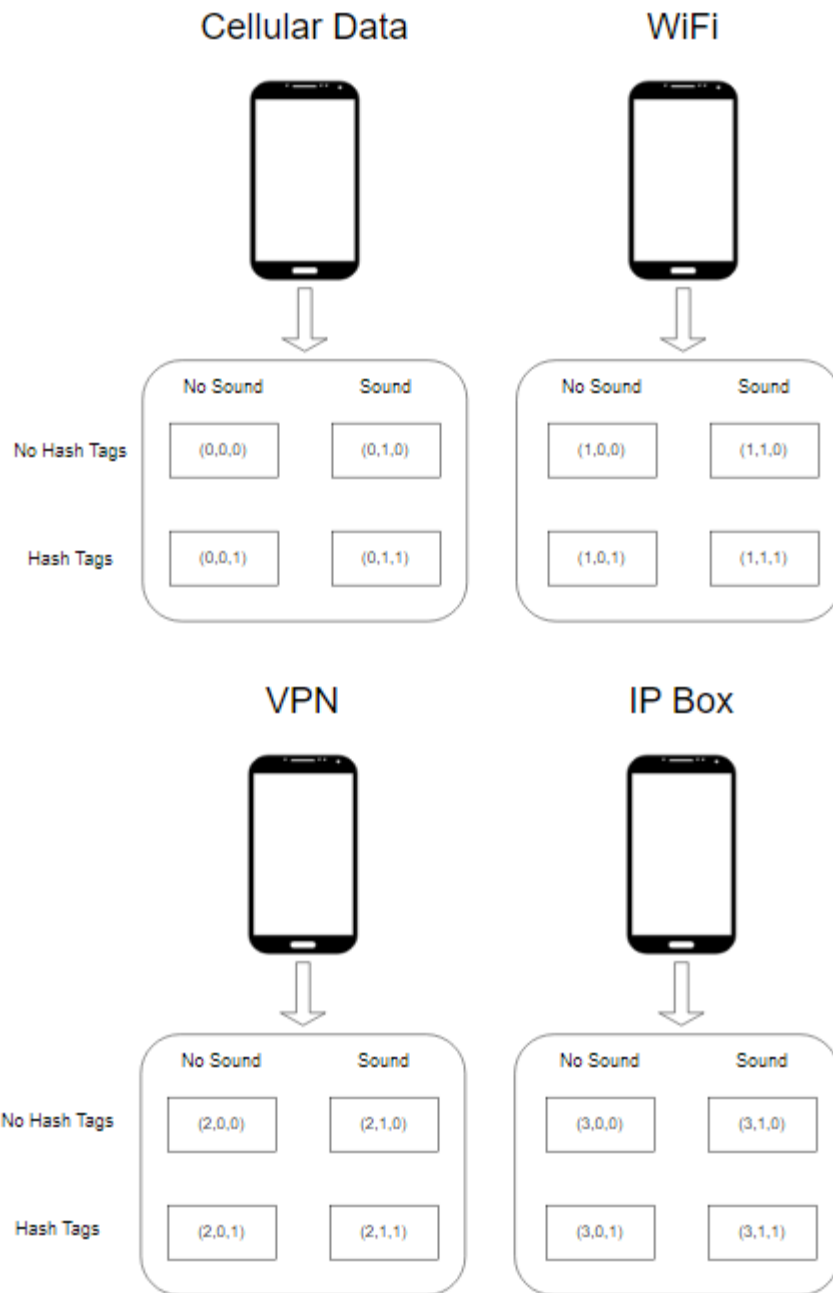
Figure 14: Experimental Factorial Design for Investigation

The following provides a brief overview of each variable, describing what they are, why we chose them, and how we planned to test them.

3.1.1 Content

Content-wise, we uploaded posts pertaining to one category. However, to gather data, we had to post content that users would prefer to see on their feeds. After looking through TikTok's creative center to see what the top 100 content trends were at the time of this project, we chose Zodiac signposts, which are essentially daily horoscopes. The reason we chose this topic was that it is relatively simple to generate lots of posts with similar content. Again, one of our goals is to keep content as a constant variable so sticking to one subject that's simple to generate allows us to bring in more valuable data to analyze.

3.1.2 Internet Connectivity

Currently, there is a lack of research on whether or not internet connectivity affects the viewership of content on TikTok—although connectivity overall is a critical measure of user experience for online platforms (e.g. Berman and Katona, 2020; Rhiu and Yun, 2018). To test this factor in our experimental design, we planned to utilize four phones, one for Wi-Fi accounts, one for cellular data accounts, one for VPN, and one for the IP Box connection. By isolating each internet connectivity type on a phone, it eliminated any potential effects that may arise if we were to switch connection types on that phone. There is difficulty in identifying what aspects of connectivity will play a role, there are platform connectivity (how well TikTok manage its connectivity with users); viewer connectivity (users who view connectivity); and poster connectivity (users who post on TikTok). Each of these may affect user experience, we focus on the connectivity of the poster given that we are doing this study from the poster perspective. Thus, many potential confounding effects may play a role in user experience and connectivity is heavily dependent on multiple relationships.

We hypothesize that internet connectivity will play a relatively insignificant role in viewership.

3.1.3 Hashtags

TikTok provides content creators with the ability to influence the audience of their posts by adding hashtags. Users who like certain content will often see similar hashtags in

their viewed posts and can even favorite the hashtags to have their feed display similar posts. Research has shown that hashtags do influence followership, views, and other performance metrics (e.g., Schultz, 2017; Sun et al., 2022).

We evaluated the magnitude of the influence of these hashtags on views. There was two options for this independent variable—uploaded posts will either have hashtags tagged in them or simply have none. For accounts with hashtags, we searched for optimized hashtags from tiktokhashtags.com. For example, since our content is going to be on zodiac signs, our posts with hashtags could potentially have "#zodiac #astrology #zodiacsigns #horoscope #virgo #capricorn #leo". We hypothesize that including optimized hashtags will be strongly relational to viewership.

3.1.4 Background Audio

Content creators additionally have the option to add a sound to their posts. A sound from TikTok can range anywhere from other creators' original audio to remixes of hit songs and iconic TV lines. Often, the audio chosen for trending posts is one of the trending songs on Spotify, YouTube, or other music platforms. However, correlation does not equal causation, so it is unclear whether it is the TikTok posts increasing the popularity of the songs, or the songs increasing post viewership.

Similar to hashtags, there will also be two options for this independent variable: either they contain background audio or have no audio. If there was background audio, we searched for the top 10 trending audios on TikTok from tokboard.com and chose among them as the background audio for our content. We believed that including background audio will significantly relate to greater viewership.

3.1.5 Followers

Users can also follow other content creators to stay updated on posts; however, it's not a variable that we are testing, as it is an extraneous variable that we intend to eliminate. For example, in week one we may have zero followers, which might not affect our views, but later in week four, we may have 100 followers which may result in an influx of views that could skew our data. We will be recording the number of followers every time

we post and use that data to create a regression equation that relates followers to views so we can get a better estimate of the views gained by other variables.

3.1.6 Viewership

Our research pertains to the effect of internet connectivity, hashtags, and background audio on viewership. However, in order to prevent how long the post has been uploaded from playing an influence on the viewership, we decided to gather the number of views on every post approximately 48 hours after they have been posted, which also prevents the number of views from saturating.

3.2 Data Collection

Originally, we planned to test and collect data on each combination of the previously listed independent variables using the four phones. Having the four phones allowed us to test internet connectivity independently. Table 1 illustrates the experimental factorial design on how each different combination of factors between optimized hashtags and no hashtags, popular background audio, and no audio, as well as Wi-Fi, cellular data, VPN, or IP connection would be represented by an account. The Worcester Polytechnic Institute (WPI) team would test the phones and accounts pertaining to Wi-Fi and cellular data, while the Hangzhou Dianzi University (HDU) team would test the phones and accounts pertaining to VPN and IP connection. In order to gather enough data, we planned to create 100 unique posts in the span of approximately 30 days, each varying in the variables used. Each unique post would be posted on all eight accounts simultaneously, resulting in a total of 1600 posts. Four unique posts would be uploaded every day, with two posts in the morning and two at night, resulting in 64 posts a day. Before each post, we would record the number of followers we have on the account and the time posted. After 48 hours have passed, the amount of views and likes that the post received would be recorded into Google Sheets so all members have access. The benefits to following these methods are that (i) we would only need to create 100 different posts since all accounts will have the same posts in the same order and (ii) all accounts will be posting around the same time.

To keep the content of our posts consistent throughout, we would be only posting content relevant to a popular subject, which is Zodiac Signs. The reasons we chose this subject are (i) its popularity on TikTok and (ii) its ability to be mass produced. Mass-producing posts allow us to collect larger amounts of data, leading to more accurate conclusions overall. Figure 15 is a good example of what the content of a typical post will look like.

Wi-Fi Accounts

	Account 1	Account 2	Account 3	Account 4
Hash Tags	✓	✓		
Sound	✓		✓	

Cellular Data Accounts

	Account 5	Account 6	Account 7	Account 8
Hash Tags	✓	✓		
Sound	✓		✓	

VPN Accounts

	Account 9	Account 10	Account 11	Account 12
Hash Tags	✓	✓		
Sound	✓		✓	

	Account 13	Account 14	Account 15	Account 16
Hash Tags	✓	✓		
Sound	✓		✓	

Table 1: (Pre IQP) Chart of Accounts and their variables

Figure 15: Example Zodiac Sign TikTok Post

3.3 Data Collection Alterations

However, due to unforeseen circumstances, our data collection process and experimental design had to be altered in various ways. One underlying issue was the HDU team not receiving their equipment in order to collect the data for VPN and IP

connections—requiring a first major adjustment to this study. We decided to only collect and compare data between Wi-Fi and Cellular data with respect to internet connectivity.

Figure 16 provides an updated version of Figure 14 since we only had two phones to utilize, while Table 2 lists the updated accounts and their independent variables. The original method was changed from two posts in the morning and two posts at night to four posts at noon. This alteration occurred due to fear of being shadow-banned due to bot-like or spam behavior. Shadow banning is when the social media platform does not transparently ban the account, but will reduce its exposure by not featuring its content on the For You Page (FYP). However, after careful reconsideration and TikTok's terms of service, we decided it is no longer needed and we can upload all four posts simultaneously around noon.

We encountered a blocker that we were trying to avoid, being shadow banned. All of our accounts, besides account 1, became shadow banned. As a result, we stopped posting on the shadow banned accounts until the shadow ban lifted, usually around 2 weeks. We continued to post on Account 1 to see the growth, but only posting twice a day instead of four to reduce the possibility of creating redundant content and the fear of potentially being shadow banned due to bot-like or spam behavior. However, due to time constraints, the shadow banned was not lifted early enough and data collection was concluded earlier than anticipated.
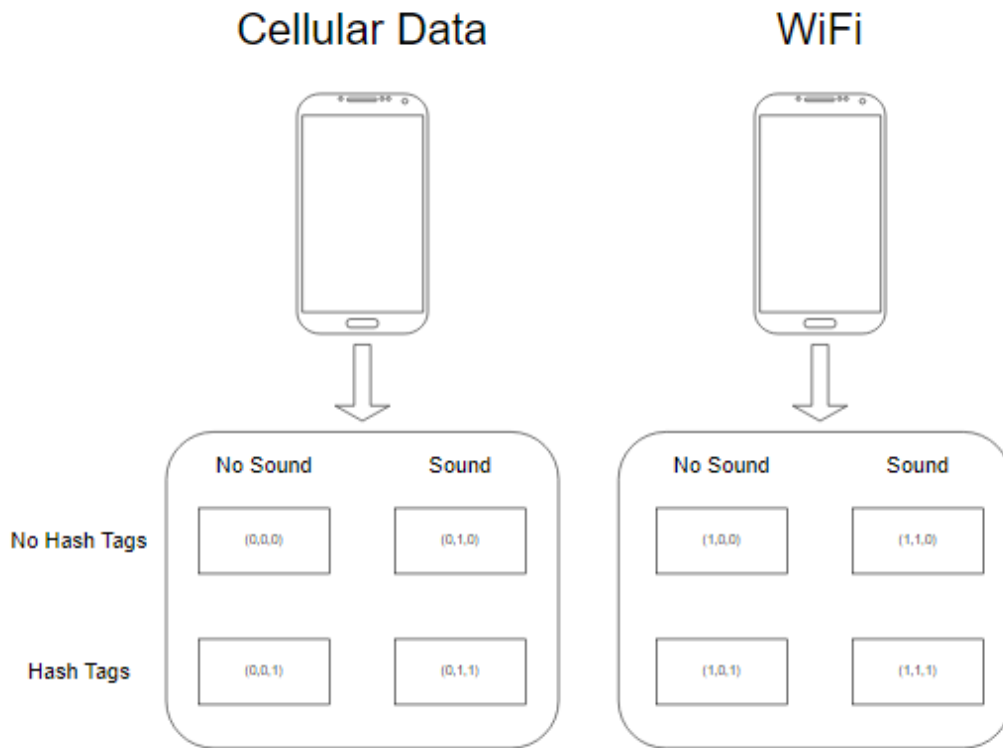
Figure 16: Updated experimental factorial design for investigation

Wi-Fi Accounts

	Account 1	Account 2	Account 3	Account 4
Hash Tags	✓	✓		
Sound	✓		✓	

Cellular Data Accounts

	Account 5	Account 6	Account 7	Account 8
Hash Tags	✓	✓		
Sound	✓		✓	

Table 2: Experimental factorial design and inclusion or exclusion of factors in the experimental design

3.4 Data Analysis

Bivariate (correlation) and multivariate analysis are used to conduct the data analysis portion of our research. Since we have multiple independent variables, we will need to derive multiple linear regression models and see to what magnitude each variable affects viewership after 48 hours. Additionally, we will also need to test the correlation between all independent variables to account for potential multicollinearity and for initial relationships amongst pairs of variables. For example, if we make a linear regression model for the relationship between two independent variables and see a strong correlation between them, there is high multicollinearity (Statistics 101, 2014). High multicollinearity can indicate a relationship between independent variables, which would effectively skew any analysis of relationships with the dependent variable. After we finish our data collection process, we will have posted around 800 times–100 times on each of our eight

accounts. We chose to collect data this way, so we have 100 data points for each combination of variables.

We do see a potential problem relating to followers. All of our accounts will be public, meaning anyone can follow us and when someone follows someone, they will see their post regardless of how they make it, meaning automatic views. To counter this, we'll also record how many followers we have at the time of each post. Ultimately, we expect an increase in followers and views as we run our experimentation. We'll graph the number of followers against viewers and derive an equation for counting additional views based on followers and subtract that value from each post. Using this method would help isolate the other independent variables we aim to test. Next, we'll graph the linear regression models for independent variables against the dependent variable, views. With this next set of graphs, we'll analyze the correlation and determine how the variables affect viewership.

3.5 Livestreaming on TikTok

For live streaming, the main focus of the live streams was to solely test the effectiveness of the internet connectivity type on viewership both concurrently and in total. Because TikTok Live does not have the option to incorporate hashtags and background audio in the same way it allows for video uploads, those variables do not have to be considered. One additional Wi-Fi account and cellular data account would be created just for live streaming. In order to gather enough data, we plan to stream for a total of about 15 hours through multiple live streams. During the live streams, the concurrent viewers would be recorded every five minutes into Google Sheets. The total number of viewers would also be recorded once a live stream ended. Unfortunately, due to multiple challenges that will be expanded upon in the Challenges section in 5.2, the data obtained from live streaming was extremely underwhelming, and as a result was dropped.

4. Findings

For this section, we present a correlation analysis, support for a regression analysis, and a growth analysis based on the collected data featured in Appendix A. The data analyzed was views per post after 48 hours. It is important to note that the data collection and experimentation turned into a pilot test for future studies. During experimentation, we encountered obstacles that impeded our data collection processes, making our final analyses less conclusive than desired.

4.1 Raw Data Results

Figures 17-24 are graphs of the data sets captured and Appendix A contains the data sets themselves. In each figure, the x-axis represents the post number in chronological order and the y-axis represents the views received per post. For example, Figure 17 has all 38 posts recorded in chronological order along with the views after 48 hours.

As seen in Figures 17 through 24, Experiments 2 through 8 resulted in insufficient data starting after a given data point's results went to zero. However, some accounts were shadow banned earlier, as indicated by their views dropping to zero and remaining there for the rest of the data collection. This is due to the algorithm recognizing the repetition of content across all of our accounts. To maintain an approximate level of significance in the data size, we decided to only use the first twelve data points to study the correlation between the variables on all accounts and study growth based on data from the first account in Figure 17.

Appendix A contains the data sets used to graph Figures 17 through 24. Peak viewership occurred in Figure 17, Experiment 1, with a high of 307 views but all accounts had varying views throughout the entire data collection process.
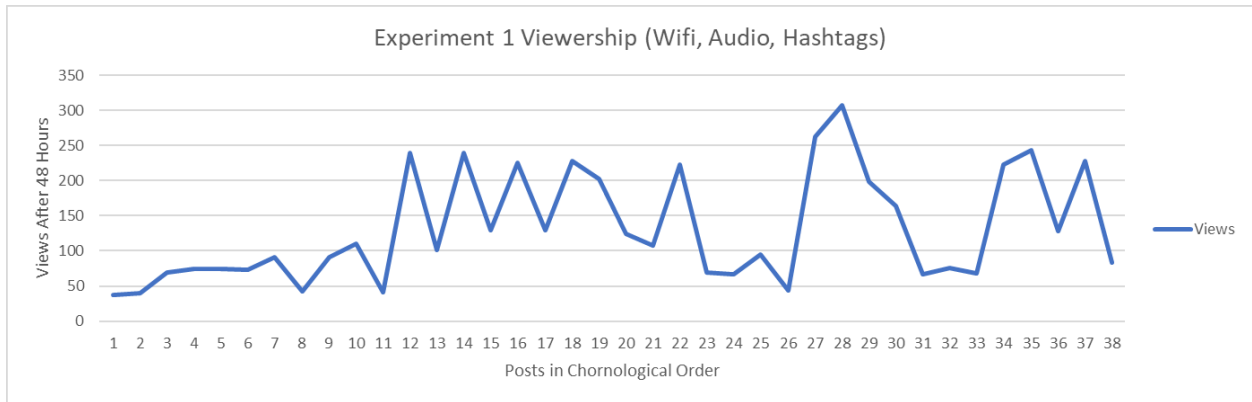
Figure 17: Experiment 1, Time Series Analysis of Viewership with Wi-Fi, Audio, and Hashtags
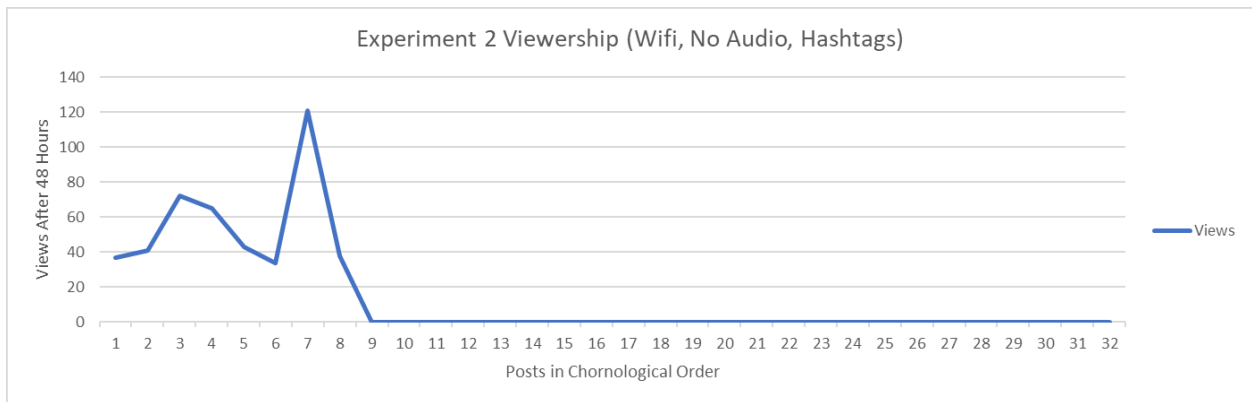
Figure 18: Experiment 2, Time Series Analysis of Viewership with Wi-Fi, No Audio, and Hashtags
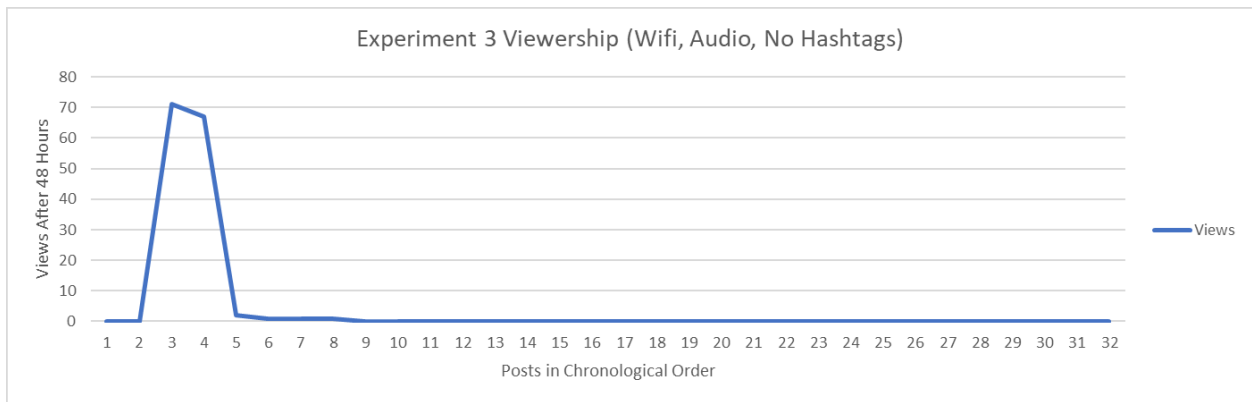
Figure 19: Experiment 3, Time Series Analysis of Viewership with Wi-Fi, Audio, and No Hashtags
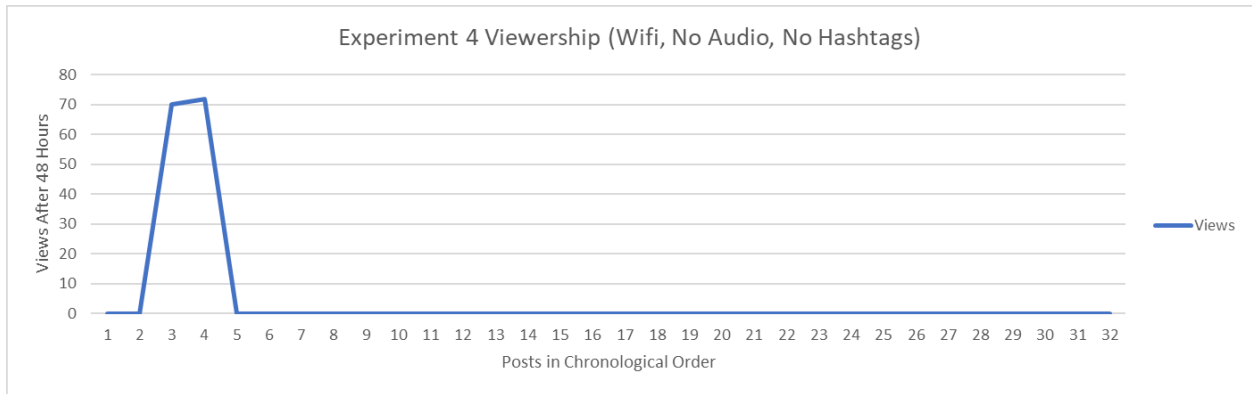
Figure 20: Experiment 4, Time Series Analysis of Viewership with Wi-Fi, No Audio, and No Hashtags
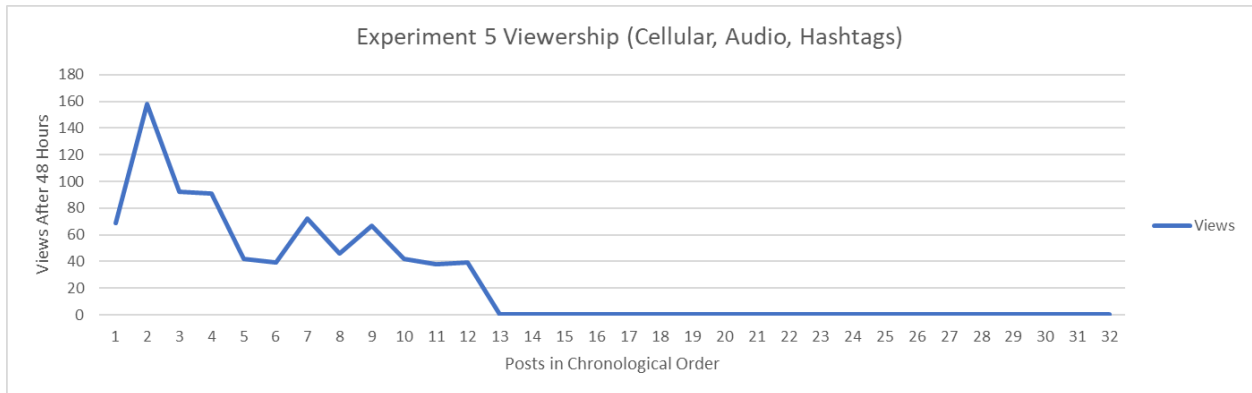
Figure 21: Experiment 5, Time Series Analysis of Viewership with Cellular, Audio, and Hashtags
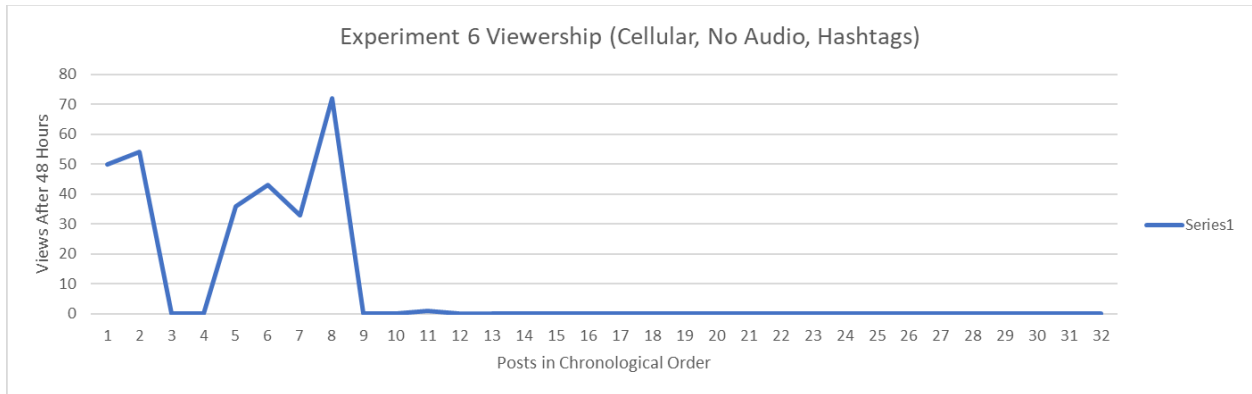
Figure 22: Experiment 6, Time Series Analysis of Viewership with Cellular, No Audio, and Hashtags
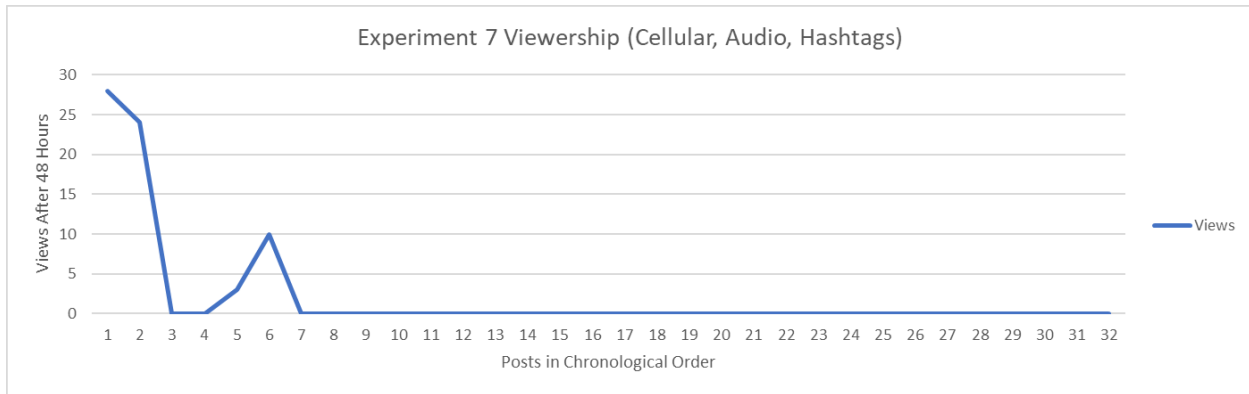
Figure 23: Experiment 7, Time Series Analysis of Viewership with Cellular, Audio, and No Hashtags
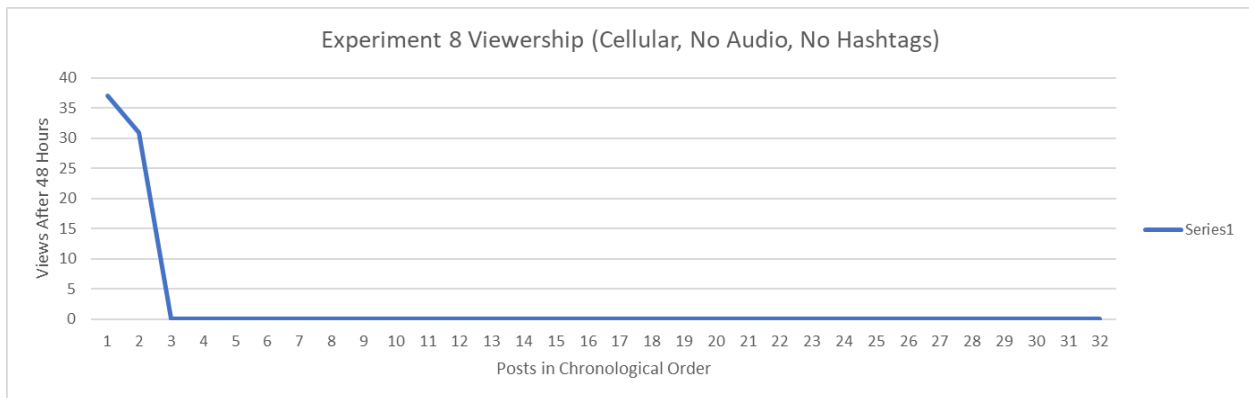
Figure 24: Experiment 5, Time Series Analysis of Viewership with Cellular, No Audio, and No Hashtags

4.2 Correlation Analysis

We performed a correlation analysis, using Statistical Package for the Social Sciences (SPSS) software, to determine the magnitude of correlation to increases in views for each variable. SPSS is a statistical analytic tool used by the HDU team to execute the correlation analysis. Zero represents Wi-Fi, with audio, and with hashtags. One represents cellular data, no audio, no hashtags. We should see negative correlations for any preferences for any option represented by zero and positive correlations for any preferences for any option represented by one.

The correlation analysis in Table 3 shows there is a negative correlation for the three variables when compared to views. Each experimental variable shows a statistically significant relationship at the p<0.01 level. The negative correlations means that when Wi-Fi, audio, and hashtags were present, viewership likely increased.

38

The results initially pointed towards posts gaining more views while on Wi-Fi, background audio and hashtags. Using the Pearson Correlation method, we were able to find specific magnitudes of correlation for each variable. From least to greatest correlations; connection mode, audio, and hashtags. An important detail to note is that the magnitude of correlation for hashtags was almost double the magnitude of correlation for connection. In turn, this means hashtags likely lead to the greatest increase in views.

Correlations

		Views	Connection	Audio	Hashtags
Views	Pearson Correlation	1	-.325**	-.396**	-.533**
	Sig. (2-tailed)		.000	.000	.000
	N	116	116	116	116
Connection	Pearson Correlation	-.325**	1	.147	.147
	Sig. (2-tailed)	.000		.115	.115
	N	116	116	116	116
Audio	Pearson Correlation	-.395**	.147	1	.147
	Sig. (2-tailed)	.000	.115		.115
	N	116	116	116	116
Hashtags	Pearson Correlation	-.533**	.147	.147	1
	Sig. (2-tailed)	.000	.115	.115	
	N	116	116	116	116

**Correlation is significant at the 0.01 level (2-tailed).

Table 3: (HDU Analysis) Correlation Analysis of Connection, Audio, and Hashtags versus Views

*Zero represents Wi-Fi, Audio, and Hashtags, while One represents cellular data, No Audio, and No Hashtags

4.3 Regression Analysis

A regression analysis can be performed to determine the magnitude of any multivariable relationships between views and each dependent variable. To see if a regression analysis could be acceptable, we had to test for multicollinearity between each independent variable and assert that the data is normally distributed.

In Tables 4-6, the results show that regression analysis with an F-score of 46.695 is statistically significant at the $p<.001$ level and the Variance Inflation Factor (VIF) is below five. R-Square is the proportion of variance in the dependent variable (Views) which can be predicted from the independent variables (Hashtag, Audio, Connection). The VIF for all

three variables is closer to one than five meaning there is extremely little multicollinearity between the independent variables. Lastly, as seen in Tables 6, 7, and 8, the F statistic for all three variables is higher than 10 with p<0.0001. The normal P-P plot results in Figure 25 show that the data is normally distributed.

Overall, based on the data analysis, we can then conclude that having hashtags, background audio, and a Wi-Fi connection can lead to increased views on a post. Additionally, hashtags are the most important followed by background audio and then connection type—this relationship can be seen by considering the standardized beta coefficients of -0.214, -0.296, and -0.458 for connections, audio, and hashtags. These values are significant and follow the same pattern as the bivariate correlation tests described in section 4.2

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.656*	.431	.415	51.605	1.114

- Predictors: (Constant), Hashtags, Connection, Audio
- Dependent Variable: Views

Table 4: (HDU Analysis) Model Summary

Coefficients							
	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	238.101	21.483		11.083	.000		
Connection	-29.224	9.917	-.214	-2.947	.000	.962	1.039
Audio	-40.349	9.917	-.296	-4.069	.000	.962	1.039
Hashtags	-62.516	9.917	-.458	-6.304	.000	.962	1.039

Table 5: (HDU Analysis) Coefficients for Regression Analysis
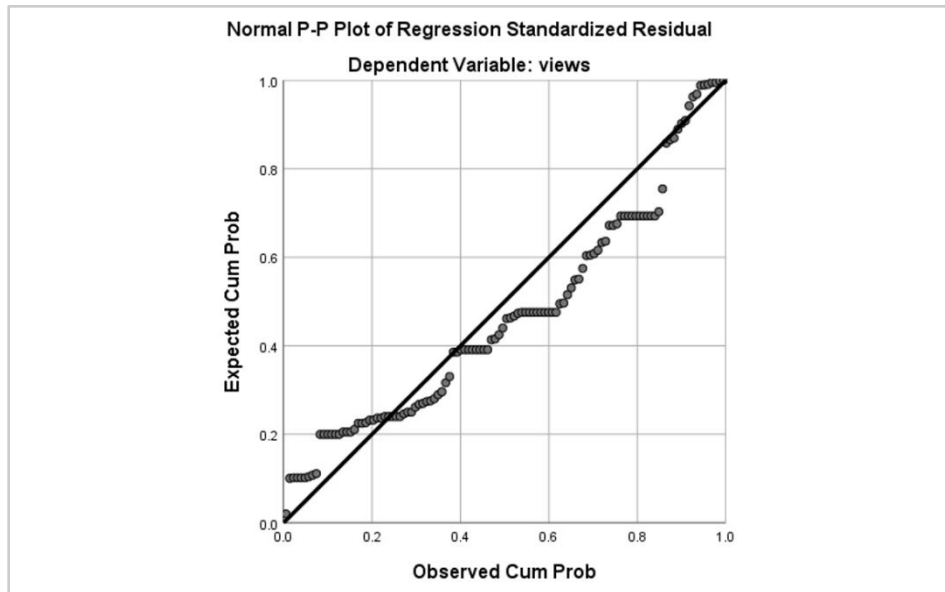
Figure 25: (HDU Analysis) Normal Distribution Graph

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9543.721	4	2385.930	46.695	.000[a]
	Residual	9963.779	195	51.096		
	Total	19507.500	199			

a. Predictors: (Constant), reading score, female, social studies score, math score

b. Dependent Variable: science score

Table 6: (HDU Analysis) F-Statistic Significance Level p<0.000

4.4 Limitations

During this analysis there were numerous limitations that led to our results being skewed. The first major issue was the lack of data for the accounts. At most we only had twelve data points and even then, some of the accounts only had two posts that received views. This is due to the accounts being shadow banned at different times. We still chose to use the first twelve data points since that's when all the accounts (accounts 2-8) were shadow banned. Additionally, due to an insignificant amount of followers on the majority of the accounts, there was not enough data to determine if they played a key role in affecting our overall viewership. Thus, we did not end up creating a regression equation to test that correlation.

Other limitations include the fact that every day we posted different posts at different times during the day and on different days of the week. In a perfect experiment, we would be able to post the exact same post multiple times on each account at the exact same time every day. We believe these limitations are very small though since TikTok receives a vast number of views daily and the most views one of our posts received was only around 300. Additionally, we kept the content of the posts the same across all accounts, however, that got the accounts shadow banned.

5. Recommendations, Challenges, and Conclusion

In this section we provide some general recommendations related to the findings of this study. The results are limited to primary and secondary research completed by the team. The section will also describe some of the challenges faced during the project that may limit the significance of the recommendations for those wishing to develop a social media presence on TikTok. The section then ends with a summary and concluding statement for the report.

5.1 Recommendations for Increasing Viewership

In order to increase viewership pertaining to posts, we highly recommend focusing on hashtags. As seen in Table 3 in Section 4 *Findings*, views had the highest correlation of -0.533 with hashtags and the largest standardized beta coefficient of -0.458 of the multiple linear regression model. As stated in Section 2.3.4, *"For You Page" Content Algorithm*, TikTok's algorithm uses hashtags as one of its primary factors in determining the content category and the viewers that would enjoy such content. Also, it would increase the chance of it being featured on said viewers' FYP. In our case, our posts with hashtags had "*#zodiac*", which allowed the algorithm to increase the chance of them appearing in users who often look at content relating to zodiac signs. Additionally, it increases the likelihood that the viewers will like the post since they are more likely to enjoy the content since it aligns with their interests. With the increase in the *likes-to-views* ratio, TikTok's algorithm increases the chance of the post being featured on other users' FYP regardless of whether or not they look at content relating to zodiac. For both companies and content creators, we

would recommend using hashtags relating to the content of your post to connect your post with the correct audience, which will in turn increase the *likes-to-views* ratio. With a high *likes-to-views* ratio, it will increase the exposure of your posts due to TikTok's algorithm.

We would also recommend focusing on background audio for posts as a secondary measure. As seen in Table 3, views had a correlation of -0.395 with audio. Even though it is not as high as views with hashtags, it is higher than the correlation between views and connection. As stated in Section 2.3.4, *"For You Page" Content Algorithm*, TikTok's algorithm does use background audio to curate the user's FYP page. However, based on our results, we can see that background audio has a lower priority—although it is significant and explains some relationship—compared to hashtags in TikTok's FYP algorithm. Users want content they would be interested in rather than just background audio they would enjoy. As a result, we would recommend using background audio to enhance the quality of the content by finding one that suits the post.

In regards to connectivity, it should have the lowest priority in regards to video posting based on our correlation and standardized beta coefficient scores of –0.325 and –0.214, respectively. Even though the correlation value is not much lower than that of background audio, it should still be placed at the lowest priority since internet connection should not play a major role in video posts. Once a video gets uploaded, the connection on our end would not play a role in the quality of the uploaded content, nor the overall viewership. We do believe that the connection type matters much more in livestreaming, as having the fastest and most stable connection type would provide the better livestream quality.

However, our experimentation results indicated that Wi-Fi played a more significant role when compared to cellular data. This potentially calls into question our results, as the speed and stability of our Wi-Fi was fractions of that of cellular data. We believe that this was primarily due to a low sample size, as well as the data being slightly skewed to Wi-Fi, as the only video posting account that was not shadow banned used Wi-Fi.

5.2 Project Challenges and Recommendations

Over the course of the project, we ran into multiple challenges that inhibited our ability to carry out the full extent of the original IQP proposal. In this section, we first mention the challenges associated with the video posting portion, as well as the recommendation for overcoming them. Next, we address the multiple challenges when attempting to carry out the live streaming portion of our project, and how to overcome those in future projects.

Limited Video Posting Data Due to Shadow Banning

Around the end of our second week of video posting experiments, the views received on each post in Account's #2-8 dropped to zero, which is a clear indication that they were shadow banned. We believe this occurred because all eight accounts contained the exact same content and shared similar usernames. Additionally, some accounts shared the same hashtags and/or background audio. Since Account 1 typically was the first to have the content uploaded, we believe that the algorithm interpreted the remaining accounts as spam accounts that tried to recycle content from Account 1, therefore placing the shadow ban on all of them.

For future projects that undergo similar data collection methods, we recommend that more consideration is put into the content. Obviously coming up with unique video ideas would prevent the algorithm from believing that one account was reposting another, but since it may be difficult to potentially continue creating hundreds of unique videos, we recommend that there is at least some variance. In the case of our zodiac sign posts, one account's post might mention traits pertaining to Leo, Pisces, and *Virgo*, however, another account might instead mention Leo, Pisces, and *Taurus*. While we could not test how much variance is needed exactly to avoid shadow banning as a whole, varying the content slightly is a good place to start.

Unforeseen Restriction for TikTok LIVE

One of the first major roadblocks that we encountered when attempting to test live streaming, was that in order for an account to have the LIVE option enabled, a 1,000

follower requirement must be met. Since TikTok's information page only mentioned a minimum of 18 for who can start a LIVE, we believed that any account with the right birthday would have the option. One solution is to buy the needed 1,000 followers, which we did coordinate with our sponsor and his tech specialist to acquire. While we ended up getting the option to start a LIVE on both of our live streaming accounts, another challenge arose, which we will talk more about next.

Lack of a Loyal Follower Base

As mentioned in the previous challenge, we ended up buying the 1,000 followers needed to enable TikTok's LIVE feature. However, for the duration of all the live streaming attempts, we were unable to capture any viewers. Because the initial 1,000 followers were all bought, our "follower base" essentially consisted of only bots. Since our followers are all bots, we cannot fully utilize TikTok's notification options, which notify a user when someone who they are following starts a TikTok LIVE. Because of this, the only way we can realistically get viewers is either from people randomly stumbling upon our LIVE in the never ending scroll page of LIVEs, or by somehow getting it on their FYP page.

For future projects that plan to conduct experiments on live streaming, we highly recommend that the proper time is taken to naturally build up the initial 1,000 followers. As shown previously in our Background, there are numerous methods that businesses have utilized in the past to create brand awareness. In Section 2.2, the Mr. Peanut brand utilized storytelling to triple their followers, greatly increasing their reach on the platform. One of the features TikTok has is the ability to create a Q&A, which is a question and answer feature where anyone can click on a question to view other people's answers, as well as create a video post to respond. Additionally, as shown in Section 2.3.5, Chipotle utilized a custom hashtag to create an Internet challenge, bringing in nearly 90 million views. As seen above, there are numerous creative methods for encouraging user interaction and getting people to follow. Once that follower base has been built up, we believe that it'll be much easier to consistently attract viewers in LIVEs.

Poor Wi-Fi Connections

Due to the providing housing at the project center in Hawaii, our live stream attempts on the Wi-Fi account frequently ended in failure because the Wi-Fi connection in the room could not remain stable enough for long periods of time. Even a brief hiccup in the connection was enough to stop the LIVE altogether, consistently costing us potential data. It is crucial in future projects that any type of connection is both stable and fast enough to ensure no bottlenecks arise. We recommend to at least have speeds of 6-10 Mbps (Megabits per second) to have sufficient live streaming quality, minimizing the chance that a LIVE ends abruptly and increasing the overall experience for the viewers.

Not Enough International Communication

Due to unforeseen circumstances, our HDU team was unable to receive their phones from the sponsor, and as a result could not carry out the data collection regarding VPN and IP-Box connections. While we believe that this was primarily due to a lack of strong communication between the HDU team and the sponsor, we also did not communicate quickly enough with the HDU team afterwards to discuss potential alternatives. Since China is 18 hours ahead of Hawaii, any talk about what other options the HDU team has for collecting data dragged on for way longer than needed, and became even less of a priority as we had our own data collection methods to follow through on.

Having frequent and responsive communication is crucial for future collaborations across great distances. This applies especially for shorter project time periods, where the small mishaps can end up snowballing towards the end into serious problems.

5.3 Conclusion

Considering the novelty of TikTok in comparison to applications like Facebook or Twitter, there is much left to explore within and around the platform. With TikTok serving as a pioneer in the development of new social media models and more personalized user experiences, its value as an asset for businesses has continued to increase in sync with the platform's global popularity. More users worldwide means companies are put within reach of greater amounts of potential consumers. However, the unique breadth of marketing freedom offered means obscurity in determining optimal methods for effective

advertisement. Though not explicitly solved by our experiment, this question is perhaps one step closer to being answered. The challenges encountered and preliminary findings of this project have established it as a foundation for future, similar studies.

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Appendices

Appendix A: Account Views Over Time

	A	B	C	D	E	F	G	H
1	Views After 48Hrs							
2	Acc. 1	Acc. 2	Acc. 3	Acc. 4	Acc. 5	Acc. 6	Acc. 7	Acc. 8
3	37	37	0	0	69	50	28	37
4	40	41	0	0	158	54	24	31
5	69	72	71	70	92	0	0	0
6	75	65	67	72	91	0	0	0
7	74	43	2	0	42	36	3	0
8	73	34	1	0	39	43	10	0
9	91	121	1	0	72	33	0	0
10	42	38	1	0	46	72	0	0
11	91	0	0	0	67	0	0	0
12	110	0	0	0	42	0	0	0
13	41	0	0	0	38	1	0	0
14	240	0	0	0	39	0	0	0
15	101	0	0	0	0	0	0	0
16	240	0	0	0	0	0	0	0
17	129	0	0	0	0	0	0	0
18	225	0	0	0	0	0	0	0
19	129	0	0	0	0	0	0	0
20	228	0	0	0	0	0	0	0
21	202	0	0	0	0	0	0	0
22	124	0	0	0	0	0	0	0
23	108	0	0	0	0	0	0	0
24	223	0	0	0	0	0	0	0
25	69	0	0	0	0	0	0	0
26	67	0	0	0	0	0	0	0
27	95	0	0	0	0	0	0	0
28	43	0	0	0	0	0	0	0
29	263	0	0	0	0	0	0	0
30	307	0	0	0	0	0	0	0
31	198	0	0	0	0	0	0	0
32	164	0	0	0	0	0	0	0
33	67	0	0	0	0	0	0	0
34	76	0	0	0	0	0	0	0
35	68							
36	223							
37	243							
38	128							
39	228							
40	83							

Appendix B: Raw Account Data

Account 1 - Wi-Fi with Hashtags and Background Audio

	Date/Time Posted	Initial Followers	Views After 48Hrs	Likes	Comments
1	11/2 10:46:00 AM	0	37	0	0
2	11/2 10:52 AM	0	40	1	0
3	11/2 8:52 PM	0	69	1	0
4	11/2 20:52	0	75	2	0
5	11/3 12:38 PM	0	74	5	0
6	11/3 12:38 PM	0	73	5	0
7	11/3 12:38 PM	0	91	10	0
8	11/3 12:38 PM	0	42	1	0
9	11/4 11:19 AM	1	91	15	1
10	11/4 11:20 AM	1	110	17	1
11	11/4 11:21 AM	1	41	3	0
12	11/4 11:23 AM	1	240	29	1
13	11/5 12:15 PM	2	101	14	0
14	11/5 12:15 PM	2	240	54	0
15	11/5 12:15 PM	2	129	21	0
16	11/5 12:15 PM	2	225	34	1
17	11/6 12:20 PM	7	129	12	3
18	11/6 12:20 PM	7	228	23	0
19	11/6 12:20 PM	7	202	40	0
20	11/6 12:20 PM	7	124	9	1
21	11/7 12:14 PM	15	108	11	1
22	11/7 12:14 PM	15	223	44	2
23	11/7 12:14 PM	15	69	5	0
24	11/7 12:14 PM	15	67	6	0
25	11/8 12:59 PM	18	95	1	0
26	11/8 12:59 PM	18	43	4	0

27	11/8 12:59 PM	18	263	6	0
28	11/8 12:59 PM	18	307	13	1
29	11/9 12:29 PM	22	198	38	1
30	11/9 12:29 PM	22	164	17	1
31	11/9 12:29 PM	22	67	13	1
32	11/9 12:29 PM	22	76	4	1
33	11/15 12:30 PM	29	68	6	0
34	11/15 12:30 PM	29	223	65	1
35	11/16 12:30 PM	32	243	39	0
36	11/16 12:30 PM	32	128	9	0
37	11/17 12:15 PM	33	228	41	1
38	11/17 12:15 PM	33	83	10	0
39	11/21 1:37 PM	36	75	13	0
40	11/21 1:37 PM	36	249	22	1
41	11/22 1:04 PM	37	180	4	0
42	11/22 1:04 PM	37	64	7	0

Account 2 - Wi-Fi with Hashtags and no Background Audio

	Date/Time Posted	Initial Followers	Views After 48Hrs	Likes	Save
1	11/2 10:56 AM	0	37	0	0
2	11/2 10:59 AM	0	41	1	0
3	11/2 8:49 PM	0	72	6	1
4	11/2 8:49 PM	0	65	6	0
5	11/3 12:43 PM	0	43	2	1
6	11/3 12:43 PM	0	34	0	0
7	11/3 12:43 PM	0	121	2	1
8	11/3 12:43 PM	0	38	1	0
9	11/4 11:25 AM	0	0	0	0
10	11/4 11:26 AM	0	0	0	0
11	11/4 11:26 AM	0	0	0	0

12	11/4 11:27 AM	0	0	0	0
13	11/5 12:20 PM	1	0	0	0
14	11/5 12:20 PM	1	0	0	0
15	11/5 12:20 PM	1	0	0	0
16	11/5 12:20 PM	1	0	0	0
17	11/6 12:23 PM	1	0	0	0
18	11/6 12:23 PM	1	0	0	0
19	11/6 12:23 PM	1	0	0	0
20	11/6 12:23 PM	1	0	0	0
21	11/7 12:19 PM	1	0	0	0
22	11/7 12:19 PM	1	0	0	0
23	11/7 12:19 PM	1	0	0	0
24	11/7 12:19 PM	1	0	0	0
25	11/8 1:03 PM	1	0	0	0
26	11/8 1:03 PM	1	0	0	0
27	11/8 1:03 PM	1	0	0	0
28	11/8 1:03 PM	1	0	0	0
29	11/9 12:32 PM	1	0	0	0
30	11/9 12:32 PM	1	0	0	0
31	11/9 12:32 PM	1	0	0	0
32	11/9 12:32 PM	1	0	0	0

Account 3 - Wi-Fi with no Hashtags and Background Audio

	Date/Time Posted	Initial Followers	Views After 48Hrs	Likes	Comments
1	11/2 11:01 AM	0	0	0	0
2	11/2 11:03 AM	0	0	0	0
3	11/2 8:55 PM	0	71	7	1
4	11/2 8:55 PM	0	67	7	0
5	11/3 12:48 PM	0	2	1	0
6	11/3 12:48 PM	0	1	0	0

7	11/3 12:48 PM	0	1	0	0
8	11/3 12:48 PM	0	1	0	0
9	11/4 11:33 AM	0	0	0	0
10	11/4 11:33 AM	0	0	0	0
11	11/4 11:33 AM	0	0	0	0
12	11/4 11:33 AM	0	0	0	0
13	11/5 12:22 PM	0	0	0	0
14	11/5 12:22 PM	0	0	0	0
15	11/5 12:22 PM	0	0	0	0
16	11/5 12:22 PM	0	0	0	0
17	11/6 12:27 PM	0	0	0	0
18	11/6 12:27 PM	0	0	0	0
19	11/6 12:27 PM	0	0	0	0
20	11/6 12:27 PM	0	0	0	0
21	11/7 12:22 PM	0	0	0	0
22	11/7 12:22 PM	0	0	0	0
23	11/7 12:22 PM	0	0	0	0
24	11/7 12:22 PM	0	0	0	0
25	11/8 1:03 PM	0	0	0	0
26	11/8 1:03 PM	0	0	0	0
27	11/8 1:03 PM	0	0	0	0
28	11/8 1:03 PM	0	0	0	0
29	11/9 12:36 PM	0	0	0	0
30	11/9 12:36 PM	0	0	0	0
31	11/9 12:36 PM	0	0	0	0
32	11/9 12:36 PM	0	0	0	0

Account 4 - Wi-Fi with no Hashtags or Background Audio

	Date/Time Posted	Initial Followers	Views After 48Hrs	Likes	Comments
1	11/2 11:04 AM	0	0	0	0

2	11/2 11:04 AM	0	0	0	0
3	11/2 8:58 PM	0	70	0	0
4	11/2 8:58 PM	0	72	0	0
5	11/3 12:51 PM	0	0	0	0
6	11/3 12:51 PM	0	0	0	0
7	11/3 12:51 PM	0	0	0	0
8	11/3 12:51 PM	0	0	0	0
9	11/4 11:37 AM	0	0	0	0
10	11/4 11:37 AM	0	0	0	0
11	11/4 11:37 AM	0	0	0	0
12	11/4 11:37 AM	0	0	0	0
13	11/5 12:25 PM	0	0	0	0
14	11/5 12:25 PM	0	0	0	0
15	11/5 12:25 PM	0	0	0	0
16	11/5 12:25 PM	0	0	0	0
17	11/6 12:31 PM	0	0	0	0
18	11/6 12:31 PM	0	0	0	0
19	11/6 12:31 PM	0	0	0	0
20	11/6 12:31 PM	0	0	0	0
21	11/7 12:23 PM	0	0	0	0
22	11/7 12:23 PM	0	0	0	0
23	11/7 12:23 PM	0	0	0	0
24	11/7 12:23 PM	0	0	0	0
25	11/8 1:03 PM	0	0	0	0
26	11/8 1:03 PM	0	0	0	0
27	11/8 1:03 PM	0	0	0	0
28	11/8 1:03 PM	0	0	0	0
29	11/9 12:40 PM	0	0	0	0
30	11/9 12:40 PM	0	0	0	0
31	11/9 12:40 PM	0	0	0	0
32	11/9 12:40 PM	0	0	0	0

Account 5 - Cellular with Hashtags and Background Audio

	Date/Time Posted	Initial Followers	Views After 48Hrs	Likes	Comments
1	11/2/22 10:45A	0	69	2	0
2	11/2/22 10:47A	0	158	6	0
3	11/2/22 8:50P	0	92	8	2
4	11/2/22 8:50P	0	91	15	0
5	11/3/22 12:37P	0	42	1	0
6	11/3/22 12:37P	0	39	1	0
7	11/3/22 12:37P	0	72	11	2
8	11/3/22 12:37P	0	46	3	0
9	11/4 11:42:00 AM	0	67	6	1
10	11/4 11:42:00 AM	0	42	2	0
11	11/4 11:42:00 AM	0	38	1	0
12	11/4 11:42:00 AM	0	39	3	0
13	11/5 12:29 PM	0	0	0	0
14	11/5 12:29 PM	0	0	0	0
15	11/5 12:29 PM	0	0	0	0
16	11/5 12:29 PM	0	0	0	0
17	11/6 12:20 PM	0	0	0	0
18	11/6 12:20 PM	0	0	0	0
19	11/6 12:20 PM	0	0	0	0
20	11/6 12:20 PM	0	0	0	0
21	11/7 12:12 PM	0	0	0	0
22	11/7 12:12 PM	0	0	0	0
23	11/7 12:12 PM	0	0	0	0
24	11/7 12:12 PM	0	0	0	0
25	11/8 12:59 PM	0	0	0	0
26	11/8 12:59 PM	0	0	0	0
27	11/8 12:59 PM	0	0	0	0

	Date/Time			
28	11/8 12:59 PM	0	0	0	0
29	11/9 12:29 PM	0	0	0	0
30	11/9 12:29 PM	0	0	0	0
31	11/9 12:29 PM	0	0	0	0
32	11/9 12:29 PM	0	0	0	0

Account 6 - Cellular with Hashtags and no Background Audio

	Date/Time Posted	Initial Followers	Views After 48Hrs	Likes	Comments
1	11/2/22 10:49A	0	50	1	0
2	11/2/22 10:49A	0	54	2	0
3	11/2/22 8:52P	0	0	0	0
4	11/2/22 8:52P	0	0	0	0
5	11/3/22 12:40P	0	36	3	0
6	11/3/22 12:40P	0	43	1	0
7	11/3/22 12:40P	0	33	1	0
8	11/3/22 12:40P	0	72	4	0
9	11/4 11:45 AM	0	0	0	0
10	11/4 11:45 AM	0	0	0	0
11	11/4 11:45 AM	0	1	0	0
12	11/4 11:45 AM	0	0	0	0
13	11/5 12:32 PM	0	0	0	0
14	11/5 12:32 PM	0	0	0	0
15	11/5 12:32 PM	0	0	0	0
16	11/5 12:32 PM	0	0	0	0
17	11/6 12:23 PM	0	0	0	0
18	11/6 12:23 PM	0	0	0	0
19	11/6 12:23 PM	0	0	0	0
20	11/6 12:23 PM	0	0	0	0
21	11/7 12:15 PM	0	0	0	0
22	11/7 12:15 PM	0	0	0	0

23	11/7 12:15 PM	0	0	0	0
24	11/7 12:15 PM	0	0	0	0
25	11/8 1:03 PM	0	0	0	0
26	11/8 1:02 PM	0	0	0	0
27	11/8 1:02 PM	0	0	0	0
28	11/8 1:02 PM	0	0	0	0
29	11/9 12:34 PM	0	0	0	0
30	11/9 12:34 PM	0	0	0	0
31	11/9 12:34 PM	0	0	0	0
32	11/9 12:34 PM	0	0	0	0

Account 7 - Cellular with no Hashtags and Background Audio

	Date/Time Posted	Initial Followers	Views After 48Hrs	Likes	Comments
1	11/2/22 10:52A	0	28	2	0
2	11/2/22 10:52A	0	24	3	1
3	11/2/22 8:54P	1	0	0	0
4	11/2/22 8:54P	1	0	0	0
5	11/3/22 12:43P	1	3	1	0
6	11/3/22 12:43P	1	10	1	0
7	11/3/22 12:43P	1	0	0	0
8	11/3/22 12:43P	1	0	0	0
9	11/4 11:50 AM	1	0	0	0
10	11/4 11:50 AM	1	0	0	0
11	11/4 11:50 AM	1	0	0	0
12	11/4 11:50 AM	1	0	0	0
13	11/5 12:35 PM	1	0	0	0
14	11/5 12:35 PM	1	0	0	0
15	11/5 12:35 PM	1	0	0	0
16	11/5 12:35 PM	1	0	0	0
17	11/6 12:27 PM	1	0	0	0

18	11/6 12:27 PM	1	0	0	0
19	11/6 12:27 PM	1	0	0	0
20	11/6 12:27 PM	1	0	0	0
21	11/7 12:17 PM	1	0	0	0
22	11/7 12:17 PM	1	0	0	0
23	11/7 12:17 PM	1	0	0	0
24	11/7 12:17 PM	1	0	0	0
25	11/8 1:03 AM	1	0	0	0
26	11/8 1:03 PM	1	0	0	0
27	11/8 1:03 PM	1	0	0	0
28	11/8 1:03 PM	1	0	0	0
29	11/8 1:03 PM	1	0	0	0
30	11/9 12:36 PM	1	0	0	0
31	11/9 12:36 PM	1	0	0	0
32	11/9 12:36 PM	1	0	0	0

Account 8 - Cellular with no Hashtags or Background Audio

	Date/Time Posted	Initial Followers	Views After 48Hrs	Likes	Comments
1	11/2/22 10:54A	0	37	1	0
2	11/2/22 10:54A	0	31	1	0
3	11/2:22 8:56P	0	0	0	0
4	11/2/22 8:56P	0	0	0	0
5	11/3/22 12:45P	1	0	0	0
6	11/3/22 12:45P	1	0	0	0
7	11/3/22 12:45P	1	0	0	0
8	11/3/22 12:45P	1	0	0	0
9	11/4 11:53 AM	1	0	0	0
10	11/4 11:53 AM	1	0	0	0
11	11/4 11:53 AM	1	0	0	0
12	11/4 11:53 AM	1	0	0	0

13	11/5 12:37 PM	1	0	0	0
14	11/5 12:37 PM	1	0	0	0
15	11/5 12:37 PM	1	0	0	0
16	11/5 12:37 PM	1	0	0	0
17	11/6 12:31 PM	1	0	0	0
18	11/6 12:31 PM	1	0	0	0
19	11/6 12:31 PM	1	0	0	0
20	11/6 12:31 PM	1	0	0	0
21	11/7 12:20 PM	1	0	0	0
22	11/7 12:20 PM	1	0	0	0
23	11/7 12:20 PM	1	0	0	0
24	11/7 12:20 PM	1	0	0	0
25	11/8 1:07 PM	1	0	0	0
26	11/8 1:07 PM	1	0	0	0
27	11/8 1:07 PM	1	0	0	0
28	11/8 1:07 PM	1	0	0	0
29	11/9 12:40 PM	1	0	0	0
30	11/9 12:40 PM	1	0	0	0
31	11/9 12:40 PM	1	0	0	0
32	11/9 12:40 PM	1	0	0	0