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The Significance of a Viral Post on Social Media

Kelsi Listman
klistman@eagles.bridgewater.edu

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Project Advisor: Dr. Erin Morris Miller
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ABSTRACT: Social media platforms have quickly become one of the main ways for communication, especially among young adults. These platforms have provided a new field of data of interest to researchers. Popular content on social media is often referred to as “viral,” and can be posted in the format of a “meme” relating to the culture of the platform. Such content is often posted by social media influencers. This exploratory study investigates a particular instance of viral content, using Twitter data. Quantitative analyses were used to determine the frequency of tweets related to the topics of the viral video using hashtags. A content analysis was done to investigate the themes present within the data set. Findings suggest that attitudes and behaviors of Twitter users are influenced by viral video posts. Viral marketing businesses may use these results to improve advertising on social media platforms.

INTRODUCTION

Advertising companies often use famous people and well-liked celebrities to endorse various products, taking advantage of a logical fallacy known as the “appeal to authority” (Gensler, 2017). This fallacy involves individuals insisting that a claim is true or in the case of advertising that a product is good, purely because it was presented by an authority figure, usually an unqualified one. Over time, the platform upon which advertising occurs has changed; currently, a lot of information is disseminated via social media. Social media networks are online applications through which individuals can interact and connect with one another. There are various popular social media platforms, but this study focuses on Twitter and TikTok.

On any social media platform, there are influencers, whose behaviors greatly impact the actions and thoughts of other users. Influencers receive a great deal of interaction on their posts, and have the ability to quickly spread information throughout a social media platform, making them ideal candidates for viral marketing (identifying influencers from sampled social networks). The website Influencer Marketing Hub identifies several factors that determine who is an influencer (2020). Most influencers tend to be knowledgeable about a certain topic, allowing for frequent posts on social media, often drawing the attention of many users. However, sometimes, influencers are given that title because they are popular, not necessarily knowledgeable. For example, many celebrities are considered influencers, even though they are not experts in the products or content they promote. Some social media users may be considered influencers based on the number of people who subscribe to or “follow” their content. Other types of influencers are differentiated by the types of content they upload. In general, there is not a specific number of subscribers or followers that defines an individual as an influencer, as the number of users differs greatly between social media platforms.

Some content can receive a lot of interaction from other users, without necessarily being from a social media influencer. When a post rapidly generates views in a short period of time, it is considered "viral." There is no set number of views that defines content as "viral," but most viral content has millions. Viral posts can be related to anything--they just have to be interesting enough that people will share the content with others. One study indicated that content is likely to be viral when it plays on emotions rather than uses information, when it is of moderate length, and has some element of surprise or drama (Tellis, MacInnis, Tirunillai & Zhang, 2019). The extent to which these characteristics influence how often content is shared is important information for advertising companies. However, some research illustrates that the sharing patterns of online video content is different than other content (Yang & Wang, 2015). According to Yang & Wang, the likelihood of sharing an online video is influenced by social media usage, attitudes, and normative influence, which is a behavioral change one adapts to fit in with a certain group (2015). Additionally, as expected, viral videos are more likely to be reposted if shared by a family member or close friend (Yang & Wang, 2015).

Sometimes, a viral post will be in the format of a "meme." The word was coined in the 1970s referring to aspects of culture that spread quickly throughout society (Shifman, 2013). A meme is a specific type of post that is repeated and adapted to many contexts, often in the form of a joke (Shifman, 2013). While a viral post and a meme seem similar, a viral post refers to one specific piece of uploaded content, while a meme is instead an idea that is slightly modified between posts. However, it is certainly possible that viral content is a meme. Consider the following example: an image went viral of a man looking back at another woman while standing with his girlfriend, titled the "Unfaithful Man" or "Distracted Boyfriend" (Figure 1). Then, users began to add words to each person in the image that reflected the situation. Thus, the concept of

the “Distracted Boyfriend” image is considered a meme. While it is not always the case that a meme is derived from viral content, this is often how memes are created in the social media networks. Additionally, it is only sometimes the case that viral content becomes a meme. Viral content and memes from social media are important pieces of data, as they can lead to insights into the attitudes of users.

Figure 1

Viral Image (https://en.wikipedia.org/wiki/Distracted_boyfriend_meme)

Example of meme based off of Viral Image (https://me.me/t/unfaithful-man-meme)

Often, viral content will be shared across platforms. For example, on 25 September 2020, a video went viral on TikTok of a man longboarding on the way to work, drinking Ocean Spray’s Cran-Raspberry juice, and listening to the song *Dreams* by Fleetwood Mac. That same day, the video was posted to Twitter, crossing between social media networks.

TikTok is a social media network established in 2016 that involves video-sharing; each video uploaded by its users is between 15 and 60 seconds long. To use the platform, individuals create a username starting with the @ symbol, along with a public profile. The opportunity to customize one’s profile comes in the form of an optional Bio, which is generally a short description of the user. People often include their ages, locations, schools, hobbies, and/or interests. Along with a Bio, TikTok users customize their account by adding a profile picture, generally an image of themselves. Users of TikTok can choose to “follow” other accounts, which means said user will be able to see the content of the accounts they are following on their feed.

The user is said to be a “follower” of that account. Additionally, users can “like” videos to show support, and they may comment on videos to express their opinions. Each user’s profile lists the number of accounts they are following, the number of followers, and the sum of likes received for each video.

Twitter as another social media network established in 2006 that serves as a microblogging platform. Users of Twitter can express their thoughts in a “tweet” with 280 characters or less, and they may also include images. Similarly to TikTok, Twitter users create a username starting with the @ symbol, along with a public profile, that includes a Bio, a profile picture, the number of accounts one is following, the number of followers, and the month and year of when the user joined the network. However, in addition to “liking” and responding to posts, like on TikTok, Twitter users are allowed to “retweet” a post, which shares the content with all of their followers. Additionally, when users retweet a post, they have the opportunity to either retweet the content as is, or “quote” the tweet, by retweeting it and adding one’s own thoughts. Any Twitter user may also “mention” another user by typing in their username beneath a tweet, which will notify the user, prompting him or her to see the content. In tweets, individuals can also use hashtags, which are represented by the # sign before a word or phrase; this connects specific topics. For example, a user may use the hashtag *#math*, indicating the tweet is related to mathematics. When one clicks on the hashtag, he or she has access to recent and trending tweets that have the same hashtag. Any user can search for tweets via hashtag, username, or keywords.

This study focuses on Twitter. Part of what makes this research so interesting is the use of an entirely new data field. Twitter can provide information about the opinions of the general public, which is valuable because researchers do not have to go out of their way to interview and

record such data. Of course, with such an unfamiliar type of data, researchers have not established norms related to how to utilize and analyze the provided information. Therefore, there is no single approved methodology for yielding legitimate analyses and results from Twitter data. As there is no universally accepted method of producing realistic and replicable results, and there is not a substantial literature base on which to ground confirmatory hypotheses, this study is categorized as exploratory research. From here, the hope is to clarify concepts that can be used in subsequent experimental research.

Unfortunately, Twitter data cannot be truly representative of the entire population. Only 18% of Internet users use Twitter; only 14% of adults use Twitter (Smith, Rainie, Shneiderman & Himelboim, 2014). Additionally, there is substantial variability of activeness in Twitter users--some individuals post frequently and some post rarely. Thus, even if Twitter were representative of the entire population, taking a random sample of tweets is likely only representative of more active users. In general, results from Twitter analyses should not be generalized to the general public. This is not to say that the dataset is not useful, rather that researchers must be cautious in their generalizations.

The goal of this research project is to determine the extent of the impact that a social media influencer has on individuals' attitudes. This project will be studying the impact of a specific incidence by an influencer: as mentioned before, on 25 September 2020, a video went viral on TikTok of a man drinking a bottle of Ocean Spray Cran-Raspberry juice while lip-syncing to *Dreams* by Fleetwood Mac. The same day, the video was released on Twitter with the same popularity. Various articles mentioned a notable increase in demand for Ocean Spray cranberry juice and a spike in downloads of the Fleetwood Mac song since the video's posting (Ioannou).

In regards to Ocean Spray's popularity, there appeared to be an increase in stock and sales following the release of the viral video. Between mid-March 2020 and mid-September 2020, Ocean Spray's stock stayed relatively constant between $10.75 and $11.75 (OCESP, 2020). The stock took a quick dive after 18 September 2020, but quickly recovered starting 29 September 2020 (OCESP, 2020). After the viral video had been posted for a few weeks, Ocean Spray's stock was back up to $11.75, then quickly shot up to $25.00 a month after the viral video (OCESP, 2020). Like most stocks, Ocean Spray has had some dips and high points, but from then until now (March 2020), their stock has been within the range of $17.00 and $25.00 (OCESP, 2020). Additionally, Ocean Spray plants were reported to be operating more than usual after the video became viral, which is especially notable, as many businesses were struggling financially during the COVID-19 pandemic (Narishkin, Gabbard & Cameron, 2020). Of course, it cannot be said that the increase in Ocean Spray's stock and sales is due necessarily to the viral video's release, but it is certainly important to mention. Plus, Ocean Spray certainly attributed its popularity to the person who posted the viral video; his TikTok username is @420doggface208, but his real name is Nathan Apodaca. The Ocean Spray brand purchased Apodaca a brand new cranberry-colored truck, as he did not own a vehicle. He appears to now be sponsored by the company, as he frequently appears in their advertisements.

In addition to a spike in Ocean Spray's stock and sales, following the viral video's release, Fleetwood Mac's song *Dreams* became rapidly popular. The number of streams of *Dreams* increased 54%, while the number of downloads increased 197% (Kaye, 2020). The Billboard's Hot 100 songs had not included *Dreams* for over 40 years, since August 1977; however, on 17 October 2020, a few weeks after the viral video's release, the song was number 21 (Kaye, 2020). In fact, no Fleetwood Mac song had been as high on the charts since February

1988 (Kaye, 2020). Not only had *Dreams* increased in popularity, but interest was sparked for many of Fleetwood Mac's greatest hits, including the entire album *Rumors*, on which was *Dreams* (Kaye, 2020). The calculations that allow a song to reach Billboard's Hot 100 are not readily available to the public, but there are several things that go into the formula: how often the songs are played on the radio of various stations, sales of singles on media (vinyl or CD), digital sales, and streamed songs via various music services (Nguyen, 2019).

Information about increased popularity in Ocean Spray products and Fleetwood Mac's music is suggestive of the significance of a social media influencer or of a viral post. By analyzing sets of tweets related to these concepts, the goal of this research is to evaluate the attitudes of Twitter users regarding cranberry juice and Fleetwood Mac, and to see if they are consistent with the reports above.

Methods

This research was inspired by participation as a research assistant in a Gifted Education study conducted by Dr. Erin Morris Miller and Dr. Jennifer Jolly. After selecting a topic, the first steps were to decide which hashtags should be used to identify relevant tweets. As articles identified an increase in cranberry juice consumption and Fleetwood Mac's popularity, these two subjects were selected. While Ocean Spray reported an increase in sales and stock, it was speculated that all brands of cranberry juice became more relevant on the social media platform. Thus, instead of using #OceanSpray, #CranberryJuice was selected. Additionally, as Fleetwood Mac became more popular, the hashtag #FleetwoodMac was selected. #Dreams was not used due to its ambiguity as a song title and an unrelated noun. There were other hashtags that went alongside tweets related to the viral video, such as #CranberryDreams, but these hashtags were too specific to evaluate over time. There are likely very few or no tweets with that hashtag prior

to the video's release. The whole goal of the study is to understand how a viral video impacts the frequency and content of tweets related to topics in the viral post. Thus, no baseline could be established, if using hashtags derived from the video itself.

After selecting which hashtags would be evaluated, the time frames during which tweets would be pulled needed to be selected. In order to establish a relatively solid baseline, tweets containing the hashtags #CranberryJuice and #FleetwoodMac were selected from up to three months prior to when the viral content was posted. There was six time frames in total: 24 June 2020 - 24 August 2020 (1-3 months before), 24 August 2020 - 24 September 2020 (up to 1 month before), 25 September 2020 - 26 September 2020 (the day of and day after posting), 27 September 2020 - 4 October 2020 (1 week after), 4 October 2020 - 25 October 2020 (1 week to 1 month after), and 25 October 2020 - 25 December 2020 (1-3 months after). Tweets were included in a time frame if they were uploaded between 12:00AM on the first day of the time frame and 11:59PM on the last day of the time frame. Note that not all time frames are the same length, so tweet frequency was calculated on a per day basis. However, it was important to have certain time frames of a shorter length, allowing for a more in-depth analysis of days surrounding the viral video. Days in longer time periods, for example between 24 June and 24 August, were expected to have a relatively stable frequency of tweets.

Once the data set was finalized, accessing the tweets required some effort. On Twitter, while any user has the ability to search under time frames and hashtags, results only include the top "trending" posts. This means that only the top 100 or so tweets most interacted with would be shown. Additionally, when searching for tweets, results generally show up in the language in which the device is using. Thus, by searching in English, any tweets with the hashtags #CranberryJuice and #FleetwoodMac would likely not show. Even if it were possible to access

all relevant tweets, there is no effective method for translating results into a spreadsheet for information. Therefore, there are various softwares and companies that can compile historic tweets for research. Finding the one that is most appropriate for differing types of research requires some investigation. For this project, the company Vicinitas provided the data set of tweets that included #CranberryJuice or #FleetwoodMac over the several requested time frames. The analysis done by Vicinitas on the data provided included the tweet ID; the username of the uploader; the date and time; the type of device from which the tweet was posted (e.g. Twitter Web App, Twitter for iPhone); the number of likes, retweets, replies, and quotes; the language; whether the tweet was the original post or a reply; the text of the tweet; the country, city, latitude and longitude coordinates; and any urls or media linked in the tweets. While all of this information was valuable, the only material used for the study was the actual text of the tweet and the date and time to help classify the post under the correct time frame. For example, while Vicinitas provided all necessary information, the spreadsheet for the time frame 27 September - 4 October only included tweets up until 11:59PM 3 October. Thus, some tweets from other time frames had to be copied and added to other spreadsheets. Occasionally, the language of the tweet was used to help identity content in another language, so it could be translated.

With all data accessible, the quantitative analysis could begin. The total number of tweets in each time frame was recorded, along with the number of days in each time frame. Because tweets were considered part of the data set if they occurred between 12AM on the first day and 11:59PM on the last day, both endpoints were included in the number of days calculation. This information was then used to evaluate the average number of tweets per day in each time frame.

While quantitative data was certainly valuable, the bulk of this exploratory study considers qualitative data. A qualitative content analysis is done with text data to briefly

summarize information, then note any observations within the data set that apply to the research goal (Thomas, 2003). Conducting a content analysis involves using the researcher as an instrument; he or she judges the importance of key themes within the data. Initially, the researcher labels each piece of raw data--in this case, a tweet--with a certain theme. Then, once all data has been identified, the researcher continually refines the categories established by combining labels until a few main ideas have emerged.

Researcher as Instrument

The credibility of the researcher is one of the factors used to determine the validity of qualitative analysis. The researcher who completed the content analysis is an undergraduate double-major studying mathematics and psychology. On this track, she has completed several courses that provide training in the methodologies of research including Research Methods, Behavioral Psychology, and Measurement & Statistics--all classes that illustrate the processes involved in conducting psychological research. Additionally, the course completed throughout the mathematics major certainly qualifies her for the quantitative calculations involved in the research. Throughout her studies, she has earned a 4.0 overall GPA. She has also served as a research assistant under a study involving similar data. As such, she has experience of the processes involved in coding a content analysis and enveloping the themes into categories.

Content Analysis

After calculating the frequency of tweets, a content analysis was conducted for each time frame of each hashtag. The majority of sets had a large number of tweets, so a systematic sample was used to evaluate every *n*th tweet in the set. Different *n*'s were used for each group. Aside from groups that already had a manageable number of tweets for analysis (the second, third, and fourth time frame for #CranberryJuice with 25, 12, and 24 tweets respectively), the goal was to

evaluate between 30 and 40 tweets per set. Once an *n* was selected for each data set, the spreadsheets were edited using modular arithmetic on Excel. The numbers representing each row were translated into modulo(*n*). Then, the data was filtered to show only the rows labeled as 1mod(*n*). The number of tweets analyzed per set ranged from 30-36 (again, excluding the three smaller sets mentioned above), with a mean of 33.333 tweets per set.

Additionally, during the content analysis, a total of 4 tweets over 3 data sets were skipped because they could not be analyzed from the text alone, and the link to the tweet was broken. The link to a tweet can be broken for various reasons, but it is likely that the tweet was either deleted or posted from an account that became suspended. Skipped tweets are noted by asterisks in the tables below in the results section. The content analysis involved three processes for each tweet: (1) labelling under a general subject, (2) identifying the tone, and (3) deciding if the tweet was related to the viral video. When assigning each tweet in the set a description, finding the balance between generality and specificity during the content analysis was left to the discretion of the Twitter coder. Next, the coding involved labelling the tone of each tweet as negative, neutral, or positive. Negative was not necessarily synonymous with "opposing" or "rejecting" as often used. A tweet was considered negative if it reflected any displeasing emotion. For example, a tweet with a sad tone was labelled as negative. Additionally, the tone of the tweet does not necessarily match the attitude of the individual toward the subject of the hashtag. Many tweets spoke in a negative tone about how disappointing it was that young kids and teenagers were just discovering Fleetwood Mac now, after the viral video's release. Obviously, this kind of tweet does not indicate a negative attitude toward Fleetwood Mac, yet its tone is considered negative. Lastly, it was decided whether or not the tweet was directly related to the viral video (yes or no). This column of the content analysis only existed for the last four time frames of each data set, as

the first couple occurred before the video's release. In order for the tweet to be directly related to the viral video, the post had to be a reply to the viral video, be a "quote" retweet the viral video, or mention details from the viral video.

Once the initial analysis was complete, the number of categories for content was reduced by organizing similar content descriptions together. For example, some tweets discussed a specific member in the band Fleetwood Mac, for example there were 17 tweets originally labeled as Stevie Nicks and 18 tweets labeled as Peter Green. These tweets, along with any others whose content was relative to an individual member of the band, were all lumped into one category: One of Fleetwood Mac. Again, the extent to which the content was "similar" was left to the judgment of the Twitter coder. Tweets that could not evenly fit into a category were labeled as outliers; some minority opinions with very few tweets were also grouped into the outlier category, as their impact on the data seemed insignificant.

Results

As mentioned previously, quantitative data involved calculating the frequency of tweets uploaded per day with the hashtags #CranberryJuice and #FleetwoodMac. Tables 1 and 2 display this information respectively. Additionally, these tables contain the number of tweets that were examined during the content analysis. The last column in both tables illustrates the proportion of tweets that were not directly related to the viral video. This information is helpful for understanding if Twitter users continue discussing the topics of the selected hashtags apart from their relation to the viral video.

Table 1

#CranberryJuice Tweets

Timeframe	Number of Tweets	Number of Days	Tweets per Day	Number of Tweets Analyzed	Tweets *not* directly related to viral video	Percentage of tweets *not* directly related to viral video
06/24/2020-08/24/2020	61	62	0.98387	30	30	100%
08/24/2020-09/24/2020	25	32	0.78125	25	25	100%
09/25/2020-09/26/2020	12	2	6	12	0	0%
09/27/2020-10/04/2020	24	8	3	23[a]	7	30.435%
10/04/2020-10/25/2020	205	22	9.3182	34	5	14.706%
10/25/2020-12/25/2020	119	62	1.91935	30	21	70%

[a]One tweet was skipped from this time frame during the content analysis

Table 2

#FleetwoodMac Tweets

Timeframe	Number of Tweets	Number of Days	Tweets per Day	Number of Tweets Analyzed	Tweets *not* directly related to viral video	Percentage of tweets *not* directly related to viral video
06/24/2020-08/24/2020	5130	62	82.7419	34	34	100%
08/24/2020-09/24/2020	1163	32	36.34375	36	36	100%
09/25/2020-09/26/2020	399	2	199.5	33	17	51.515%
09/27/2020-10/04/2020	912	8	114	34[a]	20	58.824%
10/04/2020-10/25/2020	4182	22	190.0909	34[b]	15	44.118%
10/25/2020-12/25/2020	2951	62	47.59677	35	30	85.714%

[a]Two tweets were skipped from this time frame during the content analysis

[b]One tweet was skipped from this time frame during the content analysis

Some information from the tables above is illustrated graphically in Figures 2 and 3 below. The light blue lines in each figure represent the total number of tweets per day from each hashtag. It is clear that there is a spike in the frequency of tweets following the upload of the viral video, which supports its classification as "viral." This follows since at least 69% of the #CranberryJuice tweets from the third, fourth, and fifth time frames were directly related to the viral video. Similarly, slightly less than half the #FleetwoodMac tweets in the same time frames were directly related to the video on average. However, it is important to note that only a sample

of tweets from each data set were analyzed for their relation to the viral video, so the percentages in the chart may fluctuate in the entire sample. Additionally, based on the estimated percentages of tweets unrelated to the viral video, the number of tweets per day not directly related are demonstrated in Figures 2 and 3--the dark blue lines. The overall tweets per day in each data set were multiplied by the percentage of tweets unrelated to the video to provide a new value.

Figure 2

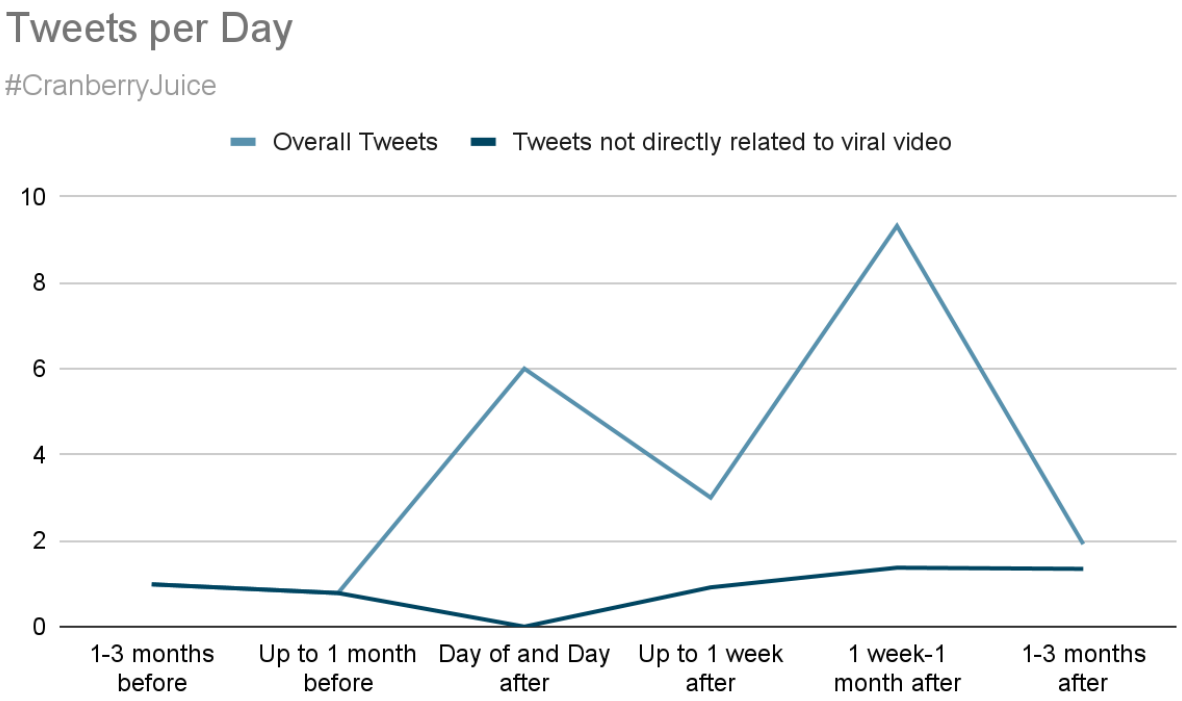
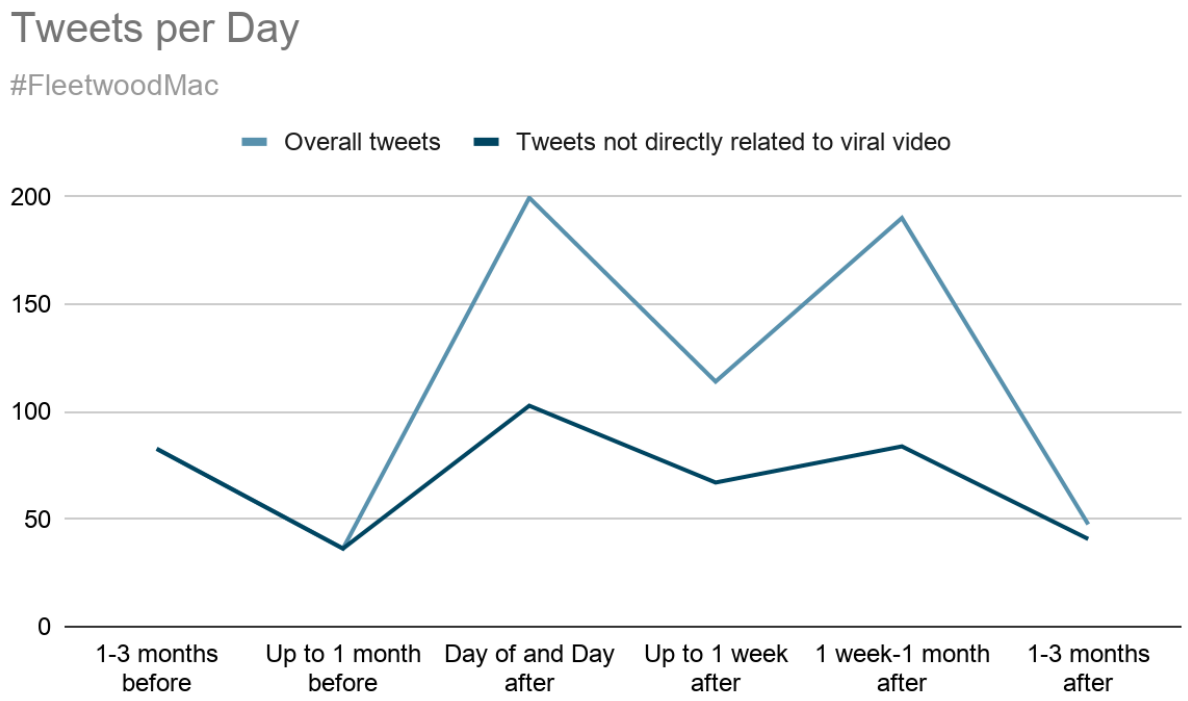


Figure 3



For the #CranberryJuice data set, it appears that there is a slight increase in the number of tweets per day when disregarding tweets associated with the viral post. In the two time frames prior to the upload, the number of daily tweets hovered just below one--0.98387 and 0.78125, so the baseline is within this range. All tweets with the hashtag #CranberryJuice on the day of and the day after the video's release were directly related to the video. The following week, the number of tweets per day unrelated to the video stayed close to the baseline--0.91305. However, the final time frames demonstrated a modest increase in unrelated tweets per day, with values of 1.37033 and 1.34355. As exploratory research, this increase cannot be defined as statistically significant; although, the data should serve as means for future null hypothesis statistical testing research.

In regards to the #FleetwoodMac data set, it was difficult to establish a baseline. It seems that the daily number of tweets with the hashtag fluctuates greatly over various time frames. The

baseline could be considered the average between the first two time frames. However, since the first time frame represents data over two months, and the second time frame represents data over one month, the first set should hold more weight. A possible baseline for the data set could involve the following calculations: $2(82.7419)+36.34375=201.82755$, $\frac{201.82755}{3}=67.27585$. Therefore, the baseline is about 67.27585 tweets daily. Then, when disregarding the percentage of tweets associated with the viral video, there is a notable increase of tweets per day (102.772) on the day of and day after its release. The three time frames following the video's upload have unrelated tweets per day ranging from 40 to 84, which seems typical according to the fluctuations in the baseline.

For the qualitative aspect of the content analysis, Tables 3 and 4 below illustrate the content of each data set for #CranberryJuice tweets and #FleetwoodMac tweets respectively. (On Table 4, Fleetwood Mac is sometimes abbreviated FM for conciseness). Note that each table has two parts, since there were many categories of the content analysis. Tables 5 and 6 provide an example of a tweet that would fall under each category of both sets.

Table 3a

#CranberryJuice Content

Timeframe	Number of Tweets Analyzed	Beverage or Food	Advertisement	Health	Taste of Cranberry Juice	Wholesome Content
06/24/2020-08/24/2020	30	15	7	4	1	0
08/24/2020-09/24/2020	25	9	8	4	0	0
09/25/2020-09/26/2020	12	0	0	3	1	6
09/27/2020-10/04/2020	23	3	0	2	1	4
10/04/2020-10/25/2020	34	2	0	2	0	0
10/25/2020-12/25/2020	30	7	3	5	0	0
Total	154	36	18	20	3	10

Table 3b

#CranberryJuice Content continued

Timeframe	Viral Guy	Trends	Ocean Spray Brand	Fleetwood Mac	Skating	Outlier
06/24/2020-08/24/2020	0	0	0	0	0	3
08/24/2020-09/24/2020	0	0	0	0	0	4
09/25/2020-09/26/2020	2	0	0	0	0	0
09/27/2020-10/04/2020	2	4	2	3	1	1
10/04/2020-10/25/2020	1	14	1	11	1	2
10/25/2020-12/25/2020	0	5	1	3	0	6
Total	5	23	4	17	2	16

Table 4a

#FleetwoodMac Content

Timeframe	Number of Tweets Analyzed	Listening to Music/ Lyrics	One of Fleetwood Mac	Publication with/ about FM	Music Covers	Trends	Politics
06/24/2020-08/24/2020	34	4	21	0	1	0	0
08/24/2020-09/24/2020	36	8	7	3	2	0	0
09/25/2020-09/26/2020	33	4	0	0	0	3	1
09/27/2020-10/04/2020	34	11	4	4	0	6	0
10/04/2020-10/25/2020	34	3	5	0	0	11	1
10/25/2020-12/25/2020	35	9	5	2	6	3	1
Total	206	39	42	9	9	23	3

Table 4b

#FleetwoodMac Content continued

Timeframe	Popularity of FM	Music Comparison/ Evaluation	Vinyl/ CD	Public Music	Viral Guy	Wholesome Content	Outlier
06/24/2020-08/24/2020	2	1	1	2	0	0	2
08/24/2020-09/24/2020	1	3	4	4	0	0	4
09/25/2020-09/26/2020	1	3	6	1	0	10	4
09/27/2020-10/04/2020	2	1	1	0	1	1	3
10/04/2020-10/25/2020	10	2	0	0	1	0	1
10/25/2020-12/25/2020	2	1	1	0	0	0	5
Total	18	11	13	7	2	11	19

Table 5

Categories for #CranberryJuice Tweets	Example of Tweet in this Category
Beverage or Food	🍎 #applejuice mixed with some #cranberryjuice is 😋 https://t.co/EVMHNWox5e
Advertisement	Pago Cranberry juice is the perfect breakfast partnership ❤️ Available to purchase online from our Amazon store! #cranberry #cranberryjuice #amazon #amazonseller https://t.co/oSXxsosf6W
Health	Cranberry products reduce risk of recurrent UTI, FDA allows qualified claims #Cranberryproducts #riskofrecurrentUTI #FDA #allowsqualifiedclaims #foodanddrugadministration #cranberryjuice #urinarytractinfection https://t.co/NMqqM4EJTH
Taste of Cranberry Juice	It tastes like medicine #cranberryjuice
Wholesome Content	I don't use this verbiage often but this is a whole vibe. simple as that https://t.co/NfdLsgLkxu
Viral Guy	We all need this guy in our lives. #Dreams #CranberryJuice https://t.co/U4sF9BGimn
Trends	#fleetwoodmac #cranberryjuice who would've thought that we [would] be a thing.
Ocean Spray Brand	#Favorite #Juice ! @OceanSprayInc #CranberryJuice https://t.co/ZDoD3xSaCn
Fleetwood Mac	Always ALWAYS loved this @FleetwoodMac song "Dreams." Breezy-coolest video here, much like the group. Looked up lyric: "It's only right that you should Play the way you feel it" #skateboard #cranberryjuice #dreams @doggface208 @stevienicks #masterpiece https://t.co/w3YHqv8CVW
Skating	I will give you one guess as to what we are planning. Inspired by the works of @doggface208 on a longboard. #skatefoo #fleetwoodmac #skateboard #capecodcocktails #cranberryjuicefightsinfection #tonyhawkproskater https://t.co/egjHesGe5q

Table 6

Categories for #FleetwoodMac Tweets	Example of Tweet in this Category
Listening to Music/Lyrics	The pure joy of a car journey, alone, with fleetwood mac turned up ridiculously loud! #RefreshingBoost #bliss #childfree #oldbutgold #FleetwoodMac
One of Fleetwood Mac	#StevieNicks #music #FleetwoodMac #womeninmusic https://t.co/247DRUFNel
Publication with/about Fleetwood Mac	Fleetwood Mac biopic 'would make a GREAT movie' says Mick: Rumours script ALREADY written https://t.co/RHyVmntzfu #FleetwoodMac https://t.co/SGMKZpxzTF
Music Covers	If you like #Landslide by #FleetwoodMac, you have to listen to this version by @jordandoww. It is haunting, ethereal, and absolutely gorgeous. #lovethissong❤️ #lovelymusic @ Montgomery Village, Maryland https://t.co/lp0vv4ausU
Trends	Everyday #FleetwoodMac is trending with me! Love this band so much!!! #70srock #StevieNicks #ClassicRock ✨🤘🎸👌🌕🔮💜 https://t.co/M6toatslHo
Politics	Having some #FleetwoodMac vibes today, and feel it's my duty to get people to vote! @MickFleetwood @StevieNicks https://t.co/a9U2K3QqDq
Popularity of Fleetwood Mac	#TikTok gives a nice old song the attention it deserves: Fleetwood Mac - Dreams (Official Music Video) #FleetwoodMac https://t.co/ZBKQTukaIh
Music Comparison/Evaluation	Fleetwood Mac OR U2? #FleetwoodMac #U2 https://t.co/cOWnf98exS https://t.co/UP1TLTkz6V
Vinyl/CD	A Glimpse Of Some Of Our New Vinyl #ledzeppeliniii #thewhitestripes #southernculture ontheskids #queen #inuendo #srv #fleetwoodmac #livingcolour #jimihendrix #newvinyl #vinylisking #kingrecordsnc https://t.co/31hY6G5E7t
Public Music	Now playing #FleetwoodMac - Everywhere #thewillowClassicHits #Classichits https://t.co/mohF8vxauJ
Viral Guy	TikTok's Skating Chill Lord Says He's Received Over $13K In Donations Since Going Stupid Viral https://t.co/JnBBUlAuXf #NathanApodaca #Nathan #Apodaca #Nathan_Apodaca #TikTok #Skating #ChillLord

	#Donations #Stupid #Viral #FleetwoodMac #Fleetwood #dreams https://t.co/nhQIBblbME
Wholesome Content	In case you needed something to smile about. #FleetwoodMac https://t.co/2ncfDk3ZbL

For the #CranberryJuice dataset, the number of categories that emerged from the content analysis was 11, including an "outlier" category. For the #FleetwoodMac dataset, 13 categories emerged, including the "Outlier" category. Note that some categories only emerged after the viral video's release; for example, the "Wholesome Content," "Viral Guy," and "Trends" categories did not exist for the first two time frames in both #CranberryJuice tweets and #FleetwoodMac tweets. Of course, these categories are closely related to the theme of viral content, so it is not surprising that this is the case. Interestingly, a minority category that emerged after the video's release was the topic of "Politics" in the #FleetwoodMac dataset. This may indicate how social media is becoming more politicized, as viral content and memes are being adapted to the political sector. It is also necessary to look at how categories of tweets become less popular over the time frames. For example, the "Beverage or Food" category in the #CranberryJuice dataset made up 36-50% of tweets for the first two time frames. However, for the last four time frames, this category made up 23.333% at most, ranging as low as 0% of one set.

"Wholesome Content" encompasses tweets explaining how enjoyable a post is (usually referring to the viral video); one tweet said "I can't get enough." Many tweets in this category also included the word "vibes" when referring to the viral post, meaning the atmosphere or emotional state of the content. The "Publication with or about Fleetwood Mac" category often included mentions of documentary, books, television shows, and other media about the band. Another category that may need clarification is "Public Music;" this group of tweets consisted of

posts regarding concerts, radio stations, and other ways of listening to live music. However, mentions of listening to music via vinyl or CDs were categorized under "vinyl/CD."

In the "Beverage or Food" category, it is interesting to note that 23 of 36 tweets had to do with alcoholic beverages. Additionally, as mentioned in the methods section, the category titled "One of Fleetwood Mac" includes any tweets that mention an individual member(s) of the band. About 40.5% of tweets under this category referred to Stevie Nicks and 42.9% referred to Peter Green. Categories will be evaluated further in the discussion.

The last construct evaluated by the content analysis was the tone of the tweets in each data set. This information is displayed on Tables 7 and 8 below.

Table 7

Tone in #CranberryJuice Tweets

Timeframe	Percentage of Tweets with Positive Tone	Percentage of Tweets with Neutral Tone	Percentage of Tweets with Negative Tone
06/24/2020-08/24/2020	90%	0%	10%
08/24/2020-09/24/2020	92%	4%	4%
09/25/2020-09/26/2020	91.667%	0%	8.333%
09/27/2020-10/04/2020	91.304%	0%	8.696%
10/04/2020-10/25/2020	97.059%	0%	2.941%
10/25/2020-12/25/2020	86.666%[a]	6.667%	6.667%

[a]Because the percentages need to add to 100, the percentage of positive toned tweets was truncated here instead of rounded.

Table 8

Tone in #FleetwoodMac Tweets

Timeframe	Percentage of Tweets with Positive Tone	Percentage of Tweets with Neutral Tone	Percentage of Tweets with Negative Tone
06/24/2020-08/24/2020	58.824%	17.647%	23.529%[b]
08/24/2020-09/24/2020	91.666%[a]	5.556%	2.778%
09/25/2020-09/26/2020	87.879%	3.030%	9.091%
09/27/2020-10/04/2020	97.059%	0%	2.941%
10/04/2020-10/25/2020	82.353%	5.882%	11.765%
10/25/2020-12/25/2020	88.571%	11.429%	0%

[a]Because the percentages need to add to 100, the percentage of positive toned tweets was truncated here instead of rounded.

[b]Note that a lot of the tweets from this time frame had a negative/neutral tone because they referenced the death of Peter Green.

The tone of the tweets in both #CranberryJuice and #FleetwoodMac datasets was relatively consistent over the time frames. For the #CranberryJuice set of tweets, the number of tweets with a positive tone ranged from 86-97%, with no pattern between the fluctuations with each time frame. For 4 of the 6 time frames, the leftover tweets were all classified as negative; the other two times had its leftover tweets split evenly between “neutral” and “negative.” Again, there appears to be no relationship between the tones of the tweets in this data set and the viral video’s release.

There is an interesting finding in the tones for the #FleetwoodMac tweet data set, but it likely has nothing to do with the viral video’s release. In the first time frame, only 58.824% of

the tweets are categorized as positive. For the other time frames, the percentage of positive-toned tweets ranged from 82-97%. However, as noted in the table, this difference in tone is likely due to the proportion of tweets related to the death of Peter Green, who was a member of the band Fleetwood Mac.

Throughout this research, the numbers presented have been rounded rather than truncated. However, because the percentages of tone within each time frame must add to 100%, one value was occasionally truncated. These values are marked with an asterisk and indicated in the tables. It was decided to truncate the largest value, as this would be taking away the least significance in regards to proportionality. Every time, the largest value happened to be the percentage of positively-toned tweets.

Additionally, the data sets were run through the machine learning software LIWC2015, which completed a sentiment analysis. This software evaluated the emotional tone of each tweet using a dictionary consisting of words, word stems, and emoticons. Twitter data is one of many sources on which the software has been trained to analyze. Output from the software is presented on a scale from 0-100, in which 0 represents low on the scale and 100 indicates a high scoring. In regards to emotional tone, scores closer to 100 demonstrate a positive tone and scores closer to 0 demonstrate a negative tone. The average score for the #CranberryJuice data set for emotional tone was 49.1627 and for the #FleetwoodMac data set was 49.7709. These findings are interesting because the researcher's analysis of tone for each time frame always consisted of at least 82% positively-toned tweets, excluding the timeframe of Peter Green's death for the #FleetwoodMac set, so the average emotional tone should be much higher. Even during the excluded time frame, 58.824% of the tweets were positive, which means the average emotional tone should be greater than 50. The researcher considers her tendency to view content positively

more often than neutral, which may have swayed the data. However, the fact that the average was lower than 50 indicates a great deal of negatively-toned tweets, according to the program. Perhaps, the software underestimates the positivity in a tweet. Although, because no effect was found in regards to tone before and after the viral video's post, this discrepancy may not be of critical importance.

Discussion

The implications of this data are purely speculative, as this research is exploratory. However, there are findings that should be further evaluated. Regarding the quantitative analysis, in both the #FleetwoodMac and #CranberryJuice datasets, there was a clear increase in tweet frequency with these hashtags, following the release of the viral video. Since a notable portion of the tweets from each time frame following the video's posting was directly related to the viral content, it is clear that the post was indeed "viral"--many users were talking about it. For the #CranberryJuice data specifically, there was a modest increase in tweets per day that were unrelated to the viral video. This is notable because it implies that the viral content influenced the topics of discussion on the social media platform, even when the topics were seemingly unrelated to the viral content itself. Thus, possibly subconsciously, people were discussing cranberry juice more frequently because of the impact of the viral video. This finding can be related to previous studies of priming, a phenomenon where exposure to a stimulus can influence an individual's beliefs or actions toward another stimulus. Priming often occurs under the threshold for conscious awareness. Shrum, Wyer, Jr., & O'Guinn conducted a priming study examining the extent to which television viewing influences individuals's beliefs about social reality (1998). Their research suggested that those who are "heavy viewers" of television had beliefs about social reality that aligned with the views portrayed by the TV, implicating

television as a factor in the formulation of beliefs (Shrum, Wyer, Jr., & O'Guinn, 1998). The findings of the current study on the influence of viral content are consistent with this priming research, suggesting that priming can occur via social media as well. After consistent exposure to the viral video, Twitter users may have been primed to value or simply discuss cranberry juice and Fleetwood Mac more, increasing these topics's popularity over the social media platform.

The qualitative research was done to evaluate exactly what was being discussed on Twitter, as the number of tweets per day increased. While there are some categories that overlap between the #CranberryJuice and #FleetwoodMac dataset, the two groups will be considered as entirely separate. Before the viral video was uploaded, the majority of the tweets in the #CranberryJuice sets were categorized under "Beverage or Food," "Advertisement," or "Health." There is a notable decrease in tweets from the "Beverage or Food" and "Advertisement" categories following the viral video's release. This is likely because new categories emerged ("Wholesome Content," "Viral Guy," "Ocean Spray Brand," "Trends," "Fleetwood Mac", and "Skating") taking over a large percentage of tweets from the set. Interestingly, the number of tweets in the "Health" category stayed relatively constant over time. The most noteworthy categories that emerged are "Fleetwood Mac" and "Skating"--these two topics would never be the subject of #CranberryJuice tweets without the existence of the viral video intertwining them all. This is why the skating minority opinion was kept in the content analysis, rather than lumped into the "Outlier" category; it has significance. Another category to be further analyzed is the "trends" set. A majority of tweets classified under this group were remakes of the viral video. It is often that other users on a social media platform will remake viral content, occasionally with their own twist. For example, one tweet within this category included a video of a guy skateboarding, drinking cranberry juice, and listening to *Dreams* by Fleetwood Mac--while

wearing a Friday the 13th mask. This video was uploaded mid-October as a "Halloween edition" remake. Interestingly, the viral video became so popular, that both Stevie Nicks and Mick Fleetwood--both members of the band Fleetwood Mac--recreated the video as well.

While the categories "Trends," "Viral Guy," and "Wholesome Content" made up about 38.384% (38/99) of #CranberryJuice for the time frames after the video's upload, the three groups had fewer tweets in the #FleetwoodMac data set. For the last four time frames, those three categories only made up 26.471% (36/136) of #FleetwoodMac tweets. The content analysis for #FleetwoodMac tweets was much less clear-cut than the #CranberryJuice set. There are only a few categories that appear to have a difference in tweet frequency correlated with the viral video's release. There appears to be a decrease in the number of tweets in the "One of Fleetwood Mac" and "Public Music" categories. The decrease in "Public Music" is likely due to the emergence of new categories, like in the #CranberryJuice data set. However, the decrease in the "One of Fleetwood Mac" category is more likely due to Peter Green's death during the first time frame, so the baseline for this category is skewed.

The categories "Popularity of Fleetwood Mac" and "Politics" showed an increase related to the viral video's upload. Many tweets in the "Popularity of Fleetwood Mac" category consisted of users being shocked that younger Twitter users had never heard of Fleetwood Mac before the viral post. The "Politics" set was certainly a minority opinion, with only 3 tweets total from the sample. However, it is meaningful because it may demonstrate how social media platforms are becoming politicized. One category that showed an interesting pattern was "Music Covers." While only an estimated 4.2857% (3/70) #FleetwoodMac tweets from before the viral video were categorized as "Music Covers," in the last time frame 17.143% (6/35) tweets could be labeled this way. This finding is intriguing because there were no tweets within this group for

the first three time frames following the video's release. It is possible that users needed time to study and learn a Fleetwood Mac song well enough to create a cover, which explains the spike in the following months.

Another part of the qualitative analysis was the tone. However, any changes in tone did not appear to be correlated to the viral video--and there were very few changes in tone over time anyway. The only substantial shift in tone was from the first time frame of the #FleetwoodMac set, which--as discussed previously--can be majorly attributed to the death of Peter Green in July. In fact, the death of Peter Green may have discredited more than the tone. The amount of tweets daily could have been greatly increased due to his death, which explains the trouble establishing a baseline for #FleetwoodMac tweet frequency. It is suspected that the baseline of this set is actually closer to the daily tweets of the second time frame--34.34375 instead of the calculated *67.27585*. Thus, there may have been a noteworthy increase in tweets in this set following the release of the viral video if his death did not skew the baseline.

In addition to Green's death, there are other significant dates that may have impacted the findings. For example, Jeremy Spencer--a guitarist for Fleetwood Mac--has a birthday on 4 July, which could be another factor that increased the tweets for the first time frame. Additionally, 26 September is apparently Record Store day, so the number of tweets within the third time frame may have been increased as people were buying Fleetwood Mac vinyl. Its impact is noteworthy, as the "Vinyl/CD" category reaches a high of 18.182% (6/33) during the content analysis for that time frame. This indicates the increase in tweets the day of and day after the viral video's release may not be entirely due to the video alone.

Aside from significant dates, there are a few other sources of error that should be mentioned regarding data collection. Not all Twitter users actually use hashtags; therefore, more

users could have been talking about the viral video or the topics from the post. Thus, this research does not represent all Twitter users, just those who use hashtags. Also, users can delete their tweets, and accounts that are suspended may have posted tweets about the topics, but their content is no longer available. Additionally, it is possible that people misspell their hashtags, which would prevent these tweets from being incorporated into the data set. Twitter users may be located around the world, so they may tweet from various languages. As mentioned in the methods section, the data received from Vicinitas included in which language the content of the tweet was written. This information was used to translate the tweet into English, so its content could be analyzed. However, translation is rarely completely accurate, so this may have impacted the categorization of the tweet during the content analysis. Although, there were only a few tweets that were in other languages, so this is not a big source of error. Since cranberry juice has a different name in other languages, the hashtag was likely not representative of Twitter users who used languages other than English to tweet. Lastly, Nathan Apodaca was drinking cran-raspberry Juice in the viral video, not cranberry juice, so there may have been some tweets that were not included that should have been.

There may have also been sources of error throughout the data analyzation process. As mentioned in the methods section, the content analysis was based purely on the Twitter coder's judgement. While it is unlikely that another coder would yield wildly different results, it is possible to have minor discrepancies between the results by multiple analysts. One example of uncertainty during the content analysis was deciding whether or not the content of the tweet was directly related to the viral video. There were several tweets that started along the lines of "Now that Fleetwood Mac is popular …" which were generally given a "no" in its relation to the viral video, since the tweet does not directly fault the viral post for Fleetwood Mac's popularity.

However, because the results did not demonstrate a notable increase in unrelated daily tweets for the #FleetwoodMac data set, the findings of this study are not necessarily swayed. It is simply important to note that the effect of the viral video on unrelated tweet frequency may be larger or smaller based on whether one answers “no” or “yes” to a question like the one above.

Despite some sources of error, the findings of the research suggest that viral video content influences the attitudes and behaviors of Twitter users. This information is important for advertising companies, as they gain further insights into viral marketing. For a better understanding of the impact by an influencer or by viral content, tweets of a certain hashtag should be analyzed on a daily basis--with 24 hour time frames. This will allow for more data points on a graph, along with the opportunity to eliminate days that happen to be an important event relative to the hashtag. Replications of this study should group together #CranberryJuice with data set #CranRaspberryJuice and/or #Cran-RaspberryJuice, since Nathan Apodaca was drinking Ocean Spray’s Cran-Raspberry juice in the viral video. Additionally, by noting important events relative to the hashtags, a percentage of tweets from each time frame could be dismissed. For example, a better approximation of the tweets per day for the first #FleetwoodMac time frame involves removing the portion of tweets related to Peter Green’s death. Future research should incorporate as many hashtags as possible relative to viral content to consider all relevant posts. Studies should expand the length of time during which data is collected while minimizing the duration of each time frame. Therefore, specific patterns can be tracked, including time frames later than 3 months after a viral content’s upload.

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