

COVID-19 Named Resources on Facebook, Twitter, and Reddit

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ABSTRACT

Crisis Named Resources (CNRs) are social media accounts and pages named after a crisis event. They are created soon after an event occurs. CNRs share a lot of information around an event and are followed by many. In this study, we identify CNRs created around COVID-19 on Facebook, Twitter, and Reddit. We analyze when these resources were created, why they were created, how they were received by members of the public, and who created them. We conclude by comparing CNRs created around COVID-19 with past crisis events and discuss how CNR owners attempt to manage content and combat misinformation.

Keywords

Crisis named resources, Facebook, Twitter, Reddit, COVID-19.

INTRODUCTION

Social media can be used before, during, and after a crisis event to raise public awareness, understand and monitor the event, provide information and warnings, and improve response and recovery management (Palen and Hughes 2018; Wendling et al. 2013). A wide variety of people contribute to crisis-related communications on social media, including emergency responders, government, public relations practitioners, and members of the public (Simon et al. 2014; Wigley and Zhang 2011).

When communicating about a crisis event, people often create dedicated venues or channels on social media (Bird et al. 2012; Shklovski et al. 2008). Past studies have called such dedicated venues *Crisis Named Resources* (or CNRs). CNRs are social media pages and accounts named after a crisis event. They appear soon after the event occurs and share event-related information. Since these resources are named after an event, they appear as search results on social media search engines and gain more attention than they otherwise would if they were not named after the event (Chauhan and Hughes 2020). These CNRs serve as important and visible information sources for those seeking information online, thus they require further study to better understand the role they play in crisis events.

In this study, we analyze the CNRs created around COVID-19 across three social media platforms: Facebook (social networking service), Twitter (microblogging and social networking service), and Reddit (social news aggregation, web content rating, and discussion website). We chose COVID-19 as the event of study for several reasons. First, COVID-19 has affected the global community, with more than 114 million cases worldwide. Second, COVID-19 has resulted in widespread uncertainty and anxiety. After almost a year, it is still unclear when vaccines will be widely available, when everyone will be vaccinated, and when things will return to normal. Third, the COVID-19 pandemic offers a rare opportunity to study an unfolding event as it takes place over a much longer period of time than most crisis events. Finally, COVID-19 has resulted in record online activity (Koeze and Popper 2020). This is likely due to the stay-at-home orders issued soon after the pandemic was declared that caused many to turn online for social connection and answers to the uncertainty caused by the pandemic (Ferrara 2020). We chose Facebook, Twitter, and Reddit as social media platforms of study because of their popularity and unique affordances. CNRs about COVID-19 exist on all three platforms, however, CNRs on Facebook and Twitter are much different than those on Reddit. For example, while only the CNR owners can post on Facebook and Twitter CNRs, everyone can post on a Reddit CNR (or subreddit). Once a user posts something on Reddit, other users cast positive (known as up-votes) or negative (known as down-votes) votes; posts with more up-votes appear towards the top of a subreddit. There are also differences in the way Facebook, Twitter, and Reddit moderate these CNRs. While Facebook and Twitter verify the authenticity of pages and accounts and place blue-colored verification checkmark badges next to verified pages and accounts, subreddits have moderators, who make

community rules and moderate user posts.

This work contributes to the *crisis informatics* body of research (Palen et al. 2009) and builds upon past studies of CNRs by looking at a different type of event (a pandemic) and social media type (Reddit). This analysis allows us to compare and contrast CNR existence and use across different event and social media types. Our research enquiries are as follows:

- When are COVID-19 related CNRs created?
- Why did people create these CNRs?
- Which COVID-19 related CNRs were most well-received?
- Who are the owners of these CNRs and how do they manage their resources?

We conclude the paper by examining differences between CNRs across different social media platforms and comparing COVID-19 CNRs with those created for past crisis events. We also discuss how CNR owners are taking steps to reduce misinformation and disinformation, and offer recommendations based on these observations.

BACKGROUND

Social Media Use During Crisis Events

People often exchange information on social media platforms during crisis events (Bruns 2014; Reuter et al. 2018). Heverin and Zach (2010), for example, reported on the types of information transmitted, the sources of the information, and the temporal trends of information shared on Twitter during the 2009 Washington shooting of four police officers and the subsequent 48-hours search for the suspect. The use of social media during crisis events can also help in sensemaking (Mirbabaie and Zapatka 2017; Stieglitz et al. 2017), raising situational awareness (Tobias 2011; Vieweg et al. 2010), and coping with disasters (Vicary and Fraley 2010).

Though there are numerous benefits of using social media during crisis events, social media can also propagate misinformation and disinformation (Wendling et al. 2013). *Misinformation* is false information shared unintentionally and *disinformation* is false information shared with the intentions of causing harm (Wu et al. 2016). It is therefore critical to determine who is sharing the information, why, and what is the influence (or reach) of these accounts.

Crisis Named Resources

As already stated, CNRs are social media accounts, pages, or communities named after a crisis event. People in the past have created such resources for many crisis events, such as the 2014 Carlton Complex Wildfire and the 2016 Fort McMurray Wildfire (Chauhan and Hughes 2017, 2018). Shklovski and colleagues (2008), for instance, discovered that a member of a rural community, who had been evacuated due to the 2007 Southern California Wildfires, created a community-based volunteer website to reconnect community members and facilitate information exchange about the wildfire status and humanitarian relief efforts in the area. Bird and colleagues (2012) also reported on Facebook groups created during the 2010/11 Queensland and Victorian floods. They conducted surveys with people who were following these groups and found that respondents first heard about these groups from their friends or family members, a Facebook or Internet search, or after receiving an invitation from a Facebook friend. Their findings also show that respondents perceived government Facebook groups and websites as more accurate and trustworthy than community groups, while community Facebook groups were seen as timelier and more useful than government groups and websites. A recent study also reported on the perceived trustworthiness of CNRs named after the 2017 Hurricane Irma and showed that participants evaluated trustworthiness based on their perceptions of a CNR's content, information source, profile, and owner (Chauhan and Hughes 2020).

Our contribution in this space is to deepen our understanding regarding COVID-19 related CNRs on Facebook, Twitter, and Reddit. Since COVID-19 is a global crisis event, this study is not limited to any specific country or a geographic region. Specifically, we are investigating when CNRs are created, why they are created, how they are received by members of the public, and who owns these resources and how they moderate their resources.

COVID-19 A Pandemic and Infodemic

On December 31st, 2019, China alerted the WHO to several cases of unusual pneumonia in the city of Wuhan in Hubei province, China. The WHO found that the new virus belonged to the coronavirus family on January 7th, 2020. The new disease was given the name "COVID-19" on February 11th, 2020 and was declared a pandemic on

March 11th, 2020 (Al Jazeera, News Agencies 2020). Soon after this declaration, the world changed. The pandemic forced many countries to close borders, restricting travel outside and/or within the country. Educational institutions, organizations, and businesses around the globe were forced to close (Al Jazeera, News Agencies 2020).

COVID-19 caused much uncertainty and resulted in record social media activity worldwide (Watson 2020; Wold 2020). In response to which, the World Health Organization (WHO) Director-General, Tedros Adhanom Ghebreyesus at the Munich Security Conference on February 15, 2020 said, “*We’re not just fighting an epidemic; we’re fighting an infodemic* (an over-abundance of information - some accurate and some not).” WHO has therefore shared public health information and advice, including myth busters on COVID-19, on its social media channels and website (World Health Organization 2020).

As of February 2021, COVID-19 has infected more than 114 million people and has claimed more than 2.53 million lives worldwide (John Hopkins University and Medicine 2020). This event provides a unique opportunity to study a global-level crisis as it slowly unfolds. Studying CNRs during a pandemic will also help us better understand social media activity and behavior during this type of event.

DATA COLLECTION

Using Facebook, Twitter, and Reddit search engines, we determined pages, accounts, and communities, whose name had any of the following keywords- ‘*coronavirus,*’ ‘*COVID-19,*’ ‘*quarantine,*’ and ‘*social distancing.*’ For each identified Facebook page, we recorded its name, information in the about and page transparency section, the number of likes and follows, and whether it had a profile picture, cover picture, and a verification sign¹. For each identified Twitter account, we recorded its name, handle, bio, location, date joined, number of tweets, number of following, number of followers, and whether it had a profile picture, cover picture, and a verification sign¹. For each identified Reddit community (or subreddit), we recorded its subreddit name, handle, about description, number of members, date created, rules, moderators, and whether it had a profile picture and a cover picture. The collected parameters are summarized in Table 1. In total, we identified 690 Facebook pages, 172 Twitter accounts, and 217 subreddits related to COVID-19. All data were collected in June 2020, after obtaining an ethics clearance from our academic institution.

Table 1. Data Collection Parameters

Data Collection Parameters	Facebook	Twitter	Reddit
Name	Yes	Yes	Yes
Handle	Yes	Yes	Yes
Bio	Yes	Yes	Yes
Date Created	Yes	Yes	Yes
Presence of a Profile Picture	Yes	Yes	Yes
Presence of a Cover Picture	Yes	Yes	Yes
No. of Likes, Follows, or Members	Yes	Yes	Yes
Presence of a Verification Sign	Yes	Yes	Not Applicable
Page Transparency Section	Yes	Not Applicable	Not Applicable
Location	Not Applicable	Yes	Not Applicable
No. of Tweets	Not Applicable	Yes	Not Applicable
Community Rules	Not Applicable	Not Applicable	Yes
Community Moderators	Not Applicable	Not Applicable	Yes

FINDINGS

Overview of COVID-19 Related Crisis Named Resources

The majority of the CNRs we identified had a COVID-19 related profile or cover picture (see Table 2). All

¹ Twitter and Facebook confirm the authenticity of accounts that are in the public interest by placing a blue-colored check mark verified badge next to an account’s name.

subreddits and the majority of Facebook (75.3%) and Twitter (96.5%) CNRs had a self-description. Very few (0.1% Facebook and 12.2% Twitter) of these resources had a blue check mark verification sign.

While some CNR owners (24.2% Facebook, 26.7% Twitter, and 41.1% Reddit) created their resources for a specific continent, country, state, county, or neighborhood (e.g., COVID-19 South Africa, Coronavirus Canada, or US Coronavirus updates), others addressed a more general audience (e.g., COVID-19 Resources, Coronavirus Stories, or Coronavirus Prayers).

Very few CNRs (0.5% Facebook, 8.1% Twitter, and 0.9% Reddit) claimed to be official. Of these official CNRs, many belonged to a country government or county emergency management agency.

Table 2. Overview of COVID-19-related Crisis Named Resources

Crisis Named Resources Attributes	Facebook (N = 690)	Twitter (N = 172)	Reddit (N = 217)
COVID-19 related Profile Picture	687 (99.5%)	169 (98.2%)	152 (70.0%)
COVID-19 related Cover Picture	623 (90.2%)	140 (81.3%)	71 (32.7%)
Self-Description (about or bio)	520 (75.3%)	166 (96.5%)	217 (100.0%)
Verification	1 (0.1%)	21 (12.2%)	Not Applicable
Claimed to serve a geographic region	167 (24.2%)	46 (26.7%)	90 (41.4%)
Claimed to be official	4 (0.5%)	14 (8.1%)	2 (0.9%)

Creation of Crisis Named Resources

CNR creation dates were retrieved from Facebook pages, Twitter accounts, and Reddit community pages. As shown in the Table 3, the number of new CNRs continued to rise from January to March and started to decline gradually after that. We posit that this behavior reflects how the anxiety caused by the pandemic increased in the beginning and then began to stabilize as people acclimated to the changing conditions (e.g., wearing masks, practicing physical distancing, working from home, etc.).

Table 3 also shows that most Facebook pages (60.4%), Twitter accounts (41.8%) and Reddit communities (71.8%) were created in the month of March. We speculate that this is a result of heightened activity caused soon after the declaration of a pandemic on March 11th, 2020. With stay-at-home orders and uncertain conditions, many people chose to turn to social media to find information and cope with difficult circumstances. Bridging knowledge gaps that arise due to the uncertainty caused by crisis events is a common response and has also been observed in the context of COVID-19 pandemic (Christianson and Barton 2020; Stephens et al. 2020).

Some CNRs (3.7% Facebook, 41% Twitter, and 0.9% Reddit) were created before January 2020, before knowledge of the virus was widespread. This implies that these CNRs may not have been created for COVID-19 but were rather renamed or repurposed. Though we do not know why these individuals or organizations renamed their CNR, we speculate that they did so to participate in the event, show their support, or to draw attention to themselves.

Table 3. Number of Crisis Named Resources Created by Month

	Before Jan 2020	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020
Facebook (N = 690)	26 (3.7%)	14 (2.0%)	19 (2.7%)	417 (60.4%)	207 (30.0%)	7 (1.0%)
Twitter (N = 172)	70 (40.6%)	5 (2.9%)	9 (5.2%)	72 (41.8%)	14 (8.1%)	2 (0.5%)
Reddit (N = 217)	2 (0.9%)	13 (5.9%)	34 (15.6%)	156 (71.8%)	12 (5.5%)	0 (0.0%)

Owner Intentions for the Crisis Named Resources

To determine the intentions of COVID-19 related CNR owners, we analyzed CNRs based on their name, handle, and description. Two researchers coded all the CNRs independently and later met to discuss the results. All conflicts were resolved, and researchers finally agreed on the following six categories- *news*, *support*, *response*, *opinions*, *memes*, and *personal*. Our findings show that while the majority of CNRs on Facebook (56.8%) were about *support* for those affected by the event, the majority of CNRs on Twitter (33.7%) and Reddit (40.0%) were about *news* updates (see Table 5). This seems to imply that Twitter and Reddit were more commonly used to share information (*news*), while Facebook was more about building a community around the event (*support*). Facebook does have more rich features for facilitating this kind of community (i.e., groups, pages, friends, support for longer

messages and multimedia), However, further investigation (namely interviewing CNR owners) is needed to fully understand correlations between CNR owner intentions and platform type.

A few CNR owners had multiple intentions and thus the corresponding CNR was coded with multiple categories. We provide examples of these intentions in Table 4 and discuss them in detail below.

Table 4. Examples of Owner Intentions for the Crisis Named Resources

Example Descriptions	
News	Latest news regarding the Novel Corona virus (2019-nCoV) Coronavirus latest news and updates around the world
Support	A coordinated mental health response to #COVID19 Tips and Recipes for Cooking during the Quarantine
Response	Get more info on how to stay safe during this covid-19 pandemic This page for awareness about covid-19 you will get to know about its precautions, symptoms
Opinions	A place to vent without judgement about the negative effects of the Covid-19 shutdown. Let's talk conspiracy
Memes	We live in unprecedented memes Memes about everyone's favorite pandemic
Personal	[An individual's name] vs COVID19 [An individual's name] #FlattenTheCurve #StayHome to fight #COVID19

Table 5. Owner Intentions by Category for the Crisis Named Resources

	News	Support	Response	Opinions	Memes	Personal
Facebook (N = 690)	149 (21.5%)	392 (56.8%)	88 (12.7%)	8 (1.1%)	66 (9.5%)	6 (0.8%)
Twitter (N = 172)	58 (33.7%)	37 (21.5%)	17 (9.8%)	4 (2.3%)	29 (16.8%)	33 (19.1%)
Reddit (N = 217)	87 (40.0%)	83 (38.2%)	6 (2.7%)	47 (21.6%)	10 (4.6%)	0 (0.0%)

News. These CNRs were created with the aim to exchange announcements, information, facts, and updates about COVID-19. A significant amount of CNRs on Facebook (21.5%) and a majority of CNRs on Twitter (34%) and Reddit (40%) were related to *news*.

Support. These resources were created with the intent to spread prayers and positivity, allow people to share their COVID-19 stories and quarantine experiences, provide resources for mental health struggles and things to do during quarantine, and facilitate donations. The majority of Facebook (56.8%) and many Twitter (21.5%) and Reddit (38.2%) CNRs provided *support*.

Response. These CNRs focused on helping frontline workers, building technology to assist in rapid screening, and educating people about the virus. Very few resources (12.7% Facebook, 9.8% Twitter, and 2.7% Reddit) belonged to this category.

Opinions. CNR owners created these resources to allow for speculation, discussion, uncensored information, conspiracy theories, and political discourse around COVID-19. Reddit (21.6%) had many more *opinion*-based CNRs compared to Facebook (1.1%) and Twitter (2.3%).

Memes. The aim of these resources was to share memes or jokes about COVID-19. CNRs allowing memes appeared more frequently on Twitter (16.8%) than Facebook (9.5%) or Reddit (4.6%). Prior research has also reported the existence of parody social media accounts around crisis events (Chauhan and Hughes 2020; He et al. 2016; Wan et al. 2015; Achter 2008).

Personal. Personal accounts that changed their name to COVID-19 were categorized as personal. Very few Facebook (0.8%) and a considerably number of Twitter (19.1%) accounts were *personal*. None of the subreddits were categorized as *personal*, because Reddit does not allow one to rename a subreddit.

Popularity of Crisis Named Resources

CNRs usually gain popularity because they are named after an event which means that they appear when people search for information on social media about the event. Prior research has reported that people follow community groups created during a crisis event for curiosity as well as to share information, offer help, and gain information about the affected community (Bird et al. 2012).

We recorded the number of likes (Facebook), followers (Twitter), and members (Reddit) for each CNR on June 07, 2020. Table 6 shows that 20.2% Facebook pages and 6.9% Twitter accounts had zero or less than 10 followers. A vast majority of CNRs on Facebook (76.9%), Twitter (69.1%), and Reddit (89.8%) had likes, followers, or members in the range 10 – 9,999. Many CNRs (2.7% Facebook pages, 23.8% Twitter accounts, and 10.1% Reddit communities) were followed by over 10,000 people. We now report on the most popular CNRs on the three social media platforms.

The most popular Facebook CNR had 2,057,920 likes. It was created in March 2020 with the intentions of sharing news updates from around the world. Though page owners do not provide any information about themselves, the page transparency section from Facebook states that this page was managed by four individuals from the United States of America. A page with more than 2 million likes has a strong influence, thus any misinformation shared from this page would be of concern.

The most popular CNR on Twitter had 150,100 followers. It was created in January 2020 with the goal of sharing news and updates about the pandemic. The account owners tweeted actively (~25,900 tweets) throughout the pandemic and often used #covid19 and #coronavirus hashtags. The account owners do not provide any information about themselves, their sources of information, or how they manage their account. This is concerning because given its popularity, any misinformation or disinformation sent through this account would likely be amplified to many Twitter users.

The most popular subreddit monitored the spread of COVID-19 and facilitated discussions about the virus. It had 2,118,104 members and was created in May 2013, 7 years before COVID-19. The popularity of this subreddit is likely because its handle was named after coronavirus - the generic coronavirus and not COVID-19 specifically. This subreddit was moderated by 10 individuals. The next most popular subreddit had 257,777 members and was created in February 2020. The aim of this subreddit was also to facilitate scientific discussion about COVID-19. This subreddit had 10 moderators, who had set up the following 10 rules for their members - *be civil, use scientific sources, no inappropriate/sensationalized titles, media policy, avoid reposting information, avoid unsourced speculation and anecdotal discussion, avoid off-topic and political discussions, avoid 'economic impact' discussions, no medical advice, and no low effort posts/comments.*

Table 6. Popularity of Crisis Named Resources Created around COVID-19 (Follower Counts were Captured on June 07, 2020)

Number of Likes, Followers, or Members (as of June 07, 2020)	Facebook N = 690	Twitter N = 172	Reddit N = 217
No Followers (0)	59 (8.5%)	2 (1.1%)	0 (0.0%)
Single Digit Followers (1 - 9)	81 (11.7%)	10 (5.8%)	0 (0.0%)
Two Digit Followers (10 - 99)	230 (33.3%)	17 (9.8%)	60 (27.6%)
Three Digit Followers (100-999)	245 (35.5%)	46 (26.7%)	76 (35.0%)
Four Digit Followers (1,000 - 9,999)	56 (8.1%)	56 (32.5%)	59 (27.1%)
Five Digit Followers (10,000 - 99,999)	17 (2.4%)	37 (21.5%)	19 (8.7%)
Six Digit Followers (100,000 - 999,999)	1 (0.1%)	4 (2.3%)	2 (0.9%)
Seven Digit Followers (1,000,000 - 9,999,999)	1 (0.1%)	0 (0.0%)	1 (0.4%)

Owners of Crisis Named Resources and Moderation Strategies

We determined CNR owners by analyzing resources' names, handles, and self-descriptions. Our findings show that most of the Facebook (91.8%) and Twitter (77.9%) CNR owners did not reveal their identities (see Table 7). Of those who revealed their identities, many gave an abstract description about themselves (e.g., international team of researchers and volunteers, mental health care practitioners, regional public information officers, or collection of coaches, therapists, and other professionals). Very few owners gave their names or contact information. Unknown identities raise concerns with accountability, i.e., who would be accountable for misinformation and disinformation sent through these resources?

Table 9. Examples of Moderation Rules for Crisis Named Resources

	Example Descriptions
High Quality Information	Avoid reposting information. No extraordinary claims without substantiation. No sensational titles.
Relevant Information	No medical advice. Avoid off-topic political discussions.
Civil Interactions	No personal attacks or harassment. Be polite and no fear mongering.

DISCUSSION

In this paper, we identified 1,079 COVID-19 related CNRs on Facebook, Twitter, and Reddit. Most of these resources were created in March 2020 with the intention to share *news, support, response, memes, and opinions*. Nine of these resources had over 100,000 followers. Most owners did not reveal their identities but encouraged people to share *relevant and high-quality information* and *be civil* in their interactions. Below, we compare the CNR activity across platform type, and COVID-19 CNRs with those created for past crisis events. We also discuss how CNRs owners are combating misinformation and corresponding recommendations from our research.

Crisis Named Resources Activity across Platform Types

We identified 690 Facebook, 172 Twitter, and 217 Reddit COVID-19 CNRs. Though Facebook, Twitter, and Reddit are all US-based social media platforms, compared to Twitter (Clement 2020a) and Reddit (Degenhard 2020), Facebook (Clement 2020b) is much more popular in countries outside the United States. This could be one of the reasons behind the much larger number of COVID-19 Facebook CNRs. Another reason could be the fact that Facebook is the most popular social media network worldwide (Clement 2020c).

There are many social media platforms and each platform has a different set of affordances (Choi et al. 2016; Smith et al. 2012) and this played a role in the behaviors we observed. We expound on these differences below.

Account verification. Facebook and Twitter have an option where users can have the authenticity of their pages and accounts verified. This verified status is indicated by a blue-colored verification badge next to the verified account's name. Reddit does not verify subreddits, but it does ensure that usernames and the name of subreddits cannot be changed. This is a useful feature because in this study we noticed that some verified Twitter CNRs changed their names, which is troubling, as it means that a Twitter account owner could change their identity and purpose soon after the verification process.

Anonymity. One of the challenges with CNRs is that they appear soon after a crisis event and have no past social media activity thus providing no opportunity to evaluate their credibility. Most CNR owners also chose not to identify themselves. Anonymity of resources could particularly affect the accountability of resources that are sharing crisis-related news, raising funds for crisis-affected victims, or sharing opinions about the handling of a crisis event. In extreme cases, people can also stay anonymous and use their CNRs to provoke political divide. To combat the issue of anonymity, Facebook has introduced a page transparency section on all its pages. This section provides many details about a page, including the information about when the page was created and if the page has ever changed its name. This information could be very useful in assessing the credibility of a page. Reddit, on the other hand, has taken steps to ensure the credibility of subreddits, by allowing only the users who have enough positive karma² points and whose account is at least 30 days old to create communities (or subreddits).

Moderation. While Facebook and Twitter are taking steps to combat misinformation, they do not explicitly provide an opportunity for the account and page owners to do so. Reddit, on the other hand, allows users to explicitly add rules and moderators to their subreddits. Consequently, we noticed that subreddit owners in our dataset have made rules to fight misinformation (e.g., asking people to cite sources of information), disinformation (e.g., asking people to avoid sharing articles with inappropriate, edited, or sensational titles), and malinformation (e.g., asking people to avoid sharing posts that advocate xenophobia, bigotry, or abusive behavior).

Crisis Named Resources for Various Crisis Events

Compared to past crisis events, we found a record number of CNRs around COVID-19. Researchers who have specifically looked at CNRs in the past have reported 8 CNRs during the 2014 Carlton Complex Wildfire (Chauhan and Hughes 2017) and 83 CNRs during the 2016 Fort McMurray Wildfire (Chauhan and Hughes 2018).

This is because COVID-19 was far more widespread and directly affected more people, and had record online activity.

COVID-19 CNRs also had a record number of followers. For instance, while nine COVID-19 CNRs had over 100,000 followers, the most popular Fort McMurray Wildfire CNR on Facebook had 41,428 followers (Chauhan and Hughes 2018). This difference is again likely because the pandemic was a global crisis event that affects everyone and not a local one (e.g., a wildfire). The pandemic is also a prolonged event, unlike many other types of crises, and CNRs have likely garnered more attention due to sustained public interest.

Most COVID-19 related CNRs were created in March after the pandemic declaration. This finding is consistent with past studies which show that CNRs are created soon after a crisis event occurs (Bird et al. 2012; Chauhan and Hughes 2017, 2018, 2020; Shklovski et al. 2008). The *personal* COVID-19 CNRs (personal accounts that were repurposed for COVID-19) were also present in past crisis events – Carlton Complex and Fort McMurray Wildfire.

COVID-19 CNRs owners created their resources to share *news*, *support*, *response*, *opinions*, and *memes*. Prior works have also reported about CNRs sharing *news* updates (Bird et al. 2012; Chauhan and Hughes 2017, 2018, 2020; Shklovski et al. 2008), *support* (e.g., *Donations*, *Fundraisers*, *Prayers*, *Needs & Offers*, and *Stories* types of CNRs created during the Fort McMurray Wildfire (Chauhan and Hughes 2018)), *response* (Chauhan and Hughes 2020), *opinions* (e.g., CNRs sharing *reactions* during the Fort McMurray Wildfire (Chauhan and Hughes 2018)), and *memes* (Chauhan and Hughes 2020). While there are similarities with the past crisis events, we noticed a lot more opinion-based CNRs (those that were discussing how the pandemic was handled by different governments) for the COVID-19 pandemic than past crisis events.

Finally, like the past CNRs, owners of most COVID-19 related CNRs (particularly on Facebook and Twitter) chose not to disclose their identities (Chauhan and Hughes 2017, 2018, 2020). The unknown identities of CNRs owners remain a concern, especially when the owners of CNRs with the greatest number of followers are unknown.

Combating Misinformation

Social media platforms are taking steps towards combating misinformation and empowering their users with accurate information (Geeng et al. 2020; Leathern and Rodgers 2018; Lee and Oppong 2020; WhatsApp 2020). For instance, Facebook and Twitter are directing their users to credible public health resources if users search vaccine-related keywords (Bickert 2019; Harvey 2019). Social media companies are also taking steps to minimize the top-down misinformation that comes from influential users. For example, Twitter, Facebook, and YouTube in late March removed posts shared by Brazilian President Jair Bolsonaro because they included coronavirus misinformation (Brennen et al. 2020).

In our data, we saw many examples where CNR owners attempted to combat misinformation through moderation. They would create rules meant to improve the quality of information that appeared in their CNR, and in enforcing these rules they would question and possibly censor information that did not abide by the pre-established rules. CNR moderation was much more visible on Reddit than on Facebook or Twitter, because the moderation mechanic is built into the design of Reddit.

Recommendations

We offer several recommendations based on the results of this study. We recommend that social media platforms create a more robust verification process. For instance, social media sites might impose periodic reverification that discourages people to repurpose their accounts after verification. Adding the date when an account was verified would also be useful information in helping people to assess whether an account is authentic and trustworthy. Social media platforms may want to consider mechanisms where newly created CNRs are reviewed before they can become public.

We also recommend that emergency responders and researchers pay particular attention to CNRs and monitor them for content as well as misinformation. CNRs are so easy to find (they are named after the event) and thus are more publicly visible than other sources of information. We therefore see them as critical information sources that should be vetted, especially early in a crisis event when little information is available.

CONCLUSION

This study expands upon existing research on CNRs by examining them in a new type of event (a pandemic) and by looking at a previously unexamined social media platform in this context (Reddit). We identified and examined

Facebook, Twitter, and Reddit CNRs related to COVID-19. Most of these resources were created in March 2020, soon after COVID-19 was declared as a pandemic. CNRs owners created these resources with the intentions to share COVID-19 related news, support, response, opinions, and memes. They also encouraged members of the public to share relevant and high-quality information and be civil in their interactions.

Past crisis events as well as the COVID-19 event have showed that CNRs due to their visibility and popularity can be significant centers of influence. Thus, it is important that researchers and emergency responders pay attention to these resources and monitor them for misinformation.

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