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Analysis of COVID-19 Tweets by Organizations and Stakeholders in South Atlanta, Georgia

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An abstract of
a thesis submitted to the Faculty of the
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2022

Abstract

Analysis of COVID-19 Tweets by Organizations and Stakeholders in South Atlanta, Georgia

By Christiana A. Ziworitin-Ogola

Background: COVID-19 has seriously impacted low-income communities and members of the Black, Indigenous, and People of color (BIPOC) communities in the US. South Atlanta has a predominantly Black population, and clinical testing and vaccine uptake have been particularly low since the beginning of the pandemic. The popularity of wastewater-based surveillance for detecting and monitoring the trends of COVID-19 and the wastewater surveillance research being done by the Center for Global Safe Water, Sanitation and Hygiene at Emory University, have given rise to the need to identify the most effective social media communication strategies to disseminate COVID-19 wastewater information to the communities affected.

Objectives: To understand and evaluate the different types of COVID-19 messaging stakeholders and organizations disseminate via social media and to identify effective strategies for communicating and disseminating information about COVID-19.

Methods: Twitter analytics and qualitative content analysis were conducted on data from the tweets of 73 Twitter accounts of organizations and other stakeholders serving South Atlanta communities from January 1 to May 31, 2022, to determine the function of tweets, the risk communication strategies used in tweets and the engagement the tweets had with the public.

Results: 1026 COVID-related tweets from 38 accounts were analyzed. 70% were tweets from the news media category. Content analysis showed that information was the most common message function, and risk and efficacy were the most common risk communication strategy. Neither content nor use of engagement strategies seemed to influence engagement. Tweets by the Atlanta Public Schools had the most engagement from the public.

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1. INTRODUCTION

1.1. Rationale

1.1.1. COVID-19 Pandemic

The COVID-19 pandemic which started as a coronavirus outbreak in China in November 2019 has since affected almost all the countries of the world. Globally, there have been over 400 million confirmed cases, over 6 million deaths, and more than 10 billion doses of the COVID-19 vaccine administered as of March 2, 2022 (1). WHO records from the same date show that the United States has reported a total of 78,307,631 confirmed cases of COVID-19 with 943,293 deaths. The records also show that 537,567,013 doses of vaccines have been administered as of March 2, 2022 (2). The impact of the pandemic has been multi-dimensional, affecting the health and wellbeing of millions around the world including the US. It has further revealed the disparities, including health inequities and environmental injustices among low-income communities and members of the black, indigenous, and people of color (BIPOC) communities. These populations have been hit the hardest by the pandemic both in terms of health impact and economic impact (3). Since the availability of COVID-19 vaccines, uptake has been particularly low in African American communities, stemming in part from the distrust that Black communities have towards the health system (4). In Georgia, about 44.5 % of the population in Fulton County is Black or African American. However, the city of Atlanta has a Black population of about 51% (5). As of January 2022, only 45.8% of the Black population in Fulton County have received at least one dose of the COVID-19 vaccine compared to 62.8% of American Indian or Alaska Native, 63.2% of White and 80.6% of Asian populations in the same county. Vaccination rates in most of south Fulton county, which is predominantly Black, are less than 50% compared to north Fulton County (6).

Surveys on coronavirus vaccine hesitancy indicate that community organizations, community leaders, or Black elected officials tend to be better trusted by members of their communities compared to white elected officials (7)

1.1.2. Wastewater Surveillance for SARS-CoV-2

Limited testing and reporting of COVID-19 cases in BIPOC communities have resulted in an underestimation of the true burden of the disease (8). Individuals with COVID-19 can shed the SARS-CoV-2 virus in their feces whether they are symptomatic or asymptomatic. This discovery has led to the popularization of wastewater surveillance (WWS), a method of public health surveillance used to monitor the presence of several disease-causing pathogens excreted in the urine and feces of humans and collected in sewage systems. It has been a significant tool in the eradication of poliomyelitis because it identified communities that still had wild type poliovirus circulating in the population. WWS is relatively low cost compared to clinical testing as it provides data at the population/community level. There are two common methods of wastewater sample collection – grab and composite sampling. Grab sampling involves collecting wastewater at one point in time while composite sampling involves collecting wastewater samples at regular time intervals. Detection and quantification of the virus are performed in the laboratory by quantitative reverse transcription-polymerase chain reaction (RT-qPCR) (9).

WWS has become a vital tool in public health for the surveillance of COVID-19 since SARS-CoV-2 was first detected in sewage by researchers in the Netherlands (10). Many research groups around the world have been testing sewage for SARS-CoV-2 and have discovered that rising concentrations of SARS-CoV-2 in sewage have corresponded to subsequent rises in the number of cases of COVID-19 reported through testing (10,11). WWS can detect changes in SARS-CoV-

2 levels in wastewater and show spatial and temporal community trends and can thus be used as an early sign to detect and monitor the spread of COVID-19 in communities. It can be invaluable in communities with poor access to healthcare or poor healthcare-seeking behaviors (12).

Across the globe, researchers have worked on developing and modifying different methods of detecting SARS-CoV-2 from wastewater. In the United States, researchers in academic institutions have collaborated with cities, counties, states, federal, and/or private departments of health, wastewater utilities, and laboratories at different levels to develop WWS programs (13). WWS programs have produced data for communities and institutions at different levels depending on the sample collection site. These programs can be implemented in many U.S. communities since over 80 percent of households are connected to municipal wastewater collection systems (12).

1.1.3. Social Media and the COVID-19 Pandemic

The internet and social media have become more popular over the years as more than 70 percent of U.S. adults report using social media as a means for getting and sharing information, networking, and/or entertainment (14). Social media has become a popular method for rapidly disseminating information, especially during the COVID-19 pandemic (15). Over 50 percent of U.S. adults say social media sites are their source for news (16), and about 50 percent say that their source of some, or a lot of, COVID-19 vaccine information is social media (17). Social media has been used extensively by individuals and organizations to disseminate information, personal or public, fact or fiction (18). Information about COVID-19 has been disseminated on different social media platforms, by individuals, groups, and organizations, and in different forms such as infographics, phrases, videos, etc. There have been many social media research studying various aspects related to COVID-19 on social media, including infodemics, attitudes, perceptions,

behaviors, and mental health of the public related to issues surrounding COVID-19, content analysis, engagement, public health surveillance, and outbreak predictions. (15). Given the use of social media by most of the population in the U.S. and the relatively high reliance on social media for news, public health organizations, community organizations, and other stakeholders must develop and disseminate accurate COVID-19 information on social media. This will empower citizens to take action that will be beneficial to their health.

1.2. Problem Statement

Researchers at the Center for Global Safe Water, Sanitation and Hygiene (CGSW) have developed and applied methods for wastewater-based surveillance of SARS-CoV-2. Methods developed include wastewater sample collection, the concentration of SARS-CoV-2, and detection using RT-qPCR. The Emory research team started developing methods for this work through routine collection and analysis of wastewater from Emory University Hospital, student residence halls on Emory campuses, and the quarantine buildings that house suspected and confirmed cases of COVID-19 (9,19). Armed with these methods, the research team, in collaboration with the City of Atlanta Department of Watershed Management has been collecting and analyzing wastewater samples from nine influent lines feeding the three large wastewater treatment facilities in South Atlanta, fifty-six manholes in communities, eleven schools, and two correctional facilities in South Atlanta. Data from these samples can be used to track temporal and spatial trends in SARS-CoV-2 concentration in sewage and COVID-19 burden in South Atlanta, specifically in neighborhoods, and institutions. However, wastewater surveillance and the data generated are relatively new and are not well understood by stakeholders and members of the communities. Social media has played a key part in disseminating public health information during the pandemic, especially about COVID-19. Organizations and stakeholders in communities have used social media among other

methods to reach members of the communities they serve. Therefore, there is a need to identify the most researchers at the to disseminate information from the CGSW wastewater surveillance program.

1.3. Purpose statement

This study aims to identify key stakeholders in South Atlanta communities, including community organizations and influencers, to understand their role, reach, and influences in COVID-19 messaging to members of their community via social media. This will inform the most effective social media engagement methods to disseminate local wastewater surveillance findings to the target population. This study will support the ongoing Rockefeller Foundation sponsored project, "*Dissemination and Translation of Wastewater-Based Surveillance for COVID-19 to Support Public Health Response in Atlanta Communities – Reaching the Last Mile"*, which aims to use an innovative community-engaged approach to communicate the findings of COVID-19 wastewater surveillance in south Atlanta communities. Using strategic social media, the project seeks to fill knowledge gaps related to 1) COVID-19 wastewater monitoring; 2) awareness of the COVID-19 burden in the local South Atlanta community over time; and 3) personal and public health protective measures in response to wastewater monitoring results to prevent COVID-19.

1.4. Objectives

- To understand and evaluate the different types of COVID-19 messaging put out by organizations, influencers, and stakeholders in South Atlanta via social media and their engagement with members of the community.
- To identify effective strategies for communicating and disseminating COVID-19 information via social media.

1.5. Significance Statement

The successes of WWS in the early detection and monitoring trends in SARS-CoV-2 infection in communities have been plagued with the challenges of disseminating the information to members of these communities. Many WWS programs have developed dashboards and websites in collaboration with local and state health departments to inform public health decisions at that level (20–22). However, disseminating WWS information to community members needs to go several steps further by providing awareness and filling knowledge gaps at the grassroots level to influence behavior change at the individual, family, community, and institution levels.

Studies have shown the engagement of the public with COVID-19 related and other social media posts of various public health agencies, e.g., in the United States (23,24), Canada (25), Italy (26) and Saudi (27), but none have focused on the engagement of the public with COVID-19 social media posts of various types of organizations and stakeholders in South Atlanta, Georgia which is a key deliverable for informing the best strategies for communicating the results of the wastewater surveillance for COVID-19 in South Atlanta via social media.

2. LITERATURE REVIEW

2.1. Introduction

In the last two years, the COVID-19 pandemic has disrupted many lives. There has also been an explosion of research in the scientific world as researchers have raced to understand the virus, its effects, impacts, etc. Many of these studies have supported the development of guidelines and mitigation strategies as the virus has evolved into several strains. Clinical testing is the main method to detect cases and this information can be used to help control the spread of COVID-19. However, with the reduction in testing sites and the popularity of home tests, clinical testing reports are no longer reliable in gauging the true rate of COVID-19 infection and spread. The detection of SARS-CoV-2 in the feces of infected individuals has resulted in the growth of wastewater-based surveillance, which is currently being used to complement clinical testing and, monitor the trend of COVID-19 infection and spread, to inform public health action.

2.2. Wastewater surveillance

Wastewater-based epidemiology (WBE) has existed since the 1920s when *B. Typhosus* was first isolated from sewage (28). The isolation of the poliomyelitis virus from the feces of acutely infected individuals led to wastewater surveillance of poliomyelitis during polio epidemics (29). WBE has also been used to study the presence of therapeutic drugs and other chemicals and biohazards in the environment (30,31). Before the COVID-19 pandemic, wastewater surveillance was used to fight opioid misuse by monitoring the opioid levels in wastewater in Tempe, Arizona (32). The first record of SARS-CoV-2, the virus that causes COVID-19, in wastewater was in the Netherlands (10). Following that, various institutions have partnered with their cities, counties, and states to pilot wastewater surveillance for SARS-CoV-2 to inform public health action. WWS

data have been shown to provide early warning of COVID-19 outbreaks in communities and institutions and have been used to inform its control (19). For example, the University of California employed large-scale wastewater surveillance which led to the early diagnosis of about 85% of all COVID-19 cases on its campus (33). WWS data has mostly been communicated with local and state departments of health and the CDC. The most common method of wastewater surveillance dissemination to the public has been through dashboards (20–22,34).

A research study that analyzed the challenges, successes, and lessons from the experiences of wastewater surveillance programs that occurred in 25 colleges and universities showed the importance of having a communication plan to disseminate wastewater surveillance data. The authors of this study also stressed the importance of involving a wide range of stakeholders to inform effective approaches to communication and messages (35). The importance of engaging stakeholders, community organizations, and members of a community with the planning, implementation, and dissemination of WWS programs and data cannot be overemphasized as the success of programs to control the spread of COVID-19 has been dependent on the collaboration of stakeholders in the community (36).

2.3. Public Health Communication Strategies

The ability to transmit information is a very important element in health promotion and behavioral change. According to Bernhardt (2004), “Public health communication is the scientific development, strategic dissemination, and critical evaluation of relevant, accurate, accessible, and understandable health information communicated to and from intended audiences to advance the health of the public” (37). Since the start of the COVID-19 pandemic, there has been no shortage

of information (both true and false) from the news media, public health organizations, government agencies, school authorities, community leaders, religious leaders and even individuals who have social media platforms. The responsibility to provide valid information lies on not just health experts and political leaders, but also on everyone in the community to ensure the promotion and protection of health (38). Public health communication strategies and interventions that are tailored to the demographics of a population, increase their risk perception. Trust in the effectiveness of preventive measures results in positive behavioral changes (39). There are different strategies for effectively communicating health information and risk, especially during a health crisis like the COVID-19 pandemic. Finset et al (2020) suggested four elements in the first year of the pandemic: openness and honesty, consistence and specificity, acknowledgement of uncertainty and yet confidence in decision making, and lastly, acknowledgement of emotions (38). The US Environmental Protection Agency developed the seven cardinal rules of risk communication (40) The first rule is to involve the public as a partner early, before making any decisions to ensure their interest and collaboration. The second is to plan carefully and evaluate performance. The third is to listen to the concerns of the public. The fourth is to be honest, open, and frank, even when the answer to their questions is unknown. The fifth is to coordinate and collaborate with credible sources. The credibility of sources of health communication has been shown to affect the persuasiveness of a message. The sixth is to meet the needs of the media by being accessible to reporters and providing valid information that meets the need of each type of media. The seventh is to speak clearly with compassion and drop all technical terms or ambiguity.

Public health information can be disseminated via different communication methods including prints such as newspapers, flyers, etc., television, radio, digital media, and social media.

2.4. Social Media

2.4.1. Social Media Use

Social media is defined as ‘forms of electronic communication (such as websites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (such as videos) (41). The use of social media by individuals, public and private organizations as well as formal or informal groups has grown over the years. Individuals and organizations rely on social media for rapid dissemination of information across various platforms, e.g., Twitter, Instagram, Facebook, blogs, etc. As of 2021, over 70% of Americans use at least one social networking platform (42). Social media has been increasingly used in public health to communicate risks of diseases, environmental hazards, humanitarian emergencies, health promotion, and even research data (43,44). The CDC agrees that the use of social media for health communication can enable health information to reach a larger audience and create a greater impact on the public (45). Since the onset of the COVID-19 pandemic, social media has been used to disseminate various forms of public health communications regarding COVID-19, including real-time cases and deaths from COVID-19, regular updates on symptoms and signs of COVID-19, preventive measures, and even treatment. Social media has been shown to positively influence public health awareness and behavioral changes as it pertains to COVID-19 (46).

Twitter is one of the fastest growing social media platforms worldwide. In the United States, about 23% of adults use twitter (42). Twitter is the largest “microblogging” application, where users can post short messages while including all different forms of attachments such as documents, images, URLs, videos, audio files, etc. of up to 140 characters. Twitter has been used as a major source for

the latest news updates especially from the news media and prominent figures in communities; as a marketing tool by businesses: and as a means of updating stakeholders about happenings in organizations.

2.4.2. Organizations, elected officials, and Social Media Use

There has been an increase in the usage of social media by elected officials and organizations to engage with the public. Twitter accounts generate different types of content, including elected officials highlighting their actions and achievements on social media, health organizations using social media for health literacy, nonprofit organizations using media to engage their stakeholders, and news media using social media to disseminate information. Users have turned to social media to engage with community leaders, elected officials, and organizations and get information. An inductive study of the tweets from the Twitter account of 100 large nonprofit organizations found 12 types of tweets which were categorized into three main functions: information, community, and action. Information included tweets spreading general and specific information. Community included messages that gave recognition and thanks, acknowledged community events, and promoted dialogues. The last function, action, included messages that are a call to action to the users to encourage them to participate in specific activities, buy a product, or volunteer. This classification has been used in several studies ((23,25,47–49). Other studies have analyzed the content of tweets in terms of subject matter/topics (23,48,50), risk communication (25,27) or semantics (50).

2.4.3. Twitter Engagement Strategies

The impact of Twitter accounts on other users can be assessed by measuring the user engagement with the content of these accounts. Users of Twitter engage with the posts of other users by liking, commenting, tagging, replying, mentioning, or retweeting the posts of others or by accessing the

link in the tweet. Various strategies are employed by twitter accounts to increase user engagement such as use of media, URLs, hashtags and mentions (especially of popular twitter accounts) (48,51).

Several studies have attempted to analyze the health communications and the strategies best engaged with on Twitter.

A study analyzed the tweets of 26 public agencies in Texas and their public engagement. 7269 COVID-19 -related tweets posted in the first 6 months of 2020 were classified into tweet functions (information, community, and action), preventive measures and health beliefs mentioned in tweets using natural language processing. The engagement was measured by the frequency of retweets by others about an agency's COVID-19 tweet, time between the agency's tweet and the first retweet, and the time between an agency's tweet and last retweet (52). Information was the most frequent function of the tweets by these agencies, followed by action. The study found that public engagement with public health agency tweets was relatively low with each tweet having less than 13 retweets and 19 likes. Several factors deter the kind of engagement that content will receive on social media, including the type and structure of the message.

Another study examined the content and engagement of tweets of Canadian public health agencies and decision makers by content analysis into message function (information, community, and action) and risk communication strategy (risk, concern, corrective, efficacy, experts, and uncertainty). It found that information was the most common message function across account types, except for regional and local public health departments. However, action tweets received the highest engagement in most account types. In addition, the study found that the risk communication strategies were not widely used by any account type. The study also analyzed

engagement of tweets that used some engagement strategies, including media, hashtags, URLs, and mentions, discovering that even though the use of hashtags and URLs were in most tweets they did not always correspond to increased engagement. The study noted the variations in tweets of different agencies and decision makers. Public health agencies and medical officers of health had high frequency of tweets and engagement compared to provincial health authorities, provincial health ministers, and regional and local health departments. Engagement was measured using the average retweets per tweet (25).

A third study explored the Saudi Arabian Ministry of Health's use of twitter and the public engagement during different stages of COVID-19 pandemic using message function and the crisis and emergency risk communication model. Content analysis was done using the codes: risk message, warnings, preparations, uncertainty reduction, efficacy, reassurance, and digital health response. Engagement was assessed using the number of likes and retweets. The results showed that messages about uncertainty reduction, reassurances and efficacy were mostly used among all stages of the pandemic. However, tweets that included warnings, uncertainty reduction, and reassurances had high public engagement. Engagement was also influenced by tweet content, media type, and crisis stage. In terms of engagement strategies, use of hashtags was associated with more engagement, but engagement was negatively associated with hyperlinks and multimedia files (27).

3. METHODOLOGY

3.1. Introduction

The objectives of this study were to understand and evaluate the different types of COVID-19 messaging put out by stakeholders and organizations in South Atlanta via Twitter and their engagement with members of the community; and to identify effective strategies for communicating and disseminating COVID-19 information via Twitter. To meet these objectives, a mixed methods approach was taken to analyze the contents of tweets and to measure the engagement of Twitter users on the Twitter accounts of our study population.

3.2. Study Population / Sample

The study focused on stakeholders and organizations in South Atlanta, Georgia, USA. The sample for this study included elected officials such as the Mayor of Atlanta and city council members, community-based organizations serving South Atlanta communities, news media, the Atlanta Public School District, government organizations, faith-based organizations, and health organizations that had existing Twitter accounts.

3.3. Research Design

The research used mixed methods, employing both quantitative and qualitative research methods to analyze the content of tweets and the engagement on the Twitter accounts of stakeholders and organizations.

3.4. Procedures

3.4.1. Method of Selecting Sample Population

A list of 73 relevant stakeholders and organizations serving communities in South Atlanta was compiled using a purposive sampling method. Initially, these were identified from a current

partnership with the overall project, "*Dissemination and Translation of Wastewater-Based Surveillance for COVID-19 to Support Public Health Response in Atlanta Communities – Reaching the Last Mile"* which this study hopes to inform. Some were identified either from a list of organizations that had received funding for COVID-19 work from the Community Foundation for Greater Atlanta or from Foundation Directory Online. The Twitter handles for each organization were searched via their website or directly on Twitter.

3.4.2. Criteria

Criteria for sample selection included:

- Organizations that have been involved in providing COVID-19 interventions in South Atlanta,
- Organizations focused on health equity issues in South Atlanta,
- Elected officials serving the South Atlanta communities, and
- News media serving South Atlanta /Atlanta

Organizations and stakeholders that met the above criteria but did not have twitter accounts were excluded.

3.4.3. Data collection method

The compiled list of 73 stakeholders and organizations and their twitter account handles was used to download twitter data used for this study. Data was downloaded using a software with search words - Covid OR #covid19 OR pandemic OR Covid19 OR "covid-19" OR #pandemic in the Atlanta, Georgia area. Data spanned from January 1 to May 31, 2022, and totaled 1026 tweets. The Twitter data included full text of individual tweets, URL, author, date and time, location,

hashtags, impact, impression, mentions, media URL, Twitter followers, Twitter following, Twitter reply counts, Twitter retweets, Twitter tweets, and reach.

3.5. Data analyses

All tweets were characterized by 5 variables: account category, media, URL, hashtags and mentions. There were seven account categories into which twitter accounts were classified by type: community-based organization, elected official, faith-based/religious organization, government organization, health organization, news media, or school. Accounts classified as community-based organization belonged to non-profit organizations focused on providing services for communities in Atlanta. Accounts classified as government organization belonged to government agencies such as the Department of Watershed Management and the Atlanta Mayor's Office. Accounts in the faith-based/religious organization category included those of faith-based community organizations, churches, and mosques. If the account belonged to an organization focused on health, it was classified as a health organization (also included health focused community-based, faith-based, government, or private health organizations, for profit or non-profit). Accounts classified as elected official were official accounts of the mayor and Atlanta city council members. Accounts belonging to television or radio stations serving Atlanta communities were classified as news media, while those belonging to Atlanta public schools were classified as school. The media variable indicated tweets that contained media and the type of media (image or video). The URL variable indicated tweets that included URLs, while the hashtags and mentions variables indicated tweets that contained hashtags and mentions, respectively.

A stratified random sample of tweets from the data set were selected for initial coding for content analysis. Data was stratified according to account categories and individual twitter accounts using a weighting of 20% across account categories and proportional weighting across individual

accounts. This resulted in 205 tweets containing 16 tweets from community-based organizations, 2 from elected officials, 14 from government organizations, 29 from health organizations, 142 from news media and 2 from school. Subsequently, coding was done for tweets in all account categories except news media, resulting in 314 tweets, 77 from community-based organizations, 10 from elected officials, 72 from government organizations, 145 from health organizations, and 10 from school.

To analyze the types of messages and communication strategies used in each tweet, tweets were coded into two broad variables – message function and public health risk communication strategy – adapted from Slavik et al (25). The message function variable was coded into three mutually exclusive categories – information, action, and community - originally proposed by Lovejoy and Saxton (53). Tweets that contained more than one function were coded into the function that was most prominent. Tweets coded as information included tweets that provided any form of education or update on COVID-19 cases, symptoms, transmission, strains, vaccination, policies or on any other topic with reference to COVID-19. Tweets coded as action included tweets that prompted any changes in behaviors or encourages an action towards preventing or reducing harm from COVID-19. Tweets coded as community were tweets about local communities and programs that supported communities.

The second variable, risk communication strategy was coded into six non-mutually exclusive categories – corrective, risk, efficacy, concern, uncertainty, and experts. Corrective indicated tweets that corrected misinformation about COVID-19. Tweets that informed users about any form of risk with COVID-19 were coded as risk. Tweets that were coded as efficacy contained information on preventing COVID-19 or reducing harm resulting from COVID-19. Concern referred to tweets that recognize any concerns, fears, or anxiety related to COVID-19. The

uncertainty code was given to tweets that recognized any form of confusion or uncertainty about COVID-19. Tweets that referred to experts directly or indirectly were coded as experts.

Engagement of tweets was measured using twitter retweets and twitter reply counts. Non-parametric tests – Kruskal-Wallis test (H) and Wilcoxon-Mann-Whitney test were used to examine differences between Twitter retweets and replies by message function and risk communication strategy.

3.6. Ethical considerations

This study did not require IRB approval as it does not meet the criteria of research involving human subjects. All data used for this study were collected from publicly available and accessible twitter accounts.

3.7. Limitations

One of the major limitations of this study is the sampling method. Purposive sampling was done based on knowledge and partnership of certain organizations with the overall project, "*Dissemination and Translation of Wastewater-Based Surveillance for COVID-19 to Support Public Health Response in Atlanta Communities – Reaching the Last Mile",* and from funding organizations. Another limitation stems from the fact that the data was coded by only one coder which could have resulted in subjective bias. Thirdly, this study focused on Twitter, which is just one of several social media platforms the public engages with. Moreover, only 38 of the 73 accounts initially compiled had twitter accounts. The dataset covers Twitter posts from January 1 to May 31, 2022 and does not reflect changes in tweets and engagement since the onset of the pandemic.

4. RESULTS

4.1. Tweets by Account Category

The twitter sample data includes 1026 COVID-related tweets posted from 38 twitter accounts between January 1 and May 31, 2022. Out of the 73 twitter accounts in 7 twitter account categories from the original list, only 38 twitter accounts in 6 twitter account categories have tweets between January 1 and May 31, 2022. About 70% of all tweets were tweets from the news media.

Table 1: *Summary of tweets by account category from January 1 to May 31, 2022.*

Account category	**Number of twitter accounts**	**Total COVID-related tweets, n(%)**	**Mean number COVID-related tweets per account**
Community-based organizations	14	77 (7.5)	6
Elected officials	4	10 (1)	3
Faith-based/Religious organizations	0	0	0
Government organizations	5	72 (7)	14
Health organizations	6	145 (14.1)	24
News media	8	712 (69.4)	89
School	1	10 (1)	10

Figure 1*: *Mean COVID-related tweets per twitter account by account category

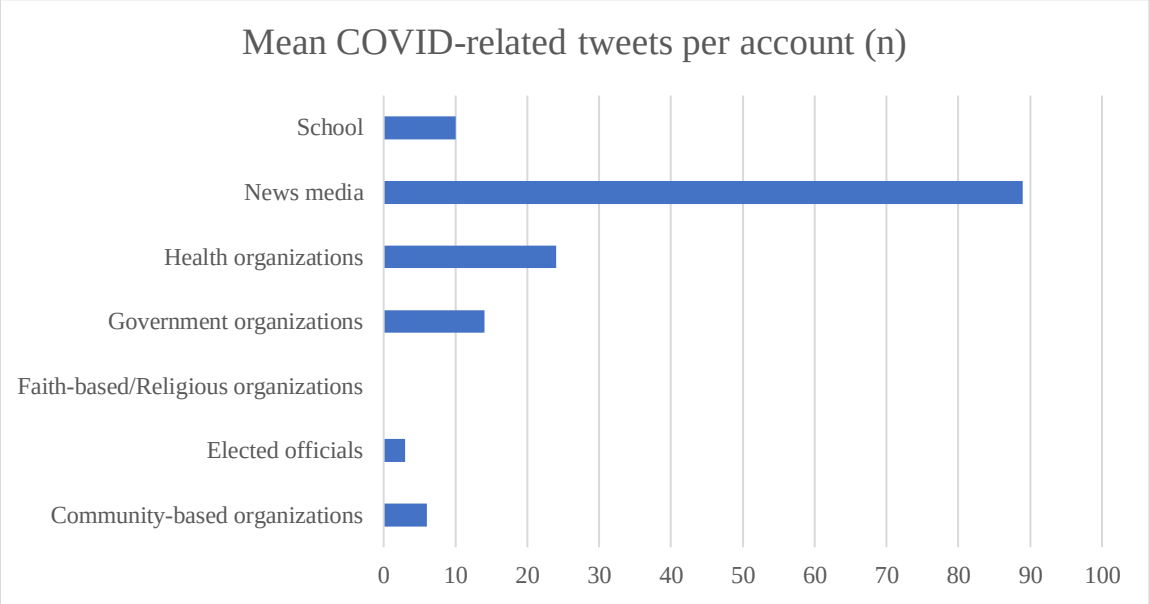
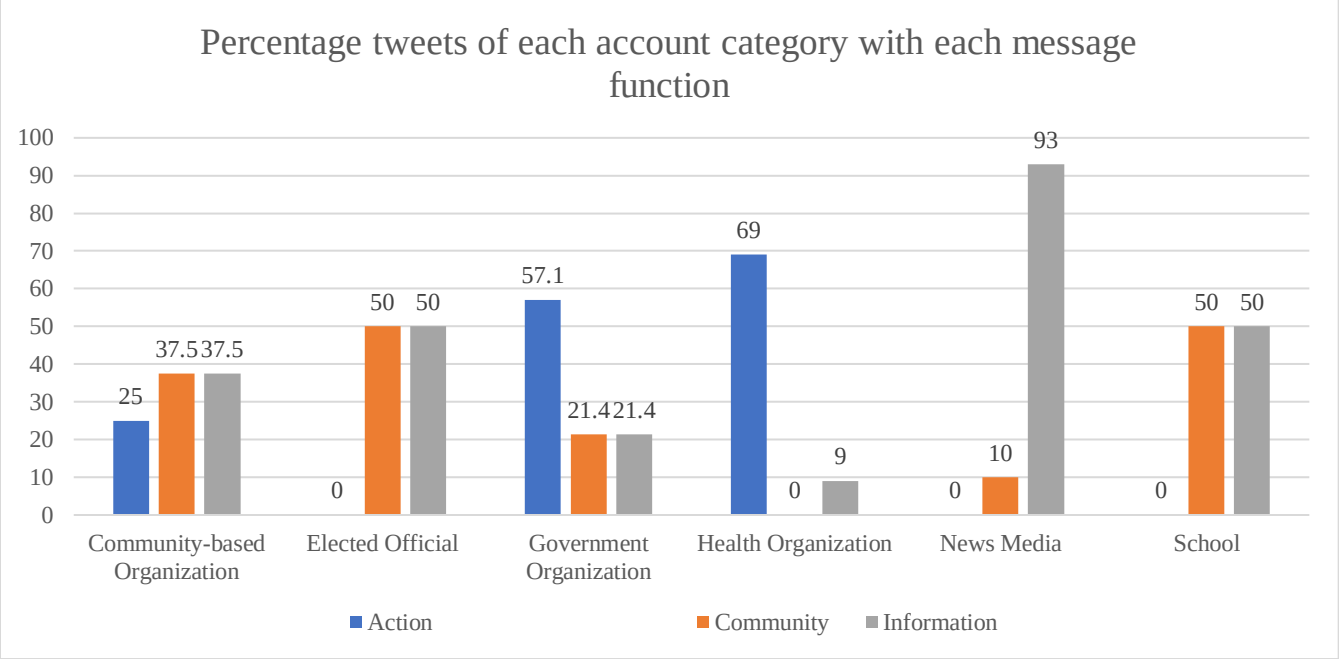


Table 1 shows a summary of the tweets by account category. Community-based organizations had the highest number of twitter accounts (14) in its category but had less tweets (77) compared to news media (712), government (72) and health organizations (145) categories. Figure 1 shows the average number of COVID-related tweets per account in each account category. News media (89) had the highest average number of tweets per account, followed by health organizations (24) and government organizations (14). On the other hand, we detected no tweets during the same period from the five faith-based/religious organizations we had identified on our list, and there were relatively few average tweets by elected officials (3) and community organizations (6) in our database.

Table 2a: *Count and percentage of message function tweets in stratified sample of all account categories*

Message function	Count (%)
Action	32 (15.6)
Community	21 (10.2)
Information	152 (74.1)
Total	205 (100)

Figure 2a: *Message function by account category in stratified sample of all account categories*



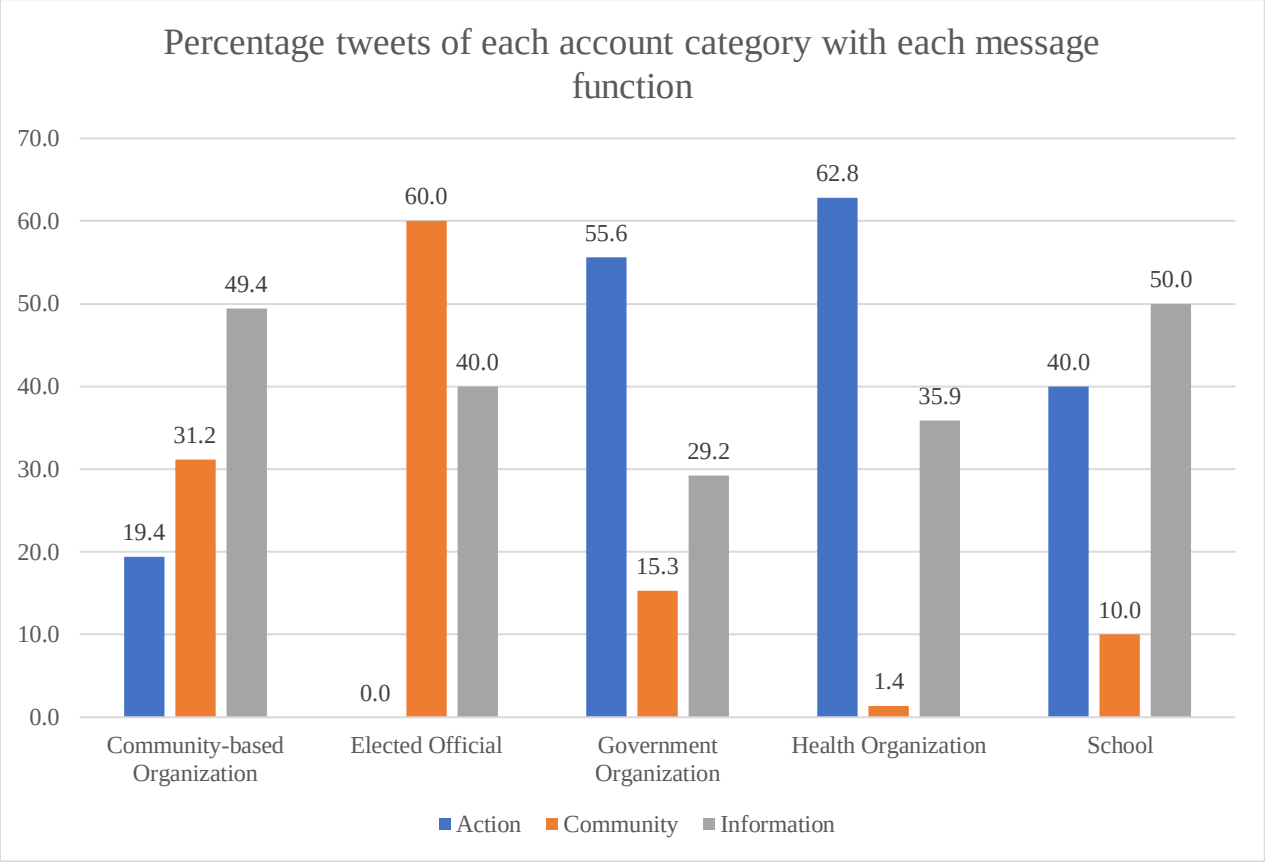
4.2. Tweet Content Analysis

Figure 2a shows a chart of the number of each message function tweets in a stratified sample of all six account categories. All six account categories used at least two message functions; however, 'information' was used by all account categories and had the highest frequency of tweets - about 74% of all tweets (Table 2a). Most 93% tweets from the news media category provided information.

Table 2b: Count and percentage of message function in all tweets except for tweets in news media category

Message function	Count (%)
Action	150 (47.8)
Community	44 (14.0)
Information	120 (38.2)
Total	314 (100)

Fig 2b: Message function by account category in all tweets except for tweets in news media category



When all tweets of all other account categories except news media were compared, as shown in Table 2b, 'action' had the highest frequency of use – 47.8%. Figure 2b shows that 63% of the tweets of health organizations prompted action, while 36% provided information. Government organizations had more action tweets (56%), while the Atlanta Public School District had 40% action and 50% information tweets. Elected officials had a 60-40 mix of community and information tweets while community-based organizations had 19% action, 31% community and 49% information. There was a significant association between account categories and message function (<0.01).

Table 3a: *Count and percentage of risk communication strategies used in stratified sample of all account categories (total of 205 tweets)*

Risk communication strategy	**Count (%)**
Concern	10 (4.9)
Corrective	4 (2)
Efficacy	56 (27.3)
Experts	12 (5.9)
Risk	100 (48.8)
Uncertainty	0

Table 3b: *Count and percentage of risk communication strategies used in all 314 tweets in the database excluding tweets from the news media category*

Risk communication strategy	**Count (%)**
Concern	56 (17.8)
Corrective	1 (0.3)
Efficacy	224 (71.3)
Experts	29 (9.2)
Risk	106 (33.8)
Uncertainty	0

Tables 3a and 3b show the percentage of tweets that used each risk communication strategy in the stratified sample of all account categories and the dataset with all but tweets in the news media category, respectively. Figures 3a and 3b are charts of the percentage of tweets by each account category that used each risk communication strategy. Risk communication strategies were not mutually exclusive, and a tweet could contain as many as all six. When considering all six account

categories, risk (48.8) was the most frequently used strategy overall, followed by efficacy (27.3) while the other strategies were used in less than 6% of all 205 tweets. When the news media category was excluded, the result showed that efficacy (71.3) was the most frequently used strategy, followed by risk (33.8). Uncertainty was not used in any tweet in the database. The news media seemed to contribute more to risk and corrective strategies and less to concern, efficacy and experts strategies. Government and health organizations communicated using mostly efficacy (77.8, 80) and risk (52.8, 29.7) strategies. However, the government communicated using more risk (52.8) and concern (15.3) strategies than health organizations which had less risk (29.7) and minimal concern (2.1) or corrective (0.7) strategies. The school district focused on efficacy (80) strategy with some risk strategy used in about 20% of tweets.

***Figure 3a*:** *Risk communication strategy by stratified sample of all account categories*

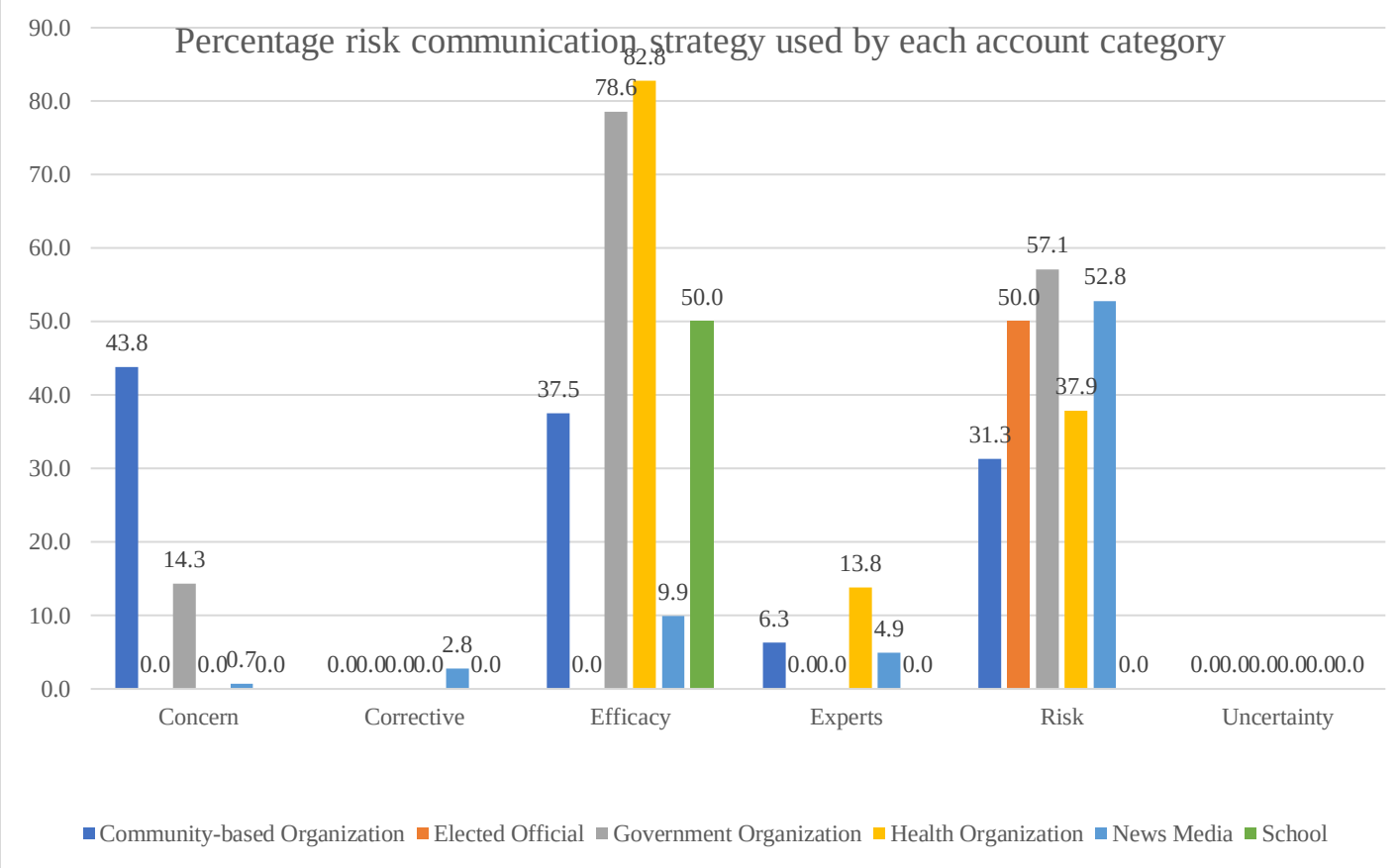
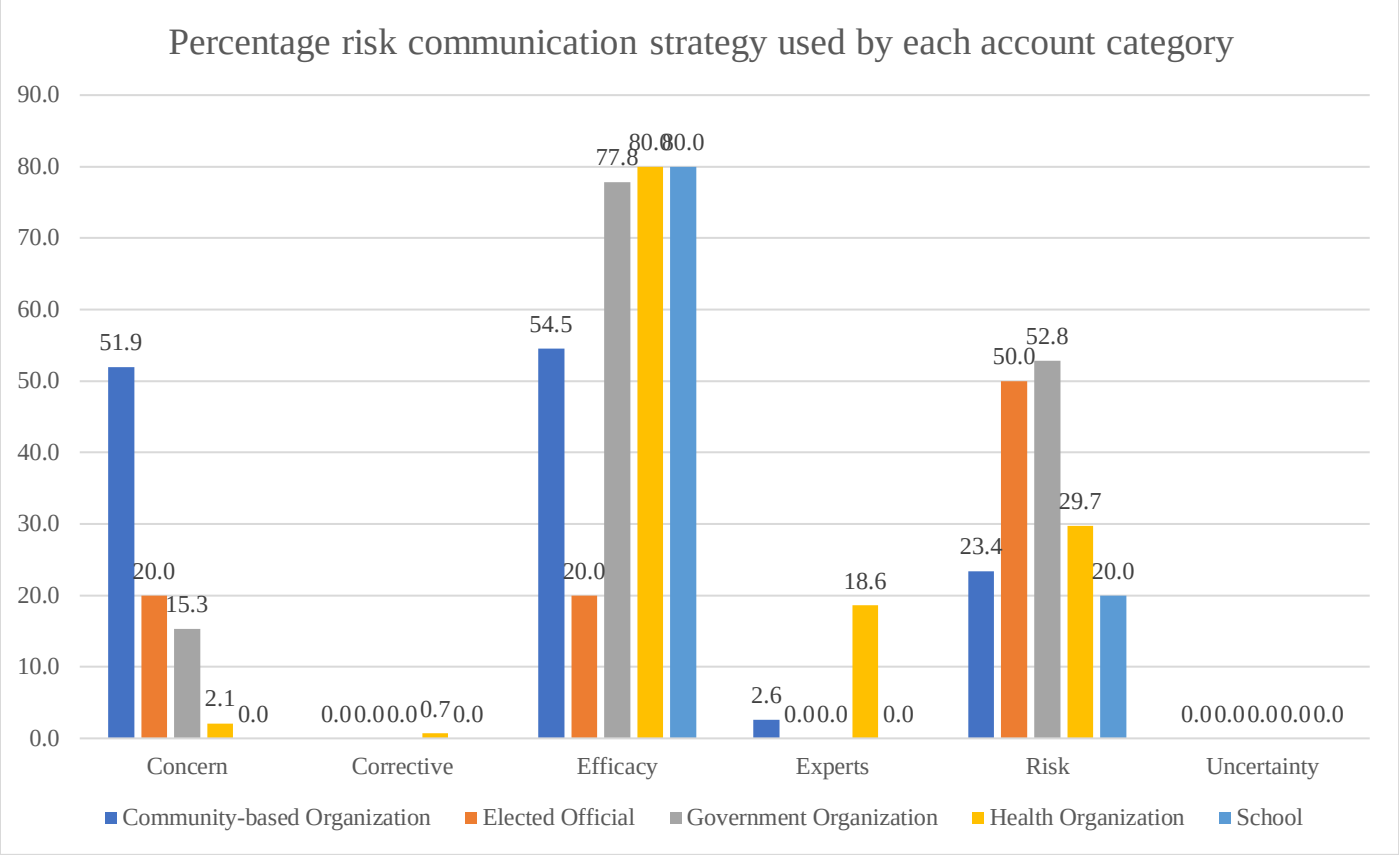


***Figure 3b*:** *Risk communication strategy by account category in the database without the news media category*



Community-based organizations used efficacy (54.5) and concern (51.9) strategies almost equally with some risk (23.4) and minimal (2.6) experts.

Tweets containing concern strategies were used mostly by community-based organizations (51.9). Corrective strategies were used by only news media and health organizations. Experts was used only by health and community-based organizations.

4.3. Twitter Engagement

Table 4 shows a summary of twitter retweets, replies and followers for each account category. Community-based organizations had the highest mean number of followers (582,447), followed by news media (380,577). However, the Atlanta Public School account had the highest mean number of retweets (29) and replies (18), followed by elected officials (4, 2). There was a

statistically significant difference in the retweets and replies across account categories (H (5) = 3.12, p=<0.01, H(5)=49.8, p=<0.01). Difference in retweets between school and all other account categories was significant. All other pairwise comparisons of retweets did not indicate significant differences.

Table 4: *Summary of Twitter retweets, replies and followers by account category, January 1 – May 31, 2022*

Account category	Total retweets, n(%)	Mean retweet per tweet	Total replies, n(%)	Mean reply per tweet	Mean twitter followers
Community-based organizations	159 (6.3)	2	9 (0.8)	0	582,447
Elected officials	44 (1.8)	4	19 (1.7)	2	8,004
Government organizations	213 (8.5)	3	41 (3.7)	1	88,760
Health organizations	321 (12.8)	2	128 (11.5)	1	19,010
News media	1479 (59.0)	2	740 (66.5)	1	380,577
School	291 (11.6)	29	175 (15.7)	18	42,712
Total	2507		1112		

Table 5 summarizes the total number and mean number of retweets and replies in each account category by the engagement strategy contained in the tweet. URL (949) was the most used engagement strategy and video (29) was the least used strategy. URL had similar retweets (2) per tweet across account categories except for elected officials (9) and school (16), though community-based organizations, government, health, and news media had similar percentage of tweets with URL (70-98%) compared to school (80%). Retweet of tweets with URL were significantly more frequent than of tweets without URL (p=0.03). Elected officials had mean number of retweets and replies per tweet of 5/2 for hashtags, 1/0 for mentions, 9/5 for URL, and 3/1 for media, respectively. However, the highest percentage of tweets (70) from elected officials used media. For schools, 90% of tweets used media (mean tweets 30, mean replies 19) and 80% used URL (mean tweets 16, mean replies 1). Replies were significantly higher in tweets with no hashtags (p=<0.01) and no mentions (p=<0.01).

Table 5: *Summary of tweets, retweets, and replies by account category and engagement strategy*

Account category	Engagement strategy		Number of tweets, n (%)*	Twitter retweets		Twitter reply	
				Total, n (%)*	Mean	Total, n (%)*	Mean
Community-based organizations	Hashtag		46 (59.7)	118 (74.2)	3	3 (33.3)	0
	Mention		23 (29.9)	44 (27.7)	2	2 (22.2)	0
	URL		54 (70.1)	118 (74.2)	2	4 (44.4)	0
	Media	Image	38 (49.4)	66 (41.5)	2	3 (33.3)	0
		None	35(45.5)	88(55.3)	3	6(66.7)	0
		Video	4 (5.2)	5 (3.1)	1	0	0
Elected officials	Hashtag		4 (40)	19 (43.2)	5	8 (42.1)	2
	Mention		2 (20)	1 (2.3)	1	0	0
	URL		3 (30)	26 (59.1)	9	14 (73.7)	5
	Media	Image	7 (70)	24 (54.5)	3	7(36 .8)	1
		None	3(30)	20(45.5)	7	12(63.2)	4
		Video	0	0	0	0	0
Government organizations	Hashtag		58 (80.6)	156(73.2)	3	27(65.9)	0
	Mention		24 (33.3)	122(57.3)	5	18(43.9)	1
	URL		57 (79.2)	97(45.5)	2	10(24.4)	0
	Media	Image	62 (86.1)	195(91.5)	3	40(97.6)	1
		None	6(8.3)	11(5.2)	2	0	0
		Video	4 (5.6)	7(3.3)	2	1(2.4)	0
Health organizations	Hashtag		24 (16.6)	48(15)	2	19(14.8)	1
	Mention		7 (4.8)	2(0.6)	0	3(2.3)	0
	URL		129 (89)	270(84.1)	2	122(95.3)	1
	Media	Image	82 (56.6)	158(49.2)	2	71(55.5)	1
		None	57(39.3)	151(47)	3	54(42.2)	1
		Video	6 (4.1)	12(3.7)	2	3(2.3)	1
News media	Hashtag		50 (7)	62(4.2)	1	27(3.6)	1
	Mention		25 (3.5)	24(1.6)	1	12(1.6)	0
	URL		698 (98)	1446(97.8)	2	719(97.2)	1
	Media	Image	50 (7)	146(9.9)	3	75(10.1)	2
		None	647(90.9)	1309(88.5)	2	657(88.8)	1
		Video	15 (2.1)	24(1.6)	2	8(1.1)	1
School	Hashtag		4 (40)	21(7.2)	5	2(1.1)	1
	Mention		1 (10)	5(1.7)	5	0	0
	URL		8 (80)	126(43.3)	16	11(6.3)	1
	Media	Image	9 (90)	272(93.5)	30	170(97.1)	19
		None	1(10)	19(6.5)	19	5(2.9)	5
		Video	0	0	0	0	0

*Percentage of tweets by an organization containing engagement strategies. A tweet may contain multiple engagement strategies.

Table 6a: *Summary of twitter retweets and replies for each message function in stratified sample of all account categories*

Account category	Message function	Number of tweets n(%)	Twitter retweet		Twitter replies	
			Total, n(%)	Mean	Total, n(%)	Mean
Community-based organizations	Action	4(25)	6(25)	2	0	0
	Community	6(37.5)	11(45.8)	2	1(50)	0
	Information	6(37.5)	7(29.2)	1	1(50)	0
Elected Officials	Action	0	0	0	0	0
	Community	1(50)	0	0	0	0
	Information	1(50)	0	0	2(100)	2
Government organizations	Action	8(57.1)	20(46.5)	3	5(55.6)	1
	Community	3(21.4)	12(27.9)	4	0	0
	Information	3(21.4)	11(25.6)	4	4(44.4)	1
Health organizations	Action	20(69)	43(69.4)	2	31(86.1)	2
	Community	0	0	0	0	0
	Information	9(31)	19(30.6)	2	5(13.9)	1
News media	Action	0	0	0	0	0
	Community	10(7)	16(5.5)	2	3(1.8)	0
	Information	132(93)	275(94.5)	2	161(98.2)	1
School	Action	0	0	0	0	0
	Community	1(50)	5(20.8)	5	19(16.7)	1
	Information	1(50)	19(79.2)	19	5(83.3)	5

Table 6b**:** *Summary of twitter retweets and replies for each message function in all account categories excluding the news media category*

Account category	Message function	Number of tweets, n(%)	Twitter retweet		Twitter replies	
			Total, n(%)	Mean	Total, n(%)	Mean
Community-based organizations	Action	15(19.4)	30(18.9)	2	0	0
	Community	24(31.2)	39(24.5)	2	3(33.3)	0
	Information	38(49.4)	90(56.6)	2	6(66.7)	0
Elected Officials	Action	0	0	0	0	0
	Community	6(60)	23(52.3)	4	10(52.6)	2
	Information	4(40)	21(47.7)	5	9(47.4)	2
Government organizations	Action	40(55.6)	50(23.5)	1	12(29.3)	0
	Community	11(15.3)	64(30)	6	9(22)	1
	Information	21(29.2)	99(46.5)	5	20(48.8)	1
Health organizations	Action	91(62.8)	205(63.9)	2	106(82.8)	1
	Community	2(1.4)	5(1.6)	3	1(0.8)	1
	Information	52(35.9)	111(34.6)	2	21(16.4)	0
School	Action	4(40)	30(10.3)	8	2(1.1)	1
	Community	1(10)	5(1.7)	5	1(0.6)	1
	Information	5(50)	256(88)	51	172(98.3)	34

Tables 6a and 6b show the twitter retweets and replies of each message function in each account category. Mean retweets ranged between 0 and 6 for all three message functions across all organizations except school which had a mean retweet of 8 for action, 5 for community and 51 for

information. Mean replies ranged from 0 to 2 in all message functions across account categories except school which had a mean reply of 34 for information but 1 for action and community. The total number of Twitter retweets and replies were not significantly different across message function in the stratified sample but there were significant differences in engagement across message function in the dataset that had all account categories except the news media.

Table 7 shows the total and mean retweets and replies per tweet for each risk communication strategy. The mean number of retweets (2) and replies (1) per tweet is similar across risk communication strategies, except for mean number of retweets for efficacy (3) and mean number of replies for concern (0). 8a and 8b summarize the twitter retweet and replies of each risk communication strategy by account category in the stratified sample and in the dataset that contains all but news media category. There were retweets and replies in almost all tweets in each account category that used any communication strategy. Statistical tests indicate that there were no significant differences in the number of retweets, for tweets containing the corrective, efficacy, concern and expert communication strategies compared to tweets that did not contain the respective strategies. There was some difference in the number of retweets for tweets containing risk strategy compared to tweets that did not contain the risk strategy.

Table 7**:** *Retweets and replies for each risk communication strategy*

Risk communication strategy	Mean retweets per tweet	Total retweets, n	Mean replies per tweet	Total replies, n
Corrective	2	8	1	4
Concern	2	18	0	2
Efficacy	3	142	1	56
Experts	2	19	1	16
Risk	2	240	1	131
Uncertainty	0	0	0	0
Total		427		209

Table 8a**:** *Summary of twitter retweets and replies for each risk communication strategy in stratified sample of all account categories*

Account category	Risk communication strategy	Number of risk communication strategy used, n(%)[#]	retweets		Twitter reply	
			Total, n(%)[#]	Mean	Total, n(%)[#]	Mean
Community-based Organizations	Concern	7(43.8)	11(45.8)	2	1(50)	0
	Corrective	0	0	0	0	0
	Efficacy	6(37.5)	12(50)	2	1(50)	0
	Experts	1(6.3)	0	0	0	0
	Risk	5(31.3)	10(41.7)	2	1(50)	0
	Uncertainty	0	0	0	0	0
Elected Officials	Concern	0	0	0	0	0
	Corrective	0	0	0	0	0
	Efficacy	0	0	0	0	0
	Experts	0	0	0	0	0
	Risk	1(50)	0	0	0	0
	Uncertainty	0	0	0	0	0
Government Organizations	Concern	2(14.3)	7(16.3)	4	0	0
	Corrective	0	0	0	0	0
	Efficacy	11(78.6)	36(83.7)	3	9(100)	1
	Experts	0	0	0	0	0
	Risk	8(57.1)	20(46.5)	3	5(55.6)	1
	Uncertainty	0	0	0	0	0
Health Organizations	Concern	0	0	0	0	0
	Corrective	0	0	0	0	0
	Efficacy	24(82.8)	59(95.2)	2	32(88.9)	1
	Experts	4(13.8)	7(11.3)	2	2(5.6)	1
	Risk	11(37.9)	33(53.2)	3	29(80.6)	3
	Uncertainty	0	0	0	0	0
News Media	Concern	1(0.7)	0	0	1(0.6)	1
	Corrective	4(2.8)	8(2.7)	2	4(2.4)	1
	Efficacy	14(9.9)	16(5.5)	1	9(5.5)	1
	Experts	7(4.9)	12(4.1)	2	14(8.5)	2
	Risk	75(52.8)	177(60.8)	2	96(58.5)	1
	Uncertainty	0	0	0	0	0
School	Concern	0	0	0	0	0
	Corrective	0	0	0	0	0
	Efficacy	1(50)	19(79.2)	19	5(83.3)	5
	Experts	0	0	0	0	0
	Risk	0	0	0	0	0
	Uncertainty	0	0	0	0	0

[#]Percentage of tweets by an organization containing risk communication strategies. A tweet may contain multiple risk communication strategies.

***Table 8b**: Summary of twitter retweets and replies for each risk communication strategy in different account categories all datasets except news media category*

Account category	Risk communication strategy	Number of tweets, n(%)[#]	Twitter retweets		Twitter reply count	
			Total, n(%)[#]	Mean	Total, n(%)[#]	Mean
Community-based Organizations	Concern	40(51.9)	97(61)	2	7(77.8)	0
	Corrective	0	0	0	0	0
	Efficacy	42(54.5)	95(59.7)	2	5(55.6)	0
	Experts	2(2.6)	0	0	0	0
	Risk	18(23.4)	39(24.5)	2	2(22.2)	0
	Uncertainty	0	0	0	0	0
Elected Officials	Concern	2(20)	1(2.3)	1	1(5.3)	1
	Corrective	0	0	0	0	0
	Efficacy	2(20)	8(18.2)	4	5(26.3)	3
	Experts	0	0	0	0	0
	Risk	5(50)	35(79.5)	7	12(63.2)	2
	Uncertainty	0	0	0	0	0
Government Organization	Concern	11(15.3)	49(23)	4	2(4.9)	0
	Corrective	0	0	0	0	0
	Efficacy	56(77.8)	145(68.1)	3	27(65.9)	0
	Experts	0	0	0	0	0
	Risk	38(52.8)	58(27.2)	2	24(58.5)	1
	Uncertainty	0	0	0	0	0
Health Organization	Concern	3(2.1)	15(4.7)	5	1(0.8)	0
	Corrective	1(0.7)	1(0.3)	1	1(0.8)	1
	Efficacy	116(80)	260(81)	2	119(93)	1
	Experts	27(18.6)	59(18.4)	2	19(14.8)	1
	Risk	43(29.7)	88(27.4)	2	49(38.3)	1
	Uncertainty	0	0	0	0	0
School	Concern	0	0	0	0	0
	Corrective	0	0	0	0	0
	Efficacy	8(80)	43	16	11(6.3)	1
	Experts	0	0	0	0	0
	Risk	2(20)	168(57.7)	84	163(93.1)	82
	Uncertainty	0	0	0	0	0

[#]Percentage of tweets by the organization containing risk communication strategies. A tweet may contain multiple risk communication strategies.

5. DISCUSSION

News media had the highest average number of COVID-19 related tweets per account, followed by health organizations, government organizations, and the Atlanta Public School district between January 1 and May 31, 2022. This finding is consistent with the main function of the news media in spreading information from happenings locally and globally. It is also consistent with the lead role government and health organizations have played in the prevention and protection of the public against COVID-19, including schools tasked with the protection of the health of children.

This study found that information was the most used message function, and it was used across all account categories especially the media. This is consistent with other studies that have analyzed tweet content in different organizations in terms of message function where information was the frequently used message function (23,25,47). Action was the second most common message function used especially by health, government, and school organizations. Considering the lead roles these organizations have played during the pandemic, it is not hard to see how their messages would be geared towards compelling the public to take action to protect themselves and others. On the other hand, tweets of community-based organizations were mostly of the community function which is consistent with their role in community-building, support, and advocacy (54).

No tweet in this study contained all risk communication strategies, neither did any account category use all the strategies. However, all account categories made use of two of the six risk communication strategies: risk and efficacy. This is consistent with the need for everyone in different roles and responsibilities to contribute to the spread of accurate information on COVID-19, especially in terms of risk and protection or reduction of harm (38). It is interesting to note that community-based organizations used the concern strategy the most, compared to other strategies.

This confirms the role of community-based organizations in continuing to support the communities they serve despite the pandemic, providing more support geared towards people affected the most by the pandemic. The uncertainty strategy was not used in any of the tweets analyzed in this study. It is possible that the period the data was collected (January 1 to May 31, 2022) may have influenced the results seen. There was great uncertainty during the early stages of the pandemic and that needed to be openly acknowledged in communications to the public. Now that there is more information about COVID-19, it may be less of a priority to communicate uncertainty in tweets to the public.

The Atlanta Public School District had the highest mean retweets per tweet and mean replies per tweet compared to all other account categories. This shows the influence the school district has on the community. The use of various engagement strategies did not appear to influence the amount of engagement. For example, though the URL was used by all account categories, for almost all, greater than 70% of tweets contained URLs) it did not result in more engagement. It is possible that some of these engagement strategies were used to add to the content of a tweet due to the Twitter word limit of 140 per tweet (48).

Analysis of content engagement found that the mean number of retweets and replies were within a small range for all message functions across account categories except for school. Statistical analysis did not indicate a significant difference in the number of retweets or replies of tweets across message function in the stratified sample but was significant in the dataset that contained all other account categories except news media. This may have been influenced by the fact that news media contained more information tweets. One study of COVID-related tweets in Texas found that tweets with information function had more engagement (23) while another study of COVID-related tweets in Canada reported that tweets with action function received more

engagement in all the accounts that were analyzed except for one, concluding that the amount of engagement received did not depend on the message function (25). Similar results were noted when analyzing the engagement of tweets containing risk communication strategies. Retweets and replies were similar for all strategies across account categories except for school. This finding is not consistent with the Canadian study that examined the same risk communication strategies in public health agencies and decision makers between January 1 and June 30, 2020 (25). That study found that tweets containing concern strategies received more retweets per tweet compared to other strategies. This may be because of the differences in the timeline of the pandemic. In 2020, there was a lot of fear and concern over the impact of COVID-19 infections and deaths, on unemployment, housing, feeding, and social and health disparities, so it is no surprise that tweets that had the concern strategy received more engagement.

6. RECOMMENDATIONS

Although this study provides important information about the use of tweets to disseminate COVID information to the South Atlanta community, we recommend that future analyses of content and engagement be conducted using data from other social media platforms. It is also important to explore other means of communication that stakeholders and organizations in South Atlanta use to reach members of the community and evaluate the effectiveness of these methods to determine the best approach for future dissemination of COVID-19 wastewater information.

7. CONCLUSION

This study aimed at identifying key stakeholders in South Atlanta communities and understanding their role and influence on the communities through social media. Therefore, an analysis of tweets of organizations and stakeholders in South Atlanta was conducted with the objective of understanding and evaluating the different types of COVID-19 messaging stakeholders and organizations disseminated via social media during January 1 through May 31, 2022, and to identify effective strategies for communicating and disseminating information about COVID-19. A mixed methods approach was used to conduct a Twitter analytics and a qualitative content analysis to measure the engagement the public had with the tweets from organizations and other stakeholders in South Atlanta, to determine the function of tweets and the risk communication strategies used in tweets. The findings of this study reveal that, though the level of use of each message function varied across different organizations and stakeholders, information was a key message function of most tweets. We also found that the most frequent risk communication strategies used were the risk and efficacy strategies, pointing to the fact that all categories were interested in informing the public of their risk of COVID-19 and ways to prevent themselves and their loved ones from getting infected or spreading the disease. However, despite the content of the tweets, the effect on engagement was minimal. the results suggest that the account type had the most effect on twitter retweets and replies of tweets. The account with the highest engagement in this study was the Atlanta School District suggesting that the school district has a lot of influence on the community and should be a partner in future efforts to disseminate COVID-19 information to the community.

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APPENDIX

Author	AccountType	Example of tweet
apsupdate	School	Happy #NationalNursesDay ! Since 2020, nurses everywhere have
1047TheFish	News Media	
11AliveNews	News Media	WHO chief: The COVID pandemic is 'most certainly not over' https://
cbs46	News Media	Thousands of Georgians who received unemployment benefits durin
hot1079atl	News Media	Asking For A Friend: My Man Won't Stop Partying During The Pand
majicatl	News Media	#DJKaySlay passed after a four-month battle with Covid-19. He was
MyClassixATL	News Media	
mygpb	News Media	Georgia's rural hospitals were struggling long before COVID-19 crus
praise1025	News Media	Tyrese Gibson's Mother Passes Away Due To COVID-19 https://t.co
streetz945atl	News Media	
wsbradio	News Media	Dr. Scott Jensen, a skeptic of the government's response to COVID-
wsbtv	News Media	The Covid-19 test kit you may have in your home likely contains a to
FHCGA_	Health Organization	FHCGA honors Mrs. Vivian Blackstock for 36 years of service, giving
FWHC	Health Organization	Need a COVID-19 vaccine or booster? We are hosting our next FRE
GaCharityCare	Health Organization	Long-term COVID effects, spiking pediatric deaths, and fading mask
GaDPH	Health Organization	Preventive health not only protects us, it protects our families. Get yo
GaPlanFirst	Health Organization	#TakeDownTobacco The hard truth - quitting smoking and vaping ca https://t.co/XjkrLUsudc
HEALingCommCntr	Health Organization	
mercyatlanta	Health Organization	
southsidemed	Health Organization	🚨 Lovejoy Stop the Spread & Get Vaccinated! Join us This Saturda https://t.co/KsBjWKxW0c
village_faith	Health Organization	
AtlantaRegional	Government Organization	"The trucking industry has lost 6% of its drivers nationwide since the
atlcouncil	Government Organization	📰'Council member Howard Shook told the watershed management
ATLWatershed	Government Organization	The Department of Watershed Management is encouraging everyon https://t.co/j9SJSNKLKo
CityofAtlanta	Government Organization	Mayor @Andreforatlanta joined @BankofAmerica at the @ACFB to https://t.co/sA3oxu5UiJ
FultonInfo	Government Organization	If you have experienced a financial hardship due to the coronavirus https://t.co/Mdnaqky5ao
AlFarooqMasjid	Faith-based/Religious Organization	
ATLmission	Faith-based/Religious Organization	
cbcatl	Faith-based/Religious Organization	
ifyc	Faith-based/Religious Organization	
metroatlantama	Faith-based/Religious Organization	

andreforatlanta	Elected Official	When I first took office, City of Atlanta services – like in many other c
antoniolewisatl	Elected Official	First in person City Council meeting since the start of the pandemic.
ByronAmos	Elected Official	There will be a Resurgence Grant Application Workshop held today https://t.co/LuN7VojIFi
JasonHWinston	Elected Official	
jasonsdozier	Elected Official	
LilianaforATL	Elected Official	
MarciOverstreet	Elected Official	Someone just asked me if there's still a need to do food giveaways s https://t.co/TLFrmb6ztO
100BMofATL	Community-based Organization	
aaausa_aaag	Community-based Organization	
AKA_TEO1991	Community-based Organization	
amaniwcenter	Community-based Organization	
bcdiatl	Community-based Organization	During the 9 months of this project, a total of 10,745 COVID-19 vacc https://t.co/AbWwGBT3JJ
CARE	Community-based Organization	Due to the increase in food prices, Ghena and Hanan are forced to r
cbwwatlanta	Community-based Organization	
CoolGirlsInc	Community-based Organization	
CoreResponse	Community-based Organization	CORE remains on the frontlines of the pandemic, testing communitie
cpacs	Community-based Organization	@napawf research found that AAPI women experienced the highest
fcsministries	Community-based Organization	Scene from the first session of Southside 2022 @_StartME cohort. T
guildatl	Community-based Organization	
HandsOnAtlanta	Community-based Organization	When the Midtown Assistance Center office was closed during the p
HOPEatlORG	Community-based Organization	This time of the year, more people seek refuge at @MARTASERVIC https://t.co/eIzJmR1yvi
LCFGeorgia	Community-based Organization	
lnpusa	Community-based Organization	
nc100bwmetroatl	Community-based Organization	
ncnwatl	Community-based Organization	
NPU_M	Community-based Organization	
npu_w	Community-based Organization	
npuvatl	Community-based Organization	
OurHouseGA	Community-based Organization	DeKalb County Commissioner Steve Bradshaw allocates $760,000 t

Pentorship	Community-based Organization	
philanthropyATL	Community-based Organization	. @cbwwatlanta provided direct support to preserve the health of wo
PSEquityMatters	Community-based Organization	🔔ICYMI: USPS will be delivering one set of 4 FREE at-home COVI
RefugeeNetwork_	Community-based Organization	
reimagineATL	Community-based Organization	"A personal goal of mine is to garner more experience working with
restorelife_atl	Community-based Organization	
SecondHelpATL	Community-based Organization	A couple weeks back, we paused our in-person meal kit packing due
SerFamiliaInc	Community-based Organization	
tcmatlanta	Community-based Organization	
TheLAA	Community-based Organization	It is important that we all receive the Covid-19 vaccine as a reinforce
unitedwayatl	Community-based Organization	📍 Important alert for those applying for assistance through the @C https://t.co/E2CAriHlbP
VOXROXATL	Community-based Organization	
watchAIBTV	Community-based Organization	