

Who is empathetic to the disaster you are going through? Mining Emotions (Empathy) in government and nonprofit responders' tweets.

By

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Abstract

This project establishes and tests a measure of empathy in Twitter posts. The project intends to find evidence on whether community leaders and decision makers are showing compassion for the vulnerable communities undergoing natural disasters like Hurricane Florence through the online media like Twitter. The measure examines accounts from government agencies, nonprofit organizations and elected officials. First, I investigated how government agencies, nonprofit organizations, and elected officials adopted social media as their communication channel with the public. Second, I studied scholarly work on how social media platforms were used during crises, such as natural disasters. Then, I reviewed literature regarding compassion and empathy, and developed the instrument for properly measuring empathy. Finally, I chose Hurricane Florence as my target and content analyzed tweets from selected government agencies, nonprofit organizations, and elected officials. It turned out many contemporary practitioners used Twitter to keep citizens informed under a natural disaster. However, there is limited evidence showing empathy being part of the public-service package regarding Hurricane Florence. The study concludes with future research possibilities on empathy, as part of compassion, and community resilience building for climate and other disasters.

Key words: Social Media, Disaster Recovery, Communication, Empathy, Compassion

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Chapter 1. Introduction

Purpose

The purpose of this project is to understand how “empathy” is displayed in Twitter posts (i.e., tweets) by government and non-profit organizations. In order to do so, I focused on natural disasters related Twitter content, for instance, the Hurricane Florence. Each year, thousands of tweets are generated from a wide array of Twitter users about natural disasters. Studies point out social media plays a crucial role in dealing with natural disasters in the following ways: reporting rescue processes, disseminating resource information, updating weather information, and guiding evacuations (Neubaum et al., 2014; Xiao et al., 2015; Murphy & Gross, 2017). However, limited research has shown the psychological perspective of social media regarding disaster related content. Individuals who actively engage with a community often show higher emotional attachment to the community (Neubaum et al. 2014). Nevertheless, the study of emotions, such as, empathy in a disaster context is underrepresented. From an urban planning perspective, social media is more than a communication tool. It provides urban planners a unique lens to look at urban issues through people’s emotional demands. Similarly, this research aims to understand how local government entities, elected officials, and nonprofits use Twitter as a communication channel. For instance, targeted Twitter accounts include state emergency management offices, the regional office of the Federal Emergency Management Agency, governors and mayors, the Red Cross and other local nonprofit organizations. During Hurricane Florence in 2018, nonprofit organizations like the Red Cross intensively used Twitter to engage with the public and provide information for post-disaster recovery. Regarding selected Twitter accounts, this research aims to answer the following questions: During a disaster event, what content is being tweeted by

community leaders and government agencies? Among studied Twitter users, are there any empathetic expressions that can be captured, if so, how to accurately capture these empathetic expressions? Among studied Twitter accounts, what types of accounts are more likely to tweet about empathetic feelings and caring messages towards impacted communities hit by a natural disaster?

To answer these questions, this project brings together four strands of research: the exploration of the existing research on the use of social media by local government, elected officials and nonprofit organizations, the use of social media in the realm of disaster response/recovery, the new area of compassion and empathy in planning, and how to establish a measure for empathy to be able to assess mental health related to community quality of life. This project was carried out in an exploratory manner. By looking at hurricane related tweets, my goal was to develop and test a measure of empathy that can be used to analyze the content of Twitter feeds in future studies. The measure was developed using definitions and different forms of “empathy” from the existing literature. Then, the measure was tested by content analyzing Hurricane Florence related tweets. Specifically, tweets from both organizational accounts and elected officials’ accounts of impacted areas were examined. Organizational accounts included government entities like emergency management offices and nonprofit organizations like the Red Cross and local food banks. Elected officials’ accounts included governors and mayors’ accounts or their offices’ accounts. Content analysis allowed me to place each tweet into existing categories commonly found in regards to disasters: preparedness information, recovery resources, disaster status and weather report, and rescue guidance in addition to creating the category of empathy and also looking for emotional expressions. If a tweet could not be categorized as any of these themes, then it was labeled as “other”.

Before investigating the tweets from organizational accounts and elected officials' accounts, and checking if there were any empathetic tweets in natural disasters, I focused on the literature regarding the following aspects:

- Use of social media by local government agencies in general and particularly to the disaster impacted areas, such as, government entities (e.g., South Carolina Emergency Management and Horry County Emergency Management), elected officials (e.g., mayors and governors), and nonprofit organizations (e.g., South Carolina Red Cross and the local food bank called Harvest Hope).
- Use of social media for natural disasters (focus on Twitter) and looking for organizations particular to disaster preparation/response/recovery.
- Empathy and compassion in planning.
- Community quality of life and connection to mental health and government organizations/nonprofits.

For the data collection, I collected tweets posted by certain accounts. After reviewing the literature on how government agencies, nonprofit organizations and local elected officials handled disasters on the social media end, I was able to find which government agencies' accounts (at the county level or the state level), nonprofit organizations', elected officials' accounts were good subjects on which to focus. Then, I filtered out their tweets by setting the timeframe to correspond to Florence's hurricane cycle (i.e., mitigation, preparedness, response, and recovery), and I specifically focused on the response period. My goal was to study a total of eight accounts based on their tweets during the declared incident period of the disaster cycle.

Do tweets show “empathy” in addition to providing information? If my introduced method properly measures empathetic expressions in their tweets, I can then conduct future research into what differences an empathetic Twitter account could make as a community leader. Before looking for empathy in organization tweets, I first explored who was using social media in addition to studying Twitter’s functions such as the use of hashtags, likes, retweets, direct messages and other network functions.

Research Questions

Hurricane Florence was chosen for this study because: 1) the hurricane was relatively recent. The declared disaster periods spanned from the beginning of September to the middle of October in 2018. The total number of tweets relevant to Hurricane Florence was fairly large ranging from local to national, 2) the duration of the disaster was approximately a two-week period which opened a window for government agencies and nonprofit organizations to provide assistance both on the scene and online, and 3) Hurricane Florence impacted a number of counties in four states, including North Carolina, South Carolina, Georgia, and Virginia. It was highly likely that different levels of governments in each state responded to the hurricane through Twitter. According to FEMA (the Federal Emergency Management Agency), South Carolina and North Carolina received the most financial assistance from the federal government, resulting in larger networks of disaster response teams than other states. The post-disaster recovery activities involved different scales of nonprofit organizations and government entities, such as, the Corporation for National and Community Service, U.S. Department of Defense, American Red Cross, etc. (FEMA, 2018). For those organizations and elected officials who managed social media accounts to facilitate the rescue and recovery process, I wanted to raise the following questions for research:

RQ1: During Hurricane Florence, what were the major themes tweeted?

RQ2: Among these tweets, are there empathetic expressions that can be captured?

RQ3: What types of accounts (i.e., government agencies, nonprofits, and elected officials from states and cities) are more likely to express emotions and empathetic feelings towards communities impacted by Hurricane Florence?

Chapter 2 Literature Review

Social Media Adoption by Various Entities

With attractive features such as being low-cost, immediate, and smart device friendly, social media has increasingly become the “go to” method for citizens to communicate with their friends, families, neighbors, organizations and governments (Kavanaugh et al., 2012; Johnson & Haleboua, 2015; Kleinhans et al., 2015).

One key function that social media performs is to promote citizens’ communication in a dynamic and modern way. Social media platforms, such as Facebook and Twitter, are widely used for conveying ideas and information in a rapid and convenient manner.

This is no exception for the disaster context. When a natural disaster occurs, social media plays a crucial role in facilitating time-sensitive conversations and information dissemination. Knowing that social media is a newly adopted communication tool by various government entities, elected officials, and organizations, I first look at which ones have adopted social media so that they can use it to talk to the public. Then, by accessing the public social media data posted by these entities, elected officials, and organizations, I analyze what content or themes they are communicating. Eventually, the content analysis will tell us whether or not, government agencies, elected officials, and organizations are expressing empathy towards citizens who have undergone natural disasters. Based on the findings, further conclusions can be made on which government agencies and organizations are more empathetic to their citizens. Additionally, the study can be extended in the future to test whether having more empathetic government agencies fosters a more resilient community for disaster mitigation and disaster recovery.

General Adoption

In 2009, the Obama Administration and the Office of Science and Technology Policy made a commitment to address the importance of harnessing new technologies in order to improve the quality of life for all Americans. An order named *Create an Open and Transparent Democracy* was issued to encourage all levels of government to develop cutting-edge technologies for boosting transparency, collaboration and engagement with America's citizens. The order was assigned to departments in the executive branch of the U.S. government (Mergel, 2013; Kagarise and Zavattaro, 2017; Office of Science and Technology, n.d.). Subsequently, federal government agencies, local government agencies, and non-governmental organizations adopted social media as an official communication channel and brand marketing tool (Mergel, 2013; Curtis et al., 2009; Nah and Saxton, 2013; Fast et al., 2015). The use of social media in dealing with public affairs has been found beneficial to various levels of government (Mossberger et al., 2013; Kavanaugh et al., 2012; Picazo-Vela et al., 2016). Public relations practitioners and for-profit organizations have been using social media to strengthen their existing brands, as well for maintaining healthy relationships with local champions and stakeholders (Eyrich et al., 2008; Waters et al., 2009). For organizations, the main purposes of adopting the social media as one of their official communicating and engaging channels include increasing the effectiveness of information delivery, promoting public engagement, monitoring patterns of public reactions to certain issues, and maintaining healthy and sustainable relationships with the public and other organizations. Interactions via social media include community outreach, gathering feedback from the community, local and social trends, creating one-way or two-way dialogues, presenting facts and updating events status (Kavanaugh et al., 2012; Mossberger et al., 2013).

Federal Level

At the federal government level, the social media adoption aims to create a more transparent, collaborative and participatory governing environment (Mergel, 2013). In doing so, the federal level government agencies usually take a three-stage adoption process: early adoption as a proactive approach, consolidation and convergence, and finalization of adoption (Mergel, 2014). The early approach functions as the pilot phase. There are no certain boundaries at this phase. Instead, the goal is to achieve the broader mandate, which states “we had to use social media to accomplish the goals of the Open Government and Transparency initiative memo” (Mergel, 2014, p. 165). The second phase emphasizes consolidating and converging all strategies of social media use into more formal and organized rules. The implementation of formalized policies corresponds to the degrees of engagement and the content of engagement for each agency. For instance, one of the social media directors Mergel interviewed (2014) said, “It (the policy) is driven by the communication needs as well as what people bring to the table, their needs, and then that sets the agenda for what guides things to be addressed at what time” (p. 166). The final stage of adoption is institutionalization. In this process, guiding principles and strict rules are implemented for online interactions.

A case study by Mergel (2013) on social media adoption shows that fifteen departments of the executive branch of the U.S. government who received the “harness new technologies” presidential order are the first fifteen departments who adopted social media as a significant communication tool. These departments included the Department of Health and Human Services, Department of Defense, and the Department of Homeland Security. For this study I look at FEMA-related entities, and FEMA is under the Department of Homeland Security which uses social media to promote public health under the disaster context.

There are three major reasons for government agencies and organizations to adopt social media, including representation, engagement, and networking. The successful developments of social media platforms like Facebook and Twitter attract millions of users, which make federal government agencies want their roles to be present in the online crowd. Some departments actively search for the best practice existed in government using social media. But some departments passively observe and duplicate what other agencies do (Mergel, 2013, p. 125). The case study suggests that there is no formal guidance provided for agencies on how to better utilize social media. Nonetheless, Mergel (2013) highlights some agencies who are highly innovative and interactive when they utilize social media. For instance, the White House's Office of New Media and Federal Web Manager's Forum have developed strategies to use social media. Learning from these active social media adopters, the passive social media adopters such as the Department of Homeland Security followed the footprint of the pioneer adopter, the White House's Office under President Barak Obama's Administration.

Social media has the potential to facilitate communication, which enhances the interactions between the public and the government. First, social media platforms like Twitter and Facebook are time sensitive. It helps governments observe how citizens react to real-time issues (Kavanaugh et al., 2012; Mergel, 2013). It allows for quick dissemination of agency information. Third, the social media makes it possible for governments to create dialogues with the public. The content of online dialogues helps government agencies improve their online services and civic engagement. Fourth, social media is used by one government agency to connect to another. The network among government agencies establishes mutual accountabilities for government agencies. Well-connected agencies tend to maximize the effectiveness of providing citizens with existing information (Mergel, 2014).

Local Level

At the local level, government officials treat social media as a resource to improve public services and communicate with citizens. Kavanaugh et al. (2012) argue that by detecting the meaningful patterns of information flows in social media, real-time events can be monitored as identifying spikes in online activities through changes in content. Additionally, finding the patterns and themes over time provides government officials with perceptions and moods of citizens that cannot be captured via traditional methods like survey and phone calls. Two types of events meet the criteria of using social media, as Kavanaugh et al. point out, the routine (e.g., ongoing issues of public concerns) and the critical (e.g., major weather or traffic disruptions, public safety or rapid responses) (p. 2). In order to improve public safety and general quality of life, a list of questions can be addressed by looking at timely data on social media (Kavanaugh et al., 2012):

When and where are events most currently happening?

What are different views of a given event?

Who are the influential users in an online or local community?

The answers to these questions make it possible for local governments to manage information and facilitate effective interactions in order to accomplish broader public engagement. The innovative ways of using social media bring meaning to the table in real time, which cannot be obtained by traditional public commenting at county or local board meetings (Adams 2004).

Twitter is widely used by elected officials and their offices (Arsono and Kusumawati, 2018; Waters and Williams, 2011). The flexibility of this information outlet platform provides some flexibility for elected officials who choose to use it. Using Twitter, elected officials may

enhance communication campaigns by providing one-way updates and disseminating information. Also, interactive two-way political communication can facilitate feedback from the audience.

Nonprofit Organizations

For nonprofit organizations, the adoption of social media innovatively supplements and supports the traditional way of using websites to enhance their presence among online environments (Nah and Saxton, 2013). As nonprofit organizations establish their public relations in the social media, they tend to use the social media platforms more frequently to communicate with their external publics. The dialogic messages to and from the public keep these organizations at the center of dynamic networks. Additionally, social media allows nonprofit organizations to reach out to wider fields. Curtis et al. (2010) conducted a survey on a total of 409 nonprofit organizations selected from Forbes, the National Charity Seal Program, Accredited Charity Directory (through the Better Business Bureau), and the Charity Navigator (independent charity evaluator online) (p. 91). Nearly all, 404 out of 409 nonprofit organizations use some form of social media. Among the 404 nonprofit organizations, 54.5% of them used social network, 51.5% used video sharing, 48.4% used blogs, and 27.1% used photo sharing. Nah and Saxton's study (2013) on the 100 largest non-educational US nonprofit organizations illustrated some driving forces for adopting social media: the revenue of nonprofit programs is positively associated with social media adoption and the frequency of social media updates. If the organization has longer experience of managing a website in the past, then the organization is more likely to adopt the social media. The number of external stakeholders who use social media positively affect the adoption. Due to peer pressure, the adoption by other local organizations also accelerates the general adoption among organizations.

Neighborhood Level

At the neighborhood level, in order to revitalize a neighborhood organization, Johnson & Haleboua (2014) conducted research on using Twitter and Facebook to promote local communications. It turned out the use of social media was quite popular among those who were interested in having a neighborhood organization. The case study of the Indian Hills neighborhood indicates a mismatch between social media use and the researched neighborhood. It is however unlikely to use social media to achieve the goal for Indian Hills per se, because of the mismatch in the affordances of social media and how residents felt about neighborhood communication. Residents did not think of neighbors as “friends”. So, Facebook was not good for them and they feared social media left some people out. The study suggests a good combination of online and face-to-face interactions will reinforce the activeness of the community. When neighborhoods are more dynamic and interactive, people are more likely to be active on their Facebook page or Twitter networks.

Another study in Blacksburg and Montgomery County by Kavanaugh et al. (2007) suggests that electronic modes are the most common communication instruments for civic, political and educational-professional groups with only exceptions in specific religious groups. Evans-Cowley & Hollander (2010) found concrete evidence that rather than using conventional methods, citizens are more likely to choose social media as tools to interact with planners.

Kleinhans et al. (2015) concluded the following:

The use of social media and mobile communication technologies has grown rapidly over the last 10 years and has facilitated a constant increase in the number of virtual networks. Kleinhans et al. (2015) assert the popularity of Facebook, Twitter, Google +, Instagram,

YouTube, Blogspot and other social media has spurred a demand for new forms of participatory planning and self-organizing governance by citizens. (p. 239)

Johnson & Haleboua (2014) argued that “Community planners have found successes in using social media, digital games, and online tools for participatory planning and education” (p. 70). Planners who advocate for livable and friendly neighborhoods often care about their community images. The social media is however a good reflection of community images. In addition, besides decision makers and practitioners, increasing evidence has shown that city officials and urban planners are trying to use social media to engage with citizens and stakeholders.

From Information to Public Engagement and Collaboration

A massive number of tweets are generated by government agencies to foster public engagement. To quantitatively understand interactive tweets, Kagarise and Zavattaro (2017) constructed a framework which suggests scholars and practitioners approach relevant tweets by considering the following three layers: (1) A measure of organizational awareness. That is to look at the presence of the organization by counting the number of followers of the target official Twitter account over time. (2) A measure of followers’ engagement. It is also known as measuring the level of interaction (e.g., counts in number of shares, likes, retweets, reactions, etc.). (3) A measure of sentiment. This process allows investigators to study the actual content and insights from commenters. Government agencies with an overall positive tone are more likely to promote conversation and boost civic participation (Zavattaro, French, and Mohanty, 2015). Most contemporary government agencies are still in the process of transforming from a passive position to a more interactive position when using social media (Kagarise and Zavattaro,

2017; Schweitzer, 2014). Government agencies are more likely to push information out rather than making interactive conversations with citizens. This one-way push strategy results in the overall tweets from government agencies being sentiment neutral. Similarly, one should expect to find the same pattern of tweets by government agencies under the disaster context.

According to Kagarise and Zavattaro (2017), the final goal of adopting social media is to achieve transparent government. The advantages of using social media include fostering collaboration, sharing knowledge, and facilitating conversations. In emergency management planning, a core value is to utilize formal and informal collaboration to bring the best potential to managing emergency resources (Johnson, et al., 2013). In the study of U.S. counties, Johnson et al. (2013) revealed that information, as a factor at the community level, significantly contributes to both formal and informal collaboration. Additionally, the study finds that informal modes are most likely to contribute in bridging and bonding social capital and developing social networks, which made it possible to enhance emergency management capacity as a whole. Social media can be an information exchange channel both formally and informally.

When looking for government entities as study targets for Hurricane Florence tweets, implications from previous studies (Johnson et al., 2013; Kagarise and Zavattaro, 2017; Zavattaro, French, and Mohanty, 2015) can be drawn. First, one ought to search for government agencies who have adopted social media and have established Twitter accounts with a higher presence in terms of having a higher number of followers, average comments and likes to the tweets. A good number of tweets should indicate a higher chance for collaboration because more information is published. If the organizations' tweets mention other organizations or are simply forwarding other organizations' tweets, it is highly likely to spot informal collaborations. Second, if the tweets involved a positive tone or conversational styled content, there is a higher

chance to spot emotional content. Third, tweets with neutral opinions from government agencies should be expected in general, but variation will occur depending on the context of tweets.

The Use of Social Media in Disaster Context

Social media is becoming increasingly valuable in the climate change era especially when dealing with natural disasters (Houston et al., 2014; Niles et al. 2019). The timely information sending and receiving feature enables governmental agencies, such as local emergency management agencies to provide citizens with disaster warnings (Houston et al. 2014). Similar to sending and receiving disaster warnings and signals, social media guarantees an accessible channel for contemporary social media users to receive preparedness information regarding certain disasters.

Niles et al.'s (2019) study on tweets of various disaster events, including two hurricanes, two tornados, and one flooding event, reveal that tweets of all disasters share a similar foundation. That is, tweets of all disasters contain basic knowledge on disaster preparedness and recovery. However, the communication on each disaster vary based on the context of each individual disaster. For instance, timely information like signaling and status reports can be helpful for residents when encountering a hurricane. Preparedness information can be more helpful for residents when encountering a long-duration flooding event. In these cases, tweets from governmental agencies and nonprofit organizations can be tailored to best suit the needs of a specific disaster. Learning from both general messaging that is applicable to any disasters and context information of a specific disaster event, planners can better prepare for future disasters in terms of enabling effective recovery following disasters to reduce the disaster risks in a changing climate (Niles et al., 2019).

These findings shed lights on Houston et al.'s (2014) framework (Table 1) which introduces how various entities, such as, governmental agencies, individuals, and community organizations use social media to disseminate information throughout a disaster.

Table 1. Social Media Content in Disasters

Disaster Phases	Social Media Content
Before disaster	Disaster preparedness ^{a,b}
	Disaster warnings, signaling and detecting ^a
During disaster	Requests for help or assistance ^a
	Updates on location and condition ^a
	News coverage and reports ^a
	Disaster response and recovery information ^{a,b}
	Donation and volunteer information ^a
	Mental/behavioral health support^a
	Emotions and good wishes^a
After disaster	Discussion on disaster causes and responsibility ^a
	(Re)connection of community members ^a
<i>Note.</i> Social media content in different disaster phases are from the following sources: a. Houston et al. (2014), b. Niles et al. (2019)	

At the community level, both individuals and organizations use social media to spread information for disaster preparedness and post-disaster recovery. During a disaster, community leaders and governmental agencies use social media to make connections with residents not only by providing information, but also by constructing peer-to-peer backchannel communications (Houston et al., 2014; Xiao, Huang & Wu, 2015.). For instance, when Twitter users post a question to the emergency management office, the emergency management office can reply to the person by replying to the original post. Or, the emergency management office can reply to the post while at the same time post the answer for other users to read. In that way, social media platforms like Twitter make it possible for local governmental agencies to learn what residents'

needs are. Xiao et al. (2015) state the following advantages that social media bring: establishing situational awareness, backchannel communications, disaster management, and real-time information dissemination.

Compassion and Empathy in Planning

Lyles et al. (2017) argue that compassion is a key element to promote public health and well-being in the planning profession. Compassion also helps to alleviate pain when encountering mental challenges like frustration, anxiety, and depression. Empathy, an indispensable component of compassion, plays a crucial role in people dealing with natural disasters. Victims of natural disasters spend a large amount of time going through the pain of losing families and healing from horrific experiences. As an urban planner, Forester has pioneered the way of understanding and engaging citizens' emotions in order to promote more equitable planning processes. Forester (1999) demonstrates one of the most effective ways to acknowledge social diversity and embrace differences is to listen closely to people's emotional demands. Emotional responsiveness helps people to see things clearly because it requires devoting attention and care. Paying attention and being compassionate for disasters helps us to learn from a diversity of people and boost the possibilities of collaborative planning.

Compassion plays important roles in other fields, such as sociology, psychology, and religious studies. In certain societies and religions, people value compassion as the core concept in their psychological agendas. Buddhist Dalai (2001) advocates compassion as a strong wish for all beings to be free of their sufferings. Cultivating compassion is crucial in Buddhism. While in clinical psychology, two parts of compassion are highlighted, self-compassion and compassion for others (Gilbert, 2010; Strauss et al., 2016).

From theories to the measures, compassion encompasses many emotional aspects, including understanding and recognizing suffering; expressing variant emotions, such as sadness, love, care and support; and acting with motivation and intention to alleviate suffering.

“Empathy,” the focus of this study is spotted throughout the compassion literature (highlighted in Table 2).

Table 2. Components of Compassion with **Empathy in Bold**.

Authors/ Theorists	Category (Discipline)	Content (Factors)	Measurement scales (Survey items)
Goetz et al. (2010)	Social Psychology	(1) Another name of empathic distress ; (2) a variant or blend of sadness or love; (3) an affective state with response that differs from love, distress, sadness and love.	By experience: moved, tender, sympathetic, warm, softhearted, touched, pity, concern. (p. 353)
Gilbert (2010)	Clinical Psychology	(1) Alleviation and prevention; (2) care; (3) Empathic insights ; (4) teaching offspring to carry on.	Fears of compassion; self-compassion; compassionate love; self-criticism/reassuring; adult attachment; depression, anxiety, and stress. (p. 250)
Jazaieri et al. (2012) and Lama (2001)	Buddhist Psychology & Western psychology	(1) Awareness of suffering ; (2) sympathetic concerns; (3) a wish to see relief from suffering; (4) responsiveness and readiness to help.	Compassion to others; compassion from others; self-compassion.
Ekman (2014)	Emotion Psychology	(1) Empathic compassion ; (2) action compassion; (3) concerned compassion; (4) aspirational compassion.	Kindness to self and other, social desirability, self-criticism, connectedness, emotional intelligence, perfectionism, anxiety, depression, life satisfaction. (Neff, 2003, p. 229)
Strauss et al. (2016)	Clinical Psychology	(1) Recognizing suffering ; (2) understanding the universality of human suffering; (3) feeling for the person suffering ; (4) tolerating uncomfortable feelings; (5) motivation to act/acting to alleviate suffering.	Ability to establish meaningful connections, meet expectations, exhibit caring attributes, and Function as a capable practitioner. (Burnell & Agan, 2013)

Focusing on empathy within compassion, empathy is found to be more specific to emotions and understanding of other's feelings. Empathy is normally perceived as "emotional" empathy and "affective" empathy (Segal et al, 2017). The meaning of emotional empathy is to share feelings with other people. Affective empathy involves mentalizing or taking perspectives through imagining of being in another person's position.

Building upon the foundation of empathy in cognitive neuroscience, Segal et al. established the Empathy Assessment Index and Social Empathy Index to learn how empathy is displayed in human behaviors in social environments. The empathy assessment indices were applied to study whether students' social and interpersonal empathy have impacts on their political perspectives and political affiliation (Segal and Wagaman, 2017). The study turned out to show that social empathy is a significant factor in shaping students' positions in social and economic justice-oriented policy. Findings suggested that students' understanding in social and economic justice can be promoted by improving their social empathy.

The empathy assessment indices are listed (Table 3) to help understand what aspects empathy contains (Segal et al., 2017). Eventually, these definitions and components of empathy will be applied to study tweets of organizations, elected officials, and government entities.

Table 3. Components of Empathy

Forms of Empathy	Content/ Keywords
Affective Response (Physiologically stimulated responses)	Flash of pain, feel for others, smile/cry for others.
Affective Mentalizing	Understand other’s emotions, be able to describe other’s feelings
Emotional Regulation	Emotional stability, recovery from emotions or moods.
Contextual Understanding of Systemic Barriers	Social assistance, stress, negative impacts, protection, economic well-being, poverty, racial differences, discrimination and barriers.
Macro self-other Awareness and Perspective Taking	Understand differences in cultures and communities. Social, political contexts.
<i>Note.</i> Definitions and elements of empathy are from Segal et al. (2017).	

For this study, empathy acts like a vehicle, which carries people’s emotions toward disaster-impacted communities. In other words, empathy opens a window to approach public health concerns by looking at how government agencies and nonprofit organizations perform to alleviate emotional trauma for disaster-impacted communities through a social media outlet like Twitter.

Twitter Use and Navigation

Twitter is an online news and social networking service, which allows registered individual users or group users to send and receive messages within 280 characters (i.e., tweets) in English, but other languages such as Chinese and Japanese have various word-count limits. People who post tweets to communicate or disseminate information are known as “tweeters”. Tweets can be sent and received from different devices, for instances, the web page from a

computer, the twitter application from a mobile device, or the third-party applications from a tablet. Normally, Twitter users will receive tweets notifications based on who they opt to follow. “Follow” means that users choose to watch for the updates by the “followed” accounts. For instance, if I choose to follow the Lawrence Police, I will receive updates when Lawrence Police (@LawrenceKS_PD) posts new tweets. Tweeters can set their message preference as the “person-to-person” mode, a “private-message” mode, which only allows designated users to see the message or tweeters can set their message preference to the “person-to-world” mode, a public-message mode that allows everyone to see the posted messages (Earle et al., 2010, Waters & Jamal, 2011).

Hashtags: “#”

Hashtag is the “central coordinating mechanism for topic related activity on Twitter” (Burns et al., 2012, p7). Scott (2015) argues that hashtags contribute pragmatic functions in twitter communications. For instance, by using hashtags, tweeters can add topical layers to their tweets. Thus, the tweets with hashtags have inferential meanings to readers. It is easy for readers to retrieve certain content by searching hashtags of certain topics, e.g., #hurricaneIrma can be used for searching tweets that are related to Hurricane Irma, for example. Hashtags create “keywords” that are then searchable.

The uses of hashtags are listed below but are not limited to the following:

- Providing content retrieval.
- Constructing an online informal communicative channel.
- Providing relevant and further information via hashtags.
- Making certain tweets stand out in the large pool of tweets.

Mentions: “@”

All registered twitter users are required to name themselves beginning with a leading “@” then their identifiers. Tweeters can mention other twitter users by inserting “@someone” in a specific tweet. For instance, if the Department of Homeland Security wants to make a tweet highlighted for New York Police Department Brooklyn South, then the Department of Homeland Security would use “@NYPDBKLNSouth”, the identifier of NYPD Brooklyn South, for Twitter to function as a highlight. On the other hand, users who are mentioned by “@” will be notified through the twitter interface.

Hurricane Florence and Responders

Hurricane Florence, a major presidential declared disaster in 2018, was a category 4 hurricane (i.e., category 4 hurricanes normally sustain wind speeds between 130 to 156 miles per hour). The determination of hurricane category is based on the Staffir-Simpson Hurricane Wind Scale (1971). National Hurricane Center states for a category 4 hurricane, catastrophic damage will occur: major damage or removal of home roof decking and gable ends; snapped and fallen trees and power poles; power outages lasting for weeks or possibly months; and uninhabitable areas for weeks or months (Glossary of NHC Terms, n.d.).

According to the Hurricane Florence NOS Fiscal Year 2018 in Review (2019), Hurricane Florence was the first major hurricane of the 2018 Atlantic hurricane season. Florence made landfall as a Category 1 (i.e., the intensity scale of the wind speed being between 74 and 95 mph) near Wrightsville Beach in North Carolina. The damaging storm surged up to 13 feet and the storm brought up to 30 inches of rainfall. The rainfall brought by Florence produced a record flooding which was catastrophic and life-threatening. The Office for Costal Management stated

that Florence caused at least 51 deaths and became one of the deadliest and costliest hurricanes to ever impact the Carolinas (NOAA, 2019).

According to the Federal Emergency Management Agency (FEMA), an agency of the United States Department of Homeland Security, the incident period for Florence spanned from the end of September to mid-October. Depending on the geographic location and the impact of aftermath events like tornadoes and floods, the lengths of incident periods vary from county to county. Florence impacted mostly the states of North Carolina and South Carolina, and partially the states of Virginia and Georgia. A total of 34 counties in North Carolina and a total of eight counties in South Carolina are designated for the most individual assistance according to FEMA. For North Carolina, FEMA has recorded 34,634 approved individual assistance applications, 130 million dollars dedicated to individual and household programs, and 143 million dollars dedicated to public assistance. For South Carolina, there has been 5,165 approved individual assistance applications, 24 million dollars for individual and household programs, and 17 million dollars for public assistance.

Public and individual assistance are provided by various organizations from federal-level government agencies to local-level government agencies and nonprofit organizations. The federal government agencies include Corporation for National and Community Service, U.S. Department of Defense, American Red Cross, etc. Among all federal-level agencies, FEMA's mission is to help people prepare before, during and after disasters. Geographically, FEMA has divided the 50 states into ten regions. FEMA Region IV is designated to serve for the southeastern states including South Carolina, North Carolina, Alabama, Florida, Georgia, Kentucky, Mississippi, and Tennessee. The Regional Office of FEMA Region IV is located in Atlanta, Georgia. The Federal Regional Center is located in Thomasville, Georgia. With these

two command centers being located in Georgia, strong nodes of communication networks are established in the State of Georgia. Hypothetically, organizations and government agencies for disaster preparedness in Georgia may have greater impacts on information dissemination than others in South Carolina and North Carolina.

Chapter 3 Methodology

Overview Research Questions

The goal of this project is to understand tweets by government agencies, nonprofit organizations, and elected officials in the disaster context, using Hurricane Florence as a case study. After deliberately collecting sets of tweets regarding Hurricane Florence posted by government agencies, nonprofit organizations, and elected officials, content analysis and account analysis are applied for answering the following research questions:

RQ1: During Hurricane Florence, what were the major themes tweeted?

RQ2: Among these tweets, are there empathetic expressions that can be captured?

RQ3: What types of accounts (i.e., government agencies, nonprofits, and elected officials from states and cities) are more likely to express emotions and empathetic feelings towards communities impacted by Hurricane Florence?

Research Design

This study creates a measure of empathy and uses it through content analysis to systematically and objectively capture empathetic expressions in tweets. First, based on the literature of empathy and compassion, codes or instructions for how to look for empathy were generated for systematically categorizing tweets. Second, the measure was applied to collected tweets (for four organizational accounts and four elected officials' accounts). Third, adjustments and improvements were made to the measure for better accuracy in capturing emotions/empathy.

To gain a broad sense of how selected accounts use Twitter to respond to a natural disaster, four organizational accounts were chosen because they had shared tasks with FEMA for the hurricane response and recovery. Four elected officials' accounts were chosen because these officials were leaders of impacted jurisdictions.

Analytical tools, such as, content analysis and account analysis were applied to understand what themes were tweeted frequently by selected organizations, agencies, and elected officials. By comparing the frequency of each theme tweeted, I examined how organizations like government agencies, nonprofit organizations, and decision makers like elected officials value information sent out.

If the target tweets (i.e., empathetic tweets) were spotted, I would compare the number of empathetic tweets across selected accounts. This study should further the understanding of what types of Twitter users are more likely to express emotions. The following steps were taken to answer the research questions:

- 1) Choose case (Hurricane Florence).
- 2) Choose subjects – a mixed set of accounts including government agencies, nonprofit organizations, and elected officials that responded and worked through recovery of Hurricane Florence and preparation for the next hurricane. (Two county/state emergency management agencies, two nonprofit organizations partnered with FEMA in Florence preparedness and recovery, and two governors and two mayors of impacted jurisdictions).
- 3) Establish tweet themes/categories: resource information, disaster status report, emotional content, like empathy, and others. (Based on a combination of literature review for content analysis and a preliminary scan of pilot data collection for common themes.)
- 4) Put tweets into categories and explore the pattern of themes from various users' accounts.
- 5) Go back to research questions and check if they can be answered. If not, determine what needs to be improved.

For the second step in choosing Twitter users to focus on, I initially selected four organizations (i.e., FEMA Region IV, Red Cross, Harvest Hope Food Bank, and South Carolina Emergency Management Division) that had shared tasks with FEMA in the recovering process for Hurricane Florence (FEMA, 2018). Reading tweets from these four organizations made me think that only focusing on organizational accounts was not enough for understanding how different practitioners use Twitter to respond to Hurricane Florence. Then, I strategically explored other Twitter users at the city level. Specifically, I searched for a list of elected officials in different municipalities and checked whether they used Twitter to assist the Hurricane recovery process. My search for mayors was based on whether the cities were impacted by Hurricane Florence (e.g., coastal cities in North Carolina), whether the mayors of such cities or their offices actively managed Twitter accounts during Hurricane Florence, and population size. The measure of an active Twitter account was based on the number of followers, tweets, retweets and likes, etc. (Kagarise and Zavattaro, 2017). With greater numbers of tweets, retweets, likes and followers of an account, it is more likely that I can spot empathy in such account. A larger population of a city would potentially be beneficial for studying the interactions between mayors and their citizens in addition to finding emotional content in their tweets. So, I aimed at the cities with larger populations rather than those with smaller populations.

A news report on tornadoes in Tennessee (Booker, 2020) mentioned the mayor of Nashville John Cooper and Governor Bill Lee used Twitter to send supportive messages to their tornado impacted communities. Mayor John Cooper tweeted “My heart goes out to those who have lost loved ones.... Together, we will get through this and come out stronger.” Then, I investigated both governors in North Carolina and South Carolina and found that they both had

actively managed their Twitter accounts. So, I included both governors' accounts for the study. A more detailed process for selecting mayors can be found in Table 5.

Selected Accounts for Study

For selecting government agencies, nonprofit organizations, and elected officials to focus on, I covered both North Carolina and South Carolina since they were the two most impacted states by Hurricane Florence. North Carolina and South Carolina received the most recovery grants for both individual and public assistance (FEMA, 2018).

Regarding Hurricane Florence, FEMA has listed a network of partnered organizations in North and South Carolina for disaster response and post-disaster recovery. A pair of government agencies and a pair of nonprofit organizations were chosen as study targets as shown in Table 4. At the state level, the North Carolina Emergency Management and South Carolina Emergency Division were two major responders according to FEMA (2018). Taking a quick look at social media usage for both agencies at the state level, South Carolina Emergency Division has a better-established Twitter account, with more than 48 thousand followers and seven thousand tweets posted, higher retweet count and comment count (Kagarise and Zavattaro, 2017). At the regional level, FEMA Region IV was chosen because the Office of FEMA Region 4 oversees all the disaster response and recovery activities for four Florence impacted states.

Table 4. Target agencies and organizations.

Agency/Organization	Level	Type
Emergency Management (South Carolina)	State	Government
FEMA Region IV (Eight Southeastern States)	Regional	Government
Harvest Hope Food Bank (South Carolina)	Regional/Local	Nonprofit
Red Cross (Georgia)	State	Nonprofit

For nonprofit organizations, Harvest Hope Food Bank and American Red Cross were chosen not only because both organizations appear on the network of local resources of North Carolina or South Carolina (FEMA, 2018), but also both organizations had well-established Twitter accounts and stayed active in the Twitter community. To examine whether an account is well-established, I used Kagarise and Zavattaro’s measure (2017), that is, to consider the number of likes, shares, and followers, in addition to the length of time that accounts have been registered. For example, the City of Issaquah in Washington State, with 33,000 population had established accounts in seven social media platforms including Twitter (Kagarise and Zavattaro, 2017).

To broaden the research scope, I chose to focus on two accounts from mayors’ offices in North Carolina: City of Fayetteville and City of Jacksonville (Table 5). To choose among the cities impacted by Florence, first, I listed all the cities of the Inner Coastal Plain and checked the status of mayors in different municipalities on adopting Twitter as their communication tools. In this region, most cities were impacted by Hurricane Florence; city officials from Greenville and Fayetteville that have more than 100 thousand population are likely to use social media to reach broader audiences and increase opportunities for dialogue (Kagarise and Zavattaro, 2017, p. 486). Then, I checked the official websites of mayors’ offices to see if they had established social

media accounts like Twitter and Facebook. It turned out seven of eighteen mayors have used Twitter (Table 5). Only five mayors have actively used Twitter. That is, these five accounts had more than one thousand tweets posted in the past. Among all them, Fayetteville and Jacksonville were chosen for the following reasons: 1) Geographic locations are within the counties that are designated for the most individual assistance by the federal government (FEMA, 2018). 2) Both mayors' offices are actively using Twitter as a means of communication with citizens.

Table 5. Elected officials from Inner Coastal Plain, NC

City	County	Mayor	Twitter Handle	#tweets
ElizabethTown	Pasquotank	Sylvia Campbell	TownOftownNC	72
Garysburg	Northampton	Roy L. Bell	NA	NA
Greenville	Pitt	P.J. Connelly	pjconnellync	294
Goldsboro	Wayne	Chuck Allen	NA	NA
Halifax	Halifax	John White	NA	NA
Kinston	Lenoir	Don Hardy	MayorDonHardy1	5583
Maysville	Jones	A. K. Jenkins	NA	NA
RoseHill	Duplin	C. Herring, Jr.	NA	NA
SnowHill	Greene	Dennis Liles	NA	NA
Whiteville	Columbus	Terry Mann	NA	NA
Williamston	Martin	J. Whichard-Brown	NA	NA
Fayetteville	Cumberland	Mitch Colvin	CityOfFayNC	4995
Burgaw	Pender	Pete Cowan	NA	NA
Beaufort	Carteret	Rett Newton	TownofBeaufort	3279
Bayboro	Pamlico	John Gyalog	NA	NA
KittyHawk	Dare	Gary Perry	NA	NA
Jacksonville	Onslow	Sammy Phillips	COJacksonville	2430
Wilmington	New Hanover	Bill Saffo	CityofWilm	15800

Data Collection

To collect target tweets, I used ‘rtweet’ package in R developed by Kearney (2018). Using rtweet package, scholars are allowed to retrieve up to 18,000 tweets. The purpose of this study is to analyze the tweet content from accounts including government entities, nonprofit organizations and elected officials. The tool for data collection, rtweet, is capable of retrieving tweets from selected accounts. Moreover, rtweet allows me to obtain elements, such as, number of likes, retweets, hashtags, etc. These extra elements were beneficial for studying the interaction component among different Twitter users. However, I did not use these elements because the scope of this project was focused on the content.

Data collection was carried out by accessing the Application Programming Interface (API). Previous studies (Schweitzer, 2014; Niles et al., 2019) on tweets were accomplished by first obtaining data through API. For this study, data query was done by accessing certain accounts. Since Twitter is considered a public social media platform, acquired tweets were considered public data. The research data conforms with the ethics codes of social science. On the other hand, the study of data is not used for commercial purposes. The data collection process was not considered a violation against Twitter’s regulations.

Sampling

To precisely study Florence related tweets by selected organizations and elected officials, the goal was to find whether empathy exists in these accounts. From a scan of collected tweets, I noticed that most hurricane relevant responses were likely to be found during FEMA’s declared incident periods. The declared incident period is known as the time interval during which the disaster-causing incident occurs (Electronic Code of Federal Regulations, n.d.). Usually, the major disaster declaration will include declared incident periods for different regions, meaning

the declared incident periods vary based on geographical locations of disaster impacted states. During the declared incident periods, various federally funded programs will kick in to assist the disaster recovery. To narrow the searching scope down and find time-sensitive information (Kavanagh et al., 2011; Megel, 2013), I chose to focus on the tweets posted during the declared incident periods of impacted states respectively. More importantly, the declared incident periods include during and during-to-after disaster phases, which perfectly match with Houston et al.'s framework in finding information relevant to emotions and mental/behavioral health support. To accomplish that, I sampled tweets based on declared incident periods of each impacted state. For selected accounts from North Carolina, the sampling was done by matching the tweeted date with the declared incident period in North Carolina, which was from September 7 to September 29, 2018. Similarly, the sampling for accounts from South Carolina corresponded to the declared incident period in South Carolina, which was from September 8 to October 8, 2018 (FEMA, 2018).

Validity and Reliability

Ideally, the measure created will be capable of capturing all empathetic tweets in a valid and reliable manner. In order for the results to be consistent, I made sure the content analysis (coding process/instruction formation) was closely tied to the literature review on the definitions of empathy and the various forms of empathetic expressions in social science. If the measure captured empathetic tweets that met the definitions of empathy, then it means content validity was established.

Measuring the level of empathy in tweets is considered a measure of an abstract and invisible trait (Frey, 2015). The construct validity of this study reflects the level of empathy of each measured Twitter account. That is the number of empathetic tweets demonstrates how

empathetic a Twitter user is. The greater number of empathetic tweets found in a Twitter account, the more empathetic the user is.

The measure of empathy was adjusted for better accuracy in capturing empathetic expressions. More details can be found in Table 9. Segal et al.'s foundation (2017) of forms and definitions of empathy (Table 3) pioneered the way of measuring empathy. I listed four examples shown in Table 6 to demonstrate how I used the modified measure to capture empathetic expressions. The measure contained four categories of empathy, and they are emotional resilience, affective mentalizing, contextual understanding and perspective taking, and emotional resilience. For instance, the first and the fourth tweet were categorized as contextual understanding and perspective taking. The commonality of both tweets was found to focus on socially vulnerable populations, such as the homeless people and children. The third tweet categorized as affective mentalizing underlined the process of a tweeter's imagining how devastating the flood was to those victims who were impacted by the flood. Emotional resilience was considered one's ability to regulate their emotion when learning the suffering experiences due to natural disasters. The second tweet was considered an example of emotional resilience because the tweet showed how the author of the tweet mentalized people's unfortunate circumstances and transformed sorrow into encouragement. Coding tweets as being empathetic using definitions of empathy indicates construct validity.

Table 6. Examples of coding using the empathy measure

Tweets	Keywords	Category	Definitions
<p>1 No child should EVER be unsafe at school. South Carolina will have a trained, certified law enforcement officer in every school, in every county, all day, every day. That is my promise to you. https://t.co/OMGpiD9Dsp https://t.co/rMQLruXPkQ</p>	<p>Child, school, unsafe</p>	<p>Contextual Understanding & Perspective Taking</p>	<p>Understand the difficulty of socially vulnerable population.</p>
<p>2 .@NC_Governor Cooper: As North Carolinians recover from #HurricaneFlorence, I have an important message: We'll be by your side every step of the way, and we'll work diligently to keep people from being left behind.</p>	<p>By your side, every step, work diligently, left behind.</p>	<p>Emotional Resilience</p>	<p>Stabilize/regulate emotions and recover from sorrow (e.g., sadness gets transformed to encouragement).</p>
<p>3 Today I toured Nichols with Mayor Lawson Battle, Sen. Kent Williams, and other local officials. The town, devastated by Matthew, has flooded even worse from Florence. Please remember them and the rest of the Pee Dee in your prayers as they continue to suffer from this storm. https://t.co/P9UfeNvdAC</p>	<p>Even worse, devastated, prayers, suffer.</p>	<p>Affective Mentalizing</p>	<p>Understand emotions of other people.</p>
<p>4 Out with Officer Carrizales checking on our homeless citizens yesterday & today. Transitions is taking ALL citizens today 803.708.4861 at 2025 Main St. Downtown shelters also at Washington St UMC, 1401 Washington St.#HurricaneFlorence https://t.co/w2puaFzNtr</p>	<p>Homeless citizens, Shelters.</p>	<p>Contextual Understanding & Perspective Taking</p>	<p>Understand the difficulty of socially vulnerable population.</p>
<p><i>Note:</i> tweets listed here are for displaying how empathetic expressions are captured. Types and definitions of empathy are based on Segal et al.'s measure of empathy (2017).</p>			

A reliable measure means that the same results can be reproduced if the same measuring process is repeated. For measuring empathetic tweets in disaster-related tweets, same results should be generated if the same procedure is carried out. To do that, I coded the content and made modification to the measure. Then I coded the content again. It was through this process that I began to see issues with the existing measures.

Relying solely on literatures of empathy and its definitions did not make a robust measure. I found a number of tweets could not be matched with the definitions in the measure. For instance, an encouraging message could not be categorized as an empathetic message. However, to post an encouraging tweet, the tweeter had to go through the process of mentalizing the pain of victims so that the emotion was translated from empathy to encouragement. By definition, mentalizing the pain is an empathetic behavior (Segal et al., 2017). Hence, I added a category named “emotional resilience” to the measure and coded the content for the second round. After modifying the measure, the measure became more inclusive in capturing Hurricane Florence-relevant empathetic expressions. Then I set the measure aside for a while and coded for a third time. The results demonstrated the reliability of the modified measure. More than 95% to check if the modified measure is reliable, meaning that same results were generated as I coded the second and third time.

Chapter 4 Findings

A Content Analysis on Government Agencies, Nonprofits, and Elected Officials.

For this study, I analyzed 1,518 tweets by two government agencies, two mayors' and two governors' offices, and two nonprofit organizations. The research questions of this study include:

RQ1: During Hurricane Florence, what were the major themes tweeted?

RQ2: Among these tweets, are there empathetic expressions that can be captured?

RQ3: What types of accounts (i.e., government agencies, nonprofits, and elected officials from states and cities) are more likely to express emotions and empathetic feelings towards communities impacted by Hurricane Florence?

To answer these questions, I conducted content analysis on targeted tweets. Specifically, the analysis consisted two phases: first, I categorized all tweets in four general themes based on previous studies of how organizations and individuals use social media during natural disasters (Houston et al., 2014; Niles et al., 2019). Second, I zoomed in to one category in phase 1 coding outcomes and tested my measure of empathy.

Disaster communication researchers (Houston et al., 2014) demonstrate that community organizations and individuals use social media to exchange information based on different disaster phases, such as, before, during, and after a disaster (Table 1). After reading all tweets for the first time, I noticed that most tweets can be matched with the content of Houston et al.'s framework. Before Hurricane Florence, the majority of messages were relevant to disaster preparedness, warnings and signaling. During the hurricane, information patterns were more centered around disaster response and recovery. Tweets, for instance, were used to spread information on road conditions, weather reports, and assistant hotlines. At the same time,

organizations like the Red Cross may send out messages to recruit volunteers and collect donations. Additionally, a number of tweets were posted to raise awareness of the service, donations and sacrifices of those who have assisted the recovery process. I create a theme called “Awareness and acknowledgement” to designate these tweets of appreciation.

Houston et al. (2014) confirm that there exists content relevant to mental/behavior health support and emotions and good wishes during a disaster. This made me sure that empathy can be captured for the second-phase coding. In this case, I named a theme “emotion and concerns” to capture all tweets relevant to emotions, good wishes, and mental/behavior health support.

With the goal of capturing empathetic expressions, I found the four themes to be useful for the first-phase coding. These themes included disaster preparedness, disaster status report and response, awareness and acknowledgement, and emotion and concerns. These four themes covered about 90% of tweets analyzed. Tweets that couldn’t be coded under these four themes, I put them under “others” category (Table 7).

Table 7. Categories of Tweets

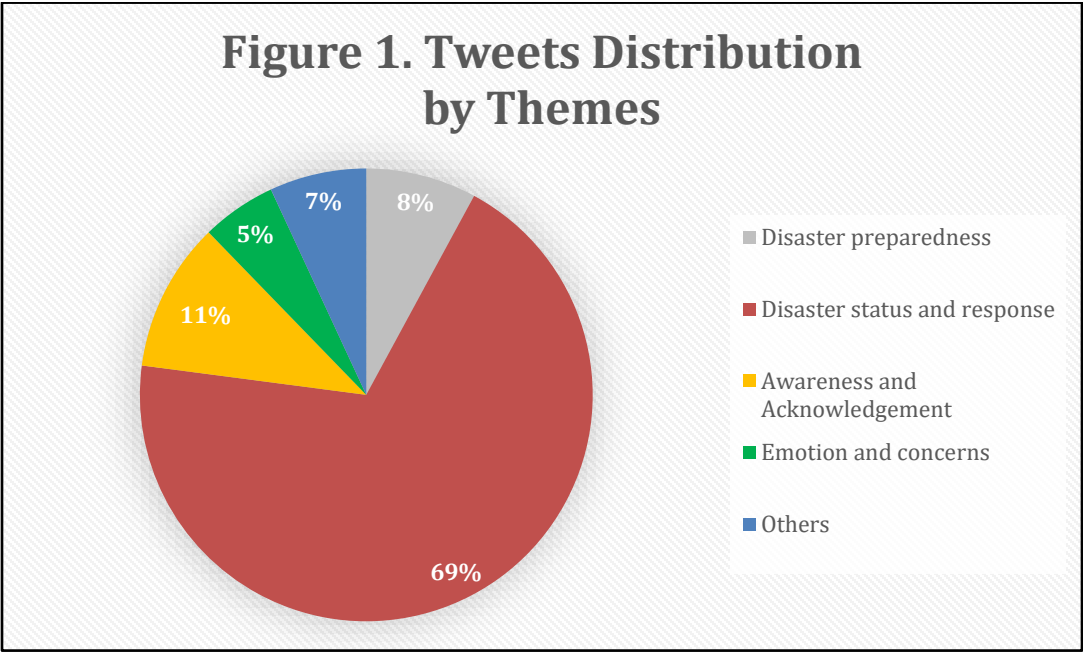
Themes	# of Tweets	Percentage
Disaster preparedness	120	7.91%
Disaster status and response	1050	69.17%
Awareness and acknowledgement	162	10.67%
Emotion and concerns	81	5.34%
Others	105	6.92%
Total	1518	100.00%

However, four themes could not cover all tweets. There was 6.9% (105/1518) of tweets that fell outside of these four themes. These tweets were classified as “others”. These “others” tweets included, information of other disaster events like hurricane Michael and earthquakes, unrecognizable symbols, standalone links, direct messages to someone who asked questions, retweets of useful links, non-English messages, job information, etc.

In the second phase, I paid close attention to the 81 tweets, the 5.3% of the overall collected tweets that are categorized as “Emotions and Concerns”. I applied the empathy measurement framework established in the literature review section (Table 2).

Phase 1 Results – The General Themes

Coding all tweets based on the four generalized social media disaster themes, yielded the following results (Figure 1), RQ1 can be answered: the most frequently tweeted theme is *disaster status and response*, and this theme covered about 69% of tweets. Messages such as road assistance, weather reports, evacuation route directing, food supply location notice, non-sentimental warnings were found in this theme. Although, a tweet may contain more than one theme. For instance, on September 25th, SCEMD (South Carolina Emergency Management Division) tweeted “Cleaning up after a flood? Wear rubber boots, rubber gloves, & goggles to avoid contact with floodwaters. Afterwards, wash your cleanup clothes separate from uncontaminated clothing in hot water & detergent. Learn more: <https://t.co/Wik1XdJ303> #Florence <https://t.co/nOeeRHtr4K>.” This tweet provided a response to those who were looking for recommendations of cleaning up contaminated clothes after the flood. Or, this tweet offered a message for flood preparedness to those who weren’t ready to encounter a flood. This tweet was considered as both *preparedness* and *status and responses*. For this study, it is less important to make it distinguishable between disaster preparedness tweets and disaster responses tweets because the goal was to study emotional and empathetic content. Decisions about where to place tweets with dual meanings (*preparedness* versus *status and response*) were made based on the time those tweets were created. For example, if a tweet was posted during the pre-disaster period or at the beginning of the declared period, it was considered a *disaster preparedness* message (Houston et al., 2015). Otherwise, it was coded as a message for *disaster status and response*.



Specifics regarding each account and each theme were listed in Table 8. The disaster response and recovery category turned out to be the most frequently tweeted theme. Then, I started to observe variations on *preparedness* information and *awareness and acknowledgement* messages of nonprofit organizations among accounts. Harvest Hope and GA Red Cross posted more *awareness and acknowledgement* related tweets than they had in disaster *preparedness*. Nonprofit organizations tweeted to express appreciations to donors and volunteers, which was seen as a way to strengthen the partnerships within their networks in addition to raise awareness of the contribution of their partnering organizations or individuals (Eyrich et al., 2008; Waters et al., 2009).

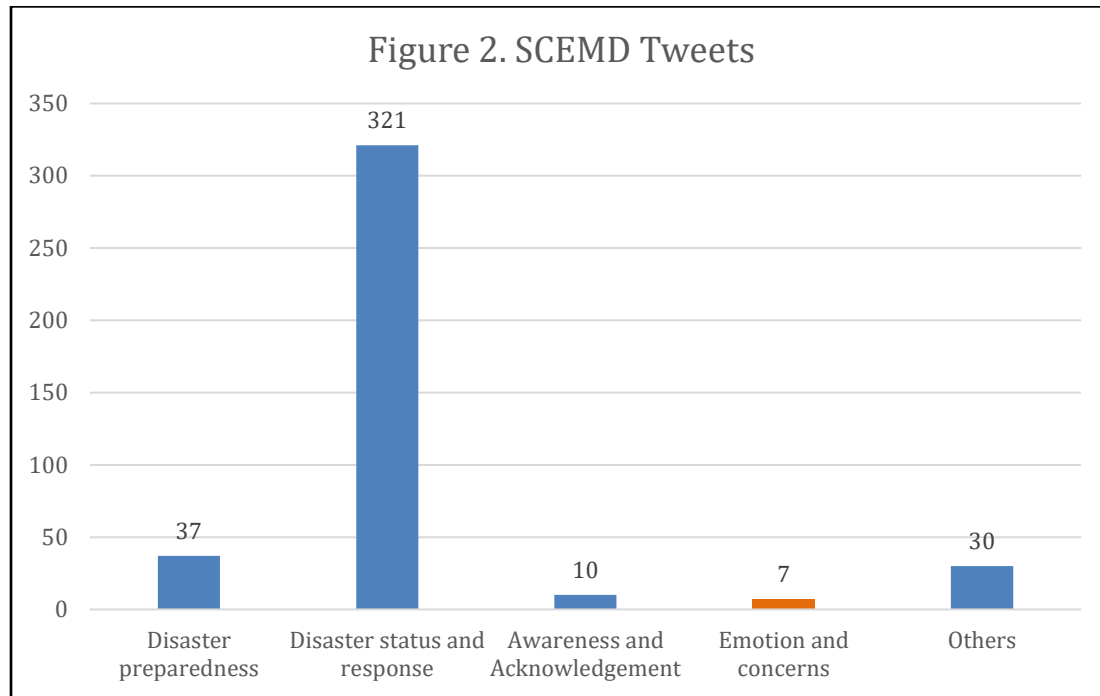
Table 8. Tweet distribution by themes

Twitter Account Name	Entity	Disaster preparedness	Disaster status and response	Awareness	Emotion and concerns	Others	Total
SCEMD	SC Emergency Division	38	335	11	7	14	405
femaregion4	FEMA Region IV	25	124	5	0	13	167
GARedCross	Georgia Red Cross	7	48	56	2	2	115
HarvestHopeFB	Harvest Hope Food Bank	5	51	41	5	8	110
CityOfFayNC	City of Fayetteville	6	68	1	2	5	82
COJacksonville	City of Jacksonville	8	55	0	3	3	69
NC_Gov	NC Governor Cooper	20	337	32	53	28	470
henrymcmaster	SC Governor McMaster	11	51	16	9	13	100
Total		120	1069	162	81	154	1518

Overall, five percent (81 tweets) were found to be about *emotions and concerns*. In the second phase of the study, the established empathy measure shown in Table 2 was applied to these 81 tweets to examine if they contained empathetic expressions.

Using SCEMD (South Carolina Emergency Management Division) as an example, SCEMD posted the majority of the tweets on hurricane *status and response* (321 tweets shown in Figure 2). SCEMD posted 37 tweets on disaster *preparedness* information which ranked the second most frequently tweeted theme. For instance, on September 9, SCEMD tweeted “Charleston County Emergency Operations Center is at OPCON 3. Daily conference calls are underway and now is the time to prepare for #Florence #chs #chswx Hurricane Guide: <https://t.co/6QXFJyZde> <https://t.co/TkSfyRCck9>.” It highlighted that Charleston County Emergency Operations Center was getting ready to assist local residents with disaster updates and recovery. Additionally, the tweet used hashtags, such as #Florence, #chs, and #chswx, to

make the tweets more visible to users who are searching for information regarding Hurricane Florence, Charleston County, or Charleston County weather forecast. Seven tweets were categorized as *emotion and concerns*. These seven tweets were part of the 81 tweets measured in phase two.



Phase 2 Results – Refining the Empathy Measure

In phase one, 81 tweets were identified as *emotion and concerns*. In the second phase, I focused on whether these 81 tweets contain empathetic expressions. To do that, I first used the established measure (Table 2) and content analyzed these tweets. The measure incorporates the definitions and components of empathy found in the literature. I used the measure to match with keywords in each tweet if these keywords reflected the meaning of empathy.

For instance, if I see a tweet mentioning “homeless people need help”, then I would categorize it as an empathetic tweet, because it demonstrates the author’s ability to understand the difficulty of certain socially vulnerable populations. It is empathetic by definition for

someone to realize the economic well-beings of certain groups (*contextual understanding of systemic barriers*).

However, based on the first-round content analysis, no tweet was found to match the *affective response* category in Table 2. By definition, affective response is evoked when the neurological pathways in our brain receives stimulus based on another people's experience (Segal et al. 2017). Emotional responses were understood as depicting one's feelings caused by unfortunate circumstances of others. The expressions of affective response include unconsciously mirroring others' behaviors, such as, crying or smiling. In tweets, it is hard to find tweeters that post such explicit feelings or their physiological responses. I dropped affective response because I did not spot expressions to match the definitions of affective response. However, words such as "devastating", "deeply wounded", and "monster storm" were found in tweets by different tweeters. These words were expressions of tweeters feelings or understandings of Hurricane Florence. For instance, a "monster storm" depicts the tweeter's understanding of how brutal the hurricane was to those impacted residents. These descriptions match the definition of *affective mentalizing*. That is, when exposed to unfortunate circumstances of others, we are likely to develop perceptions of another people's experience. When this occurs, we imagine or mentalize ourselves potentially experiencing the event as it is occurring to us.

I split *macro self-other awareness and perspective taking* into two parts. I merged the first part, the *macro self-other awareness* with *affective mentalizing* because when reading the tweets, the difference between being aware of others and mentalizing what another peoples' experience is negligible. Both terms refer to understanding other people's various circumstances as one's own. Then, I added the second part, *perspective taking*, to *contextual understanding*, because I observed tweets mentioning socially vulnerable populations by taking the perspectives

of these vulnerable people, such as the author of such tweet would imagine Hurricane Florence made it impossible for kids to go to school. In another word, understanding contextual differences requires perspective taking.

Emotion regulation describes the ability which helps us move through affective and cognitive processes. An example would be when one's mentalizing another's unfortunate circumstance while maintaining one's own state of mind rather than being overwhelmed or swept into another's emotions. Reading tweets about Hurricane Florence made me realize tweeters not only maintained their emotions from being overwhelmingly affected, but also spreading encouraging messages to cheer people up. This type of reaction, which is founded on but beyond emotion regulation, is unique in disaster communication. I call it *emotional resilience* and made it a part of the measure.

The adjusted measure (Table 9) was applied again to better capture empathy in tweets of Hurricane Florence. In the second-round content analysis, I looked for each of these components and placed emotion tweets into these three categories when the tweets met the definitions.

Table 9. Refined Measure of Empathy

Forms of Empathy	Content	Targeted groups
Affective Mentalizing	In addition to feeling for others, it helps understand others. Examples: being able to describe other’s feelings; mourn for other’s loss; send prayers, etc.	Any individual that was impacted by the disaster
Emotional Resilience	Emotional stability and resilience: from understanding other’s emotions to sustaining own emotions, or even to encouraging other people.	Any individual that was impacted by the disaster
Contextual Understanding and Perspective Taking	Understanding various social differences including economic well-being, racial differences, discrimination and barriers, political orientation, age differences, etc.	Vulnerable populations: children, elderly, low-income, etc.
Other	Cannot be included in categories above	To be determined
<i>Note.</i> Forms of empathy are based on Segal et al.’s measure of empathy (2017). Content of empathy was tailored to suit the disaster context.		

Tweets placed in the *affective mentalizing category* showed feeling(s) and the understanding of other’s suffering. For instance, Governor Henry McMaster from South Carolina (@henrymcmaster) posted a retweet on October 13 “This is simply devastating news from Florence. The selfless acts of bravery from the men and women in law enforcement is real, just like the power of prayer is real. (1/2).” The word “devastating” showed how Governor Henry McMaster felt for hurricane impacted witnesses. The second part of the tweet emphasized how McMaster mentalized those brave men and women helped with the recovery selflessly. More details can be found in the appendix.

Affective mentalizing involves people who have passed the affective responding phase and start to understand the feelings of those impacted by hurricanes. Words like “mourn” and “prayers” appeared in tweets are considered *affective mentalizing*.

Emotional resilience was reflected by reading how Twitter users transformed their emotion regulation to a sense of encouragement. Such tweets include keywords like “in this together”, “stay strong”, “get back on the feet”, etc. For instance, a tweet from the governor of North Carolina on September 18 demonstrated emotional resilience by offering an encouraging message “I do know that we will bounce back, and that this community will recover. I know the kind of people who live here, and I know North Carolinians want to help.” - Gov. Cooper. <https://t.co/RNq1iT7MA1>.”

Contextual understanding and perspective taking highlights the understanding of systemic barriers that requires one to think of social differences in social classes, economic well-beings, and racial identities. In a natural disaster context, the socially vulnerable population is more vulnerable due to the fact of lacking resources to recover. If one conceptualized what a hurricane looks like, or what impact a hurricane would bring, it would make sense that socially vulnerable populations could demand more care and empathy. I spotted keywords, such as “homeless citizens” and “kids” in tweets. One example was found in Harvest Hope Local Bank’s account on September, 29, “Some families are now left homeless after flooding from #Florence has destroyed their homes. What does this mean for those kids that are wanting to go back to school? Here's some useful information that might help your family rebuild and get back into the swing of things @WLTX <https://t.co/qWtyqpBGRm>.”

Measuring the total of 81 tweets by coding them into three categories of empathy, RQ2 is answered in that most emotional tweets, 67 of 81, turned out to be empathetic tweets. The

detailed measurement can be found in the appendix. The 14 non-empathetic tweets included concerning and warning messages, such as, governor Henry McMaster’s tweet on September 21 “I know we sound redundant, but it bears repeating: Turn around, don't drown! #Florence #PalmettoStrong #TeamSC #Sctweets <https://t.co/mSVqjajMwz>.”

To answer RQ3, what type of account(s) were more likely to post empathetic tweets, a contingency table (Table 10) was created with the following variables:

Government agencies = SCEMD, FEMA Region IV

Nonprofits = GA Red Cross, Harvest Hope

Elected officials City = City of Fayetteville, County of Jacksonville

Elected officials State = NC Governor, SC Governor

Elected officials from the state level (i.e., governors) were found most empathetic in their tweets. Nonprofit organizations, local elected officials and government agencies only posted a few empathetic tweets during Hurricane Florence.

Table 10. Distribution of empathetic tweets.

Account Type	#Empathy	#Non-Empathy	Total
Government agencies	3	4	7
Nonprofits	7	0	7
Elected officials state	55	7	62
Elected officials local	2	3	5
Total	67	14	81

Additionally, a chi square test was conducted to check if there was a relationship between the percentage of tweets that were empathetic and type of account. The null hypothesis was that there is no relationship between type of accounts and the percentage of tweets that were empathetic. The alternative hypothesis was that there is a relationship between the percentage of

tweets that were empathetic and type of account. The chi square analysis did find a significant relationship, chi square (3) = 17.181, $p \leq 0.001$. Follow-up analyses found that this relationship is due to the much greater percentage of tweets that were empathetic from Elected State Officials (89%) compared to Government Agencies (43%, $p = .001$) and Elected Local Officials (40%, $p = .02$)

Table 11. Pairwise Chi-square Tests

	Comparison	<i>p</i>
1	Government Agencies to Elected State Officials	0.001
2	Elected State Officials to Elected Local Officials	0.02
3	Government Agencies to Nonprofits	0.08
4	Nonprofits to Elected Local Officials	0.09
5	Nonprofits to Elected State Officials	0.78
6	Government Agencies to Elected Local Officials	1.00

State elected officials in the sample were much more likely to reflect empathy in their tweets. In terms of in which disaster phase(s) empathetic tweets were most likely spotted, the answer is during- and post-disaster, based on tweets of the governor of North Carolina, which consisted of the majority of empathetic tweets (51/67).

Chapter 5 Conclusion

Challenges and Limitations

There are several challenges to this study. First, the major research targets are text-based tweets. Content such as images, URL links, emojis, were not included in the study. Second, the language used on Twitter was contextual and personalized. Views of each individual tweet may vary from account to account, which means a researcher may not understand the tweets in the exact same way as those who originally tweeted the tweet. Third, only those tweets in English were analyzed in this study. Tweets in Spanish or other languages were excluded. Fourth, researched tweets are only representative for a limited portion of population who may be concerned about the disasters. It does not serve the purpose of speaking for the general public.

Implications

The value of investigating how selected accounts express empathy through Twitter reflects how government agencies, elected officials and nonprofit organizations respond to answer citizens' emotional demands. Being able to tell how empathetic Twitter users are for a certain disaster, we can learn what types of organizations or elected officials are more engaged in the post-disaster recovery process. Furthermore, questions can be explored to include if a community could maintain a higher level of compassion for a disaster, would it be more resilient to foreseeable future disasters? Would communities who are able to maintain high levels of empathy be more prone to implementing rebuilding policies that get people and structures out of harm's way for the long term?

The growing number of social media users makes it possible for planners to rethink about public engagement through social media platforms. Applying social media tools like Twitter will

broaden the scope of audiences. It is easier and faster to deliver care and support virtually to communities when needed.

On the other hand, learning from social media data enables planners to access various forms of social networks based on how interactions take place among citizens, community leaders and nonprofit sectors. Future studies can focus on which accounts are more influential during post-disaster recovery process. How to better manage social media to maximize the potential of public engagement in government settings.

More in-depth analysis can be done for specific users. For now, this study investigated the possibility of developing a framework to find empathy in social media. As a planner, my goal is to determine what content could improve planning outcomes and best aid in disaster relief.

Conclusion

Studying tweets from community leaders including elected officials, government agencies, and nonprofit organizations enabled me to test the measure of empathy I created. Results showed most tweets were posted to inform the disaster response and recovery process. Among studied accounts, although less than five percent (67/1,518) of tweets were found to be empathetic, the proportion of these empathetic tweets vary largely from one account to another. For instance, the majority of empathetic tweets (51/67) belonged to the governor of North Carolina. However, this does not tell the whole story. Only seven of 18 mayors (Table 5) chose to use Twitter to communicate with their citizens, and only five of them used social media actively. This lack of local government officials' using Twitter should also be considered in terms of not having enough tweets to analyze but also in regards to why there are so few at the local level.

No tweets were found to be empathetic from both FEMA Region IV's account and the Mayor's office in the City of Fayetteville. Regional offices of FEMA were mainly responsible for directing emergency response resources and providing guidance for local communities to access relief packages like financial assistance. Evidence showed a number of tweets from FEMA Region IV directly spoke to local government agencies regarding recovery information and provided timely updates on the disaster status. Maintaining only the recovery information affirms Houston et al.'s framework of social media usage under crisis (2014), which could allow local responders to locate recovery information efficiently. This led me to wonder whether other branches of FEMA offices' networks follow the same framework. Were these online networks working efficiently to supplement the collaboration among local governments informally (Johnson et al., 2013)? Or, would a network of empathetic champions bring a community together more tightly during a crisis?

Contrary to government agencies like FEMA, elected officials were more likely to provide empathy in times of crisis. There are multiple reasons for that. Elected officials (e.g., Governor McMaster from South Carolina and Governor Cooper from North Carolina) used their own Twitter accounts to send information to the public. Compared with organizational accounts like nonprofits and government agencies, personal accounts added an extra layer of caring and humanity to the communications because Twitter users (sub)consciously realize the physical person with whom they are interacting. For those elected officials who use personal accounts, I noticed that they have attuned the tone of their tweets to reflect their concern for citizens. Zavattaro et al. (2015) demonstrated that a positive tone is more likely to foster conversation and promote civic participation. In times of crisis, I imagine by communicating with care, support, and empathy, community leaders (e.g., decision makers of various organizations, mayors,

governors) will greatly strengthen the relationships between government/elected officials and citizens. More importantly, there can be higher likelihood that citizens feel more motivated to communicate their needs through social media platforms. In this case, a more interactive public engagement process shall be established.

The findings indicate that elected officials are more likely to provide empathy. This begs the question, what happens when an elected official does not show empathy, who takes up the slack? Perhaps it is for nonprofits or government agencies to perform this function when elected officials fail. This has implications for the roles of public servants, nonprofits, and elected officials. The traditional politics/administration dichotomy says that elected officials lead and public servants implement policy. Research by Johnson (2011) shows public servants redoubling their civic work when democratic institutions fail, is empathy another area where public servants take up the slack when elected officials do not perform their roles of “comforters” during a crisis? A future study can look at how empathy shown by government agencies fluctuates with the amount shown by the corresponding elected officials, or vice versa. If elected officials or nonprofits are showing empathy, then perhaps government agencies do not need to, but when empathy is not coming from other sources, is that when government agencies show empathy? Or do government agencies follow the lead of elected officials and show or not show empathy accordingly?

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Appendix

Phase 2 - Measuring 81 emotion-related tweets

Account names:

CityOfFayNC = Mayor's office - City of Fayetteville (NC)

COJacksonville = Mayor's office - City of Jacksonville (NC)

NC_Governor = Governor Roy Cooper (NC)

henrymcmaster = Governor Henry McMaster (SC)

GARedCross = Georgia Red Cross (GA)

HarvestHopeFB = Harvest Hope Foot Bank (SC)

SCEMD = South Carolina Emergency Management Division (SC)

Empathy types:

AM = Affective Mentalizing

ER = Emotional Resilience

CUPT = Contextual Understanding & Perspective Taking

Date Created	Account	Account Type	Empathy	text
9/17/18 16:15	COJacksonville	Elected Official	AM	Please be patient with long lines today. Everyone is looking for supplies, and supplies and services are low. Be kind to your neighbors. #OneCityJacksonvilleNC https://t.co/U01TtfAYqn
9/17/18 14:41	COJacksonville	Elected Official	AM	As more and more power is being restored to the area, we urge everyone to stay away from downed power lines. At this point, you will not know what is live and what isn't. Do not touch or drive over a downed line. Share with your neighbors who are busy with clean up today. https://t.co/OLugELJrjf
10/1/18 21:50	NC_Governor	Elected Official	AM	.@samhsagov has a 24/7 Disaster Distress Helpline, 1-800-985-5990. The @distressline provides crisis counseling for people experiencing emotional distress related to any disaster, including #FlorenceNC. https://t.co/aToMy8gfgA @NCEmergency #HurricaneFlorence @kodykinsley https://t.co/vV1BhvitkC
9/30/18 16:18	NC_Governor	Elected Official	AM	"We'll be by your side, every step of the way and we'll work diligently to keep people from being left behind. " - Gov. Cooper. https://t.co/0eagChebEz
9/29/18 16:32	NC_Governor	Elected Official	AM	We've got a big job ahead to help folks across Eastern North Carolina. It's going to take an effort across the board to make sure we help people get back on their feet. https://t.co/UvO1av6Y7L
9/29/18 14:45	NC_Governor	Elected Official	ER	"We've got a big job ahead, but I believe North Carolina is up to the task." - Gov. Roy Cooper. https://t.co/oyfqVXIkXL
9/28/18 20:23	NC_Governor	Elected Official	CUPT	Temporary housing and jobs, unemployment assistance, low-interest small business loans and more are now available in 28 NC counties hit hard by #Florence: https://t.co/2Y3U1UpQ7i https://t.co/JIzQ9tYp8
9/28/18 16:46	NC_Governor	Elected Official	ER	Hurricane Florence has devastated communities and hurt livelihoods. Putting people to work on recovery efforts can help North Carolinians get back on their feet while we work together to recover.- Gov. Cooper. https://t.co/5ZS9drYXZB https://t.co/fl5uceCTWA

9/28/18 12:04	NC_Governor	Elected Official	CUPT	"We've got to make sure we take care of people right now who don't have anywhere to live. " - Gov. Cooper. https://t.co/NiKXELnIWb
9/27/18 21:52	NC_Governor	Elected Official	AM	As North Carolinians pick up the pieces after #Florence, we'll work diligently to keep people from being left behind . Donating to the NC Disaster Relief Fund or volunteering can help. https://t.co/cjZidv7w7Y
9/27/18 14:53	NC_Governor	Elected Official	AM	@NCDHHS @SecMandyCohen: Stay healthy and safe during cleanup. Cleanup can be dangerous. Check your surroundings for hazards, wear protective clothing, stay hydrated and avoid floodwaters. Find out more on NCDHHS site. #FlorenceNC #RebuildNC
9/27/18 14:42	NC_Governor	Elected Official	ER	.@NC_Governor Cooper: I've asked for flexible funding to help people get help fast and get back on their feet. Despite the pain this storm has caused, I have seen North Carolinians at their finest. #FlorenceNC
9/27/18 14:41	NC_Governor	Elected Official	CUPT	.@NC_Governor Cooper: Agriculture is #1 economic driver in our state. Farmers have suffered over \$1 billion of losses. We must work together to help them recover, too. #RebuildNC
9/27/18 14:39	NC_Governor	Elected Official	CUPT	.@NC_Governor Cooper: We must rebuild our communities with a robust effort to build more resilient homes, roads, community centers, etc. We need to help NC home owners and business owners pay for flood insurance to help in the future.
9/27/18 14:36	NC_Governor	Elected Official	AM	.@NC_Governor Cooper: #HurricaneFlorence has now officially claimed 37 lives in NC. We mourn for these individuals and their families .
9/27/18 14:34	NC_Governor	Elected Official	AM	.@NC_Governor Cooper: As North Carolinians recover from #HurricaneFlorence, I have an important message: We'll be by your side every step of the way, and we'll work diligently to keep people from being left behind .
9/27/18 0:18	NC_Governor	Elected Official	ER	We're all in this together for the long haul because we're North Carolina strong and we're going to get through this . - Gov. Cooper. https://t.co/qCCACqCj7v

9/26/18 19:47	NC_Governor	Elected Official	ER	For North Carolinians working to get back on their feet after Hurricane Florence, help feeding their families will make a tremendous difference. I urge anyone who lives in hard-hit areas and needs this help to apply as soon as they can.-@NC_Governor https://t.co/x1esIAvrH9
9/24/18 19:06	NC_Governor	Elected Official	AM	.@NC_Governor Cooper: I have seen countless examples of selfless servie as I have traveled across NC in wake of #FlorenceNC; first responders, faith-based organizations, neighbors helping neighbors ; have seen unshakeable will to recover
9/24/18 0:23	NC_Governor	Elected Official	ER	Hurricane Florence has deeply wounded our state and those wounds won't fade as soon as the floodwaters recede. - Roy. https://t.co/o4x7ip7laj
9/22/18 21:01	NC_Governor	Elected Official	CUPT	Agriculture is the biggest economic driver in our state. Many farms were badly damaged during #HurricaneFlorence and we have to do everything we can to help . https://t.co/OWJmrLr07I
9/22/18 14:42	NC_Governor	Elected Official	ER	.@NC_Governor Cooper: Everywhere in the flood zones, I've seen pain, but I also see hope, selfless sacrifice and the hard work of recovery. North Carolinians are strong, and I believe we will rebuild stronger than ever . #RebuildNC #FlorenceNC
9/22/18 14:36	NC_Governor	Elected Official	CUPT	Agriculture is the biggest economic driver in our state. Many farms were badly damaged during #HurricaneFlorence and we have to do everything we can to help . https://t.co/OWJmrLr07I
9/21/18 16:09	NC_Governor	Elected Official	ER	.@NC_Governor Cooper: The damage to our state is devastating and is still occurring as we speak. But I continue to see signs of hope and resilience. Our toughness will ensure we do more than just build back. We will build back stronger than ever .
9/21/18 15:27	NC_Governor	Elected Official	AM	Gov. Cooper in Lumberton: "North Carolina is gonna be with Robeson County for the long haul." https://t.co/vkJvhKzLEe
9/20/18 20:02	NC_Governor	Elected Official	ER	When it comes to #Florence recovery, we're all in this together . https://t.co/fvsoGqh7Z5
9/20/18 11:50	NC_Governor	Elected Official	ER	"One thing I know is that North Carolinians are strong ." - Governor Cooper yesterday in Newport. https://t.co/ETV3trCN22

9/19/18 11:36	NC_Governor	Elected Official	ER	Governor Cooper in Wilmington today: "Together we can beat this thing and get through it. " https://t.co/YeFDGPSvIT
9/19/18 3:22	NC_Governor	Elected Official	ER	Governor Cooper in Wilmington today: "Together we can beat this thing and get through it. " https://t.co/YeFDGPSvIT
9/18/18 20:37	NC_Governor	Elected Official	ER	We're all in this together. https://t.co/O0SUQ4j4ZK
9/18/18 16:40	NC_Governor	Elected Official	ER	We're all in this together. https://t.co/O0SUQ4j4ZK
9/18/18 16:07	NC_Governor	Elected Official	AM	.@NC_Governor Cooper: The damage in New Bern is devastating . As distressing as this damage is, it is nice to see people of NC stepping up to help their neighbors. #FlorenceNC
9/18/18 11:40	NC_Governor	Elected Official	ER	"I do know that we will bounce back, and that this community will recover. I know the kind of people who live here, and I know North Carolinians want to help. " - Gov. Cooper. https://t.co/RNq1iT7MA1
9/18/18 2:51	NC_Governor	Elected Official	ER	"I do know that we will bounce back, and that this community will recover. I know the kind of people who live here, and I know North Carolinians want to help. " - Gov. Cooper. https://t.co/RNq1iT7MA1
9/17/18 16:35	NC_Governor	Elected Official	AM	.@NC_Governor Cooper: This is an epic storm that is still continuing; the rivers are still rising; some have not seen the worst flooding. This is a monumental disaster for NC that affects many of our people; already 17 have died, hope there is not another life lost #FlorenceNC
9/17/18 16:10	NC_Governor	Elected Official	AM	.@NC_Governor Cooper: Rivers are floodings; please don't make yourself someone who needs to be rescued. Just a few inches of water can sweep your car away. #florencenc
9/15/18 12:52	NC_Governor	Elected Official	ER	"You are the heartbeat of North Carolina safety, rescue, and recovery." https://t.co/tzeXarKcs9
9/15/18 0:34	NC_Governor	Elected Official	ER	"You are the heartbeat of North Carolina safety, rescue, and recovery." https://t.co/tzeXarKcs9

9/14/18 21:22	NC_Governor	Elected Official	CUPT	.@DirectorNCEM Mike Sprayberry: Different types of temp housing solutions are being discussed. We want to try to minimize the amount of time ppl spend in shelters , but there are going to be some ppl who have damaged homes and we will have to find housing for them.
9/14/18 15:53	NC_Governor	Elected Official	AM	This storm is going to continue its violent grind across our state for days. Be alert. To those in the storm path, if you can hear me "please stay sheltered in place. Do NOT go out into this storm. - Gov. Cooper. https://t.co/YEWgyCIJit
9/14/18 15:13	NC_Governor	Elected Official	ER	.@NC_Governor Cooper: We are expecting several more days of rain, and our focus is to get people away from immediate danger. We will then focus on helping people get their lives back together . #FlorenceNC #HurricaneFlorence #ncwx
9/14/18 15:03	NC_Governor	Elected Official	AM	.@NC_Governor Cooper: Hurricane Florence is powerful, slow and relentless. It is an uninvited brute , who doesn't want to leave. The storm surge alone has overwhelmed the city of New Bern. There have been over 100 swift water rescues there over the night. #FlorenceNC
9/13/18 22:13	NC_Governor	Elected Official	AM	.@NC_Governor: "To anyone still to take this storm seriously, let me be clear: You need to get yourself to a safe place now and stay there." #HurricaneFlorence https://t.co/Ow0qIKdTtJ https://t.co/WDD4IH6vuR
9/13/18 21:27	NC_Governor	Elected Official	AM	.@NC_Governor Cooper: I believe that we have the resources we need to meet this crisis. We know that we are in the early days and will need significant resources to help with cleanup. There are challenges ahead for cleanup and getting people back in their homes . #FlorenceNC
9/13/18 14:03	NC_Governor	Elected Official	ER	.@NC_Governor Cooper: Hurricane Florence is uninvited , but she is almost here anyway. The storm will soon be lashing our coast. Tropical storm force winds capable of destroying buildings will begin soon at the coast. Don't relax . Don't get complacent. Stay on guard.

9/13/18 11:43	NC_Governor	Elected Official	ER	Governor Cooper in Kinston today: "We want to continue to send the message that this monster of a storm is not one to ride out. https://t.co/osAmqC0IIC
9/12/18 23:53	NC_Governor	Elected Official	ER	Governor Cooper in Kinston today: "We want to continue to send the message that this monster of a storm is not one to ride out. https://t.co/osAmqC0IIC
9/12/18 12:23	NC_Governor	Elected Official	AM	.@RoyCooperNC: North Carolinians are a hardy bunch, and we've ridden out a lot of storms but this storm is different. We're telling people to obey evacuation orders. It can save your life . https://t.co/ApKwiGFdvI https://t.co/9IOI5aG1AO
9/11/18 17:58	NC_Governor	Elected Official	AM	North Carolina Gov. Cooper urges residents to obey evacuation orders. "Even if you've ridden out storms before, this one is different. Don't bet your life on riding out a monster. " https://t.co/evERQk8KMe https://t.co/qbBk838c5L
9/11/18 17:49	NC_Governor	Elected Official	AM	"Even if you've ridden out storms before, this one is different. Don't bet your life on riding out a monster. " - Governor Cooper. https://t.co/pfBA7SgaVB
9/11/18 14:43	NC_Governor	Elected Official	AM	Seventeen years ago, the course of our country was forever altered. We mourn the lives lost and we pray for strength and comfort for their loved ones. The first responders who rushed to help others represent the best of America.
9/6/18 20:32	NC_Governor	Elected Official	CUPT	It's my hope that one day supply drives like this one won't be necessary. We should do all we can to support teachers in their work and this year's School Supply Drive is a meaningful step forward. - Gov. Cooper. https://t.co/uxNYUV3UnL https://t.co/PG7M90MqbF
9/4/18 17:20	NC_Governor	Elected Official	AM	Wishing the brave men and women of Bravo Battery a safe deployment and a quick return home to their families . https://t.co/5BggTjWtqu

10/5/18 20:19	henrymcmaster	Elected Official	CUPT	No child should EVER be unsafe at school . South Carolina will have a trained, certified law enforcement officer in every school, in every county, all day, every day. That is my promise to you. https://t.co/OMGpiD9Dsp https://t.co/rMQLruXPkQ
10/4/18 13:58	henrymcmaster	Elected Official	AM	Today, I have ordered that flags across South Carolina will be lowered to half-staff as a mark of respect for the law enforcement officers who were senselessly shot in Florence yesterday. Please, take this opportunity to reflect on what their sacrifice means to you. #SCStrong
10/3/18 22:34	henrymcmaster	Elected Official	AM	Peggy and I ask that you pray for them, pray for their recovery, pray for their families, and pray for all of Florence. (2/2)
10/3/18 22:34	henrymcmaster	Elected Official	AM	This is simply devastating news from Florence. The selfless acts of bravery from the men and women in law enforcement is real, just like the power of prayer is real. (1/2)
10/3/18 16:18	henrymcmaster	Elected Official	ER	His enthusiasm is infectious, his vision bright and bold, his passion and energy transformative, and his heart as big as the horseshoe. Carolina stands taller than ever on the national and worldwide stage because of Harris Pastides.
9/23/18 1:57	henrymcmaster	Elected Official	AM	Today I toured Nichols with Mayor Lawson Battle, Sen. Kent Williams, and other local officials. The town, devastated by Matthew, has flooded even worse from Florence. Please remember them and the rest of the Pee Dee in your prayers as they continue to suffer from this storm. https://t.co/P9UfeNvdAC
9/15/18 20:27	henrymcmaster	Elected Official	AM	This sweet pup is named Callie. She came by @SCEMD today and lifted the spirits of the men and women working hard around the clock to keep South Carolina safe during Hurricane Florence. https://t.co/cuCvbaCnYa

9/16/18 16:35	GARedCross	Nonprofit Organization	ER	Whenever I get a hug and a tearful thank you it makes it all worthwhile . - ERV driver Fred Corey(L) with Bob Townley, both of NW #Georgia. Fred & Bob are driving a #RedCross Emergency Response Vehicle from Macon, GA to the Carolinas, to help those affected by #Florence. https://t.co/6vwjFhpf7n
9/16/18 15:58	GARedCross	Nonprofit Organization	ER	Whenever I get a hug and a tearful thank you it makes it all worthwhile. - ERV driver Fred Corey(L) with Bob Townley, both of NW #Georgia. Fred & Bob are driving a #RedCross Emergency Response Vehicle from Macon, GA to the Carolinas, to help those affected by #Florence. https://t.co/6vwjFhpf7n
9/29/18 0:36	HarvestHopeFB	Nonprofit Organization	CUPT	Some families are now left homeless after flooding from #Florence has destroyed their homes. What does this mean for those kids that are wanting to go back to school ? Here's some useful information that might help your family rebuild and get back into the swing of things @WLTX https://t.co/qWtyqpBGRm
9/18/18 16:02	HarvestHopeFB	Nonprofit Organization	AM	#HurricaneFlorence has moved on, but our @SCGrants is still hard at work with @SCEMD to make sure those impacted by the storm are not left without provisions . You can help, too, at https://t.co/3Zp4vN8xv4 . #SCStrong https://t.co/whmib7YYGX
9/16/18 14:05	HarvestHopeFB	Nonprofit Organization	AM	We are at our very best when we serve one another. So many families across the Carolinas are struggling , especially along our coast. Let's do all that we can to help them in this great time of need. Visit https://t.co/aQJY6qhhiM #HurricaneFlorence https://t.co/TGAWxvEWRd
9/15/18 17:03	HarvestHopeFB	Nonprofit Organization	CUPT	Out with Officer Carrizales checking on our homeless citizens yesterday & today. Transitions is taking ALL citizens today 803.708.4861 at 2025 Main St. Downtown shelters also at Washington St UMC, 1401 Washington St. #HurricaneFlorence https://t.co/w2puaFzNtr

9/14/18 17:10	HarvestHopeFB	Nonprofit Organization	ER	As #HurricaneFlorence bears down on SC, we are reminded of the strength and resilience of our people. We are always better together , and together we are #SCStrong. We need your help to help others. Please see donation list and donate here: https://t.co/5iWNgYitem . https://t.co/7gqq2g8rqN
9/16/18 20:45	SCEMD	Government Agency	AM	Folks, we understand there are concerns about property & family across NC. Due to prolonged rainfall, many rivers haven't yet crested, making for unpredictable and dangerous road conditions. Stay home, help responders work freely, don't put yourself at risk . #FlorenceNC https://t.co/8NGBXWKVFp
9/14/18 23:37	SCEMD	Government Agency	AM	Partners in Prayer : Hundreds of firefighters from Louisiana and Tennessee gathered together to pray for strength as they prepare for #HurricaneFlorence missions. https://t.co/6Xie83MMos
9/11/18 8:14	SCEMD	Government Agency	AM	It never ceases to amaze us how relatively calm it can be inside the eye of a hurricane. But don't let it fool you -- #Florence is a VERY dangerous Category 4 hurricane. Heed evacuation orders from authorities! https://t.co/SqrQiDnmKc https://t.co/eoYBnjLnuH
9/10/18 5:46	SCEMD	Government Agency	AM	Please check on others in your community to make sure they are prepared for Hurricane #Florence too. #NeighborHelpingNeighbor #sctweets #scwx https://t.co/uId2m5dw2z