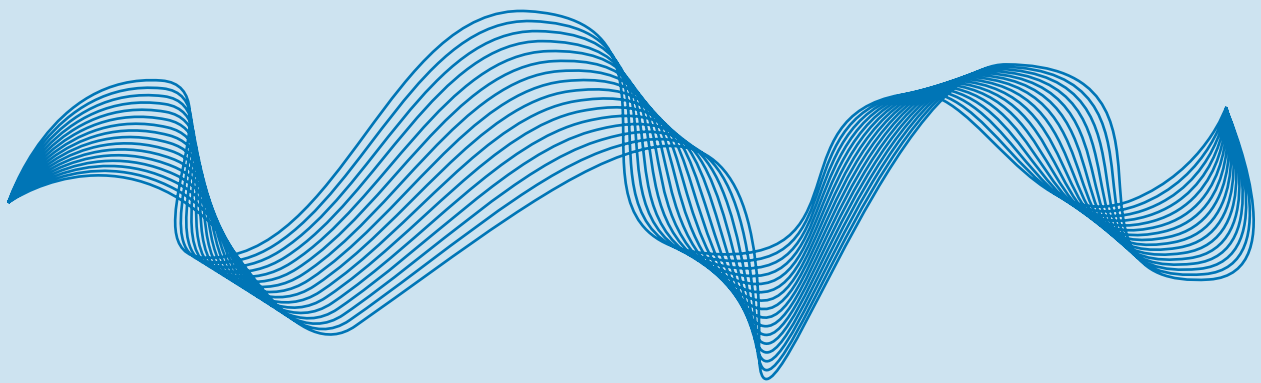# The Role of Non-profit Organizations in Assisting Marginalized Communities through Climate-induced Hazards

Year 9 Findings

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All images included in this report illustrate recent hazards impacting North Carolina and Louisiana. Photographs by Gary George and former UNC-Chapel Hill students

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Executive Summary

Federal agencies have noted the increase in hazards related to climate change, particularly wildfires, hurricanes, and flooding (DHS, 2024; FEMA, 2021; NOAA, 2021; NASA, 2021). Recent work shows that continual and repeated disruptions disproportionately harm marginalized communities.[1] Emerging evidence suggests that current disaster management systems have failed to reach marginalized communities, build trust, and accurately assess the stresses among those most in need after a hazardous event (Berke et al., 2011; Findholt, 2013), making them less likely to recover fully (Beaver et al., 2005; Davis et al., 2021). These findings suggest a need for research to inform governmental organizations on how to best communicate with marginalized communities throughout the lifespan of climate-induced hazards and, in the process, build or maintain trusting relationships.

An interdisciplinary research team at the Coastal Resilience Center at the University of North Carolina at Chapel Hill received continued funding for July 2023 to June 2024 to continue its study of the roles of non-governmental organizations (NGOs) and governmental organizations in providing unbiased support to marginalized groups before, during, and after climate-induced hazards. This team is leveraging analytic findings to develop policy recommendations to improve disaster recovery for populations most in need.

In this report, we share findings regarding how NGOs and governmental organizations support marginalized communities through a hazard, with a particular focus on communication methods. To capture this information, the research team created a database of purposefully sampled organizations to understand and assess their communication strategies and to document how they respond during events. The team also administered a survey to personnel from NGOs and local governments situated in communities impacted by hazards in order to extend previous years' research findings and assess how organizations are reaching out to the populations they serve.

[1] For this report, we define marginalized populations as BIPOC (Black, Indigenous, and People of Color) individuals from low-wealth communities, undocumented immigrants, children, women, the elderly, individuals from rural populations, and unhoused individuals. This is not a complete list, but see Davis et al., 2021 for details regarding each grouping.

Research Goals

Results from the study will assist in providing actionable steps for practitioners and communities to address inequity when providing support to marginalized populations. This report focuses on five overarching research goals:

1 Locate and categorize NGOs across the U.S. according to their orientation toward marginalized groups and exposure to climate risk.

2 Pilot an approach to identifying in real time priority NGOs in areas hit by storms and other climate hazards.

3 Examine the extent to which organizations are communicating about marginalized communities during hazards, while using social media data.

4 Expand on prior years' survey research to obtain qualitative and quantitative data on government personnel perspectives on marginalized communities.

5 Summarize the research findings, identify barriers, and provide policy recommendations based on the results.

Methods

This study is in its fourth year of application and implemented three investigatory practices. First, the team created a large database with demographic information for 5,020 NGOs nationwide. Second, the team extracted detailed demographic data and social media activity for targeted samples of NGOs (n=88) and governmental organizations (n=50) in areas affected by Tropical Storm Ophelia.[2] Lastly, the team administered a survey to personnel from NGOs and local governments situated in communities impacted by hazards in order to extend previous years' research findings and to understand how organizations communicate with communities. This plurality of methodological tools allows for the triangulation of evidence across the trajectory of the team's many years of work.

Summary of findings

The following is a summary of major themes that emerged from the database of NGOs, sample of organizations impacted by Tropical Storm Ophelia, and survey respondents from NGO and governmental organizations.

1 **Targeted NGOs tend to be located in major cities.** Sampled NGOs that targeted marginalized groups and were in disaster-prone areas were most likely to be located in major cities along the U.S. coast or centrally located in the Midwest.

2 **NGOs use social media to communicate to their communities, but not all equally.** Most commonly, NGOs communicated via a website, Facebook, and email. NGOs that served marginalized communities or were in high-risk areas—or met both of those criteria—were far less likely to have a social media presence than the comparison group of randomly sampled NGOs.

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[2] A brief and powerful extreme weather event that impacted the eastern continental U.S. and occurred during the study period in September of 2023.

3 **Based on survey responses, government personnel were far more likely than NGO personnel to rely on community leaders to distribute information to the community.** However, a reliance on community leaders may lead to prioritizing some groups or individuals over others and may result in ignoring leaders who are not readily identified as such and who may be invisible to outsiders.

> Survey respondents overwhelmingly agreed that it is vital to build and maintain relationships with marginalized communities.

4 **Building trust with community members remains vital.** As noted in previous reports, survey respondents overwhelmingly agreed that it is vital to build and maintain relationships with marginalized communities. In some cases, respondents agreed that building trust was difficult given past harms and histories of neglect. However, most respondents described using intentional programming to engage communities and build trust.

5 **NGOs and government organizations communicated differently about Tropical Storm Ophelia through social media posts.** Impacted NGOs were more likely to address issues related to, or about, marginalization on their social media accounts as compared to sampled government organizations, which were more likely to disseminate weather-related posts. Less than 5 percent of social media posts included both topics, which would show connections between weather impacts and marginalized groups.

6 **Survey responses revealed a mismatch between the need to address inequities found within the community and the lack of targeting marginalized groups for support.** Similar to trends found in Year 3, personnel overwhelmingly indicated a need to address inequities found within their communities. However, the survey showed a possible lack of prioritization of marginalized groups, given that respondents indicated they did not target such groups.

Recommended policies and practices

1 **Expand the existing database to include more NGOs.** NGOs can be classified according to the degree to which they are positioned to communicate with and assist marginalized groups through climate hazards. Data science and algorithmic techniques can help classify such organizations and point administrators toward key support infrastructure. Expanding the existing database can help government organizations to identify these vital NGOs as they support and communicate with groups impacted by hazards.

2 **Continue investigating the communication strategies of targeted NGOs.** A continued investigation is needed into how NGOs that target marginalized groups and are located in hazard-prone areas are reaching out to communities in need. It is important to uncover the reasons why NGOs are less likely than the comparison group to use social media as a form of communication.

3 **Reassess the term "community leader."** Over the years, the research team has uncovered varying and inconsistent criteria for defining a community leader. Incorrectly labeling a community leader, and subsequently funneling information to that individual, has the unintended consequence of distributing information in an inequitable way that ignores those leaders who may be invisible to outsiders.

4 **Recognize that building trust takes time and must be intentional.** While a majority of surveyed respondents agreed that their organizations work to build trust with the communities they serve, some indicated that their organization could improve on this process. Some respondents described challenges in reaching certain groups due to histories of neglect. One finding was clear: trust must be built through cultivating intentional relationships, which takes time. The trust-building process can include hiring staff with ties to the community, working collaboratively with other organizations embedded in the community, and maintaining a stable presence.

5 **Clearly establish the purpose of social media communication strategies.** When disseminating social media posts related to Tropical Storm Ophelia, government organizations were more likely than NGOs to focus on the weather. For example, government posts provided detailed information about the direction, speed, and timing of the event. The information provided was likely meaningful to those who understood meteorology or atmospheric science. However, if the purpose of these posts was to ensure a layman had access to information on how to access support throughout the event, that was not clear. Overall, posts from government organizations were less likely to mention the word "support"; the team found the word ranked 106th on government sites as compared to 5th on NGOs' postings during the same time. Continuing research should explore the usefulness of social media posts to laymen and marginalized communities.

> Continuing research should explore the usefulness of social media posts to laymen and marginalized communities.

Future direction

In this phase of the project, the team focused on creating a database that allows for real-time tracking of institutional support for marginalized communities. Social media posts from NGOs and survey responses from organizations indicated the extent to which (a) marginalized communities were the focus of preparedness and recovery efforts and (b) whether and how NGOs may serve as a bridge to connect government resources to marginalized communities. We aim to expand this work further in 2024–25 by adding organizations to our database and collecting additional information from web pages and social media accounts related to organizational responses to hazards in marginalized communities. Our ultimate goal is to include all 1.8 million NGOs in the U.S. in one system.

The research team will also conduct a content analysis on websites and social media accounts associated with organizations that were impacted by two climate-induced disasters. This process will allow the research team to understand better how organizations are communicating and addressing preparedness, response, and recovery throughout events.

Introduction

Federal agencies have noted the increase in hazards related to climate change, particularly wildfires, hurricanes, and flooding (DHS, 2024; FEMA, 2021; NOAA, 2021; NASA, 2021; EPA, 2021). Continual and repeated disruptions make full recovery especially difficult for marginalized communities. Emerging evidence suggests that current disaster management systems have failed to consistently reach marginalized communities, build trust, and accurately assess the needs among those

> There is a need for research to inform governmental organizations on how to best communicate with marginalized communities throughout the lifespan of climate-induced hazards and, in the process, build or maintain trusting relationships.

most in need after a hazardous event (Berke et al., 2011; Findholt, 2013), making them less likely to recover fully (Beaver et al., 2005; Davis et al., 2021). These findings suggest a need for research to inform governmental organizations on how to best communicate with marginalized communities throughout the lifespan of climate-induced hazards and, in the process, build or maintain trusting relationships. In this report, we share findings related to the ways in which NGOs and local government agencies communicate and offer support to marginalized communities before, during, and after an event, and the resources they call upon to do so.

Our overarching goal is to investigate how NGOs and government organizations support marginalized communities through a hazard. Additionally, this report achieves the following key objectives:

- Extends the team's previous work in identifying NGOs as key sources of support for marginalized groups
- Outlines a methodology for the measurement of NGO capacity using data science techniques
- Provides an overview of the landscape of NGOs positioned to provide hazard assistance across the United States
- Analyzes survey data and social media content to provide insight into which organizations are positioned to provide critical support through climate hazards
- Identifies barriers and provides policy recommendations based on the results of both the social media and survey analyses

Originally driven by focus groups and interviews revealing the perspectives of community members and practitioners, the first two years of this research helped identify the need for an accompanying nationwide repository of information on all NGOs that provide support to complement (or substitute for) government resources through hazards. As we document, the resources for computing and data extraction necessary for a comprehensive NGO database are beyond the scope of the current project; however, our Year 4 work lays the groundwork for a full-scale relational database and policy tool for the rapid identification of support infrastructure poised to benefit historically marginalized communities.

Our research follows the approach piloted in the previous year in beginning with a nationwide list of more than 1.8 million NGOs in the U.S. We drew information from IRS documents to extract purposive samples of organizations based on different sets of criteria. These samples allowed us to harvest detailed information on key points of contact and social media accounts for non-profits using several web-based extraction techniques. The resulting database and accompanying mapping tools are designed to allow administrators to identify sources of support for communities they have historically failed to reach due to persistent and systemic exclusion and erosion of trust (documented in the team's previous reports). Our existing database of more than 5,000 organizations will lay the foundation for building a full-scale system that identifies all 1.8 million NGOs nationwide.

In addition to creating the database of organizations, the team administered an online survey to government personnel to assess how local governments and organizations can improve their ability to provide support to marginalized groups throughout a hazard, as well as to build trust and relationships.

> The resulting database and accompanying mapping tools are designed to allow administrators to identify sources of support for communities they have historically failed to reach due to persistent and systemic exclusion and erosion of trust.

The overall purpose of the survey was to gather relevant information on best practices to reduce inequities and support marginalized groups that face hazards. While useful in documenting the voices of organizational leaders, the survey provides only a partial picture of NGO capacity available to marginalized communities.

Next, we detail our methodological approach, address our overarching research question, and outline policy recommendations based on the content analysis and survey responses. We conclude with the next steps for further research for Year 5.

Methodology

This study is in its fourth year of exploring this overarching question: How are NGOs and government organizations supporting marginalized communities through a hazard? The team applied an exploratory sequential mixed methods design to address the following five research questions:

RQ1:   Where are NGOs located?

RQ2:   What strategies are NGOs and governmental organizations using to communicate with their communities?

RQ3:   How do organizations communicate during an event?

RQ4:   How, if at all, are organizations considering marginalized populations?

RQ5:   What barriers are organizations facing through communication?

The research team implemented three investigatory practices to answer the research questions. The following section provides a breakdown of each practice used in Year Four.

First investigatory practice: Database of NGOs

The research team was interested in identifying where targeted NGOs were located and how they communicated with the communities they served. To address these questions, the team constructed a database based on organizational data from IRS form 990. This document provided detailed address information for each NGO. We then geocoded the data and created maps showing where our samples were located. We stratified our analytic sample into five discrete batches based on key characteristics of interest. All sampling units were drawn from IRS data—the most reliable list of tax-exempt organizations across the nation—comprising 1,773,510 organizations. Batch 1 (n=1000) was constructed by taking a random sample of organizations. Batch 2 (n=1050) was constructed by sampling organizations whose names include keywords that capture marginalized identities (e.g., Black, elderly, transgender, etc.). We used stratified random sampling to select 150 organizations from each of these marginalized identities to ensure even representation across groups. Batch 3 (n=1001) was constructed by taking a random sample of organizations located in zip codes with a mean National Risk Index (NRI) score of 95.00 or higher (≥95th national percentile). FEMA's NRI includes data about the expected annual losses to individual natural hazards, social vulnerability, and community resilience.

> The research team was interested in identifying where targeted NGOs were located and how they communicated with the communities they served.

The following batches represent a combination of previous groups. Batch 4 (n=439) combines the frameworks from Batches 2 and 3 by taking a random sample of non-profits whose names contain marginalized keywords AND are located in a zip code with a mean NRI score of =>95. Due to a smaller sample size, stratification was not used. Batch 5 (n=1530) also combines Batch 2 and 3 frameworks. In order to increase the sample size, we relaxed the NRI risk score to =>80. We used stratification based on marginalized keywords to provide a more even representation of marginalized groups—namely, to correct the oversampling of groups focused on children and Asian populations. We then constructed a database with a front-end Tableau[3] application to display the precise locations of NGOs along with detail on their orientation, size, and social media activity.

Finally, we augmented our Year 3 database of email contacts for non-profits using Amazon Mechanical Turk (MTurk), a crowdsourcing marketplace. MTurk workers were compensated for targeted web searches to identify the email addresses and social media URLs (i.e., Facebook, YouTube, Instagram, TikTok, and Twitter (X)) for organizations across all batches (total n=5020). Data collectors were paid to complete a search of the organization name and return available website and social media URLs. We analyzed this data to compare differences in social media use across batches. The emails were then added to our contact list for survey outreach efforts.

Second investigatory practice: Social media scraping of NGOs

Next, the research team sought to understand how organizations communicate during a climate-induced hazard. The team reviewed Facebook posts throughout Tropical Storm Ophelia to get a sense of what organizations were saying to the communities they served. Tropical Storm Ophelia was a short-lived but powerful storm that impacted the east coast of the United States in September 2023. First, we compiled a list of the zip codes in 16 cities spanning nine states that reported experiencing substantial impacts from Tropical Storm Ophelia. We then compiled a list of all organizations across our five batches located in these 16 cities. Our MTurk process allowed us to obtain data on social media profiles for a large portion of U.S. NGOs. Next, we extracted Facebook content for the organizations in our Ophelia dataset and conducted keyword counts using all the text from posts and ranked the frequency of references to specific communities. We then identified and pulled a standardized list of Ophelia- and weather-related keywords (e.g., Ophelia, tropical storm, flood, etc.) and keywords that represent marginalized communities (e.g., Hispanic, disabled, LGBTQ, etc.). We compiled all Facebook posts from the organizations that included use of at least one keyword and were posted within the time frame of the storm and subsequent recovery period: September 15 through November 30, 2023. The resulting dataset contained 167 unique social media posts (n=167). We distinguished among three distinct disaster periods; according to the date of the post, results were tagged with "preparedness" (9/15–9/21), "response" (9/22–9/26), and "recovery" (9/26–11/30).

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[3] Tableau Desktop Version 2024.1

Third investigatory practice: PAR-driven survey

Lastly, the research team was interested in collecting information from NGOs and governmental organizations on their relation to serving communities impacted by hazards, their mechanisms used to communicate to such groups, and the processes used to build and maintain trust. The research team built on the PAR-driven survey constructed in Years 2 and 3 to collect additional data from NGOs and government organizations. In Year 2, the team developed a pilot survey based on the insight from focus group participants representing NGO leadership, academics, and local government personnel. In Year 3, the team partnered with a survey validation expert, Montana Cain, Ph.D., to support the development and validation of the instrument. In Year 4, the team expanded the survey to include questions on the use of social media in disaster outreach efforts, focusing on whether respondents used social media to communicate about disasters and whether they reached marginalized groups.

The research team distributed the online survey via Qualtrics on February 11, 2024, and sent four reminders until February 28. Specific days and times were chosen for the survey rollout, such as Sundays at 3 pm EST and Wednesdays at 1 pm EST, to ideally increase our response rate. The survey was sent to 370 government representatives and 820 non-profits. We received a small sample of survey respondents from 43 government agencies and 26 non-profit organizations. We analyzed numeric response and certain categorical variables using STATA SE version 18. We also used Microsoft Excel to code open-ended responses.

Findings

RQ1: Where are NGOs located?

Our research has found that NGOs are some of the first groups to support marginalized communities in times of hazard. The support they provide is facilitated by their proximal location, access to the community, and existing relationships. Leveraging this finding, we designed a tool that located NGOs nationwide. Each map also includes concentrations of declared disasters by county to indicate potential areas with the highest need. Those with higher concentrations of need are represented by a darker hue of blue. The results are displayed by batches in Figures 1–4.

Figure 1. Batches 1–3: Sampled NGOs, including those that serve marginalized populations and are located in disaster-prone areas

Batch (n=3051)
- NGOs [1]
- Marginalized [2]
- High Risk [3]

CNTD(ld)

1   53
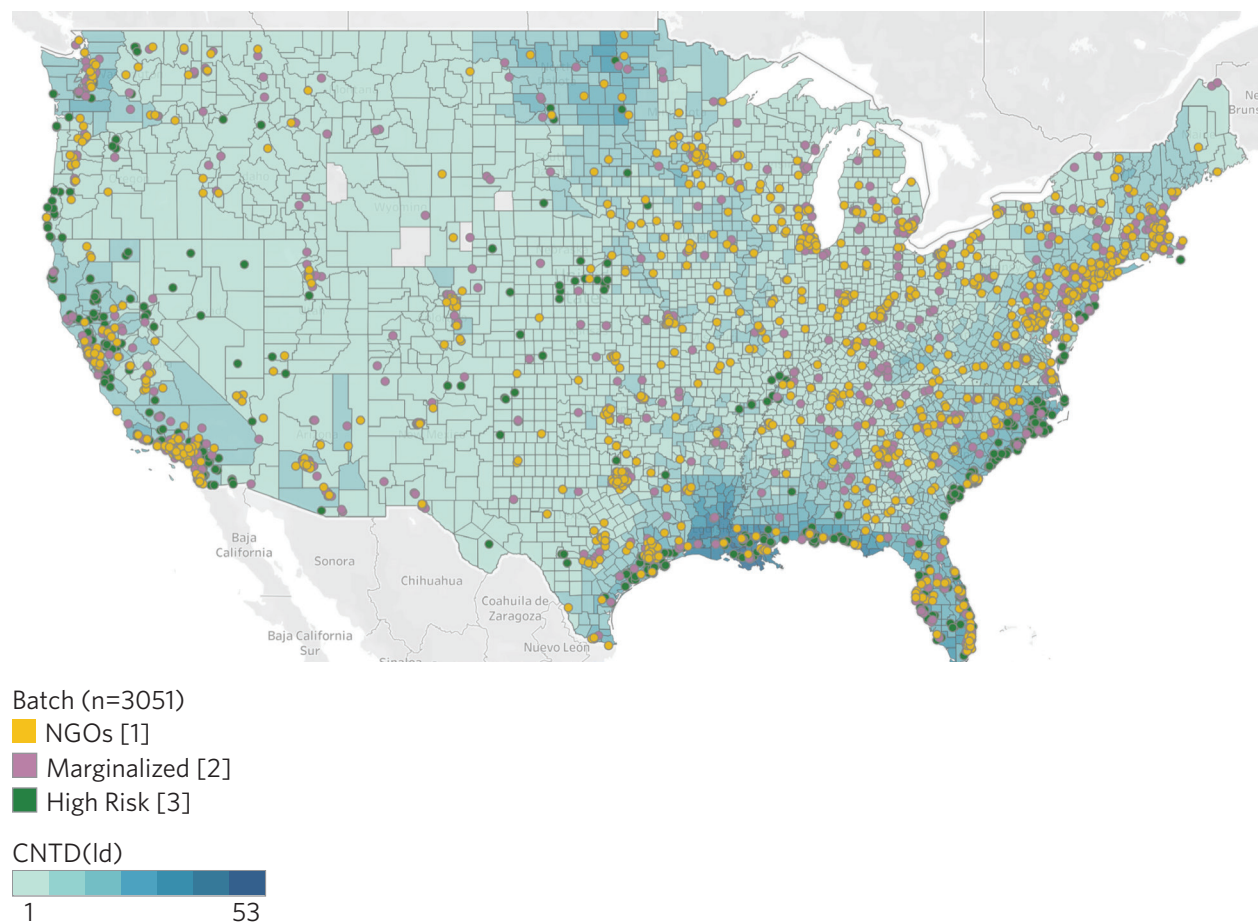
Figures 2 (Batch 4) and 3 (Batch 5) compile NGOs that target marginalized groups and are in disaster-prone areas. As indicated earlier, Batch 4 represents a smaller sample but with a mean NRI score of =>95, while Batch 5 has a larger sample but with a mean NRI score of =>80. Overall, we found that Batch 4 NGOs are concentrated primarily in major cities along the U.S. coasts, while Batch 5 NGOs are clustered along the coastline and among the central states.

Figure 2. Batch 4: Locations of NGOs that target marginalized groups and are in disaster-prone areas (smaller sample)

Batch (n=439)
■ Risk & Marginalized [4]

CNTD(ld)
1   53
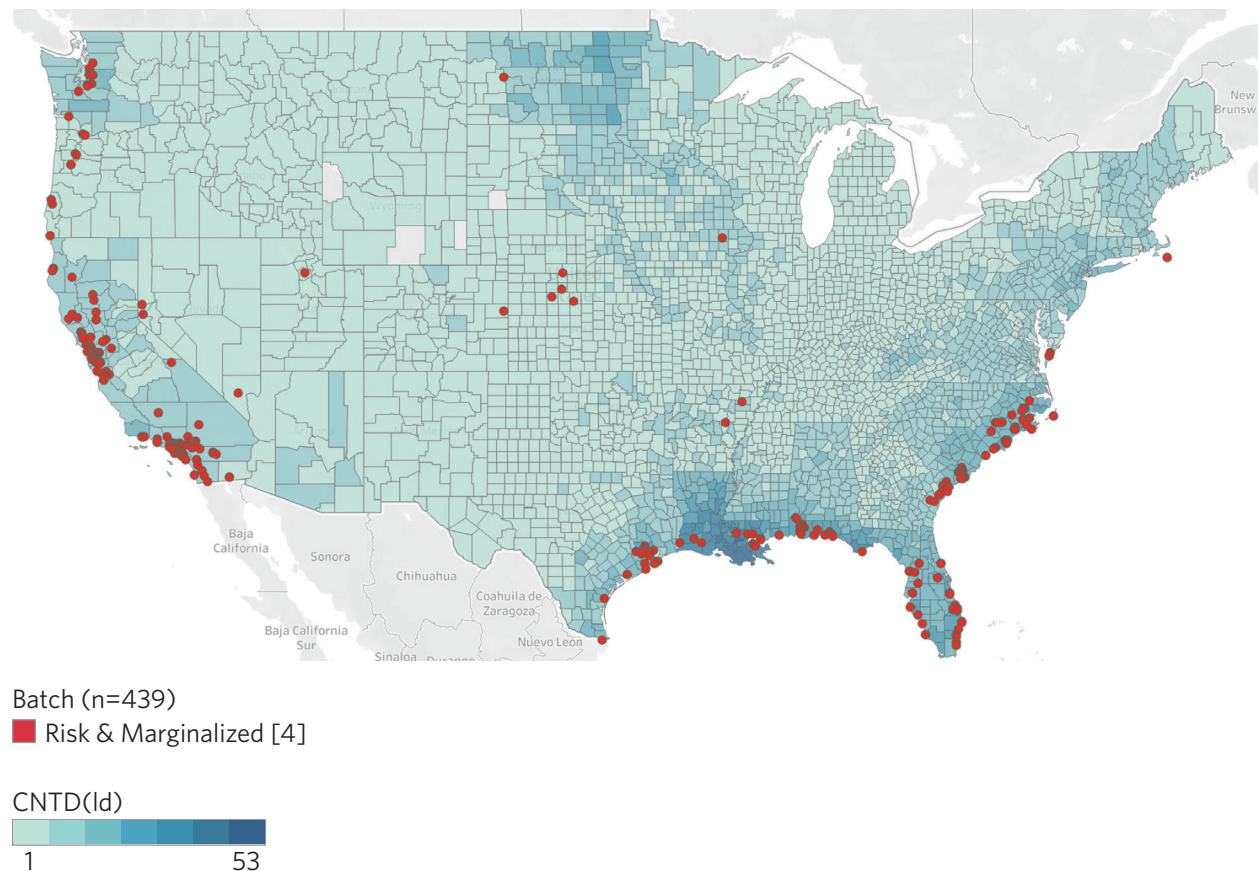
Figure 3. Batch 5: Locations of NGOs that target marginalized groups and are in disaster-prone areas (larger sample)
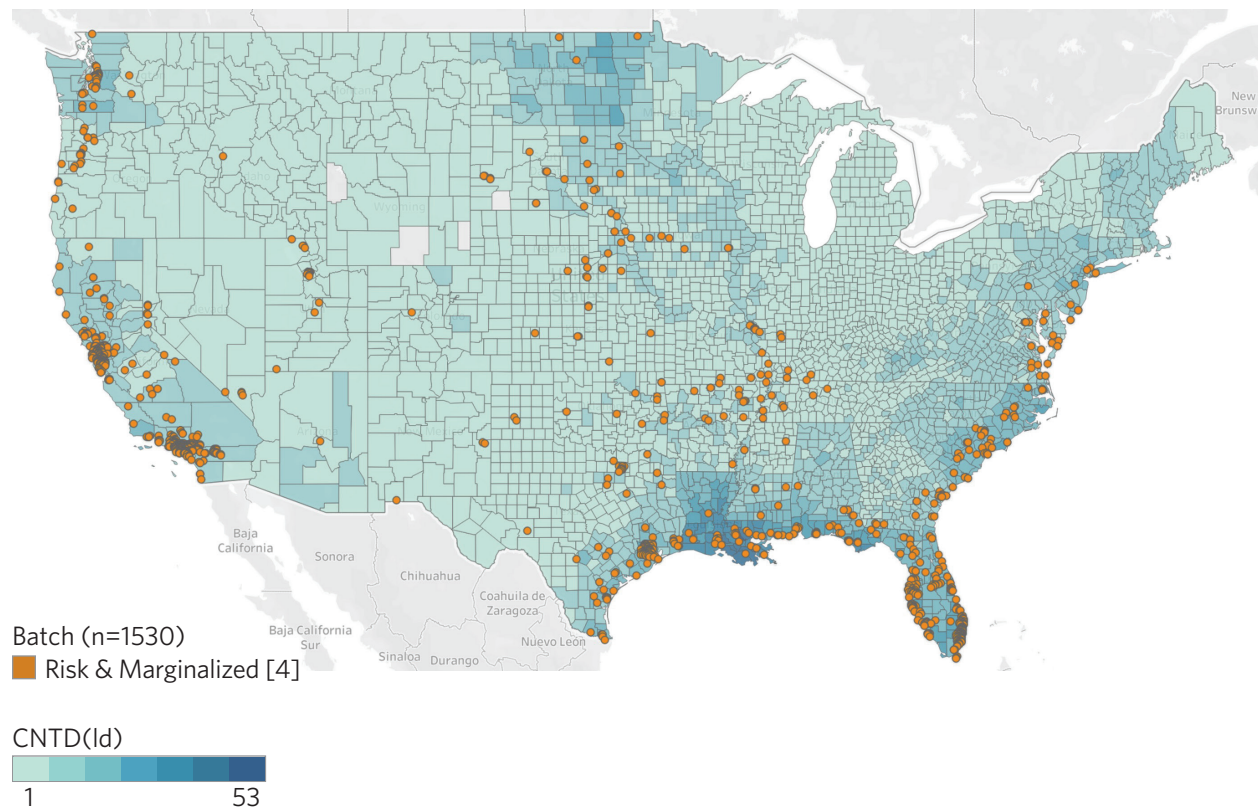
Batch (n=1530)
■ Risk & Marginalized [4]

CNTD(ld)

1   53

RQ2: What strategies are NGOs and governmental organizations using to communicate with their communities?

Figure 4 illustrates the various types of digital platforms used by NGOs to communicate with community members. For all batches, websites, Facebook, and email were the most common platforms organizations used to communicate. TikTok, YouTube, and LinkedIn were far less popular mechanisms. NGOs that target marginalized groups (Batch 2), operate in high-risk areas (Batch 3), or both (Batch 4 and 5) consistently had a lower social media presence than our comparison group of a random sample of NGOs (Batch 1). This finding shows that NGOs that work with marginalized groups and in high-risk zones may be less equipped to reach groups via their social media accounts during an event; they may use alternative methods, outside of social media, to connect with their audiences.

Websites, Facebook, and email were the most common platforms organizations used to communicate. TikTok, YouTube, and LinkedIn were far less popular.

Figure 4. Digital platforms used by NGOs for communication

Bar chart showing digital platforms used by NGOs across five batches:

Platform	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5
Website	96%	98%	76%	90%	89%
Facebook	46%	26%	38%	22%	20%
Email	36%	23%	9%	11%	11%
Instagram	29%	14%	9%	10%	8%
Twitter	25%	13%	6%	8%	6%
Linkedin	18%	11%	6%	8%	7%
YouTube	18%	10%	7%	7%	0%
Tiktok	2%	0%	1%	0%	1%
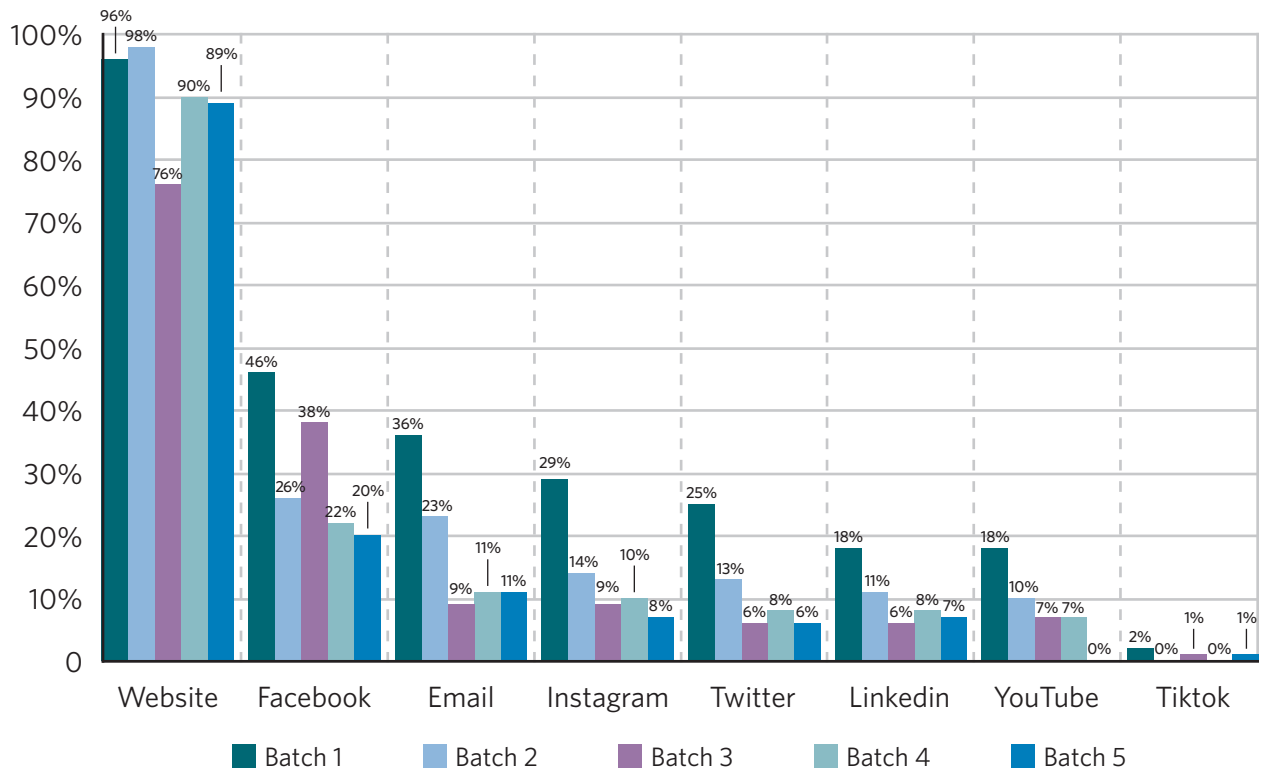
In Figure 4, our findings show that large proportions of NGOs sampled from IRS data use websites and many also use social media. However, this does not necessarily indicate that they use these tools to serve communities. Our survey therefore asked, "How does your organization ensure that important information reaches the people it serves?" Survey respondents cited social media, electronic materials (e.g., newsletters), and printed materials as the most commonly used tactics (Table 1). Government officials were more likely to share information through community leaders as compared to their NGO peers. Survey respondents also described "Other" as including indigenous friendships, billboards, telephones, alerting systems, mass notifications, and disaster recovery groups.

Table 1. Strategies for distributing information by organization type

	Non-profit	Government	Total
Social media (e.g., Facebook, Twitter, etc.)	14	37	**51**
Electronic materials (e.g., flyers, newsletters, memos, etc.)	13	35	**48**
Printed materials (e.g., flyers, newsletters, memos, etc.)	12	34	**46**
Through community members	12	27	**39**
Through community leaders	9	32	**41**
Sharing at informal community events such as block parties	9	22	**31**
Through other organizations	9	28	**37**
Through elected officials	5	33	**38**
Sharing at formal community events such as public hearings	8	24	**32**
Newspaper or other print media (e.g., magazines)	7	27	**34**
Radio announcements	6	19	**25**
Television announcements	4	19	**23**
Other (please specify)	1	6	**7**

Building trust is a critical ingredient for fostering relationships between groups, especially between organizations and marginalized groups. Given this, our analysis focused on the nuances with which respondents spoke about the importance of building trust. The vast majority of survey respondents (94.9 percent) indicated that their organization works to build trust within the communities they serve. Individual responses about relationships with their targeted communities included the following language: "trusted and strong relationships," "good relationship," "good support," "great working relationship," and a belief "in long-term relationships."

> An overwhelming number of survey respondents indicated that their organization works to build trust within the communities they serve.

Although most survey respondents agreed that trust was a valuable mechanism used within their organizations, some observed that they could do a better job at building trust with community members. One respondent aspired to do more in reaching families. Another commented on the challenges in reaching those members who have faced histories of neglect: "My biggest challenge is with my smaller communities in the county. They have felt abandoned for so long that I am working on letting them know they matter too."

Throughout the survey responses, individuals remarked on how they work to build trust with the communities they serve. Respondents included the following examples: exhibiting consistency and honesty, being a stable presence at community events, hiring staff that reflect the communities they serve, working with organizations that have strong ties to the community, and providing "community-embedded programs." Overall, respondents agreed that building trust was vital and that they needed to actively work on it through constantly reaching out and supporting the communities that they serve.

RQ3: How do organizations communicate during an event?

The research team reviewed Facebook posts throughout Tropical Storm Ophelia to assess how organizations communicate to their communities. Table 2 provides a breakdown of the five most common terms across NGO and government Facebook posts collected throughout Tropical Storm Ophelia. "Veterans" is ranked as the second most common term among both groups; this prevalence is likely due to the fact that the postings occurred around and on Veterans Day. This timing also helps to explain the presence of terms such as "national," "American," and "government."

Table 2. Ranking the Most Frequent Terms in NGO and Government Posts

Rank	NGO		Government	
	Term	***n***	**Term**	***n***
1	Community	56	Expected	193
2	Veterans	56	Veterans	177
3	National	51	Community	163
4	American	41	Government	110
5	Support	34	Children	105

We searched for specific key terms to assess their frequency on posts. This process allowed us to assess their popularity and helped to eliminate common terms associated with Veterans Day. The team measured the frequency with which posts invoked the terms "equity" and "vulnerable." "Equity" was ranked 158th and showed up six times among NGO posts as compared to being ranked 6,454th and showing up once on a government post. "Vulnerable" was ranked 434th and showed up 12 times on government posts and did not show up at all on NGO posts. This disparity is likely due to a difference in discourse around topics related to marginalization and vulnerability.

Next, we conducted a content analysis of NGO and government social media posts to determine how they communicate to their communities through a hazard. As described above, social media posts were categorized as *weather* if the post contained keyword(s) only from the *weather-related* list, *marginalized* if the post contained keyword(s) only from the *marginalized* list, and *both* if the post contained keywords from both the *weather* and *marginalized* lists.

Table 3 illustrates a substantial difference in social media content between NGO and governmental posts. For our sampled NGOs impacted by Tropical Storm Ophelia, 75.9 percent of posts contained only *marginalized* keywords, 19.3 percent contained only *weather* keywords, and 4.8 percent contained *both* types of keywords. In contrast, for sampled governmental organizations impacted by Ophelia, 29.4 percent of posts contained only *marginalized* keywords, 52.8 percent contained only *weather* keywords, and 3% contained *both* keywords.

These results suggest that the sampled NGOs focused their social media communications more heavily on topics related to or about marginalized communities, with over three-quarters of their posts containing keywords associated with marginalization. Government accounts, on the other hand, emphasized weather-related information in their posts, with over half containing weather-related keywords. Notably, for both types of accounts, only a small percentage of posts (under 5 percent) contained keywords from both the *weather* and *marginalized* lists, indicating that most posts tended to focus on one category or the other rather than drawing connections between weather impacts and marginalized groups.

Table 3. Comparing Facebook posts between sampled NGOs and government agencies

Dataset	Ophelia – NGO		Ophelia – Government	
	n	%	*n*	%
Marginalized	126	75.90%	204	29.35%
Weather	32	19.28%	367	52.81%
Both	8	4.82%	21	3.02%

Tables 4 illustrates a subset of the terms identified in the social media posts. Results show that the word "support" was ranked 5th and found in seven places within the NGO posts as compared to 106th and found 37 times in the government posts. Also, the word "Ophelia" was ranked lower on government posts compared to NGOs' posts. We would expect to see the word "Ophelia" at a higher rank in government posts given those agencies' role and focus on disaster management.

Table 4. Comparing key terms' rank and number between sampled NGOs and government posts

Term	Ophelia – NGO		Ophelia – Government	
	Rank	*n*	Rank	*n*
Support	5th	7	106th	37
Ophelia	210th	5	577th	9
Helping	644th	2	227th	22
Flooding/Floods	1408th	1	611th	8
Rainfall	-	-	72nd	47

RQ4: How, if at all, are organizations considering marginalized groups?

The research team also found differences in the use of language around marginalized groups between NGOs and government organizations (Table 5). Government organizations were more apt to include posts that target age, specifically referencing support for children and elderly populations. Reference to race or ethnicity was very rare in government social media activity throughout Tropical Storm Ophelia. In contrast, the terms "African" and "Latino" were more common in the posts from NGOs.

Table 5. Comparing key terms of marginalization between sampled NGOs and government posts

Term	Ophelia – NGO		Ophelia – Government	
	Rank	*n*	Rank	*n*
Children	22nd	19	16th	105
African	28th	17	1774th	3
Latino	33rd	16	748th	7
Native American	1771st	1	2682nd	2
Elderly	2155th	1	244th	21

The research team also noted varying perspectives of surveyed government personnel. Results showed that 25 officials indicated using social media to communicate about disasters. Of those, 24 respondents (96 percent) indicated using such tools to reach marginalized groups. The survey therefore indicates a potential mismatch between self-reported and observed behavior with respect to social media use. While the vast majority of survey respondents report using social media to reach marginalized groups, the use of key terms indicating an orientation toward such groups is rare during a storm. To be sure, this may be due in part to sample bias in the survey data, whereby the 24 respondents who report using social media in this way are systematically more likely to engage marginalized groups. It could also be true that organizations use social media to target groups in ways that are not detectable in our keyword searches. We also do not know how these government officials identify their target groups, so it is difficult to assess whether survey respondents are more comfortable reaching out to various marginalized groups, such as those based on race, ethnicity, and language.

Survey respondents were asked if their organizations aim to support marginalized groups; if so, which groups; and to indicate their level of commitment to addressing inequities. Taken together, the responses to these questions show a slight change from the Year 3 findings. Although the most recent results substantially show the same issue—a possible lack of prioritization of marginalized communities despite NGOs and governmental agencies nominally supporting them—there was an increase in the percentage of respondents who agreed their organization was committed to addressing

these inequities. Like the findings from Year 3, there seems to be a breakdown across organizations in their prioritization of "marginalized" communities, likely due to a misunderstanding of the term.

Survey respondents were asked if their organization intentionally aims to serve specific marginalized groups. The most frequent response was that the organization did not target a specific group or population (Figure 5), while the second-most-frequent response was the elderly population. These results follow a similar trend observed in Year 3 and are discussed in the previous report. We saw little variation between surveyed responses from NGO and government personnel; however, government respondents were more likely to indicate that their organization did not intentionally target any group. This difference is in line with more traditional expectations that the role of the federal government is to support all groups equally.

Figure 5. Organizations' aim to serve specific groups

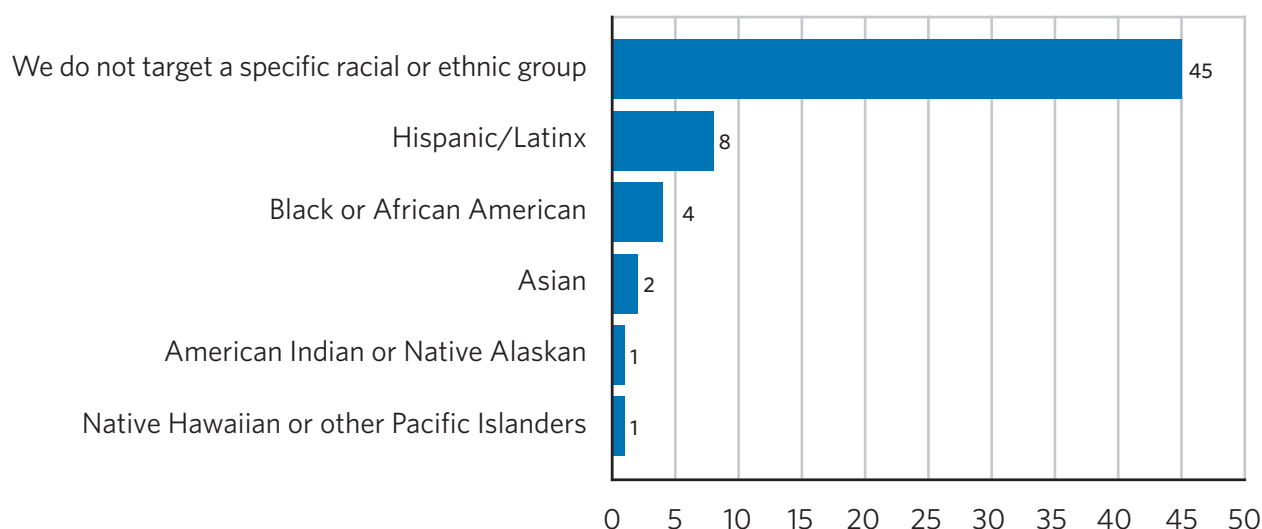*Does your organization intentionally aim to serve any of the groups listed below?*
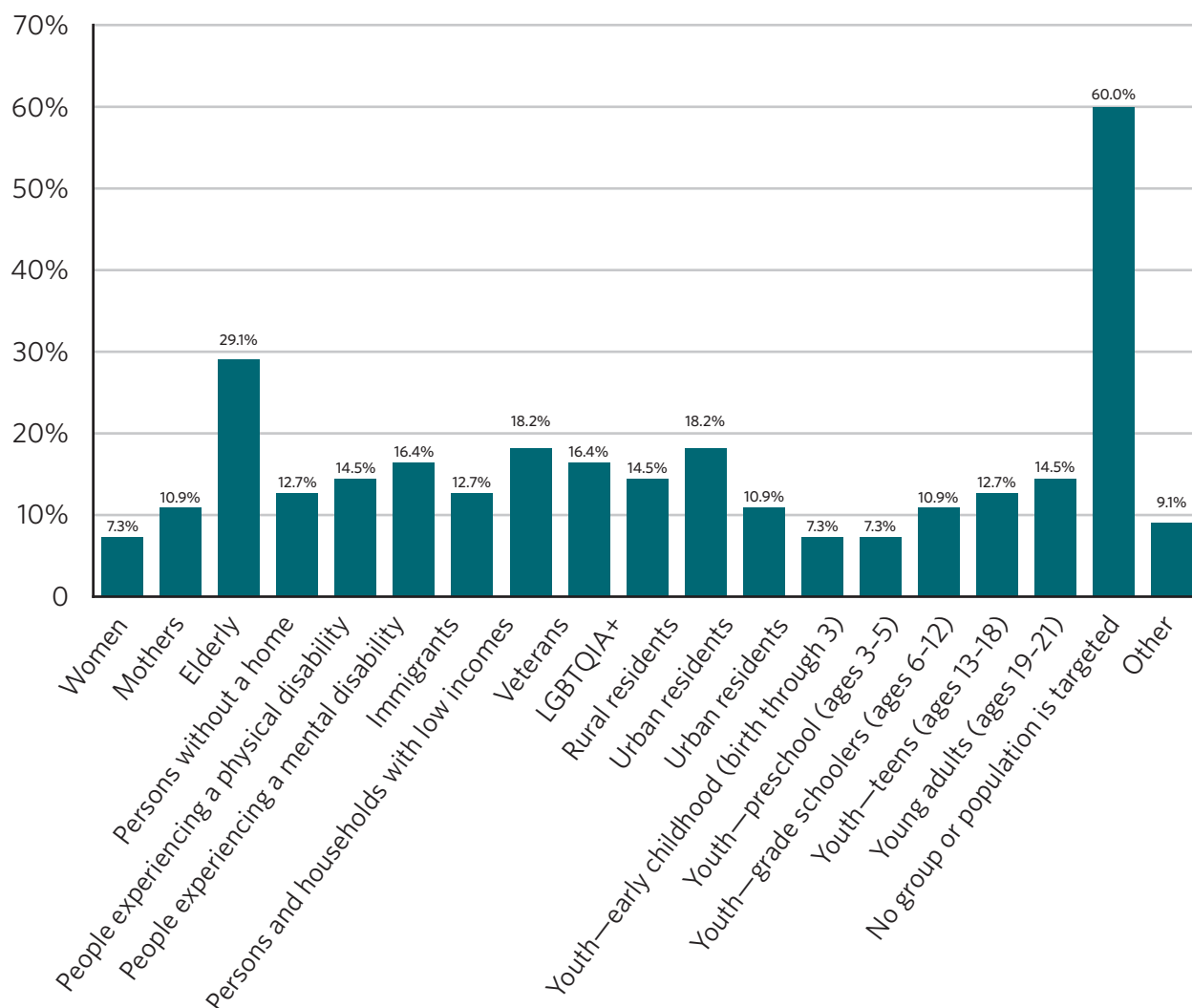
The total number of respondents for this question equals 55. Some respondents selected more than one answer.

The survey results also indicate that most respondents represented organizations that did not aim to serve a specific racial or ethnic group (Figure 6). Of the organizations that do support specific racial or ethnic groups, the most frequently selected group was Hispanic/Latino populations, with 14.5 percent of responses.

Figure 6. Organizations' aim to serve specific racial or ethnic groups

Does your organization intentionally aim to serve specific racial or ethnic groups?

The total number of respondents for this question equals 55. Some respondents selected more than one answer.

Our survey captured a variation in the extent to which NGOs and government organizations purposefully serve marginalized groups. Some respondents indicated offense toward the idea of prioritizing marginalized groups, and some viewed the idea as counter to their mission. Yet other respondents viewed serving specific marginalized groups as a priority. Although 81.8 percent of respondents indicated their organizations did not focus on specific racial or ethnic groups, over 85 percent of respondents at least somewhat agreed that their organization is committed to addressing the inequities that are experienced by marginalized groups. This is a substantial increase from Year 3, with more than double the percentage of organizations agreeing with this statement.

RQ5: What barriers are organizations facing through communication?

Respondents identified several barriers to their organization's efforts, including staffing shortages, a decline in volunteerism, and the impact of the COVID-19 pandemic. Roughly 80 percent of respondents indicated that staffing shortages have been a major problem for their organization. Our results show an increase in that barrier as compared to previous years, with 13.4 percent of respondents citing staffing shortages in Year 3 and 35 percent in Year 4.
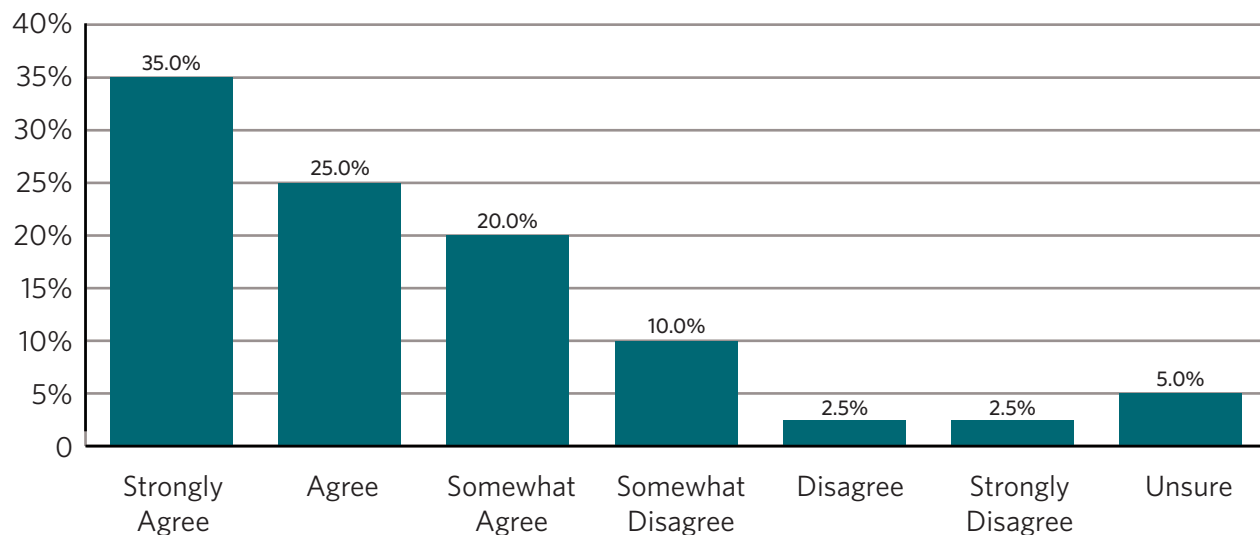
> **"**
> [We are] generally trusted and [have] strong relationships with much of the community we serve, but there are definitely populations we are not able to reach effectively. This is largely due to bandwidth and our relatively small team. We are staffed sufficiently to work with community organizations in this space, but do not have the staffing to independently conduct additional outreach to marginalized populations on our own.
> **"**

Figure 7. Staffing shortages for organizations

Staffing shortages are a major problem for my organization.

Strongly Agree	35.0%
Agree	25.0%
Somewhat Agree	20.0%
Somewhat Disagree	10.0%
Disagree	2.5%
Strongly Disagree	2.5%
Unsure	5.0%

The total number of respondents for this question equals 40.

Roughly 65 percent of respondents at least somewhat agreed that the decline in volunteerism has hindered their organization's ability to support their community. Survey respondents also agreed that staffing and volunteer shortages are likely due to the COVID-19 pandemic. Just over 59 percent of survey respondents agreed that the pandemic has had a negative impact on their organization's ability to serve marginalized communities. Comparatively, 28.2 percent indicated that the pandemic did not negatively impact their ability to serve marginalized communities, an increase from the Year 3 report.

Conclusion

The conclusions shared in this report are drawn from the database of NGOs, the sample of organizations impacted by Tropical Storm Ophelia, and survey responses from NGO and government personnel. We found that targeted NGOs tend to be located in major coastal cities or centrally located in the Midwest. Overall, NGOs use social media to communicate with their communities, but we found differences among the types of organizations. For instance, NGOs that serve marginalized communities or are in high-risk areas—or fit both of those criteria— are far less likely than the comparison group to have a social media presence. We also found that government personnel rely on community leaders to funnel information; however, the research team could not determine how those leaders were identified. We also found that building trust with community members remains a vital asset in outreach efforts, although additional efforts are necessary for targeting historically neglected populations. Additionally, we found that organizations communicated about Tropical Storm Ophelia through social media; however, the posts varied in many ways. Lastly, surveyed personnel revealed a mismatch by acknowledging the need to address inequities found within their communities but also indicating that they do not target marginalized groups for support.

> **Building trust with community members remains a vital asset in outreach efforts, although additional efforts are necessary for targeting historically neglected populations.**

> **Surveyed personnel revealed a mismatch by acknowledging the need to address inequities found within their communities but also indicating that they do not target marginalized groups for support.**

Policy Recommendations

1 *Expand the existing database to include more NGOs.*

NGOs can be classified according to the degree to which they are positioned to communicate with and assist marginalized groups through climate hazards. Data science and algorithmic techniques can help classify such organizations and point administrators toward key support infrastructure. Expanding the existing database can help government organizations to identify these vital NGOs as they support and communicate with groups impacted by hazards.

2 *Continue investigating the communication strategies of targeted NGOs.*

A continued investigation into the ways in which NGOs that target marginalized groups and are located in hazard-prone areas are reaching out to communities in need would be useful. It is necessary to uncover the reasons why NGOs are less likely than the comparison group to use social media as a form of communication.

3 *Reassess the term "community leader."*

Over the years, the research team has uncovered varying definitions of who is a leader and who is not. Incorrectly labeling a community leader, and funneling information to that person, has the unintended consequence of distributing information in an inequitable way that ignores those leaders who may be invisible to outsiders.

4 *Building trust takes time and must be intentional.*

While a majority of surveyed respondents agreed that their organizations work to build trust with communities they serve, some of them indicated that their organization could improve on this process. Some described challenges in reaching certain groups due to histories of neglect. One finding was clear: trust must be built through cultivating intentional relationships, which takes time. This can be achieved by hiring staff with ties to the community, working with other organizations embedded in the community, and maintaining a stable presence.

5 *Clearly establish the purpose of social media communication strategies.*

When referencing Tropical Storm Ophelia in their social media posts, government organizations were more likely than NGOs to communicate messages focused on the weather. For example, government posts provided detailed information about the direction, speed, and timing of the storm, which was likely meaningful to those who understood meteorology or atmospheric science. However, if the purpose of the posts was to ensure a layman had access to information on how to access support throughout the event, this was not clear. Specifically, posts from government organizations were less likely than NGOs to mention the word "support," which ranked 106th on their sites as compared to 5th on NGOs' postings during the same period. Additional research should explore the usefulness of hazard-related social media posts to laymen and marginalized communities.

Next Steps

Efforts are underway to secure additional data and resources for the construction of a full-scale national database of NGOs. Our work in Year 9 with the Coastal Resilience Center has allowed us to create a pilot tool for practitioners and communities to identify organizations that can provide direct assistance or coordinate with local governments. Our database and mapping applications can provide rapid reconnaissance for storm-struck localities to help them identify various types of organizational support based on the following: a) social media activity indicating an NGO's capacity to provide hazard support and b) an NGO's orientation toward historically marginalized groups.

The current tool, which is based on a sample of 5,020 organizations, is scalable and robust. With proper computing infrastructure and data extraction capacity, this tool could be expanded to include all areas of the U.S. and all 1.8 million NGOs. Our aim in the coming years is to continue to build the database and accompanying practitioner tools to allow for real-time storm and hazard support anywhere in the country.

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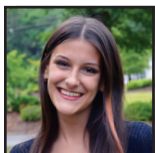
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