Weathering the Twitter Storm

» Early Uses of Social Media as a Disaster Response Tool for Public Libraries During Hurricane Sandy

BY SHARON HAN

INTRODUCTION

In the Digital Age of instantaneous communication, when disasters hit, they hit us all. The fall and winter of 2017-18 brought a literal and figurative deluge to our screens with the arrival of hurricanes Harvey, Irma, and Maria to the United States. Within moments of each event, websites and news feeds filled with images of destruction and cries for help. The use of social media to bring awareness to victims' situations through hashtags and directly tagging first responders underscores the importance of this technological tool in the twenty-first century. In fact, the ubiquity of social media in documenting Hurricane Harvey have led some to believe that it should be considered the first "social media storm."[1] However, many of the most popular social media platforms have existed since the mid-2000s and have already been used to communicate disaster- related information since well before Harvey reached the United States' shores. Some of social media's earliest adapters were even public libraries who had the resources and means to use this information technology as a method of connecting with their communities.

Why should social media matter to public libraries in times of disaster? As a physical manifestation of information access, the public library maintains a relationship with its community that varies across regions, time, and context. Currently, the public library as an entity is in an interventionist period, according to Jaeger's article "Libraries, Policy, and Politics in a Democracy: Four Historical Epochs," where its roles and responsibilities are heavily influenced by outside factors, especially the federal government.[2] From tax forms to permits to insurance claims, the government encour- ages people to use the public library to find and use information necessary to navigate American society. Public demand for accessing government and other resources is especially apparent after natural disasters, which, due to their unpredictable nature, can heighten community uncertainty and the need for credible and reliable information. Public libraries can meet this information need by using social media as one strategy to assess and provide resources in real time.

When Hurricane Sandy landed on New Jersey's shore on October 29, 2012, it prompted a new era for societal response to emergencies and community needs. Due to the hurricane's trajectory into densely populated areas of the American northeast and subsequent widespread flooding, Hurricane Sandy was the deadliest storm of 2012.[3] With initial estimated recovery costs of up to $50 billion, the degree of damage to buildings, infrastructure, and endangerment of people's safety made swift and coordinated communication paramount in response efforts. Thus, the aftermath of Hurricane Sandy resulted in federal agencies using social media for the first time in coordinating and implementing disaster response.[4] As community-based service providers, many public libraries responded to the hurricane by sharing available resources and services with patrons.

However, few studies explicitly examine the use of social media as a library tool to support their community.
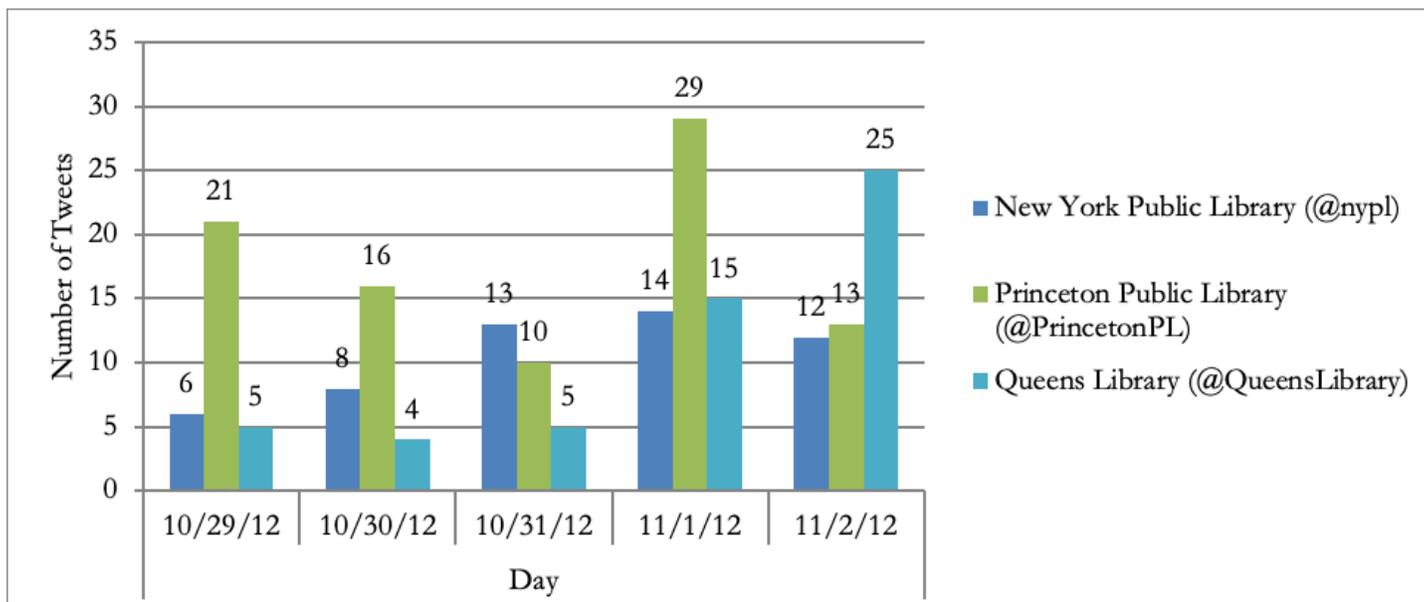
Figure 1. Number of tweets per day by library.

This paper explores the role of social media and its impact on public library services in response to Hurricane Sandy as a measure of libraries using digital mediums to support their communities. Using Twitter posts from three separate public libraries impacted by the hurricane, their content is analyzed and compared to reported library services after the storm. The analysis will then be used to discuss the use of social media as a library tool and recommendations for social media implementation in future disaster response.

BACKGROUND INFORMATION
Library Response to Disasters
According to the Institute of Museum and Library Services' Public Library Data from 2009 to 2011, over half of all public libraries are located within declared "disaster counties."[5] This value implicates disaster response as an important topic within public librarianship discourse. In addition to assessing damages to buildings and collections, libraries must also meet the needs of its community. Information needs are heightened after a disaster, as the destruction results in information uncertainty and loss of important resources such as power and telecommunication services.[6] Consistent and increased use of public libraries is not unusual post-disaster. For example, despite 35 percent of Louisiana libraries being closed after Hurricane Katrina in 2004, a study found that overall library visitor counts only decreased by 1 percent.[7] Frequent use of library resources after a disaster can be attributed to the library's

free and low-cost resources, as well as the institution's reputation as a source for reliable and credible information.[8]

Libraries also extend their resources and services beyond their walls. Library bookmobiles and delivery programs provide services to those who are unable to physically visit the library. Some libraries use their skills in information management and communication to assist local disaster preparedness groups and response teams.[9] In 2011, the Federal Emergency Management Agency (FEMA) declared public libraries eligible for temporary relocation funds in the event of an emergency, a distinction once limited to first responders, hospitals, utilities, and schools.[10] Former Executive Director of the American Library Association's (ALA) Washington Office, Emily Sheketoff, stated such a distinction recognizes libraries as "essential community organizations."[11] In context with Jaeger's interventionist period, it benefits libraries and government agencies alike to have libraries open to serve communities after a disaster.

In the aftermath of Hurricane Sandy, communities suffered from varying degrees of damage, such as flooding, power outages, debris, and downed trees.[12] The impact of the storm drove many community members to their local libraries to seek shelter, charge their electronics, file insurance claims and other e-government forms, drop off or pick up donations, and obtain entertainment.[13] Despite the many stories of libraries serving disaster victims and working with first responders, such actions have yet to be translated into widespread library policy

and procedures. ALA provides a "Disaster Preparedness and Recovery" resources webpage, but it primarily focuses on addressing material and structural needs after a disaster, such as mitigating water damage to collections.[14] Other studies also note a majority of library disaster response literature remains focused on protecting materials.[15] Such a limited perspective is highlighted in a national survey in which the majority of librarian respondents believed protecting library materials and performing daily services were their primary goals in the event of an emergency.[16] As a result, library communication with the community and local organizations remains a relatively unexplored subject in context with disaster response.[17] While trade journals and websites publish stories of individual libraries serving their communities, formal studies and research are comparatively scarce. With the widespread use of technology and the Internet, one method of communication stands out as an important tool for library outreach and study: social media.

Disaster Response through Social Media
As information providers and advocates of communication technology, libraries should use social media to connect with their communities. Although libraries were early adopters of social media prior to Hurricane Sandy, their use of these tools tends to focus on one-way information sharing instead of a dialogue with their community.[18] Social media in context of disaster response may upend traditional library social media use, which is why this topic needs further examination.

Social media coupled with mobile technology has created a society in which information sharing and communication are constant and instantaneous.[19] Since social networking is a relatively new form of media, formal studies on its impact on social behaviors have only come about in the last decade.[20] Within this young body of literature, however, social media use in disaster response and recovery is a popular topic for researchers, organizations, and federal agencies.[21] Alexander claims that social media provides the following benefits during disaster response:

- Provides an outlet to listen and share thoughts, emotions, opinions;
- Monitors a situation;
- Integrates social media into emergency plans;
- Crowdsources information;
- Creates social cohesion and promoting therapeutic initiatives;
- Furthers causes; and
- Creates research data.[22]

Such a comprehensive list is beneficial to this study because it provides a framework through which library social media use can be examined. These benefits stem from the sharing of information with people or entities, which is a large component of library disaster response, as discussed in the previous section. Using Alexander's list as a reference, the three main benefits this study examines in context with library disaster response are:

1. **Monitors a situation.** A survey of library patrons impacted by the 2015 South Carolina floods revealed all respondents used social media to learn about the flooding and impacted areas.[23] People now frequently use social media to get updates on situations, whether they were directly or indirectly impacted by the natural disaster itself. Disaster response groups also monitor social media feeds to assess and allocate resources to those in need.[24] Libraries can use social media feeds to assess resources and services use, plan outreach opportunities, and even inform the public about its own status during the disaster.
2. **Integrates social media into emergency plans.** Social media is a low-cost and effective way to coordinate disaster response between organizations and people. Much like bookmobiles, social media serves as outreach for librarians to improve service accessibility. Librarians can

Table 1. Categories organized by social media benefits.[36]

Benefit	Twitter Content Categories
Monitoring a situation	- Hurricane information - Library event/service related to hurricane - Replies
Integrating social media into emergency plans	- Library policies - Library status - Non-library event/service related to hurricane
Creating social cohesion and promoting therapeutic initiatives	- Library event/service related to hurricane - Library event/service NOT related to hurricane - Non-library event/service related to hurricane - Replies - Social interactions

use platforms like Twitter and Facebook to help coordinate their activities and services alongside with other responders in the community. Having an established plan of action where the library's role and responsibilities are clearly outlined will result in more effective service and efficient response to community needs.[25]

3. **Creates social cohesion and promoting therapeutic initiatives.** In alignment with the library's mission of creating and serving communities, social media can act as an extra method of fostering connections in times of need. Disaster victims can take advantage of social media's speed and ubiquity to check in with family, tell them they are safe, and participate in relief efforts.[26] Social cohesion through platforms such as Twitter can also create participatory discourse between people and organizations. For example, then-FEMA administrator Chris Furgate's recommendation to read to children during the hurricane prompted the hashtag #StormReads to trend on Twitter, as many accounts—libraries included—shared their recommended titles.[27]

Library use of social media can also address growing concerns about rumors and misinformation spread during disasters.[28] As providers of reliable and accurate information, libraries help establish source credibility and push more accurate resources to misinformed and unaware community members.

Although there is a substantial amount of research focused on libraries responding to disasters and social media use during disasters separately, there is a gap in library science literature examining social media as a method of library disaster response. Interestingly, formal studies that mention library disaster response note an explicit absence of

social media as a form of emergency communication.[29] Despite the current dearth, library social media studies can develop quickly thanks to the abundant amount of data available on social media platforms. As libraries continue to respond to disasters, they will require more deliberate and planned use of social media as a communication tool. Such a need demands a closer examination of how libraries have historically used social media during disasters.

CASE STUDIES: THREE PUBLIC LIBRARIES AND TWITTER

This study will examine the social media feeds of three public libraries during and immediately after Hurricane Sandy landed on the northeastern coast as a measure of social media's impact on communication and information-sharing amongst libraries, patrons, and first responders. Due to its frequent use for sharing up-to-date information, Twitter was the selected social media platform to study.[30] The public library systems were selected for this analysis based on their varying characteristics and available literature describing their actions after the hurricane. New York Public Library (NYPL, @NYPL), Princeton Public Library (PPL, @PrincetonPL), and Queens Library (QL, @QueensLibrary) have Twitter accounts that were at least two years old by October 2012. All accounts were active during the time period of interest, although they were closed when Hurricane Sandy landed. NYPL and QL were closed an additional two days due to damages to several branch libraries.[31]

These library systems serve varied communities. NYPL and QL are urban libraries located in New York City, with 91 and 62 branches respectively, and PPL is a one branch library located in downtown Princeton, New Jersey. The larger library systems
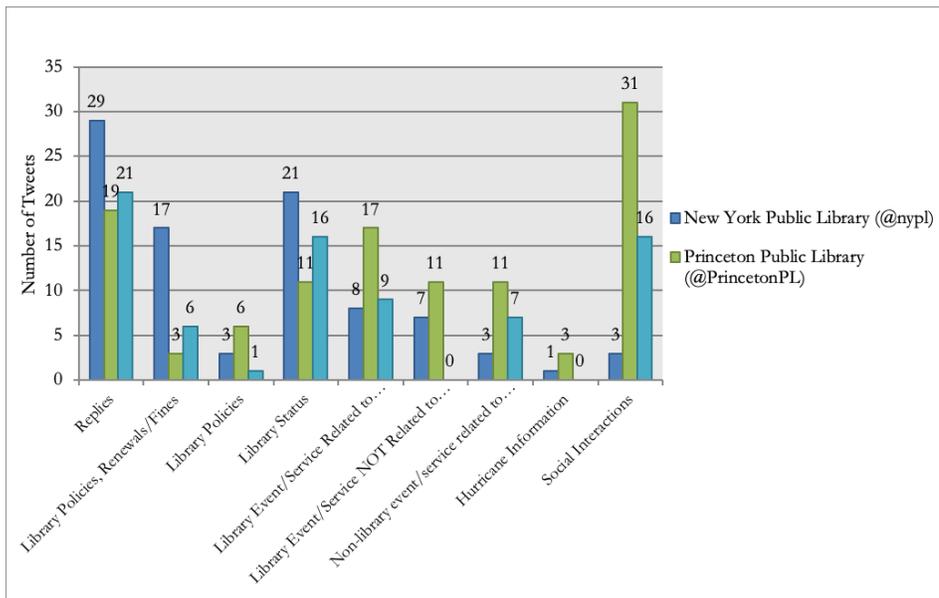
Figure 2. Twitter content by library.

reported flooding and power outages at several branches from the hurricane, while PPL sustained no structural or internal damages.[32] However, all library systems were in communities where large numbers of households lost electricity and Internet access, and sustained damages from fallen trees and flooding.[33] The library systems were mentioned in news reports for services to library patrons affected by the storm, including providing charging stations for electronics, helping people fill out FEMA insurance forms, running programs for children and adults, and having public computers and wireless connections to access the Internet.[34] The libraries' coupled use of Twitter and active provision of disaster response services make them ideal candidates for examining the correlation between the two activities.

METHODOLOGY
This study used a filtered search on Twitter to identify tweets from each library's feed within the time period of interest. Within searches, each tweet was recorded and categorized based on content and message format. A single tweet could have more than one category. Common content subcategories were identified to improve analysis. Defined categories are as follows:

- Hurricane Information: Information on the hurricane's status and impact from news and government agencies.
- Library Policies: Information on library policies.
- Library Policies, Renewals/Fines: Information on renewals and fines during the studied time period.

- Library Status: Information on library branch closures.
- Library Event/Service Related to Hurricane: Event or service specifically planned in response to hurricane.
- Library Event/Service NOT Related to Hurricane: Regular library programming; included event/service cancellations as an indirect/direct result of hurricane.
- Non-Library Event/Service Related to Hurricane: Information on non-library sponsored events and services provided in response to the hurricane.
- Replies: A publicly posted message from the library to another Twitter user.
- Social Interactions: Non-informative and informative tweets aimed at conversing with people or organizations in a social manner.

Selected categories were then associated with a corresponding benefit from three of Alexander's defined benefits **(table 1)**.[35] After categorizing, the collected data was organized for analysis and comparison.

RESULTS
From October 29-31, each library used Twitter regularly to provide information or to communicate with library followers. Tweet frequencies were counted and compared over the five- day period across libraries **(figure 1)**. While NYPL and QL averaged almost 11 tweets per day, PPL had nearly double their numbers, at about 18 tweets per day. NYPL and QL had a generally increasing trendline in tweets, while PPL's Twitter use fluctuated greatly. NYPL and QL's low tweet count during the studied time frame may be

attributed to library-wide closures, although only QL's tweet count increased significantly upon reopening.

Content analysis illustrated variations in Twitter use across all three libraries **(figure 2)**. NYPL tweeted the most about their library status and renewal/fine policy, with 21 and 17 tweets, respectively. PPL focused more on advertising library events and services such as electrical outlets, heat, Internet, and entertainment. They also used Twitter heavily for social interactions, 35 percent of PPL's 112 tweets, including asking questions, recommending books, thanking concerned patrons, and even apologizing for retweeting too many news articles about the hurricane. QL's Twitter use was more of a mix, often posting about library status and socially interacting with other Twitter users.

Each library also differed in least common content tweeted. NYPL had the fewest tweets about the hurricane, non-library services and events related to the hurricane, other library policies, and social interactions. PPL also had few tweets with information about the hurricane and rarely tweeted about fines and renewals. QL had no tweets about the hurricane, nor did they tweet about any library events or programs that were unrelated to their disaster response.

DISCUSSION
The data collected was analyzed to determine whether each library fulfilled the three identified benefits of social media that directly relate to the library's mission of information access and community building: monitoring a situation, integrating social media into emergency plans, and creating social cohesion and promoting therapeutic initiatives. Each library's consistent responses to Twitter users, status updates, and information about library services illustrates they all monitored their communities' situations and responded accordingly through services and programs, as evidenced in news reports. Libraries also used Twitter to engage with others and

create a social network of library patrons and local institutions. Based on the lack of information about the storm itself and few recommendations for non-library disaster response group resources, it is not apparent libraries integrated social media as part of their emergency policy and procedures. This also resulted in a dissonance between library action and their online communication. One notable example: many news reports described librarians aiding patrons with

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finding and filling out FEMA insurance forms, but only one of the 196 tweets analyzed in this study advertised FEMA assistance at the library.[37] PPL tweeted several posts illustrating library use by affected patrons, but also emphasized they were at capacity due to large visitor numbers and shortages in charging stations and Internet bandwidth. PPL also failed to offer alternatives on Twitter to meet patron information needs.

The lack of a coordinated effort perhaps can be explained in two parts. First, as no two disasters are alike, library response is often a direct reaction to the event and damages to their institution and community. A busy library would logically place social media communication and coordination as a lower priority than other immediate, tangible needs. Second, librarians may not make a concerted effort to use social media if they are trained to prioritize protecting library collections and conducting regular services.[38] While digital and outreach services such as bookmobiles have been common components of libraries, there is still a noticeable gap in libraries extending these same services using online tools. The libraries in this study used social media as a part of their disaster response, but the lack of planning resulted in each library's Twitter feed acting more as a "triage center," providing basic assistance as the need arose, rather than an extension of in-house services.

TAKEAWAYS AND FURTHER RESEARCH
While these libraries provided much needed services in the aftermath of Hurricane Sandy, their implementation of social media as a communication and information-sharing tool illustrates opportunities to develop more coordinated efforts. As library presence on and use of social media continues to grow, it should be considered as a necessary component of library disaster response and collaboration with other government agencies and first responders. While libraries are qualified for FEMA funding, it is uncertain that local first responder groups are aware of the services and benefits libraries provide post-disaster at all. As of 2013,

the U.S. Department of Homeland Security's Virtual Social Media Working Group did not include any library organizations, which leaves libraries out of crucial conversations in designing comprehensive disaster response plans.[39]

In an effort to participate in productive discourse, librarians also need to improve their social media use to better align with their practice when serving distressed communities. While the exact reasons for librarians' lack of effective social media use in disaster response remains speculative, other research has shown that training opportunities for social media use in libraries remain scarce and not very effective.[40] Since Hurricane Sandy, social media has only grown as a powerful tool for people and communities, rendering it an essential skill for librarians today. This should motivate librarians, library associations, and other professional groups to consider developing effective training and workshops geared towards intentional use of social media.

Despite its power, social media should be seen as a complementary tool to enhance information services for community members. It will optimize the library's reach, but it cannot completely replace current methods of outreach, nor should it. This is especially important when considering who benefits the most from libraries, many of whom do not necessarily have consistent access to social media.[41] Social media use varies across age, socioeconomic status, digital access, and education levels, making it important for librarians to consider whose information needs are and are not being met online. Considering such limitations, learning impactful social media skills and creating a support network amongst disaster response groups will enable libraries to effectively develop outreach strategies and improve disaster response services.

The discussion and takeaways highlight the necessity for further research on social media use in library disaster response. As the history of library development and service informs the direction of libraries today, so too should historic uses of social media

as a library service tool guide future work. Continuing research may include case studies of public library response to recent disasters, which would provide better insight into the developing use of social media. The identified patterns and strengths can be used to guide future work in incorporating effective social media policies and protocols in library disaster plans. Considering social media usage by first responders and federal agencies, future research should also include a closer examination of relationships between public libraries, first responders, and disaster information providers in improving coordinated response efforts.

CONCLUSION
When disaster strikes, many communities exhibit a great need for resources and information. Despite libraries providing much needed service and resources to community members after natural disasters, their use of social media platforms as a tool remains overlooked. This study examines historical use of social media as a communication and service tool between libraries, community members, and disaster response groups in the aftermath of Hurricane Sandy. The effectiveness of social media use was evaluated using Alexander's review of social media benefits and compared with descriptions of post-Sandy library resources and services described in the literature. The study found social media use to be highly variable based on content and correlations with reported in-house library services. There was no sign of a coordinated effort with other disaster response groups, and the primary objective of their Twitter accounts was connecting with patrons and other organizations through social interactions. Improvements to social media use could be achieved through intentional coordination with first responders, directed training, and evaluating social media's strengths and limitations in disaster response.

If libraries wish to continue providing pertinent information, they need to adapt to communication methods used by their community. With social media's strong

presence in society, suburban and urban libraries such as the ones examined in this study should improve their use of social media as an effective information sharing and communication tool. Continuing to examine and assess uses of social media as a disaster response tool can help shape policies and procedures that will enable libraries to better serve their communities. ∎

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