

Aaron Cunningham, Alero Jakpa, Benjamin Lee, Irini Sfyris

Social Networks and Disaster Management

Prof. Hazem Said

31 Jan 2013

Project 1: Hurricane Sandy

Hurricane Sandy has become notorious as being one of the most damaging hurricanes in recent American history. There were many factors that went into the so-called “Frankenstorm,” and there was a lot of work put into the relief effort on many different fronts to recover from that disaster, both within government and outside of it, including social networks like Facebook.

One of the aspects that made Sandy so destructive was in its formation. Hurricanes in general are formed when warm, moist air from the ocean rises and creates an area of low pressure near the surface of the water. Air from surrounding areas swirls down and rushes in to fill this low pressure area. It is then heated and rises as well. The warm, moist air that has risen then cools and becomes a cloud. As the cycle continues, the cloud spins and grows, turning into a tropical cyclone, or hurricane, as it is called when it occurs in the Atlantic or eastern Pacific oceans (“How do Hurricanes Form?”).

Hurricane Sandy, also called Superstorm Sandy, was a bit unusual due to its pathway and structure. Normally, storms like this would continue north and out safely to sea. Sandy was blocked by a strong ridge of high pressure over Greenland, so it turned its wrath stateside (“Sandy Stirs Climate Change Debate”). It took an unprecedented turn towards the American coastline and struck almost every bit of coast north of New Jersey up through Cape Cod.

Additionally, the hurricane core remained intact, even as it made landfall. The cool, dry air wrapping around the storm from the United States would normally have weakened the storm. Instead, it added more ferocity, as the storm now had the center of a hurricane surrounded by gale-force winds spanning hundreds of miles. To add to that, the storm hit at precisely the right time, when a dip in the jet stream had been making its way across the country, and hit Sandy near Florida. Sandy then became large enough to influence that weather system, and the two joined to create a giant superstorm (Nolan). At its peak diameter, the storm stretched over 943 miles from southwest to northeast (Erdman).

There is some speculation that climate change played a part in making the storm so destructive. As Andrew Weaver, a climate scientist at Canada's University of Victoria, put it, "The ingredients of this storm seem[ed] a little bit cooked by climate change, but the overall storm is difficult to attribute to global warming." First, the rising sea levels from the melting arctic ice caused the destructive storm surge and incredible flooding that beat New York City's record flood set in 1821. Second, the Atlantic Ocean is now about two degrees warmer than it was 100 years ago, which fed the hurricane. Finally, the Gulf Stream is also warmer than usual, allowing Sandy to race northward ("Sandy Stirs Climate Change Debate").

After the storm died down, people were left to clean up the mess and deal with the death and destruction. An estimated 125 people were killed in the United States as a result of the storm, most of them in New Jersey and New York City. Another 71 people were killed in the Caribbean. It caused an estimated \$62 billion in damage, mostly in New York and New Jersey, damaging or completely destroying more than 642,000 homes and businesses. There is at least \$315 million that can be attributed to Sandy in the Caribbean, including 130,000-200,000 damaged homes in Cuba ("A Month After Superstorm Sandy").

In response to the disaster, President Barak Obama authorized the Federal Emergency Management Agency (FEMA) to provide support and resources for states affected by Hurricane Sandy. FEMA and other government agencies worked collaboratively to ensure the safety of the hurricane survivors by providing recovery centers, food, and water, draining homes and infrastructures, and providing funding to victims for homes and small business. They also worked with non-profit organizations, such as the American Red Cross, in the distribution of resources.

To carry out its rescue operations, FEMA is equipped with personnel trained for *Response Operation*. Response operation includes protocols that personnel are to follow during disasters, such as: search and rescue, situational awareness, and communications and logistic supports. In plans to help victims after the aftermath, FEMA built staging locations for water, meals, generators, medical supplies and other important resources ("Ongoing Response to Hurricane Sandy"). According to The White House, "FEMA also created 65 Disaster Recovery Centers to support affected communities, provided millions of bottles of water, hundreds of thousands of meals, and hundreds of generators to affected states, and approved over \$600 million in direct assistance to hundreds of thousands of individuals impacted by the storm" ("Ongoing Response to Hurricane Sandy"). FEMA's community relations teams went door-to-door helping hurricane survivors in most affected areas with available resources and providing knowledge of situations. The housing inspectors worked survivors to identify and inspect damages to homes. Not only did the survivors get assistance from first responders, they could get help by accessing FEMA's website using smartphones or devices with internet service.

FEMA created a website specifically for Hurricane Sandy. At the right hand corner of the page, there is a box that provides information on its progress. As of January 18, 2013, FEMA

has: 4731 personnel deployed; 527,820 people that applied for assistance and \$1.20 billion approved for assistance. Furthermore, FEMA created 39 recovery centers: 23 in New York, 15 in New Jersey and 1 in Maryland. To help survivors, they made it easy to find Disaster Recovery Centers by typing an address and searching by radius. After Hurricane Sandy, victims and survivors who had lost their homes stayed in these centers. The primary purpose of the recovery centers was to provide shelter, food, and medication for victims and survivors. These centers were funded not only by FEMA, but from other organizations like the Red Cross, as well. They allowed FEMA to know if individuals needed additional help. They provided psychological help to the victims, as they were staffed with counselors and were able to provide references to counseling facilities around the area. FEMA also provided victims with legitimate house inspectors and recommended contractors for rebuilding homes. The centers were free of charge. Depending on a survivor's qualification, FEMA also offered financial support to survivors.

FEMA's Hurricane Sandy website also provides information to volunteers, where they could apply using a smartphone or by calling a certain phone number. They also provided helpful information to inform the volunteers about how to help and what kind of help was needed. Additionally, there was a link for people who visited the site to make personal donations to the relief effort.

Throughout this process, there were a lot of rumors concerning FEMA and false organizations claiming to be affiliated with them. On their page they correct one such rumor that claimed "City Assessment Contractors under the NYC Rapid Repairs and Sheltering and Temporary Essential Power (STEP) program [were] telling residents throughout Staten Island in New York to provide payment for services provided immediately." They claimed that "FEMA [would] reimburse survivors for assessment costs and guarantee additional cash payments of

\$10,000 to be used for rapid repairs to their homes." This was absolutely not true, as FEMA explained on their website; the true services were free to everyone and did not hand out donations ("Hurricane Sandy: Rumor Control").

FEMA was not alone in the Hurricane Sandy relief effort. They had the Department of Defense (DOD) who deployed 4000 personnel. The Defense Logistics Agency (DLA) delivered over 1.8 million gallons of fuel and 9 generators and transformers to power apartment buildings. The Joint Logistics Operations Center (JLOC) worked as a communication facilitator during the operation within and outside the agencies. The U.S ARMY Corps of Engineers (USACE) was responsible for the "unwatering" project. This project involved removing water from 14 infrastructure locations in critical conditions. These locations included: Jersey City PATH Train Tunnel, Brooklyn Battery, and the World Trade Center (The White House). The Department of Transportation (DOT) and the Department of Energy (DOE) were also involved ("Defense.gov").

In addition to the relief efforts of government agencies, there was a wide-ranging response to Hurricane Sandy from private charities. Financial support was the most common method. The largest contributor, the 12-12-12 relief concert, raised over \$50 million for the Robin Hood Relief Fund (McKinley). That fund was further broken down to fund over 250 separate programs in the New York and New Jersey areas. Some of the largest programs it funded were loan programs such as the New York City Non-Profit Recovery Loan Program, for \$2 million (Robin Hood). Other large fundraisers included NBC's Hurricane Sandy Telethon, which raised \$23 million (NBC), and ABC's Day of Giving, raising \$16 million, which both went to support the Red Cross (ABC). The total amount of donations, as of November 2012, was about \$220 million (Lipman). While the government dwarfed that with a \$50 billion aid bill, that wasn't signed until January.

While financial support was common, a large number of groups provided material support as well. DisasterPhilanthropy.org lists 36 different charities, and that list is by no means comprehensive. The American Red Cross operated 32 shelters in New York, along with numerous kitchens and emergency vehicles. AmeriCares delivered millions of dollars of medicine and hygiene supplies. Even the Humane Society was busy with relief efforts, as it cared for pets in shelters and helped return them to their owners (Hurricane Sandy | NGO Response).

Even some for-profit companies have contributed to relief efforts. Johnson and Johnson donated \$5 million in money and hygiene kits to AmeriCares. Verizon provided equipment to run “text to donate” campaigns, and Caterpillar Inc. donated equipment. The Center for Disaster Philanthropy listed almost 800 donations from corporations and celebrities, showing the substantial response from for-profits as well as non-profits (Hurricane Sandy | Donor Response).

The Red Cross took advantage of social media to raise awareness of Hurricane Sandy as quickly as possible. They spread a text-to-donate number over Twitter, and got 540,000 posts related to Sandy in a day (Kavner). Also, Charity Navigator set up a special page to list charities which were helping out with relief efforts, which allowed users to donate their money as efficiently as possible.

In general, while the scale of the response of non-government organizations wasn't as large as the government's, it has been very large by historical standards and also quite diverse, as organizations provided money, food, medicine, construction materials, and even helped with pets.

It is easy to see the largest contributors from a distance. Huge organizations played equally huge parts in putting the East Coast back together, and their effort is ongoing. What may

not be as evident is how society worked on an interpersonal level to recoup and rebuild. When it comes down to the core of it all, these large efforts all had the same fundamental purpose -- to rebuild individual lives and the environment surrounding each one of them.

To understand how recovery really happened, then, it is important to look past the big numbers and monetary donations. What happened in the immediate aftermath of the superstorm? Did society sit around and wait for the large corporations and agencies to come rescue, or were there action steps that each one of these families, and each one of these affected communities, was already equipped to take? Not everything gets solved with dollar bills. Actually, nothing does. It is most importantly about the people driving the change, so we take a look to how individual people responded:

In an interview with Lorenza Morata Ruiz, Associate Producer at Melissa Harris-Perry, NBC News, some insight about the living and working conditions in New York City following the storm was provided. It was clear that the affected population was well prepared for the storm, despite some skepticism about how serious it actually would be. “The local NYC government did a great job informing everyone about evacuations and had constant updates leading up to, during, and following the storm” (Ruiz).

There’s undoubtedly a sharp contrast between Hurricanes Sandy and Katrina. What happened in 2005 was a tragedy for which the area was ill-prepared, since the break in the levee was not foreseen. Katrina has become notorious as one of the worst natural disasters in American history, whereas Sandy, with damage costs in the same realm as Katrina, cannot even be categorized in the same level (Fischetti). This time, America took the necessary precautions while waiting for Sandy to make landfall.

Ruiz, who was home in Yonkers at the time the storm hit, did not have to evacuate, but some of her friends, who were not too far away, sustained damage to their homes or even lost them completely. "I lost power," she said, "but only for a few hours during the storm. Many of my friends/colleagues lost power for days or weeks." The lack of power caused outages in television, heat, and internet in some homes, but it wasn't a case where the networks were down and unusable. Cell phones remained operational, and for many people, the internet was not too far from reach.

Damage to infrastructure was the bigger crisis: Ruiz returned to work three days following the storm, but she noted, "Transportation was very difficult for most people." Before her railway was running again, the company sent a car to bring her to work. Luckily, it was operational shortly after. Some of her less fortunate co-workers at NBC had to live out of hotels for weeks (paid for by the company) to ensure they could make it to work. There was just no way to get around some parts of the city (Ruiz).

Though not true of all natural disasters in all parts of the world, this time, with this day's technology, lack of transportation heavily overshadowed the general lack of information. People could communicate better than they could congregate.

Communication today, naturally, is not what it used to be; Thankfully, though, it has gotten much easier to reach others in our lives. The tides have turned in the direction of the *internet* and we are starting to back away from some of the more traditional methods: methods like radio, television, landline telephone, and wireless networks ("Emergency Communications"). While all have in the past been somewhat dependable sources of public information during crises, they are fragmented in their operation, and all are limited in their reach.

Neither is the internet error proof. In fact, radio is probably the avenue we can rely upon the most when disasters strike us, since it's technologically the least sophisticated of the lot. But today, at least, the internet is King. Communications of any type can be made across this channel. The internet is public and it is open. People are often displaced from their homes and from their belongings, as many were on the Eastern Seaboard when over 375,000 mandatory evacuations for Hurricane Sandy happened ("Hundreds of Thousands..."). How does one know how to get a hold of a family member when disaster strikes suddenly, and no warning or preparation time is given? They're not going to necessarily have their personal landline accessible to them, or have their singular cell phone in working order. As long as one can obtain access to the internet, calls can be made using Voice over Internet Protocol (VoIP), news broadcasts can be watched, and damages can be seen through photographs.

This access is not exclusive, either, and can be the single answer to any communication problem. If one computer with internet access can be set up after a destructive disaster of some kind then an entire community can be reached, and can reach out to others. A battery operated smartphone is a computer, requiring only one thing: a functional mobile network.

With Facebook and Linked In now both publicly traded companies, social media is obviously becoming an ever present force in our lives -- much more so than it has been in previous disasters. Online services make it very easy to stay in touch, and to stay informed. Following the earthquake in Japan and Hurricane Sandy, Google put out a disaster relief map that aggregated photos of damage, locations of area shelters, and other critical information about power outages and weather ("Google Crisis Map").

Ushahidi is an open source platform with goals that align very closely to those of Google's disaster relief efforts. The website, originally developed to publicize information about

Kenyan violence outbursts in the 2008 post-election period, now serves as a space where interactive maps point users to location-based conflicts. Information can be submitted through SMS, email, Twitter and the site itself, making it highly accessible in chaotic situations ("Our Mission - Ushahidi").

Over one billion users strong, Facebook has been a huge communication hub for victims and volunteers helping with Hurricane Sandy. News organizations point people to their Facebook pages for up-to-date information. Non-profits small and large almost all have public profiles on this site where information can be shared in seconds with followers. The social media giant represents a revolution in communication and information sharing, enabling cost-free interaction between friends, colleagues, businesses, agencies, organizations, and almost everything in between.

The Jersey Shore Hurricane Facebook page is just one example of how individual communications have become "lifelines" for the Sandy evacuees. With 170,000 users liking the page, photos, damage accounts, and requests such as, "Can someone visit the woman trapped in Seaside Heights?" have been shared (Calefati). Lorena Ruiz expressed how she felt about social media's role in the days after the storm, saying, "Social media was very effective in making people aware of areas that were greatly affected that the mainstream media ignored at the onset. The best example is Staten Island. Staten Island suffered greatly from the storm, but it only came to light through social media."

Twitter, Instagram, Google+, and YouTube have all been utilized in a similar way. Social media enables people to share, to connect, and to raise awareness in ways unimaginable 5 years ago (Networker). In efforts as large as fundraising to bits of help as small as knowing which

subway lines to take in NYC, social media is a tool that speeds recovery and reconnects society in a whole new way (Ruiz).

Overall, Sandy was an incredibly powerful and disastrous storm, but the impact was minimal compared to the aftermath of Hurricane Katrina. With the various preparations made by the government and their organized relief efforts, among those of both non-profit and industry groups, affected areas were well on their way to recovery in less than one week. Social media, such as Facebook, helped speed this process along by bringing attention to where it was needed most quickly and raising money to fund the operations. The relief efforts in the wake of Hurricane Sandy are a testament to the power of social media in the face of natural disaster.

Works Cited:

- "A Month after Superstorm Sandy, Death Toll Is at 125 in US; Damage Estimated at \$62B." *Fox News*. FOX News Network, 29 Nov. 2012. Web. 30 Jan. 2013.
- "Apply for Assistance." *FEMA.gov*. FEMA, 08 Mar. 2012. Web. 31 Jan. 2013.
- Calefati, Jessica. "Facebook Page Becomes Lifeline for Many Hurricane Sandy Evacuees." *NJ.com*. The Star Ledger, 3 Nov. 2012. Web. 31 Jan. 2013.
- Erdman, Jon. "Superstorm Sandy: A Giant Circulation." *Weather.com*. The Weather Channel, 29 Nov. 2012. Web. 28 Jan. 2013.
- "Emergency Communications." *FCC.gov*. Federal Communications Commission, n.d. Web. 31 Jan. 2013.
- Fischetti, Mark. "Sandy versus Katrina, and Irene: Monster Hurricanes by the Numbers: Scientific American." *Scientific American*. Scientific American, 29 Oct. 2012. Web. 31 Jan. 2013.
- "Google Crisis Map." *Google Crisis Map*. Google, n.d. Web. 31 Jan. 2013.
<<http://google.org/crisismap/2012-sandy>>.
- "Hundreds of Thousands Ordered to Evacuate as Sandy Bears down on East Coast." *Msnbc.com*. NBC News, 10 Oct. 2012. Web. 31 Jan. 2013.
- "How Do Hurricanes Form?" *NASA SpacePlace*. NASA, 8 Mar. 2012. Web. 28 Jan. 2013.
- "Hundreds of Thousands Ordered to Evacuate as Sandy Bears down on East Coast." *Msnbc.com*. NBC News, 29 Oct. 2012. Web. 31 Jan. 2013.
- "Hurricane Sandy." *Defense.gov*. United States Department of Defense, n.d. Web. 31 Jan. 2013.
- "Hurricane Sandy." *FEMA.gov*. FEMA, 01 Jan. 2013. Web. 27 Jan. 2013.
- "Hurricane Sandy | Donor Response | Center for Disaster Philanthropy." Center for Disaster

- Philanthropy. N.p., 3 Jan. 2013. Web. 31 Jan. 2013.
- "Hurricane Sandy | NGO Response | Center for Disaster Philanthropy." Center for Disaster Philanthropy. N.p., 17 Jan. 2013. Web. 31 Jan. 2013.
- "Hurricane Sandy Relief." Hurricane Sandy Relief. Johnson and Johnson, Nov. 2012. Web. 31 Jan. 2013.
- "Hurricane Sandy: Rumor Control." *FEMA.gov*. FEMA, 12 Mar. 2012. Web. 31 Jan. 2013.
- Kavner, Lucas. "Hurricane Sandy: Red Cross, Other Relief Organizations See Social Media As 'Double-Edged Sword' For Relief Efforts." *TheHuffingtonPost.com*. The Huffington Post, 30 Oct. 2012. Web. 31 Jan. 2013.
- Lipman, Harvy. "Nearly \$220M in Charitable Donations for Sandy Relief Raised Thus Far." *NorthJersey.com*. The Record, 19 Nov. 2012. Web. 31 Jan. 2013.
- McKinley, James C., Jr. "12-12-12 Producers Say Concert Brought In \$50 Million." *NYTimes.com*. New York Times, 19 Dec. 2012. Web. 31 Jan. 2013.
- "NBC Hurricane Sandy Telethon Raises 23 Million." *Rollingstone.com*. Rolling Stone Magazine, 5 Nov. 2012. Web. 31 Jan. 2013.
- Networker, The. "Hurricane Sandy - a Social Media Storm." *B & T Weekly (2012)ABI/INFORM Complete*. Web. 31 Jan. 2013.
- Nolan, David. "Why Is Sandy Unusual?" *CNN*. Cable News Network, 29 Oct. 2012. Web. 28 Jan. 2013.
- "Our Mission - Ushahidi." *Ushahidi.com*. Ushahidi, n.d. Web. 31 Jan. 2013.
- <<http://ushahidi.com/about-us>>.
- "President Obama Signs Storm Aid Bill - New York News." *MyFoxNY.com*. Fox 5, 29 Jan. 2013. Web. 31 Jan. 2013.

"Robin Hood Responds: Hurricane Sandy." *The Robin Hood Foundation*. Robin Hood, n.d. Web. 31 Jan. 2013.

Ruiz, Lorena M. "Interview with Lorena Ruiz." Online interview. 30 Jan. 2013.

"Sandy Stirs Climate Change Debate." *Weather.com*. The Weather Channel, 30 Oct. 2012. Web. 29 Jan. 2013.

"Sandy Recovery: \$2.7 Million in Aid to Help Survivors." AmeriCares.org. AmeriCares, 16 Jan. 2013. Web. 31 Jan. 2013.

Sher, Lauren. "ABC's 'Day of Giving' to Help Hurricane Sandy Victims: Live Blog." ABC News. ABC News Network, 5 Nov. 2012. Web. 31 Jan. 2013.

Appendix: The Simplex Creative Problem Solving Process

Problem definition

Divergence

	HMW understand past responses for disasters?
	HMW use this info for our final project?
**	HMW understand how disasters impact people?
***	HMW gather info on natural disasters?
*	HMW make a schedule to do it in 3 weeks?
*	HMW find a schedule that works for everyone?
*	HMW find what tasks are required?
	HMW decide how long to spend on each task?
*	HMW decide what info to include in the paper?
	HMW decide what parts of society to include?

Why? What's stopping us?

	HMW focus on a specific disaster/narrow the scope of the paper
	HMW write a paper on a specific disaster?
	HMW choose a natural disaster?
	HMW gather info on natural disasters?
	HMW find resources on natural disaster?
	HMW find resources on the impact of disasters?

Idea Finding

HMW gather info on natural disasters?

- Go to the library.
- **Google a list of natural disasters and pick one.
- *Interview someone.
- *If someone has a personal relationship with a disaster, it could be a good one to pick.
- **Government websites (i.e. FEMA)
- Find out if UC has any involvement in assisting with natural disaster relief.
- Talk to Red Cross.
- Ask a librarian where to start.
- *Search through library search summons.
- *Newspapers.
- Online newspapers (BBC, New York Times, etc.)
- Journals specifically related to natural disasters.
- Look at Youtube/Google/Facebook/Twitter involvement in disaster relief.
- Google everything.

Evaluate and Select

Criteria:

- *Ease of use
- Speed of use
- *Clearly shows impact on people
- *Variety of information
- ****Relevant to criteria of paper (background info, government response, non-profit response, social network use)
- Credibility of source
- *How recent it is

Acceptance

	Ease	Speed	Impact	Variety	Relevant	Credible	Recent
Google	3	3	2	3	3	2	2
Interview	1	1	3	2	3	3	2

Relationship to disaster	3	2	3	2	3	3	2
Government websites	3	3	2	3	3	3	2
Library search summons	2	2	2	3	3	3	2
Newspapers	3	3	3	2	3	3	2

Action

Google

- Look for contact info.
- Look for background info on a specific disaster.
- Look for recent disasters.
- Look for government response to chosen disaster.
- Look for non-profit response to chosen disaster, if it is there.
- Look for how social media was utilized.
- List of disasters.
- Read background info on several disasters.
- Weigh importance.
- Notice trends between disasters.
- Search for people in Cincinnati who have been impacted by natural disaster.
- Hashtags.

What will be done	How it will be done (answering these questions)	By whom	(By) when	Where
Look at social media response	-Did networks set up special programs or sites? -How many people were reached? -What was the response? -Did celebrities utilize social media? -Local, national, international?	Aaron	Tuesday, end of class	Home Library search summons
Look at	-Did government set up special	Alero	Tuesday, end of	FEMA, Google

government response	<p>programs or sites?</p> <ul style="list-style-type: none"> -What was the plan for the relief efforts? -What went wrong? -What went right? -How much did they spend? -Local, national, international? 		class	
Look at non-government response	<ul style="list-style-type: none"> -What was the relief plan? -How was it executed? -What went wrong? -What went right? -How much was spent? -Where did the money come from? -How long did it take? -How much were they able to accomplish up to the present? 	Ben	Tuesday, end of class	Google, Wikipedia references
Look up background information	<ul style="list-style-type: none"> -Dates, times, location -Type of disaster -Background on how that type of disaster occurs -Specific causes -Impact of the disaster -Cost of damage -Compare to other disasters -Time to rebuild -Death toll/injuries/displaced 	Irini	Tuesday, end of class	Google
Find interviewee	<ul style="list-style-type: none"> -Ask a librarian -Look for contact info on websites -Ask around the university, social media -Ask Honors department -Ask friend 	Irini	Tuesday, end of class	Facebook