

November 4-5, 2014 Embassy Suites Airport | San Francisco

New Trends: Use of Mobile & the Internet of Things in Disaster Response

Jeannette Sutton, Ph.D., Assistant Professor, Dept. of Communications; Director of the Division of Risk Sciences in the College of Communication and Information University of Kentucky

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A Research Perspective

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Terse Message Retransmission

- What terse messages are salient among the public online?
 - Measured by amplification of official messages under imminent threat.



5 Hazards 5 Cases



Associated Press/John Paraskevas

Winter Storm Nemo (2/08/2013-2/09/2013)

- Large Nor'easter affecting East Coast and Great Lakes regions of the US; >700,000 people losing electricity and 18 deaths.
- 65 total accounts; 1301 total tweets; 15621 total retweets



Associated Press/Gaylon Wampler

Waldo Canyon Fire (6/26/2012 – 6/28/2012)

- Large wildfire covering >18,000 acres in the Colorado Springs area;
 - 32,000 CS residents were evacuated
- 17 total accounts; 621 total tweets; 6308 total retweets



Tom Green/Zuma Press File

Boston Marathon Bombing (4/15/2013-4/20/2013)

- IED event during the 2013 Boston Marathon and subsequent manhunt
- 25 total accounts; 834 total tweets; 512303 total retweets



Associated Press/Bebeto Matthews

Hurricane Sandy (10/29/2012-10/30/2012)

- Deadliest hurricane of the 2012 Atlantic hurricane season and widest hurricane to hit the Atlantic coast
- 69 total accounts; 2866 total tweets; 255050 total retweets



Associated Press/Dennis Pierce

2013 Colorado Floods (9/10/2013-9/16/2013)

- Flooding in northern Colorado; 200 miles affected resulting in 14 deaths.
- 50 total accounts; 3127 total tweets; 22856 total retweets

Style/Structure Effects

Negative Binomial Coefficients Predicting Retweet Counts of Official Messages During Five Hazard Events



Message Content Effects

Negative Binomial Coefficients Predicting Retweet Counts of Official Messages During Five Hazard Events



Summary

Increase Predicted Retransmission Rates

- Follower numbers
- Hashtag
- Imperative sentence
- Hazard Impact
- Advisory/Evacuation

Decrease Predicted Retransmission Rates

- Directed communication
- Thank you's
- URLs



Terse Messages for Warnings and Alerts

 How does message length affect perception and confirmation under conditions of imminent threat?





ANOVA testing (DF=2,250) showed significant differences for message interpretation (F=9.24, *p<.001) and milling (F=9.09, *p<.001), and near significant difference for personalization (F=2.53, p=.081), across the three hazard types.



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Summary

- 140 character messages do not consistently shift perceptions from safety to risk
- 140 character messages produce milling response
- Under conditions of imminent threat, this isn't optimum
- Next steps:
 - Investigate the effectiveness of sequenced warning messages
 - Investigate the effectiveness of weblinks

Conclusions

- Disaster communication is not only about technology deployment
 - It is also about who says what, when, how, and to whom.
- Technological solutions must have the end user in mind
 - Design for the user
 - Draw from research on human behavior



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An EM Perspective

Kristin Hogan External Affairs Specialist San Francisco Department of Emergency Management





We believe in connection. Not catastrophe.



SF72 preparedness messaging has nothing to do with disaster and everything to do with San Francisco.

San Francisco is pretty... different. Some might even say it's seven square miles of contradictions.

San Francisco is the fog, the farmer's market, the costume box in every closet. It's the \$5 cup of coffee next to the \$1 taco. It's where optimism meets work ethic. It's the nudists and the startups, the hippies, the idealists, the lifers, the transplants. This city might be the only thing we all have in common.

This is our city.

By living here, we've all embraced a way of life that's about being on the edge – of social change, technology, even nature. After all, the ocean, the hills and the fault lines are San Francisco too. So let's take care of the people and the place we love. Let's take stock of our skills and resources. Let's not wait until a disaster to show how connected we are.

Let's start small and go from there. Together.

Emergencies look like cities coming together. Not falling apart.



In an Emergency

- We are always activated (24/7 Duty Officer watch at a minimum)
- We activate our EOC for unplanned and planned events ranging from a World Series clinch games and subsequent World Series Victory Parade to a suspected Ebola case in San Francisco (THERE ARE NO CONFIRMED OR EVEN SUSPECTED CASES OF EBOLA IN CALIFORNIA!)
- We use numerous tools to issue public notifications, alerts and warnings including but not limited to social media, AlertSF, CMAS and EAS
- We have formally integrated social media into our Emergency Response Plan for both information dissemination and situational awareness roles
- We are the primary emergency public information dissemination organization in the City and County of San Francisco





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A Private Sector Perspective

Anthony Martwick Area Director, National Public Safety Strategy Verizon



Public Safety & the Smart City



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Emergency Disaster Response Navigating "Islands of Application Data"



How to connect users with different devices, using different applications, generating disparate data, connected to different networks?

- BodyWorn Technology
- Video Surveillance
- Mounted & Dismounted Sensors
- COOP Interoperability
- Application Continuity
- Social Media Emergency Mgmt
- · Citizen Responder Data
- IP Cyber Security & Forensics
- Geo-Spatial Incident Mgmt
- Real-time Data Mgmt
- Data Driven Analytic Platforms



Public Safety Enabling Technologies



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Emerging Technologies Perspective

Heather Blanchard

Director, Wireless Internet Development CTIA – The Wireless Association



South Napa Earthquake's effect on the UP wearers' sleep changes with the distance from the epicenter

August 25, 2014



https://jawbone.com/blog/napa-earthquake-effect-on-sleep/