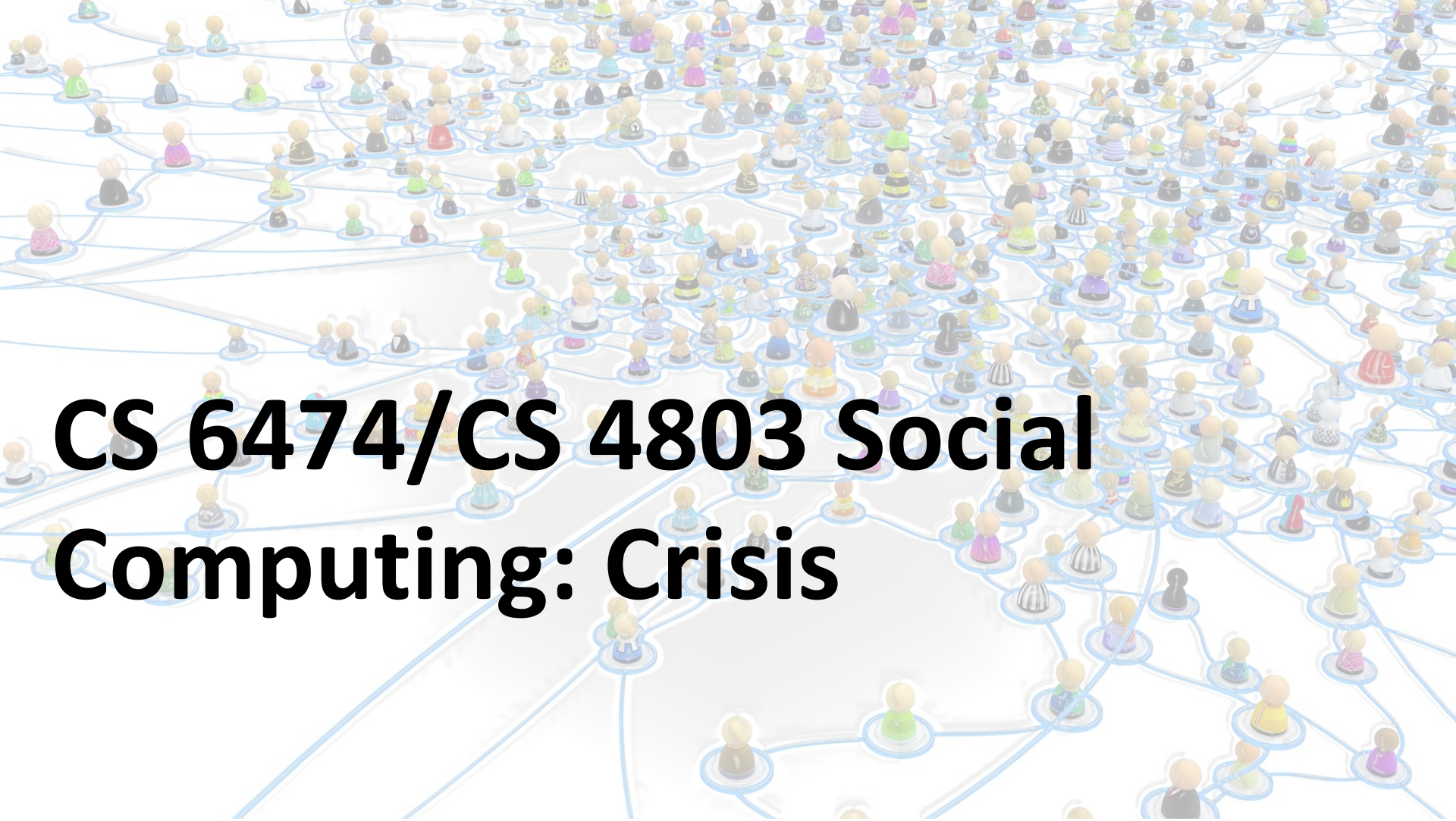


CS 6474/CS 4803 Social Computing: Crisis

Munmun De Choudhury

munmund@gatech.edu

Week 12 | April 1, 2021

Crisis Informatics

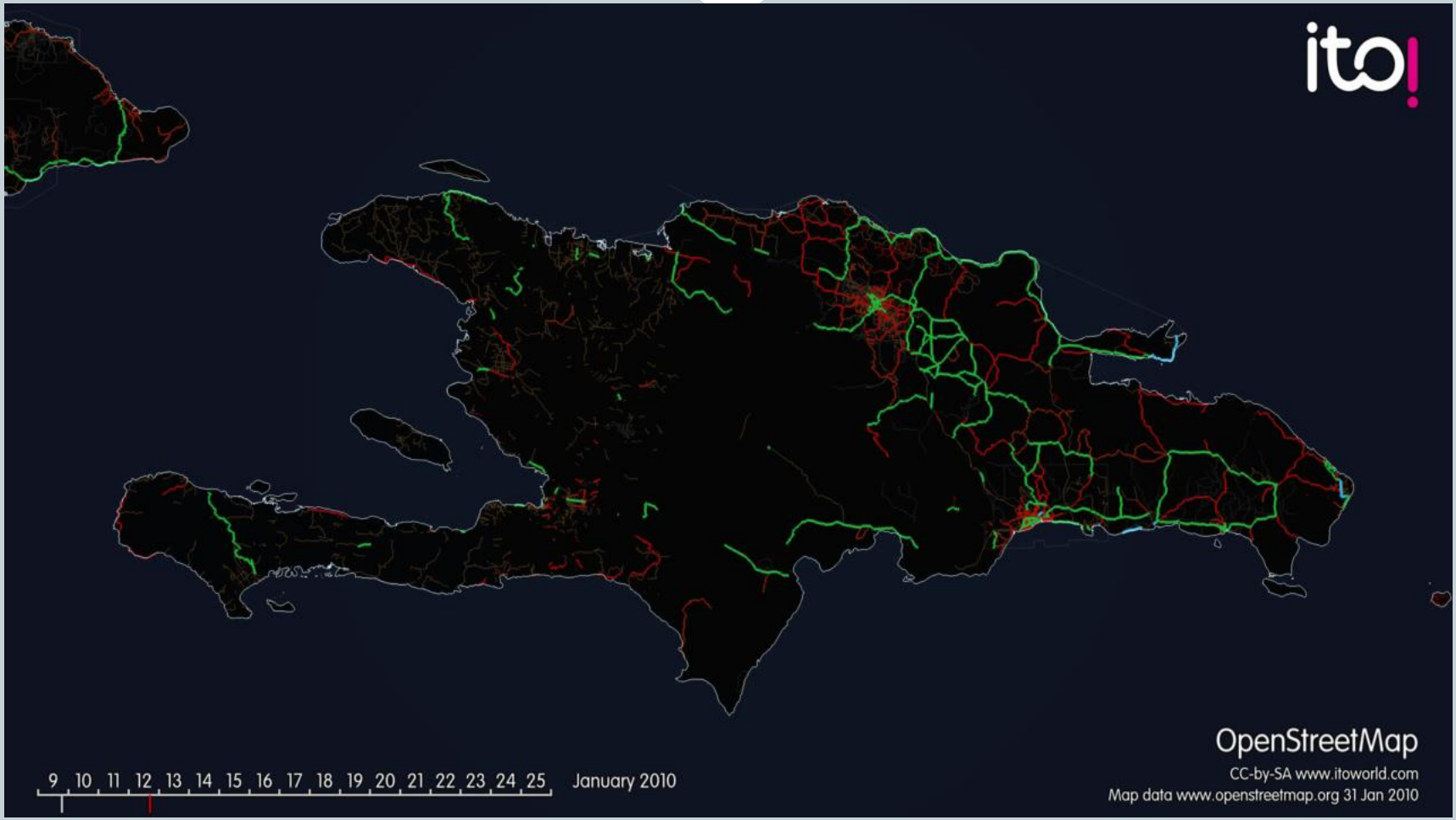
- Definition: An integrated approach to the technical, social, and informational aspects of crises.

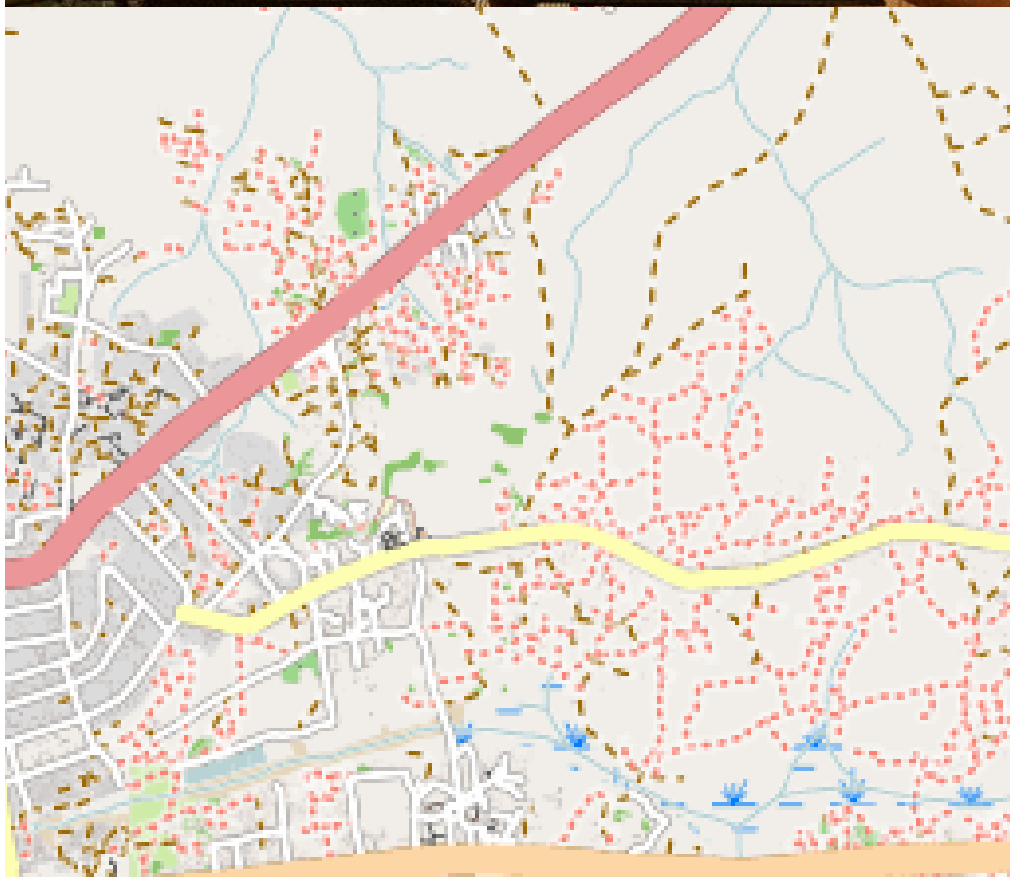
  —*Coined by Hagar (2006, 2010), Palen (2007, 2011)*

- Scope: Full life-cycle of a crisis

- Focus: Needs and contributions of the public

Open Street Map – Haiti 2010





Gulu, Uganda:

U.S. State Department HIU worked with Humanitarian Open Street Map Team (H.O.T.) to deliver high-resolution commercial satellite imagery to “the crowd” for a Red Cross disaster reduction project.

Tracking Population Movement

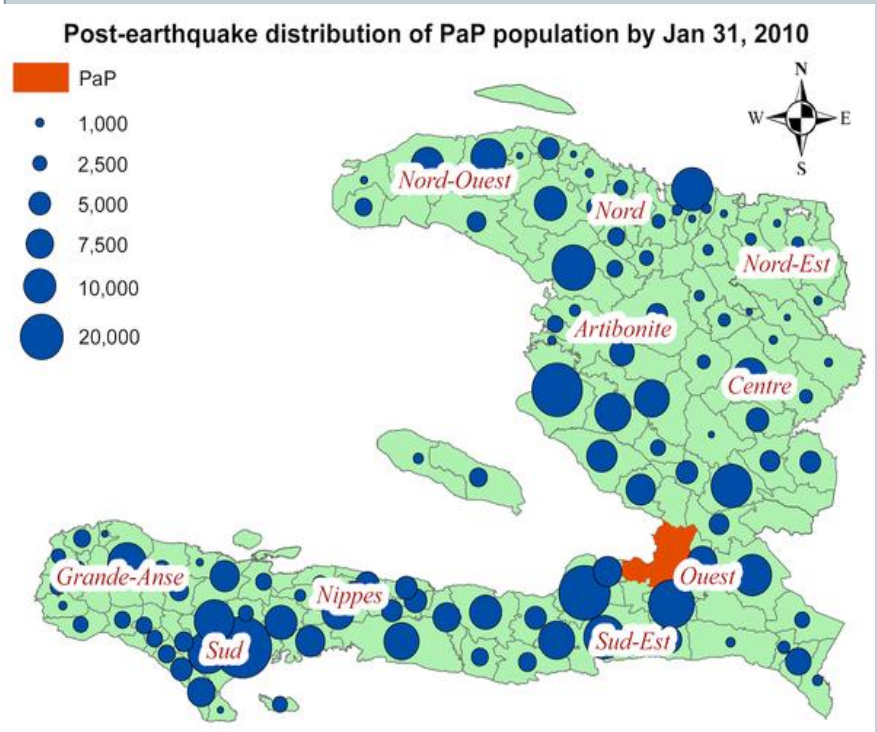


Figure 2. Est. distribution of persons who moved out of Port-au-Prince after the earthquake.

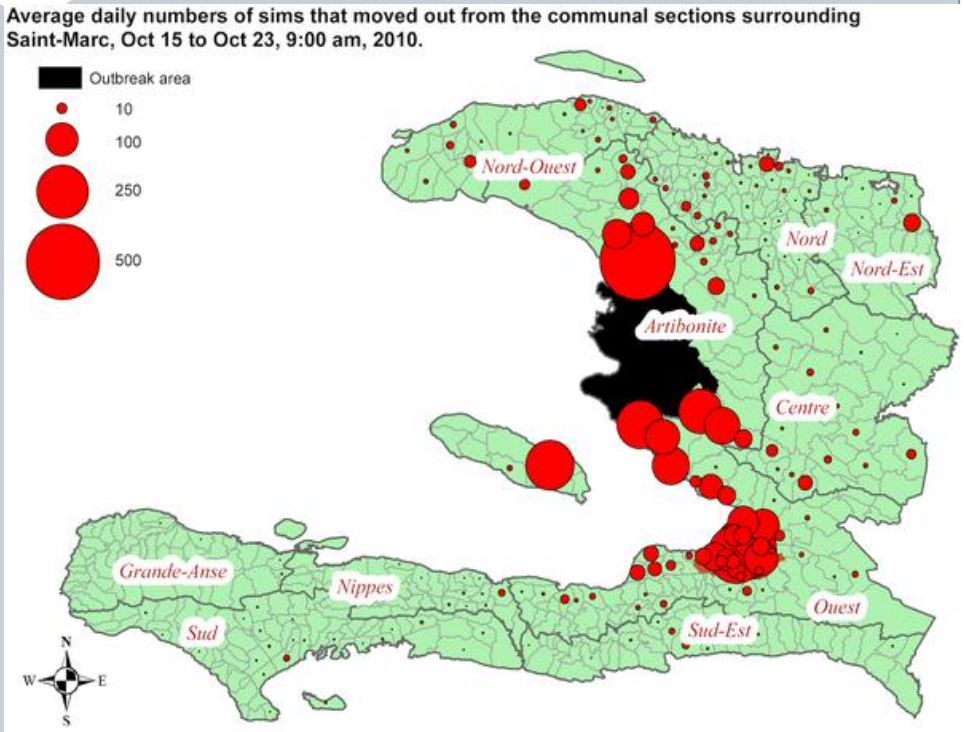
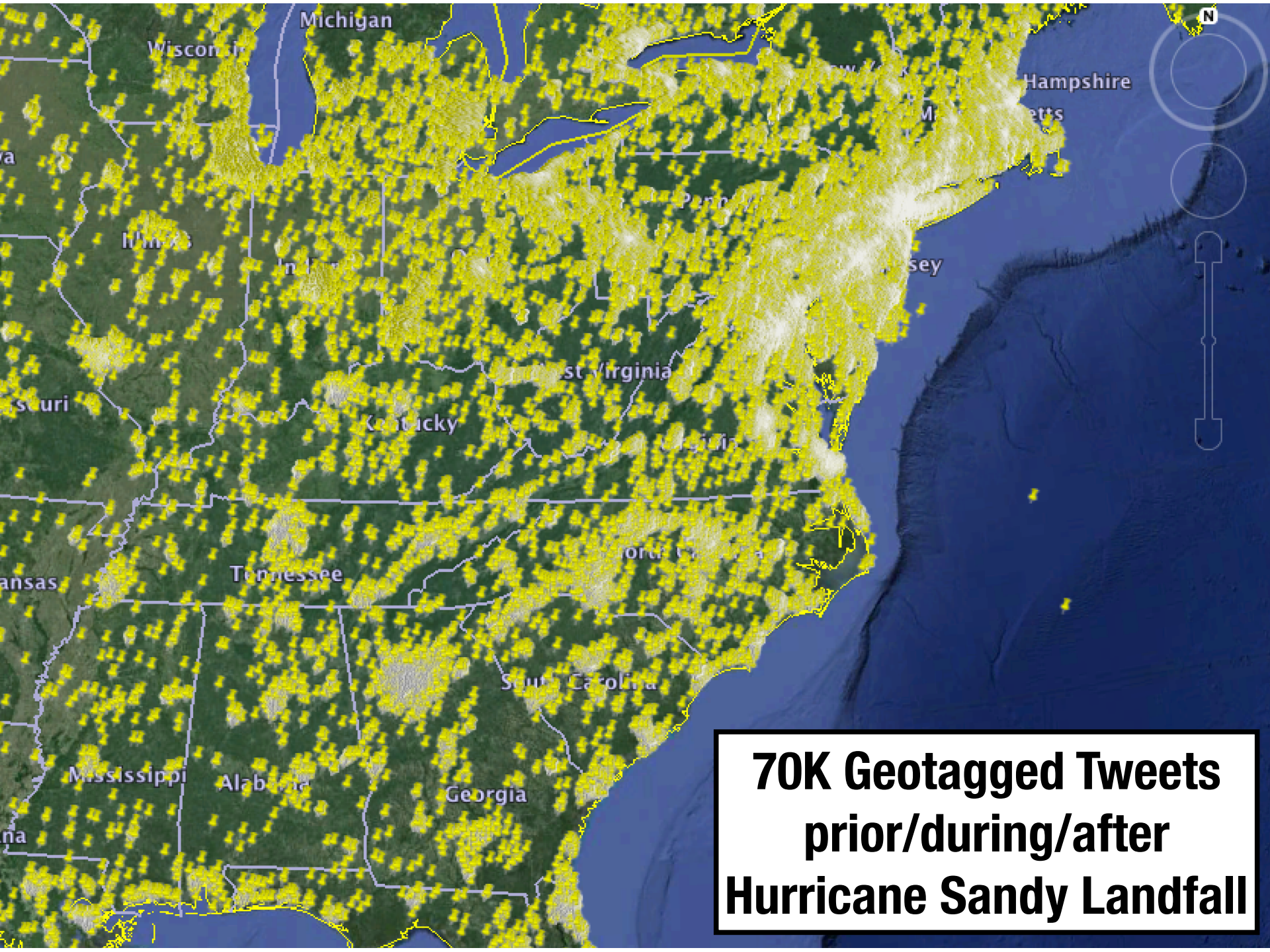


Figure 5. Average daily numbers of SIMs moving out of the cholera outbreak area.


Michigan
Wisconsin
Hampshire
Tennessee
Mississippi
Georgia
70K Geotagged Tweets
prior/during/after
Hurricane Sandy Landfall

URGENT Christopher Frecynet is still alive under his house. 64 Rue Nord Alexis.(RUELLE NAZON, AVENUE POUPELARD

Mirna Nazaire lives in P-A-P at Bizoton 6#12. Entire neighborhood without food. People are dying.

French hospital is now open and ready to receive the wounded at the french lycee in rue marcadieux bourdon

- Questions of interest:
  - Which hospitals are open?
  - Who is in trouble? Does anyone have any tents?
  - Where are the open roads?
  - Any information on Person ABC?
  - What help is needed?
- Who needs this info?
  - Aid Agencies
  - Non-Governmental Organizations
  - Red Cross, UN, etc.
  - Military & other relief suppliers
  - Individuals in Haiti
  - Donors - matching needs to offers etc.

Crisis Informatics: Human-Centered Research on Tech & Crises

Fifteen years of social media in emergencies: a retrospective review and future directions for crisis informatics

RESEARCH-ARTICLE

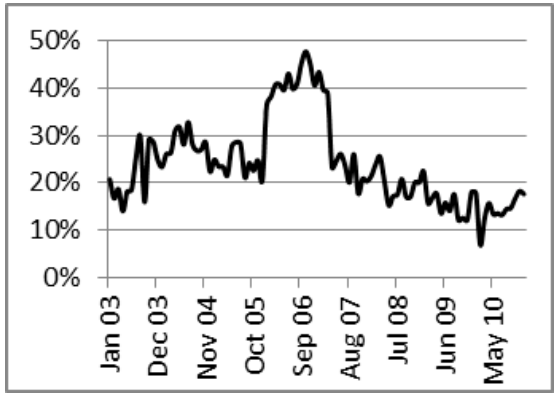
Blogs as a collective war diary

Authors: Gloria Mark, Mossaab Bagdouri, Leysia Palen, James Martin, Ban Al-Ani, Kenneth Anderson Authors Info & Affiliations

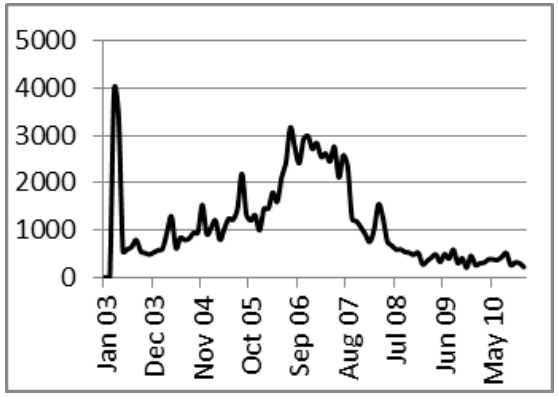
Publication: CSCW '12: Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work • February 2012 • Pages 37–46 • https://doi.org/10.1145/2145204.2145215

ABSTRACT

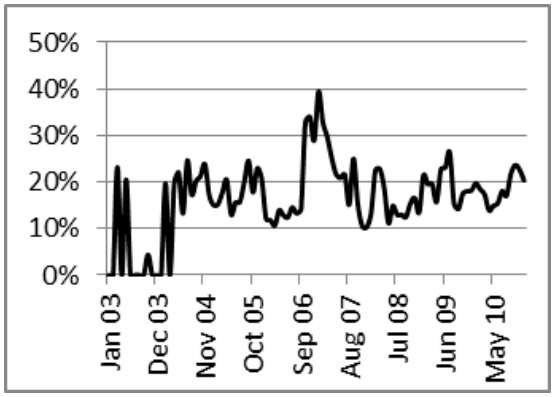
CSCW '12: Proceedings of the ACM 2012...



a. Timeline of war topics in English

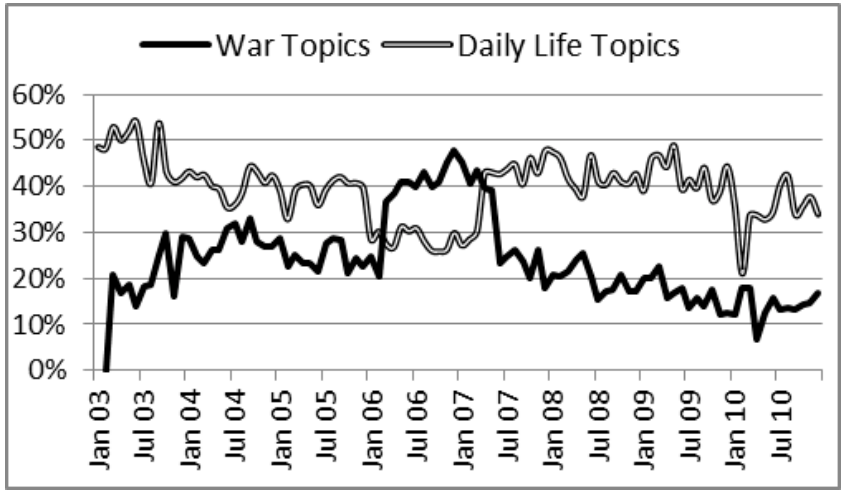


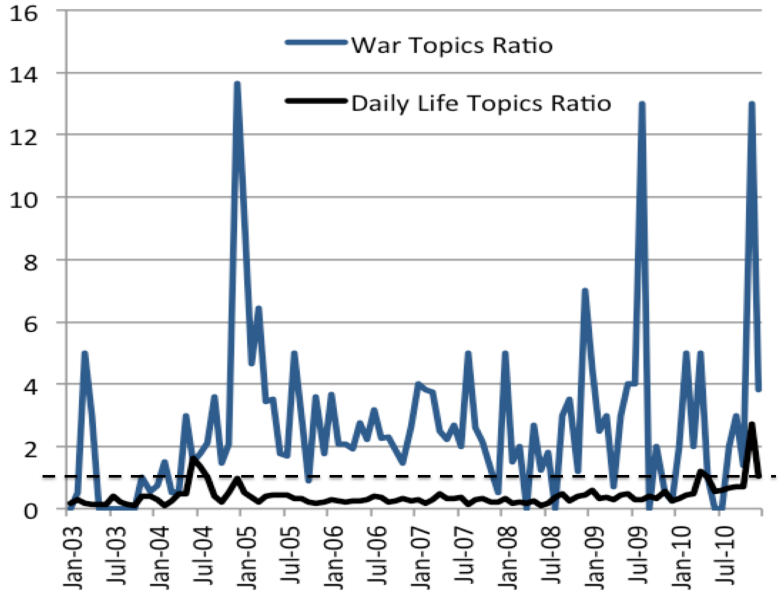
b. Body count



c. Timeline of war topics in Arabic

Arabic posts were more impersonal and showed a lag with external events





"Voluntweeters": Self-Organizing by Digital Volunteers in Times of Crisis

Kate Starbird
ATLAS Institute, Technology, Media & Society
University of Colorado at Boulder
Boulder, CO 80309-0430
starbird@colorado.edu

Leysia Palen
Department of Computer Science
University of Colorado at Boulder
Boulder, CO 80309-0430
palen@colorado.edu

ABSTRACT
This empirical study of "digital volunteers" in the aftermath of the January 12, 2010 Haiti earthquake describes their behaviors and mechanisms of self-organizing in the information space of a microblogging environment, where collaborators were newly found and distributed across continents. The paper explores the motivations, resources, activities and products of digital volunteers. It describes how seemingly small features of the technical environment offered structure for self-organizing, while considering how the social-technical milieu enabled individual capacities and collective action. Using social theory about self-organizing, the research offers insight about features of coordination within a setting of massive interaction.

Author Keywords

activities often remarkable. Previous research and development efforts have emphasized the potential for "crowdsourcing" via social media to increase situational awareness during crisis events [10,15]. However, use of the popular umbrella term risks both obscuring the underlying behaviors that constitute "crowdsourcing," and erroneously casting them as novel by-products of new media. Spontaneous volunteerism is not a new feature of crisis events [2,4,8,20]— disaster events in the pre-ICT era were places where such large-scale self-organizing phenomena could previously be seen. This paper attempts to unpack "crowdsourcing" in crisis response by applying an existing framework of self-organizing in disaster settings [9] to new digital volunteer behaviors. In so doing, it reveals new forms of volunteerism that were not previously possible.

"Why I did it? has no other explanation other than I had to. One part of the world was in pain and I could not sit back watch others do something when I had a little chance to send some drinking water to people if I could."

"I think that's when I went on Twitter and started tweeting. Then I discovered a whole bunch of people tweeting for Haiti and started doing it myself and building up connections as much as I could in order to try to save some lives if possible. … As you'll see some of us tweeted 16 hours a day or more… I just hoped what I was doing was helping. I'll never know if my tweets actually helped but that's ok as well."

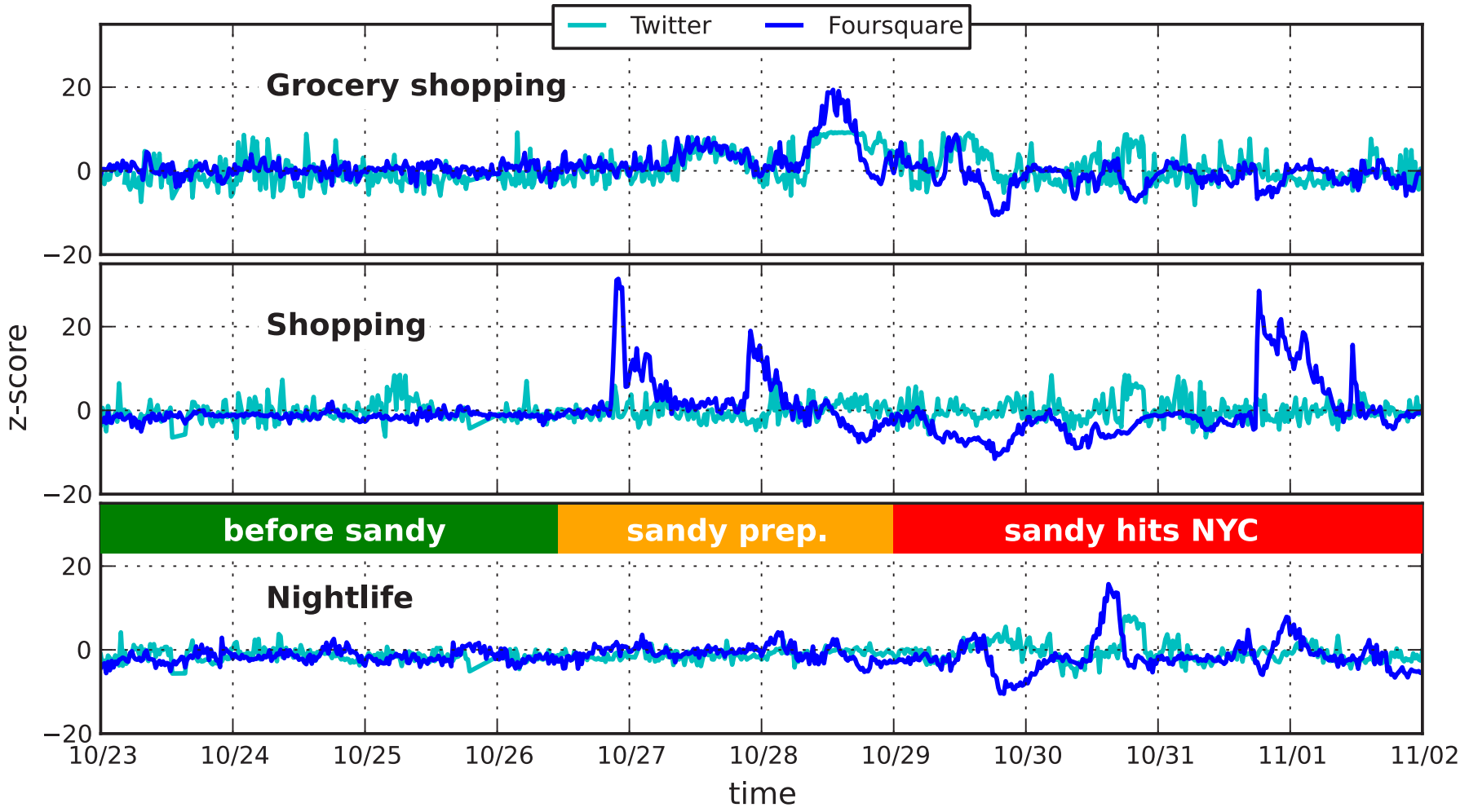
Extracting Diurnal Patterns of Real World Activity from Social Media

Nir Grinberg
Rutgers University
nirg@cs.rutgers.edu

Mor Naaman
Rutgers University
mor@rutgers.edu

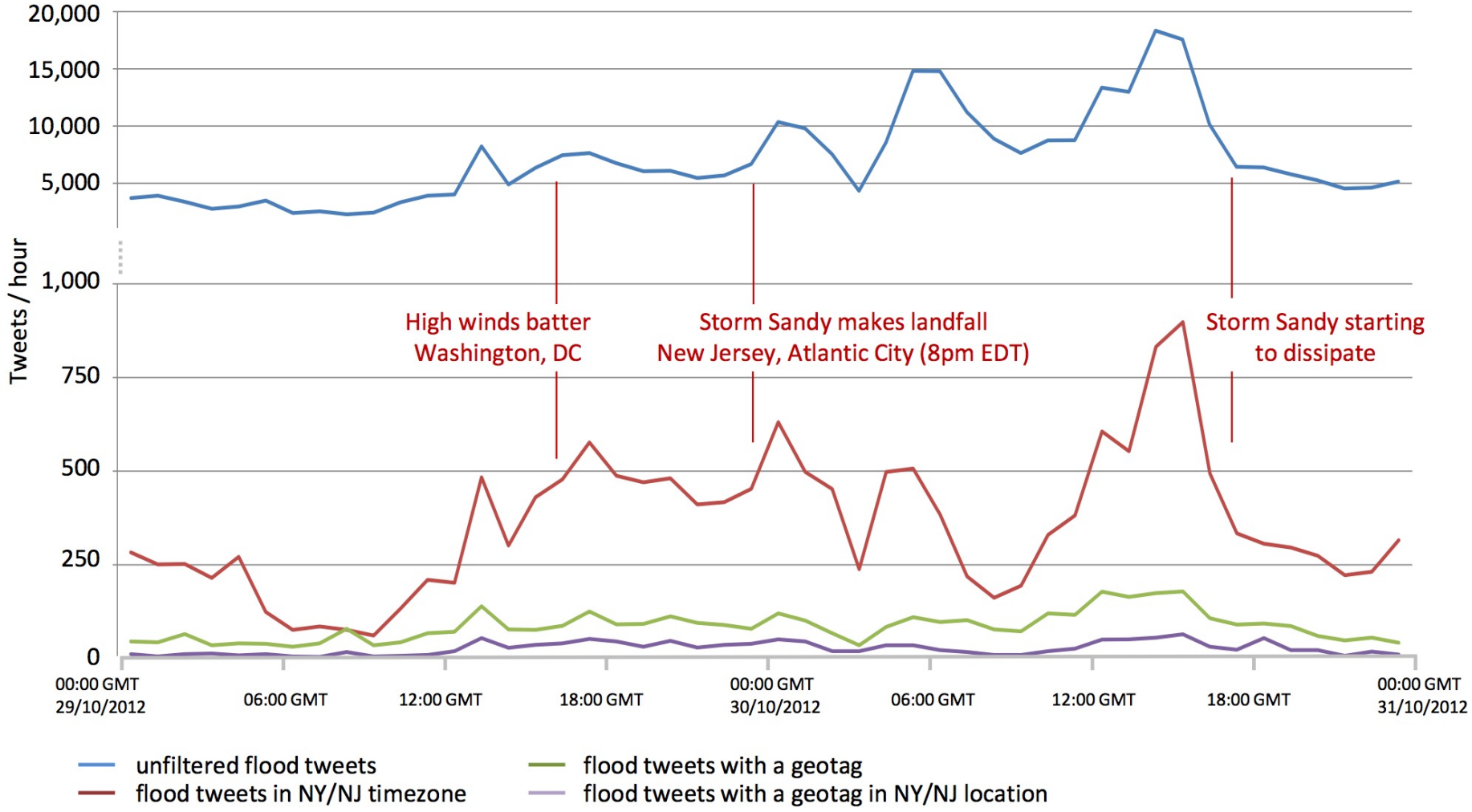
Blake Shaw
Foursquare, Inc.
blake@foursquare.com

Gilad Lotan
SocialFlow, Inc.
gilad@socialflow.com



Real-time Crisis Mapping of Natural Disasters using Social Media

Stuart E. Middleton, Lee Middleton and Stefano Modafferi, *University of Southampton IT Innovation Centre*



Characterizing the Propagation of Situational Information in Social Media During COVID-19 Epidemic: A Case Study on Weibo

Lifang Li, Qingpeng Zhang, *Member, IEEE*, Xiao Wang, *Member, IEEE*, Jun Zhang, *Senior Member, IEEE*, Tao Wang, Tian-Lu Gao, Wei Duan, Kelvin Kam-fai Tsoi, and Fei-Yue Wang, *Fellow, IEEE*

***Abstract*— During the ongoing outbreak of coronavirus disease (COVID-19), people use social media to acquire and exchange various types of information at a historic and unprecedented scale. Only the situational information are valuable for the public and authorities to response to the epidemic. Therefore, it is important to identify such situational information and to understand how it is being propagated on social media, so that appropriate information publishing strategies can be informed for the COVID-19 epidemic. This article sought to fill this gap by harnessing Weibo data and natural language processing techniques to classify the COVID-19-related information into seven types of situational information. We found specific features in predicting the reposted amount of each type of information. The results provide data-driven insights into the information need and public attention.**

***Index Terms*— COVID-19, crisis information sharing, infectious disease, information propagation, social media, social network analysis.**

platforms to acquire needed information and exchange their opinions [2], [3]. There are many different types of information on social media platforms, and the situational information, the information that helps the concerned authorities or individuals to understand the situation during emergencies (including the actionable information such as help seeking, the number of affected people) [4], is useful for the public and authorities to guide their responses [5], [6]. Identifying these types of information and predicting its propagation scale would benefit the concerned authorities to sense the mood of the public, the information gaps between the authority and the public, and the information need of the public. It would then help the authorities come up with proper emergency response strategies [6].

The existing studies have not yet agreed on the definition of situational information. Some categorized help seeking

POLICY FORUM | SOCIAL MEDIA RESEARCH

Crisis informatics—New data for extraordinary times

Leysia Palen[1,2,*], Kenneth M. Anderson[1]
+ See all authors and affiliations

Science 15 Jul 2016:
Vol. 353, Issue 6296, pp. 224-225
DOI: 10.1126/science.aag2579

A funnel cloud near Venice, Italy, June 2012.

PHOTO: PETER PHIPP/TRAVELSHOTS.COM/ALAMY STOCK PHOTO

Questions to consider

Outline

ELSEVIER

Online Social Networks and Media

Volume 22, March 2021, 100104

An exploratory study of COVID-19 misinformation on Twitter

Gautam Kishore Shahi [a] ✉, Anne Dirkson [b] ✉, Tim A. Majchrzak [c] ✉

https://doi.org/10.1016/j.osnem.2020.100104

Highlights

- A very timely study on misinformation on the COVID-19 pandemic.

JOURNAL of TRAVEL MEDICINE

Volume 27, Issue 3
April 2020

Article Contents

< Previous Next >

The pandemic of social media panic travels faster than the COVID-19 outbreak FREE

Anneliese Depoux, PhD ✉, Sam Martin, PhD, Emilie Karafillakis, MSc, Raman Preet, MPH, Annelies Wilder-Smith, MD, Heidi Larson, PhD

Journal of Travel Medicine, Volume 27, Issue 3, April 2020, taaa031,
https://doi.org/10.1093/jtm/taaa031
Published: 03 March 2020 **Article history** ▼

PDF Split View Cite Permissions Share ▼

Issue Section: Editorial

Within weeks of the emergence of the novel coronavirus disease 2019 (COVID-19) in China, misleading rumours and conspiracy theories about the origin circulated the globe paired with fearmongering, racism and mass purchase of face masks, all closely linked to the new 'infomedia' ecosystems of the 21st century marked by social media. A striking particularity of this crisis is the coincidence of virology and

Racism is a Virus: Anti-Asian Hate and Counterhate in Social Media during the COVID-19 Crisis

Caleb Ziems, Bing He, Sandeep Soni, Srijan Kumar
Georgia Institute of Technology
cjziems@gmail.com, {bhe46, sandeepsoni, srijan}@gatech.edu

Abstract

The spread of COVID-19 has sparked racism, hate, and xenophobia in social media targeted at Chinese and broader Asian communities. However, little is known about how racial hate spreads during a pandemic and the role of counterhate speech in mitigating the spread. Here we study the evolution and spread of anti-Asian hate speech through the lens of Twitter. We create COVID-HATE, the largest dataset of anti-Asian hate and counterhate spanning three months, containing over 30 million tweets, and a social network with over 87 million nodes. By creating a novel hand-labeled dataset of 2,400 tweets, we train a text classifier to identify hate and counterhate tweets that achieves an average AUROC of 0.852. We identify 891,204 hate and 200,198 counterhate tweets in COVID-HATE. Using this data to conduct longitudinal analysis, we find that while hateful users are less engaged in the COVID-19 discussions prior to their first anti-Asian tweet, they become more vocal and engaged afterwards compared to counterhate users. We find that bots comprise 10.4% of hateful users and are more vocal and hateful compared to non-bot users. Comparing bot accounts, we show that hateful bots are more successful in attracting followers compared to counterhate bots. Analysis of the social network reveals that hateful and counterhate users interact and engage extensively with

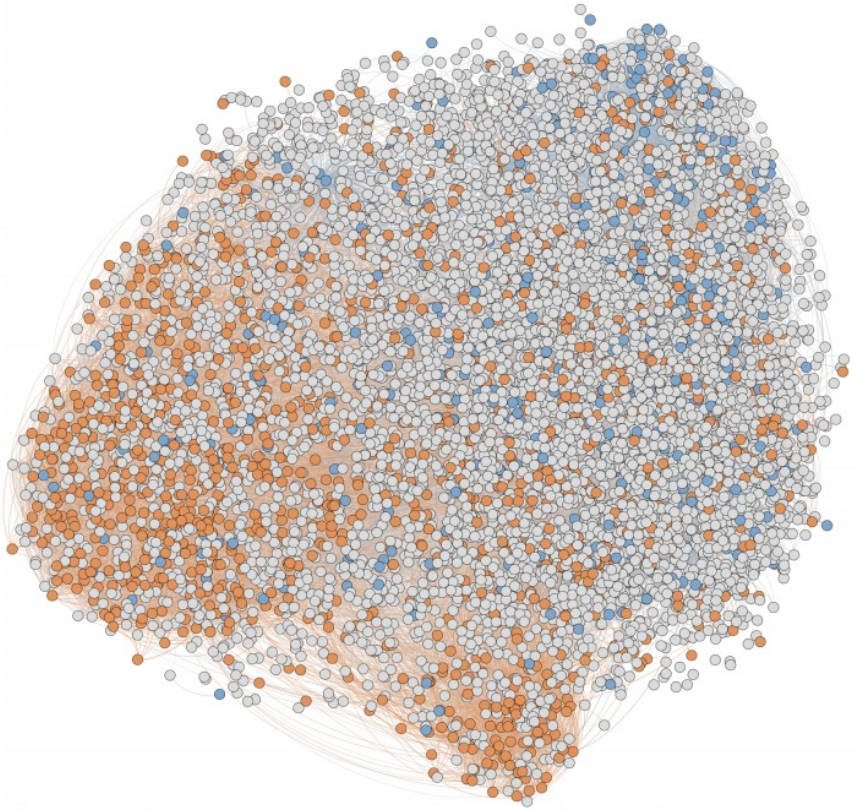


Figure 1: The COVID-HATE social network containing hate nodes (orange), counterhate nodes (blue), and neutral nodes (gray).

Research Challenges

- Technology mediated-behavior
- Data integration and system interoperability
- Information extraction and natural language processing
- Information security and reputation systems
- Legal and policy issues
- Ethics and codes of conduct

Priority Research Challenges

- Determine **where governments can effectively leverage** social networking and crowdsourced data to augment existing info or intelligence for improved decision-making. Conversely, determine where it is not appropriate.

- Determine which **policies** need to be adapted or established. Develop ways for agencies to look ahead in their policymaking 5-10 years with rapid technological change – "Strategic Foresight."