

NCST Technical Investigation of Hurricane Maria (Puerto Rico)

Public Response to Emergency Communications

Project Leader: Katherine J. Johnson

Objective:

To investigate the role of emergency communications in public response for those under imminent threat from Hurricane Maria. This project will also examine the use of communications during response and recovery (during and immediately after the hurricane).

Motivation

- rapid intensification of storm leading to short evacuation timelines
- extensive damage and impact from Hurricane Maria on Puerto Rico
- multi-hazard environment: winds, floods, storm-surge, landslides
- societal preference for sheltering in place
- extended lack of communication among emergency & building officials, and the public after the storm
- emergency rescues required in places across the island



Project Plans: Goals

#1

Characterize the use of emergency communication (technology and information) before, during, and after the hurricane.



#2

Identify the factors that influenced the public's decision to take protection (evacuate) prior to the hurricane, and to understand the role of emergency communications in that decision.

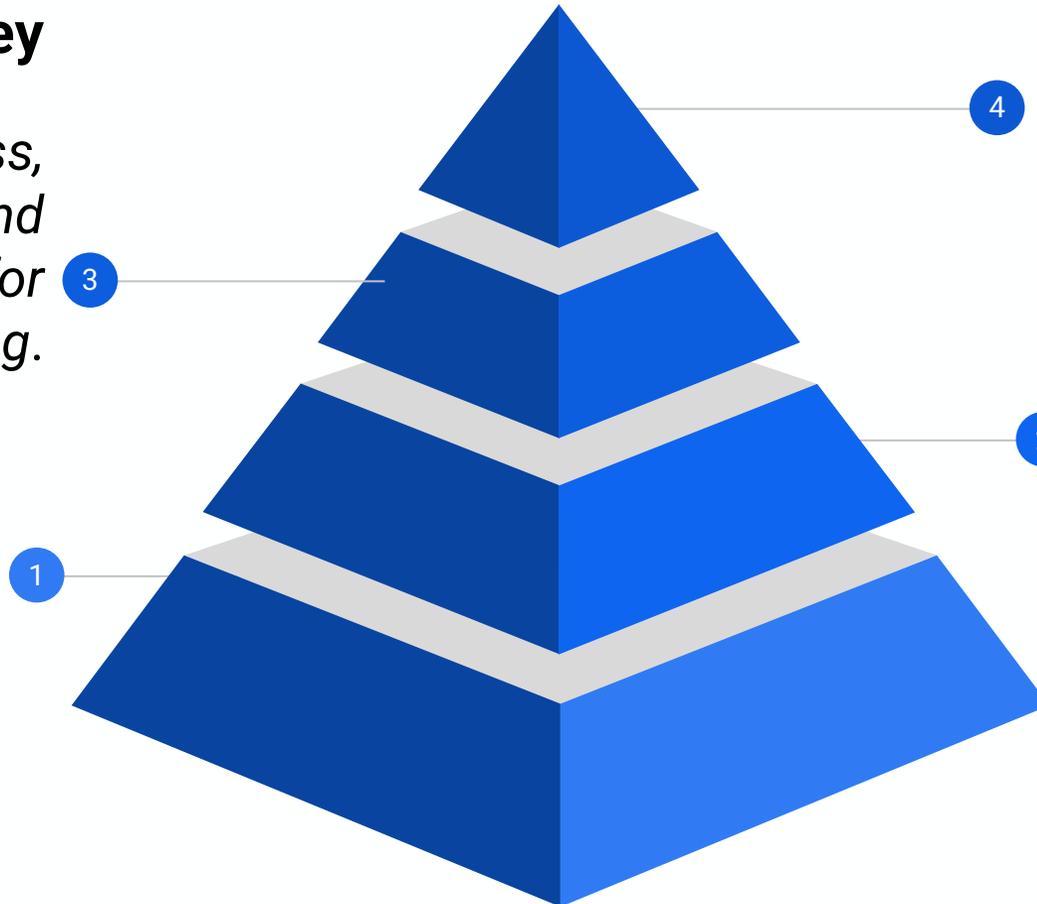
Project Plans: Key Data Sources

Household Survey

Topics: risk awareness, access to info channels and sources, and factors for evacuation decision-making.

Emergency Messages

Qualitative content analysis of messages received by public before the storm.



Household Interviews

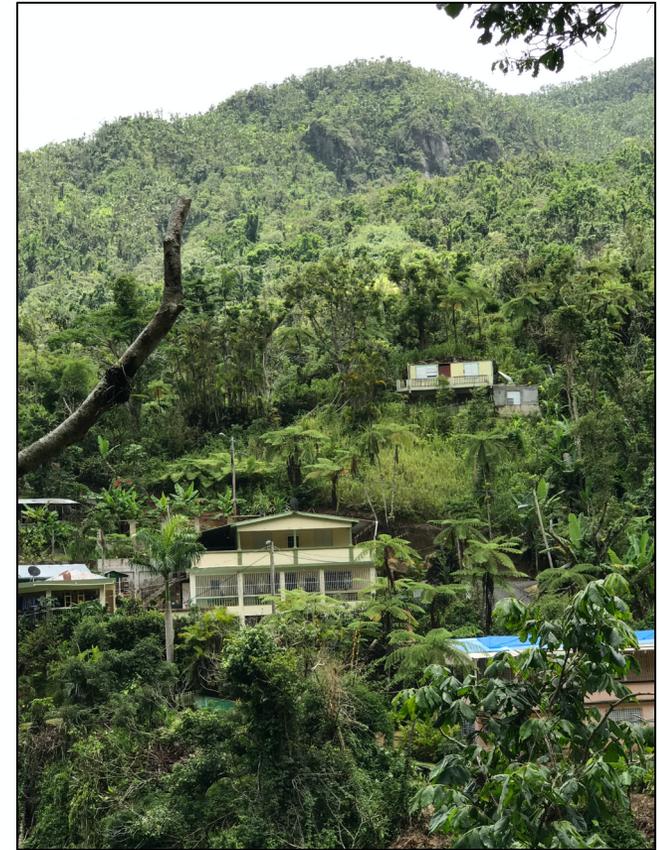
More in-depth characterization of topics covered in survey.

Information Provider Interviews

Insights on message content, distribution, and effectiveness.

Progress: Overview

- refinement of project workplan
- completion of an initial literature review
- finalization of all data collection instruments
- final approval for all instruments except household interview
- development of data analysis plans for instruments
- completion of cross-project “hurricane timeline”
- deployment of *Survey* pilot
- deployment of *Information Provider Interview*
- draft *Final Report* outline



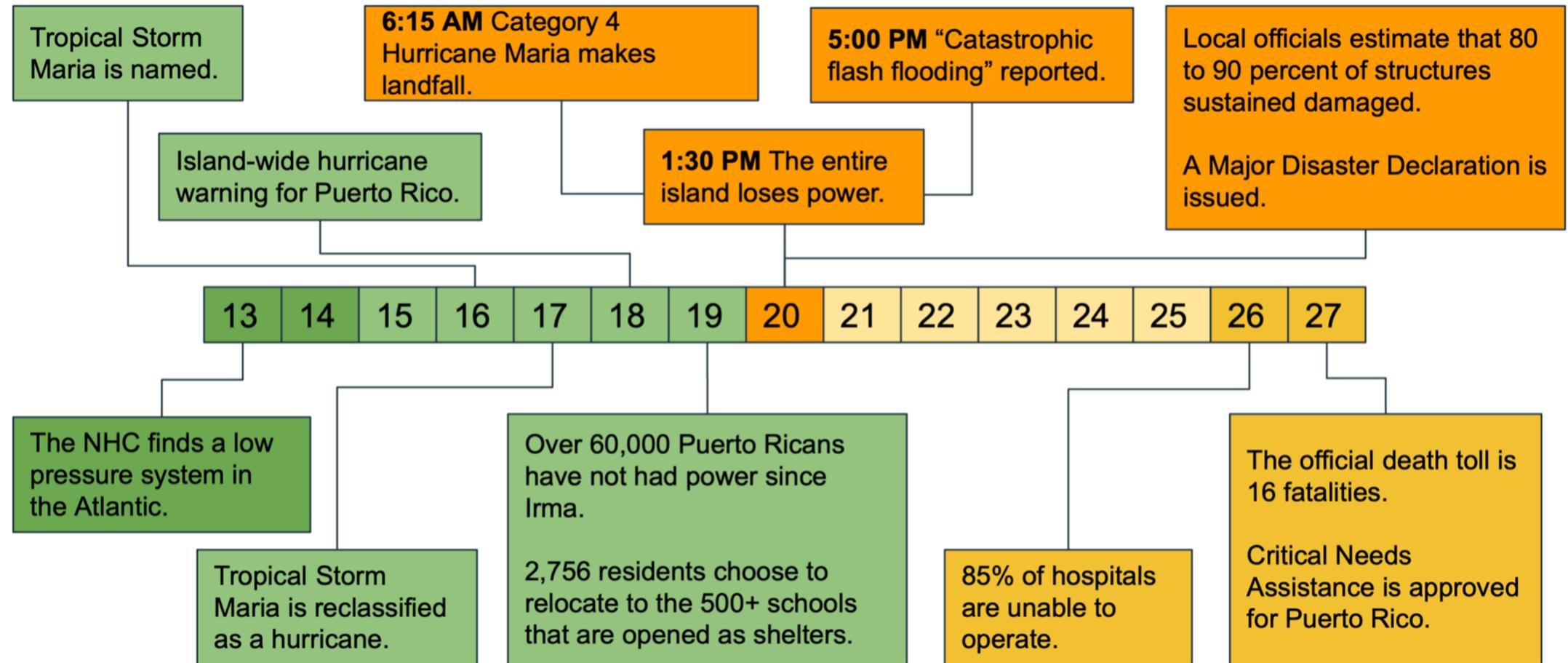
Recent Progress: Support

- coordinated with Horsley Witten Contract Team in development of methods and instruments:
 - sampling strategy
 - refinement and testing of survey and interview instruments
 - outreach and deployment strategies
- collaborated with students via NIST Professional Research Experience Program on:
 - literature review
 - coding of qualitative data



NEW HIRE: Herovic (100% time);
expertise in risk and crisis
communication, resilience, and
renewal; uses mixed methods
approaches to understand human
behavior, thought, and decision
making as influenced by the
communication environment

Recent Progress: Contextualizing Communications



Recent Progress: Qualitative Content Analysis

- >1,500 long and short form messages extracted, organized, and translated
- theory-driven metrics for evaluating message effectiveness refined
- tailored methodological approach for qualitative content data analysis (QCA) defined, based on deductive coding and inductive analysis of fallout data
- 1 graduate student and 2 undergraduate students will join the project full-time for the summer to assist with data processing
- QCA will feature special emphasis on social media data
- codebook and sampling strategy are currently being finalized

Recent Progress: Survey Pilot

- survey was pilot tested Dec. 2020
- qualitative (e.g. recorded comments) and quantitative (e.g. response frequencies) feedback from 20 respondents spurred several important changes to the final survey instrument to streamline, standardize, and clarify questions
- in particular, we found it necessary to simplify terminology to improve understanding and reduce the number of questions and complexity of question scales to fit the required survey run time of 25 minutes

Recent Progress: Survey Planning

- stratified sample of 1,500 households across four study regions planned by census tract; representative of demographic characteristics, flood, and landslide risk
- planned in-person mode changed to either online (via Qualtrics) or telephone; respondents will have postcards dropped off requesting their participation
- sampling plan including walking paths with randomized selection of housing units developed; web based survey landing page developed
- descriptive statistics and regression analyses will identify factors associated with decisions to take protection (evacuate); and role of emergency communications

Recent Progress: Information Provider Interviews

- 35 Information Providers Interviews initiated
- expert interviewees include: Mayors, Emergency Managers, Meteorologists, Forecasters and Journalists, and Government Agency representatives
- interview instrument approved Apr 2021



Recent Progress: Household Interviews

- instrument drafted, under review by contractors
- PRA/OMB approval still needed
- developing sampling strategy to have 100 individuals who have completed the household survey also complete the 60 minute interview
- focus of interview will be on barriers to taking protective action, as well as unmet information needs before and during the hurricane



Next Steps

- complete Information Provider Interviews
- deploy Household Survey, expected Summer 2021
- finalize Household Interview instrument, expected Summer 2021
- complete Qualitative Content Analysis, expected Winter 2021/22
- arrange additional expert interviews, if necessary, depending upon coverage of completed interviews
- continued collaboration across HM team to coordinate on key issues
- report writing is ongoing

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Project Leader: Katherine J. Johnson

Project Team: Emily Walpole, Emina Herovic, Joel Cline (NOAA)

Acknowledgements to past members: Erica Kuligowski, Camila Young, Lauren Cain, Genevieve Tan

Questions?

Please 'raise your hand' using the Blue Jeans Participant window and unmute your audio and video

