**Use of Twitter in Disaster Rescue: Lessons learned from Hurricane Harvey**

Volodymyr V. Mihunov1, Nina S. N. Lam1, Lei Zou2, Zheye Wang1, Kejin Wang1

*1 Department of Environmental Sciences, Louisiana State University, Baton Rouge, LA, USA, 70803*

*2 Department of Geography, Texas A&M University, College Station, TX, USA, 77843*

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**Online Supplementary Materials**

**Appendix A. Online Survey of New Twitter Use – Part 1: Flood Victims - January 2019**

Start of Block: Default Question Block

**Q1** Introduction message

**Q2** Which of the following natural disasters have you experienced in your area of residence?

* Tornado (1)
* Earthquake (2)
* Wildfire (3)
* Hurricane (4)
* Other, please specify (5) \_\_\_\_\_\_\_\_\_\_\_

Skip To: End of Block If Q2 != 4

**Q3** During any of the following events, were you a resident of the affected area?

* Hurricane Isaac (1)
* Hurricane Sandy (2)
* Hurricane Matthew (3)
* Hurricane Harvey (4)
* Hurricane Irma (5)

Skip To: End of Block If Q3 != 4

**Q4** Which one of these statements regarding your experience during the Hurricane Harvey are true?

* I evacuated before Hurricane Harvey made landfall on Houston (Aug 25, 2017) (1)
* After Hurricane Harvey made landfall I asked for external assistance (including friends and relatives) for evacuation (2)
* I did not evacuate or asked for evacuation assistance (3)

Skip To: End of Block If Q4 != 2

**Q5** Which method(s) did you use to ask for evacuation assistance? Please check all that apply.

* Called 911 (1)
* Called voluntary organizations (2)
* Called relatives or friends (3)
* Used websites of rescue organizations (4)
* Twitter (5)
* Facebook (6)
* WhatsApp (7)
* Zello app (8)
* Crowdsource rescue (9)
* Other, please specify: (10) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Skip To: End of Block If Q5 != 5*

**Q6** If you did not evacuate from your home before the flood, what were the reasons? Please check all that apply.

* Did not receive warning information (1)
* Did not think it is necessary to evacuate (2)
* Did not have a place to go (3)
* Lacked transportation resources to evacuate (4)
* Lacked financial resources to evacuate (5)
* Wanted to remain with family or friends (6)
* Other, please explain: (7) \_\_\_\_\_\_\_\_\_\_\_\_

**Q7** If your home was flooded because of Harvey, what was the approximate depth of water outside your home?

* Under 1 foot (2)
* 1 - 2 feet (4)
* 2 - 3 feet (5)
* Above 3 feet (6)
* Wasn't flooded (1)

**Q8** What is the zip code of your home during Hurricane Harvey? \_\_\_\_\_\_\_\_\_\_\_\_\_

**Q9** How many years have you been living in this zip code? \_\_\_\_\_\_\_\_\_\_\_\_\_

**Q10** Do you or your household own your home?

* Yes, own home (1)
* No, we rent (2)

**Q11** Which of the following best describes the place where you lived before Hurricane Harvey made landfall?

* Single family detached house with one bedroom (1)
* Single family detached house with two bedrooms (2)
* Single family detached house with more than two bedrooms (3)
* An apartment, condominium, duplex, or townhouse (4)
* A mobile or modular home (5)
* Other, please specify: (6) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Q12** Did you move to a new home after Hurricane Harvey?

* No (1)
* Yes. Please enter the zip code of your new location: (2) \_\_\_\_\_\_\_\_\_\_\_\_

**Q13** Did you receive any **responses** from the method(s) you used to ask for external assistance? Please check all that apply.

* Police or fire department (1)
* Voluntary organizations (2)
* Relatives or friends (3)
* Through websites of rescue organizations (4)
* Twitter (5)
* Facebook (6)
* WhatsApp (7)
* Crowdsource rescue (8)
* Did not receive any responses (9)
* Other, please specify: (10) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Q14** Did you receive any **assistance** for rescue from the method(s) you used? Please check all that apply.

* Police or fire department (1)
* Voluntary organizations (2)
* Relatives or friends (3)
* Through websites of rescue organizations (4)
* Twitter (5)
* Facebook (6)
* WhatsApp (7)
* Crowdsource rescue (8)
* Did not receive any responses (9)
* Other, please specify: (10) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Q15** How long did it take for you to be rescued?

* Less than 2 hours (1)
* 2-5 hours (2)
* 5-10 hours (3)
* More than 10 hours (4)
* Other, please explain: (5) \_\_\_\_\_\_\_\_\_\_\_\_

**Q16** Which organization rescued you? Please check all that apply.

* Police or fire department (1)
* Coast Guard/National Guard/Texas Guard (2)
* Texas Taskforce 1 or 2 (3)
* *Cajun Navy* or *Texas Navy* (4)
* Individual volunteer (5)
* Relatives or friends (6)
* Other, please explain: (7) \_\_\_\_\_\_\_\_\_\_\_

**Q17** Please select the reasons you used Twitter or social media to seek help. Please check all that apply.

* The 911 system could not be connected (1)
* The telephone signal was unstable (2)
* Social media was easy to use (3)
* Social media may reach first responders, friends, and relatives directly (4)
* Used all methods to reach people who can help (5)
* Other, please explain: (6) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Q18** Did you experience problems regarding the use of Twitter during Hurricane Harvey? Please check all that apply.

* ⊗No, I did not experience any problems (1)
* Lack of information regarding how to get help on Twitter (2)
* Not knowing if the tweets asking for rescue reached first-responders (3)
* Not knowing if the first-responders would send help (4)
* Not knowing how long it would take for the rescue (5)
* Other, please explain: (6) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Q19** How useful is Twitter for seeking help?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ⊗Twitter is: (1) | * Extremely useful (1) | * Very useful (2) | * Moderately useful (3) | * Slightly useful (4) | * Not at all useful (5) |

**Q20** Have you used hashtags to seek help?

* Yes, please specify which hashtags (1) \_\_\_\_\_\_\_\_\_\_\_\_
* No (2)

**Q21** Please rank the suggestions below according to their usefulness for improvement of Twitter use for future rescue activities, with 1 being the most and 4 being the least useful. Optionally, please provide your own suggestion in the field "other, please specify".

\_ Spread awareness about special hashtags for emergency rescue (1)

\_ Spread awareness about special accounts for users to contact when they need emergency rescue (2)

\_ Provide information, education, and/or training on how to use Twitter for emergency responses (3)

\_ Other, please specify: (4)

End of Block: Default Question Block

Start of Block: Block 1

**Q22** New block introduction message

**Q23** What is your gender?

* Male (1)
* Female (2)
* Other (4)

**Q24** What year were you born? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Q25** What is your race/ethnicity?

* White, non-Hispanic (1)
* White, Hispanic (2)
* African American (3)
* Asian (4)
* American Indian and Alaska Native (5)
* Others, please specify: (6) \_\_\_\_\_\_\_\_\_\_\_\_

**Q26** Were you born in Texas?

* Yes (1)
* No, born in other U.S. state (2)
* No, born outside of United States (3)

**Q27** What language is spoken in your home? Check all that apply.

* English (1)
* Spanish (2)
* Other, please describe: (3) \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Q28** Which statement best describes your employment status at the time of Hurricane Harvey?

* Working full-time (35 or more hours per week) (1)
* Working part-time (less than 35 hours per week) (2)
* Not working (temporary layoff from a job) (3)
* Not working (looking for work) (4)
* Not working (retired) (5)
* Not working (disabled) (6)
* Not working (other, e.g., homemaker) (7)

**Q29** Are you considering moving because of the flood?

* No (1)
* Yes, within Houston (2)
* Yes, within Texas (3)
* Yes, outside Texas (4)
* Don’t know (5)

**Q30** How satisfied are you with living in your current location?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Extremely satisfied (1) | Somewhat satisfied (2) | Neither satisfied nor dissatisfied (3) | Somewhat dissatisfied (4) | Extremely dissatisfied (5) |

**Q31** What was your household income last year before taxes? Please select the category that includes your household income.

* Under $10,000 (1)
* $10,000 - $14,999 (2)
* $15,000 - $24,999 (3)
* $25,000 - $34,999 (4)
* $35,000 - $49,999 (5)
* $50,000 - $74,999 (6)
* $75,000 - $99,999 (7)
* $100,000 - $149,999 (8)
* $150,000 - $199,999 (9)
* $200,000 or more (10)

**Q32** What is the highest degree or level of education you have completed?

* Less than 9th grade (1)
* 9th through 12th grade (no diploma) (2)
* High school graduate (includes equivalency) (3)
* Some college, but no degree (4)
* Associate degree (5)
* Bachelor’s degree (6)
* Graduate or professional degree (7)

**Q33** How many working vehicles do you have access to?

* 0 (1)
* 1 (2)
* 2 (3)
* More than 2 (4)

**Q34** Any additional comments you would like to share? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_