



# Making Mitigation Work: A Webinar Series

## Natural Hazards Center and FEMA Webinar Series “Making Mitigation Work”

### Written Questions and Answers after the February 11, 2020 Webinar How Mitigation Helped Houston Households in Hurricane Harvey

Sara Grineski, University of Utah  
Aaron Flores, University of Utah

Question from Diane Cooper: Given the number of people impacted by Harvey I would have expected a higher response pool. Just curious how did you collect the information, online, door to door, phone, etc. (I am from Houston and know that Rice University has sent out several Harvey recoveries surveys.) Also did you only focus on Harris County or did you look at the surrounding counties?

Speaker Response: We had funding from the National Science Foundation, which covered the costs about just over 400 surveys. We initially tried to follow-up with 484 people that participated in a study about flood hazard vulnerability that we did in 2012, but we could only reach 125 of them and of those folks, 71 completed surveys. We used the rest of the money to collect surveys from a random sample of Greater Houston residents (called full sample the rest of the responses)

We used a multimodal approach, using email, landline and cell phone numbers in both English and Spanish.

We focused on the nine-county Greater Houston MSA.

Question from Diane Cooper: Do you have the numbers of how many of the respondents flooded and how many were rescued?

Speaker Response: 65% were present with major flooding occurred and 17% were stranded in an unsafe place during Harvey.

Questions from Heidi Mariscal: In regard to the health poll-were those affected suffering from contact with mold? How long after the hurricane were you looking for health issues?

Speaker Response: The analysis using the 71 pre-/post respondents was two months after Harvey. The full sample was 3 ½ months after Harvey (we took a break in surveying in mid-late December)!

Yes, mold was associated with health effects. In an analysis of the full sample, in multivariate models, we found the following:

- each scale unit increase in square feet of mold in the home resulted in a 39% increase in the odds of experiencing at least one physical health problem (OR=1.394; CI: 1.045-1.862).
- A scale unit increase in square feet of mold present in the home was associated with a 55% increase in the odds of having a PTS score  $\geq 40$  (OR=1.551; CI: 1.188-2.026).

This information is from another paper we have written on Harvey.

Questions from Michale Williams: I'm very interested in the evidence from sampling for socioeconomic barriers. What worked best? What didn't work? What can we duplicate in preparation that was borne out in evidence in mitigation for socioeconomic levels?

Speaker Response: Our analysis showed that persons from lower socioeconomic status (SES) households were more likely to suffer after Harvey, in terms of more physical health problems, more PTS symptoms, less complete near-term recovery and more adverse event experiences. Our analysis also showed that higher levels of mitigation was protective against those negative outcomes. We did not relate the SES variable to the mitigation variable though and so we cannot fully address your question here.

Question from an Anonymous Attendee: During Harvey, the effect on 9 counties of Greater Houston is different. How did you consider this variation in your study?

Speaker Response: In our statistical models, we adjusted for the flood extent within 100 m of each respondents' home. This allowed us to adjust for the fact that different households had different levels of flooding at their home. We also measured home damages and included that in the model too. We did not account for the fact that counties may have approached recovery differently.

Questions from Jeremy Maxand: I apologize if I missed this, but was there any metrics on access and functional needs/disability of the people surveyed?

Speaker Response: 15% of households in the full sample included at least one member with a disability. In another analysis, we found that households that included a person with a disability were less likely to receive NGO assistance after Harvey than were households without any disabled members. This was controlling for other variables, including race/ethnicity, SES and home damage.

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Questions from Matt Doyle: Do you know if any of your respondents impacted by Harvey were also impacted by the Memorial Day flood of 2015 and/or Tax Day flood of 2016?

Speaker Response: We do not know. We know that they were living in Greater Houston at that time, but we do not know how they were affected by other flood events as we did not ask about that in our survey.

Questions from Monique Gallant: Are there any other pre/post disaster event studies that you are aware of?

Speaker Response: Yes, there are a few, but not too many. Sometimes, researchers can take advantage of data that was coincidentally collected before a big disaster, as we did here. It is difficult though as it is hard to follow-up with research participants who were not already planning to participate in a long-term study.

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Questions from Carlie Lawson: Did you obtain any information as to why they chose the mitigation techniques that they did?

Speaker Response: We did not, although that would be great to know!

Question from an Anonymous Attendee: How did mitigation activities practiced relate to code or permitting requirements?

Speaker Response: This is great question, but we don't know the answer!

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Questions from Nina Balan: Is it possible to have the full paper sent via email? Thank you

Speaker Response: Yes! You can receive the paper from [aaron.b.flores@utah.edu](mailto:aaron.b.flores@utah.edu)

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Questions from Michale Williams: Can you please offer tips and evidence of actions that can improve sheltering experience for those community members with mental health challenges like PTSD, autism, sensory?

Speaker Response: This is a really important question. We know there has been some work on the experiences of folks with mental health challenges in shelters after Harvey. But, we don't feel qualified to offer tips and evidence related to this issue.

## Chat from Webinar with Questions and Comments for speakers:

From Denice Freeman to All Panelists: What are some types of mitigation for lower income or minority groups such as young mothers used currently?

Comment from Diane Cooper: I think if people did not flood/were rescued they would be less likely to have the post stress impacts. I am not sure that is really related to an income status. My area was severely impacted but our economic status is not LMI. People in this area even 2+ years later still have stress after an event. Although the flooding from May 2019 and Imelda reinforced their stress.

We agree with you! The analysis that we presented showed that flooding around the home was strongly and significantly associated with more PTS symptoms. Independent of that, higher income was also related to fewer PTS symptoms.

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## Comments, Suggestions, or Questions for the Natural Hazard Center?

Please contact: [katherine.murphy-1@colorado.edu](mailto:katherine.murphy-1@colorado.edu).

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