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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Using rapid damage observations from social media for Bayesian updating of hurricane vulnerability functions: A case study of Hurricane Dorian" *by* Jens A. de Bruijn et al.

Anonymous Referee #1

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The authors present an interesting topic for quantifying losses from a hurricane. While the paper has a lot of potential, I think the following comments will ensure that the paper has merit across hazard types and research fields.

The paper builds on important work performed on estimating damages from imagery. However, the current literature review and methodology sections are cursory at best and lack significant details for using images in a damage assessment. For instance, the literature review is missing any detail on quantifying structural damages through survey such as using the Tornado Injury Scale (TIS; Curtis & Fagan, 2013), or papers

such as Meyer and Hendricks (2018) which directly measure damages and recovery using images. Like the literature review, the methods section was limited in terms of image estimates. The authors do a great job outlining the model they use for the final analysis, but their contribution is using youtube to inform those models. The authors allocate two pages to explaining the Bayesian model, but they spend two paragraphs explaining how they collected the imagery. This lack of detail limits the use of this paper for other researchers and removes any valid reproducibility.

Several questions I asked while reading the methods included:1) how many people watched the videos and quantified damages? 2) If more than one person was watching the videos and estimating damages how did the authors deal with potential issues with inter-rater reliability (See meyer and Hendricks for example)? 3) How did you rate damages? Without answers to questions like these the generalizability of the study is severely limited.

Within the results section I was disappointed to not see a section on how these measures were validated. I don't feel it is enough to say "total damages are lower with this new model", without first giving evidence as to how your estimates improved the calculations. Without these validation metrics from a test dataset, the findings can't be assumed to improve the model and may in fact be making it worse.

Meyer, Michelle Annette, and Marccus D. Hendricks. "Using photography to assess housing damage and rebuilding progress for disaster recovery planning." Journal of the American Planning Association 84.2 (2018): 127-144. Curtis , A. , & Fagan , W. F. (2013). Capturing damage assessment with a spatial video: An example of a building and street-scale analysis of tornado-related mortality in Joplin, Missouri, 2011 . Annals of the Association of American Geographers , 103 (6), 1522 – 1538 . doi: 10.1080/00045608.2013.784098

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