

Interactive comment on “Assessing Transportation Vulnerability to Tsunamis: Utilising Post-event Field Data from the 2011 Tohoku Tsunami, Japan, and the 2015 Illapel Tsunami, Chile” by James H. Williams et al.

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Received and published: 15 November 2019

The paper provides an interesting insight into the impacts of tsunami on roads and bridges, and I do agree with the authors that it is worthwhile to look at tsunami impacts on critical infrastructure. The language used in this paper is clear, albeit with some grammatical errors. The field survey conducted in this study has included quite an interesting and extensive suite of observations, and was conducted in consideration of the Tohoku post-event survey dataset. That said, I still have some concerns about the paper.

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Throughout this paper, it appears that the differences in road use type, construction type, coastal topography in influencing damage are very much limited to only one dataset (either the Tohoku or the Illapel dataset) in the analysis. While it is not particularly an issue for me, it does contradict with what the authors set out in the problem statement in page 2, line 44-45. The analysis still does seem to describe about local characteristics. My suggestion is to show a table which summarises the dataset which was used to examine the influence of each factor (e.g. culvert, distance from coast).

I am also confused about the development of fragility functions for the different types of analysis (e.g. influence of distance from coastline, coastal topography, debris, road use type). The authors seem to have developed fragility functions for some, and not for the others. I assumed from the objectives outlines in the abstract that fragility functions would be developed for different factors. My suggestion would be to separate the factors for which the authors have developed fragility functions for, and those which they have only conducted spatial analysis (e.g. distribution of debris etc) for into separate sections.

Specific comments for the paper are included in the attached file. I hope that the authors would address them and I do hope that with the revised version, this paper would prove to be a worthy pioneer work for future studies on tsunami damage to transportation network.

Please also note the supplement to this comment:

<https://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2019-332/nhess-2019-332-RC2-supplement.pdf>

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2019-332>, 2019.

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