

Interactive comment on “Understanding Spatial Variations in Earthquake Vulnerabilities of Residential Neighborhoods of Mymensingh City, Bangladesh: An AHP-GIS Integrated Index-based Approach” by Md. Shaharier Alam and Shamim Mahabubul Haque

Anonymous Referee #1

Received and published: 26 November 2019

I have read the invited MS very carefully. I believe that this study is report only and isn't suitable to publish this journal. Also, There are several papers with this subject in NHSS.

Introduction: - Line 37-43: You describe attribute of historical earthquakes. But you - should add pictures of earthquake, faults and etc. - Line 54-61: I don't find innovation this study!

C1

Literature Review - This part is too long. This research isn't review search.

Methodology 3.1. Study Area - Fig. 1: please add coordinate. Also, position of city in Bangladesh country. - You should describe historical earthquakes by map and table. Also add depth of all earthquakes (it is very important).

3.2.1. Geological earthquake vulnerability parameters - calculating of PGA need several parameters such as length of fault, distant between fault and site, magnitude of earthquake, soil type, shear wave and etc. why do you use PGA, soil type, shear wave? There are many paper about calculating PGA and PSHA. For example:

Campbell, K. W. (2006). Campbell-Bozorgnia next generation attenuation (NGA) relations for PGA, PGV, and spectral acceleration: a progress report. *Seism. Res. Lett.*, 77.â

3.3.2. Weighted Linear Combination - Line 245-267: How do you determined rank of each parameter?

Method - How do you determined weight of each class of factor? I don't find anything about that.

- Line 305: There are several map with different scale. What do you utilize for convert scales to 1*1 m or 2*2 m? It is very important. - Fig 6, 8, 10, 12 shown influence of vulnerability parameters in each group. You calculate shown influence of vulnerability parameters by using AHP method. Why do you show again? Also, you shown that in Fig14. It is good because it is summery of all parameters.

Validation

- CDMP-II algorithm and Sarker algorithm aren't clear. It is too important for using and etc. - This study using several parameters such as social, urban and etc. data. But CDMP-II and Sarker algorithm utilized only geology data. How do you compare results?

C2

Conclusion - This part is moderate. Consequently, I think that this part need add key important point about advantage and disadvantage AHP model and compare with HAZUZ completely.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2019-237>, 2019.