

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1  
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## Comment on nhess-2021-277

Anonymous Referee #1

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Referee comment on "How to use empirical data to improve transportation infrastructure risk assessment" by Weihua Zhu et al., Nat. Hazards Earth Syst. Sci. Discuss.,  
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Railway system is essential for the functioning of modern society, especially in China. In recent years, we have seen an increase in the frequency of disruption of railway system caused by extreme rainfall in the context of climate change. Therefore, an accurate assessment of rainfall-induced hazard risk to railway infrastructure is of great importance. This work proposes a multi-source data-based vulnerability curves to explore the risk of railway infrastructure to rainfall-induced hazards. Thus, this research is worth publishing. And I have some minor comments:

- Please indicate the source or credit of the photo in Figure 1.
- What do the values in Table 3 mean? For example, does 5-8 in the Table 3 indicate the estimated value of the 95% confidence interval or what? Need to explain. If you only need to use the average value, then some columns may not be listed
- 5 and M1-5d have different physical meanings, you need to unify them in Equation 1, Figure 4 and the corresponding text description.
- I did not see clearly or understand the part about the moving average method. I am especially curious about how to use the moving average method to get multiple values under the same rainfall intensity in Figure 5. Finally, the statistics get the highest, lowest and average value.
- Reading through the full text, this article does a risk assessment of the railway. I suggest replacing the transportation with railway.