

Nat. Hazards Earth Syst. Sci. Discuss., author comment AC4
<https://doi.org/10.5194/nhess-2022-90-AC4>, 2022
© Author(s) 2022. This work is distributed under
the Creative Commons Attribution 4.0 License.

Reply on RC2

Fahim Sufi et al.

Author comment on "A Scenario-based Case Study: AI to analyse casualties from landslides in Chittagong Metropolitan Area, Bangladesh" by Fahim Sufi et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2022-90-AC4>, 2022

Many thanks to the anonymous reviewer for finding our solution and study innovative. Indeed, this system presents a new method for autonomously extracting AI-driven insights interactively from landslide related data using Regressions and Decomposition Analysis. This innovative methodology is now being used in other areas of research like cyclones and other natural disasters as evident from the recent citations of this preprint discussion.

We appreciated the interest of the reviewer in our approach with three highly legitimate and relevant queries. Our responses with the corresponding queries are briefed below:

Query 1: If other researchers want to apply this methodological framework in a different location, what are the main characteristics defining valuable data helpful in performing meaningful insights?

It is possible to use the methodology explained in this research to apply on landslides (or even other disasters like Cyclone or Tornado) that happened in other locations. For example, the process of using the same methodology in Tornado related casualty is explained in our following recent publication:

- Fahim Sufi, Edris Alam, Musleh Alsulami, "A New Decision Support System for Analyzing Factors of Tornado Related Deaths in **Bangladesh**", Sustainability, Vol. 14, No. 10, 2022 (Impact Factor 3.889).

Similarly, the same method applied in critically analyzing **Australian** cyclones is explained in our following recent publication:

- Fahim Sufi, Edris Alam, Musleh Alsulami, "Automated Analysis of Australian Tropical Cyclones with Regression, Clustering and Convolutional Neural Network", Sustainability, Vol. 14, No. 16, 2022 (Impact Factor 3.889).

Moreover, this method could also be used to monitor disasters from any global locations as demonstrated in following publication:

- Fahim Sufi and Ibrahim Khalil, "Automated Disaster Monitoring From Social Media Posts Using AI-Based Location Intelligence and Sentiment Analysis," in IEEE Transactions on Computational Social Systems, doi: 10.1109/TCCSS.2022.3157142, 2022 (<https://ieeexplore.ieee.org/document/9737676>, Impact Factor 4.747)

As it becomes apparent from these recent publications, the dataset is first required to be cleansed and transformed. Then, the Microsoft Power BI's Key Influencer visualization is used to analyze the outcome variable (e.g., Casualty) with respect to a list of available "explain by" variables (e.g., Elevation, Rainfall, Area of Mass, Longitude, Latitude, Number of Injuries, Style, Types etc.). The detailed process in using Microsoft Power BI's Key influencer visualization is explained at <https://learn.microsoft.com/en-us/power-bi/visuals/power-bi-visualization-influencers?tabs=powerbi-desktop>.

Query 2: What considerations were made to select the collection of feature attributes used to analyze casualties?

Machine Learning (ML) based feature analysis (e.g., linear Regression or logistic Regression) depends on the availability of many feature attributes for understanding their correlations to the outcome variable. In this study, Casualty was deemed as an outcome variable, since strategic decision makers are always keen on saving precious