Reviewer 2

Thank you very much for your observations. You kindly spent time delving into our manuscript, and we are grateful. Please find your comments in grey, and the respective answers in black. The corresponding paragraph in the paper is in dark blue.

Comments

This is an important paper to reflect about the current stance of SV research as it is a rare systematic review covering a decade and the period of 2008-2018. The focus is on social and economic aspects of SV indices and their relation to spatial aspects, specifically.

- The findings are based upon a systematic selection of studies, yet are also facing certain limitations, obviously, when describing numbers of findings according to countries or even continents, based on a total number of 21 papers only.

  Thank you for your comment. As depicted in the methodology, from an initial set of 235 papers, 84 were found to be relevant, 42 of which were considered highly relevant, and 21 were finally reviewed. Nevertheless, we agree that in a revised version of the manuscript, we can consider the complete universe of papers (n = 235) for a more holistic statistical analysis.

- Shortcomings and guidance for fellow researchers should be added such as the process of selection these papers (why those keywords were selected and others deselected), certain countries and languages that might be overlooked, grey literature and their importance for SV publications such as global or country wise indicator sets, EU is just an example, where many more studies might be found than just within journal papers published on Clarivate Analytics. A discussion section describing those shortcomings would balance out the impression conveyed by this paper that the charts and tables represent world rankings.

  Thank you very much for your comment. The choice of keywords and the exclusion of other keywords were our decisions as authors to focus mainly on the spatial dimension in the assessment of socio-economic vulnerability related to internal geo-dynamic processes such as earthquakes, tsunamis and volcanic eruptions. We will clarify this aspect in a revised version of the manuscript. We wanted to focus mainly on journal papers rather than other types of literature; however, we are open to checking other databases such as Scopus, in addition to Clarivate. We will also improve the discussion section based on the suggestion from the reviewer. Finally, the references included in the tables represent, according to the judgement of the authors, the most relevant ones regarding data sources, methods, spatial variables, indicators, indexes and tools used for spatial socio-economic vulnerability assessments.

- Certain older literature might be interesting to add that were dealing with spatial aspects of indicators such as King 2001.

  Thank you for this suggestion. We are open to reviewing this reference suggested by you regardless of the publication period.

- The discussion of spatial aspects could also include literature on known effects of spatial indicators per se - for example, within the literature on social-ecological systems that is mostly absent in this selection, but that does deal with socio-economic components of vulnerability. Scale discussions,

effects such as the Modifiable Area Unit Problem, ecological fallacy, could be mentioned even their absence in the literature cited could be of interest.

Thank you for this suggestion. Effects such as the modifiable areal unit problem (MAUP) and ecological fallacy are already discussed in our manuscript. Please read below:

'(…) Thus, assessment at the provincial, county or state level can result in lost information (Zhou, Li, Wu, Wu, & Shi, 2014) or require tackling issues such as ecological fallacy or the modifiable areal unit problem (MAUP) (Pacione, 2005)(…)'. Lines 4-6, page 17.

- It could also be cautioned more explicitly that while many aspects such as Moron I tests are not mentioned within the journal papers selected does not mean they're not treated by their studies. Often, more technical analyses in GIS such spatial autocorrelation tests are subject to more technical chapters or even shifted into the appendices within project reports or PhD theses.

Thank you for your suggestion. We are open to reviewing the references that you suggested. We did not manage to find any references to the Moron I test; however, the manuscript already includes several references to global Moran's I as a statistic method to determine spatial autocorrelation and for the assessment of social vulnerability (SV). Please read below:

'(…) hence, Gu et al., (2018) used global Moran's I and local Gi* de Getis-Ord in addition to the SoVI®, while Maharani, Lee, and Ki, (2016) utilised the SOM (…)'. Line 5-6, pag. 11

'(…) Buzai & Villerías Alarcón (2018) developed their own SV index and also used global Moran's I, but they elaborated on the spatial patterns of local association using the Local Index of Spatial Association (LISA) to determine hot and cold spots (…)'. Line 7-8, pag. 11

'(…) Lin and Hung (2016) combined Gi* de Getis-Ord to measure the high or low vulnerability association and global Moran's I to determine the homogeneity of the clusters (…)'. Line 8-10, pag. 11

'(…) According to Ley-García, Denegri de Dios, & Ortega Villa, (2015) global Moran's I and LISA allow the identification of dependence between attributes and localisations (…)'. Line 10-12, pag. 11

'(…) The summary measure of autocorrelation in the territory as a whole is undertaken with global Moran's I, while the autocorrelation of the spatial units included in the territory is measured using LISA (…)'. Line 12-14, pag. 11

'(…) Cutter and Finch (2008) also previously utilised global Moran's I and LISA to identify local variability and cluster similarity of low and social vulnerability (…)'. Line 14-15, pag. 11

'(…) These authors used global and local Moran's I or LISA as ESDA to determine the spatial autocorrelation amongst counties and identify the similarity and/or dissimilarity in the clustering of SV (…)'. Line 17-18, pag. 11

- The authors might connect their review of studies related to the Hyogo Framework also with current strategies such as the Sendai Framework and their related data bases and indices; what aspects of the spatiality of SV are demanded for by those frameworks and which aspects are captured for instance by their indicators or certain other world risk indices? Maybe the findings of the paper could also be compared to findings of similar reviews in terms of predominance of certain factors of vulnerability, prevalence of countries or aspects of spatiality such as scale, unit effects

(administrative versus grids, catchments etc), or, shortcomings (de Sherbinin, Fekete, Kuhlicke, Rufat, Tate, Terti are just examples - also look at recent articles).

Thank you very much for your suggestion. We decided as authors to focus our systematic review primarily on peer-reviewed papers that address the spatial dimension in the assessment of socio-economic vulnerability related to internal geo-dynamic processes such as earthquakes, tsunamis and volcanic eruptions. The Hyogo and Sendai frameworks are documents prepared to tackle more general aspects of disaster risk reduction (DRR) and the achievement of the sustainable development goals (SDGs), respectively. However, we can refer to both frameworks in the discussion section to highlight the contribution of the manuscript to the implementation of these frameworks. A reference to Fekete included one of the papers considered relevant for the review.

Fekete, A. (2012). Spatial disaster vulnerability and risk assessments: challenges in their quality and acceptance. Natural Hazards, 61(3), 1161-1178. doi:10.1007/s11069-011-9973-7

- Climate change research has been excluded, but reasons for this not detailed; more review studies could be found here maybe useful for a discussion section, still such as Ford, Gallina, Preston.

Thanks for your observation and suggestions. The choice of keywords, as well as the exclusion of other keywords, was our decision as authors to focus mainly on the spatial dimension in the assessment of socio-economic vulnerability related to internal geo-dynamic processes such as earthquakes, tsunamis and volcanic eruptions. We will clarify this aspect in a revised version of the manuscript. The reason 'climate change' was not considered as a search term is that, in Chile, this topic is mainly addressed by the Centre for Climate and Resilience Research (CR)2, and we did not want to step into their research field.

- Embedding this review into a broader background would better help to clarify the contribution of this paper by covering the period from 2008-2018. The selected decade is fine, since it is recent which is important to add and compare it to previous studies - but this comparison is missing, still. However, these suggestions are optional and the paper does not need to be expanded much on this.

Thank you for this suggestion. The reason for selecting the period 2008–2018 was to investigate the state of the art on the topic of the spatial dimension in the assessment of socio-economic vulnerability related to internal geodynamic processes, which we believe has been covered in the past 10 years. We will include this clarification in a revised version of the manuscript.

Some minor remarks:

- I suggest merging short paragraphs

Thank you for this suggestion. It will be taken into account in the revised version.

- Section 1 maybe more dimensions of vulnerability should be named and argued, why they had been deselected such as ecological vuln, physical, institutional etc.

Thank you for reminding us that, apart from the social and economic dimensions, the following are also dimensions of vulnerability: physical, cultural, environmental and institutional (Birkmann et al., 2013). Nevertheless, we prefer to focus on the socio-economic dimensions for this specific research.

- Section 2 methods is very short; maybe some more information could be provided such as why a decade has been selected (making it comparable with similar studies such as...?). Clarivate Analytics has been selected, because,....

Thank you for your observation and suggestion. As we explained before, the reason for selecting the period 2008–2018 was to explore the state of the art on the topic of the spatial dimension in the assessment of socio-economic vulnerability related to internal geodynamic processes, which we believe has been covered in the past 10 years. We will include this clarification in a revised version of the manuscript. We selected Clarivate Analytics as the database for undertaking the literature review search because we consider it to be the most complete leading database of scientific journal publications.

- Section 3: Make consistent use of "I" or "We"
  Thanks for your observation. The correct pronoun is 'we'.

- How did you define whether the articles were "highly relevant" or "medium"...?

The main criterion for defining the relevance of a manuscript is the use of spatial variables, indicators and/or indexes for the assessment of socio-economic vulnerability. The initial number of papers selected through the systematic review was reduced based on their relevance to the topic of the spatial assessment of socio-economic vulnerability related to mainly internal geodynamic processes. However, in the final set of papers, we also included those related to hydrometeorological hazards, epidemics and anthropogenic hazards that contain spatial variables, indicators or indexes that could be applied to the spatial assessment of socio-economic vulnerability related to internal geodynamic processes.

References

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