Notes to the Editor and Reviewers

We sincerely thank the Editor and the Reviewers for their careful reading of the manuscript and for their constructive and detailed comments. Their feedback provided an important opportunity to clarify the conceptual framing of the study, strengthen methodological transparency, and improve the coherence between methods, results, and discussion. In response, we have implemented substantial revisions across the manuscript, with particular emphasis on the methodological framework and the presentation and interpretation of results.

The Introduction was revised to better situate this research within the broader literature on volcanic risk perception, both internationally and in Chile. While maintaining the original argument that volcanic risk perception has received comparatively less attention than other natural hazards, we now emphasize more clearly that VRP research has expanded considerably over the last two decades. We also explicitly distinguish between qualitative, quantitative, and mixed approaches to VRP, and justify our choice of a quantitative psychometric approach, while acknowledging the limitations inherent in quantifying certain cultural dimensions such as belief systems or symbolic attachments to place. Throughout the manuscript, risk perception is now consistently interpreted as a relative measure of awareness of potential consequences and preparedness-related factors, rather than as perceived likelihood or alarmism.

The most extensive revisions were applied to the Methodology section. The questionnaire design and scoring procedure are now described in greater detail, and the full questionnaire, including the wording of all questions, response options, and scoring criteria, is provided as Supplementary Material. Survey responses were coded dichotomously and aggregated into factor scores, which were subsequently standardized using z-scores. The rationale for this standardization is now stated explicitly, namely, to ensure comparability across VRP factors with different score ranges and to allow meaningful multivariate analysis. Negative and positive values appearing in the results are therefore interpreted as relative positions with respect to the sample mean.

The description of the clustering procedure was substantially reworked to improve clarity and accessibility. The k-means algorithm is now presented explicitly as a classificatory tool used to identify relative VRP profiles, rather than as an optimization exercise. In response to the reviewer's comments regarding within-cluster metrics, we clarify that the final version of the manuscript does not use the within-cluster sum of squared distances (WCSS) as an analytical result or interpretative metric. Although k-means clustering inherently minimizes within-cluster distances, WCSS values are neither reported nor compared, and they are not used to support substantive interpretations. Instead, clustering is applied exclusively to derive an interpretable ordinal classification of VRP levels based on the relative positioning of respondents in a multidimensional standardized factor space. Cluster centroids are defined as mean standardized positions and are reported in the Supplementary Material to support transparency and reproducibility.

The Results section was revised to improve structure and readability, ensuring a clear separation between descriptive findings and interpretative discussion. Figures were updated to standardize terminology, clarify legends, and explicitly indicate residency status and sample size where relevant. The presentation of factor distributions emphasizes that boxplots and centroid markers convey complementary information: boxplots represent the dispersion of standardized factor scores, while centroid markers summarize the multivariate position of each VRP level. All results are presented descriptively and comparatively, without implying statistical significance.

In parallel, the Discussion section was expanded and reorganized to focus more directly on the interpretation of observed patterns, particularly the contrasting configurations of risk perception between residents and non-residents and the role of socio-economic and cultural variables in shaping these patterns. Methodological limitations and critiques of psychometric and cultural theory approaches are now addressed earlier in the manuscript, allowing the Discussion to concentrate on substantive insights and implications for volcanic risk communication and emergency management.

Finally, the Conclusions were revised to move beyond a summary of results and to provide more explicit reflections on group-specific vulnerabilities and their implications for risk communication strategies. We also acknowledge the temporal context of the dataset, noting that the surveys were conducted in 2016–2017, and reflect on the representativeness of the findings considering subsequent volcanic activity, the COVID-19 period, and recent demographic changes in the study area.

Overall, we believe that these revisions significantly enhance the clarity, methodological robustness, and interpretative depth of the manuscript, and that they directly address the key concerns raised by the Reviewers. We are grateful for the opportunity to improve the manuscript and trust that the revised version meets the standards required for publication.