**Natural Hazards
and Earth System
Sciences**

Discussions

Interactive comment on "Measuring county resilience after the 2008 Wenchuan earthquake" by X. Li et al.

X. Li et al.

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The authors gratefully acknowledge the Reviewer for the valuable comments. The comments are important, and in our view they are quite easily addressable. We are in fact quite surprised that the relatively "minor" comments have led to the decision to reject. When the open review cycle is completed, and with the Editor's instruction, we would like to have an opportunity to modify our manuscript to clarify the two points the Reviewer raised, which are: (1) discuss how the results of using the 15 variables in Wenchuan could be useful to other regions or countries; and (2) provide 3-5 real conclusions that could be shared with readers in other countries. For now, we provide more detailed explanations on the two points. These explanations will be included in

the revised manuscript.

First of all, in this paper, we select a typical region as the study area for the seismic community resilience study in China. In this region, Earthquake is active and can be so tremendously destructive at fairly regular time intervals. It becomes essential to study the seismic community resilience in this area. The Wenchuan Earthquake had received great attention because of the massive damage and heavy casualties, however, the studies on the seismic community resilience in this area are scarce. Our study on community resilience to earthquake in China fills in a major gap in this research field.

Secondly, the RIM model provides an innovative approach to community resilience assessment. It has been used effectively in the community resilience assessment for hurricanes or climate-related hazards in the United States to extract major socioeconomic indicators. While the current study is specific to Wenchuan earthquake, and definitions of key variables (exposure, damages, recovery) may differ for other types of studies, we argue that the same general modeling framework can be applied to other types of hazards and other regions to extract key indicators to assess community resilience.

Thirdly, in this study, we chose the 15 socioeconomic variables, not only based on the RIM model but also on other disaster resilience literature, to analyze the resilience of the earthquake-prone area for the seismic hazard. We realize that applying the U.S. case to China would be challenging. The variables were chosen based on their similar meanings with the U.S. variables and the data availability. We also have to choose the statistical data at the county scale from the most credible source. In addition, the variables that may deem to be useful to the developing countries, such as sex ratio, are included if they are available. The variables were used to validate the accuracy of resilience groups derived by the cluster analysis. The validation, the 85.7% accuracy, provides the following information: a) the importance of the variables on community resilience assessment; b) the characteristics of community resilience in the study area; c) the possibility to predict the resilience in the future by the variables in other parts of the country.

Lastly, the study leads to new and useful findings. For example, it shows a sharp contrast of the seismic community resilience between the two epicenter counties and the surrounding counties, even though the two epicenter-counties did not have the most powerful average intensity of Wenchuan Earthquake. Moreover, it shows that the sex ratio can be treated as a broad indicator of community characteristics for the seismic community resilience measurement in this area. This indicator might be useful to developing countries. The variable has not been considered in the previous U.S. studies.

In summary, for the readers in other countries, this study shows: a) the RIM model provides a general framework and could be used as a useful alternative approach to community resilience assessment; b) although different countries have different cultural backgrounds, stage of economic progress, and national policies, some broad indicators of disaster resilience can still be extracted. At the same time, some unique character-istics may also be identified. Our study contributes to the literature and our findings provide useful insights to strategies that help increase resilience worldwide.

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