

Simulating Disaster Voluntarism in Japan

—‘Pay it Forward’ as a Strategy for Extending the Post-Disaster Altruistic Community—

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This paper focuses on the voluntarism in Japan since 1995 to extend the support for a post-disaster community in Japan, conducting four studies addressing two topics: volunteering and the “pay-it-forward” network, using statistical methods and simulations (i.e., Cellular Automata).

In the introduction, we mentioned that volunteering was regulated following the 2011 Tohoku Earthquake. To analyze it, we reviewed and summarized the wide arrays of different factors, including economics, political science, psychology, and sociology, and noted the importance of the interdisciplinary approach to volunteering. However, the current study mainly focuses on the behaviors (volunteering, donation, etc.), motivation, or exchange of costs and benefits, but does not attend to why people undertake altruistic behavior. To consider this problem, we returned to sociological social exchange theory, biologically indirect reciprocity, and anthropological “gift-giving” theory, and found the gaps in the current volunteering studies were as follows: the possibility that survivors would turn into rescuers, and the lack of a survivor-centered view. Thus, “pay it forward” since 1995 “borantia [volunteerism] Renaissance” would be a new concept with which to solve these problems.

In this paper, first, we tried to analyze volunteering as a consistent approach to understanding disaster volunteering, such as in the 1995 Kobe Earthquake and the 2011 Tohoku Earthquake. Statistically, from Study (I), which mainly focuses on the individual determinants, probit models using an economics approach suggests that the sociological resource model explains volunteering well in contrast to the economic rationale models, and the society following the 2011 Tohoku Earthquake appeared to be a different system than the market. From Study (II), which mainly focused on the ecology and environmental effects of volunteering, the simulation study revealed that volunteering could be explained by neighborhood and remote factors, while in the 2011 Tohoku Earthquake, the neighborhood factor strongly affected volunteerism and the early response was delayed but volunteerism continued; however, the number of volunteers did not increase owing to its rural location.

In the second topic, we conducted two studies from two perspectives: as to whether “pay it forward” occurred in the support for survivors in the 2011 Tohoku Earthquake, and whether “pay it forward” would extend that support and under what conditions. Study (III) clearly shows that three groups can be seen in the support activities and “pay it forward” strongly affected one group (latent class), which had a different tendency from the other two groups. Given the results of Study (III), Study (IV) simulated volunteering, including the PFN parameter based on the formula in Study (II). It indicates that there is a tipping point where volunteering extends dramatically when the PFN parameter reaches certain conditions.

On the whole, this study contributes to the literature in post-disaster support through disaster volunteering and the possibility of extending support by using the strategy of “pay[ing] it forward.” In addition, this practice leads to mutual help in daily life. Moreover, this strategy is not only for people in the upper social stratum, rather it applies to everyone, which means that everyone can bring about change in society. (Human Sciences of Disaster Mitigation)