

# RISK AWARENESS AND INTENDED EVACUATION BEHAVIOR OF INTERNATIONAL TOURISTS IN KAMAKURA CITY, JAPAN

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## ABSTRACT

In recent years some authors have proposed that there is an increasing global tsunami risk awareness, partly as a result of disasters like the 2004 Indian Ocean Tsunami and 2011 Tohoku Earthquake and Tsunami that had devastating effects. The last of these events in particular has motivated a revision of emergency planning in Japan where soft measures are now considered necessary in order to save people's lives. In this context, evacuation behavior constitutes a key element of soft measures for emergency planning. A large proportion of the literature available on evacuation behavior has focused on local residents and it has been related to particular disasters like hurricanes or fires. Although the number of studies on tsunami evacuation is increasing, it is still a subject in development and much research appears to be needed. Additionally, the 2004 Indian Ocean Tsunami showed the importance of considering transient populations, such as tourists, as vulnerable groups in the case of a disaster. This study focuses on analyzing the state of the risk communication strategies for tsunami evacuation in an at-risk tourist area, and assessing risk awareness and intended evacuation behavior of international tourists in Kamakura, Japan.

There are several reasons that made Kamakura city an interesting case study for this research. Firstly, it has a long record of experiencing large earthquakes and tsunamis throughout its history. Secondly, it is a well-known tourist destination in Japan. And thirdly, it is one of the most

vulnerable cities in Kanagawa prefecture and consequently it has developed emergency planning initiatives.

A mixed methodologies approach was utilized during this research. Key informant interviews and fieldwork helped to assess the state of the risk communication strategies in Kamakura. Fieldwork included mapping warning signs located throughout the city and analyzing the information included in tourist maps available to the public. Results of the fieldwork showed that warning signs present some issues in terms of location, visibility, relevance of information, positioning, quality of material, and language. Tourist maps also are limited in terms of information and language.

Questionnaire surveys were used to assess risk awareness among international tourists, and their intended evacuation behavior given the hypothetical scenario of a large earthquake and tsunami. A total of 163 surveys were collected from January 30<sup>th</sup> to February 1<sup>st</sup> 2016 at two locations, Hasedera and Kotokuin temples in Kamakura. Results of the survey showed a relatively high risk awareness and willingness to evacuate from international tourists, however, the decisions post evacuation in the hypothetical scenario provided revealed some issues regarding direction of evacuation, mode of transportation, and location of evacuation areas in the city. On the other hand, a majority of respondents to the survey stated that they would expect to be warned of a threat by an official warning or announcement, whereas a minority mentioned social cues as a way to identify an impending tsunami. This could make it necessary to revise assumptions in emergency planning in the city related to visitors expected to follow social cues during an emergency. Additionally, some respondents mentioned natural warnings, but there

were some misconceptions regarding the types of warning that would signal risk of a tsunami (animal behavior, change in weather, among others).

In Japan, the concept of *tendenko* has been getting more attention after the 2011 Tohoku Earthquake and Tsunami, and is sometimes promoted as a maxim for tsunami evacuation. *Tendenko* is a cultural practice that calls for independent and immediate evacuation, and requires the trust of family and community members. A brief discussion on the role of cultural practices, in particular *tendenko*, is included to highlight the challenges that it can present to emergency planning when addressing an international audience of tourists.

Conclusions and recommendations based on this research include: considering segmentation of audience for new risk communication initiatives targeting needs of specific vulnerable groups in the city (in the case of this study, some efforts should be made to target international tourists); solve some of the issues observed regarding warning signs in order to increase effectiveness reaching the target audience; add to the existing warning signs some indication to be attentive and follow social cues in case of an emergency; search for new channels to share the information and tools that the city already has developed (like an emergency app, simulation video, and hazard map); greater coordination between tourism organizations and emergency planners; and keeping in mind the challenges when addressing an international audience that might have their own cultural practices and assumptions during an emergency.

*Keywords:* Tsunami, Evacuation behavior, Risk awareness, Risk communication, Tourist