



Risk assessment of people trapped in earthquakes and priority judgment of emergency search and rescue in China

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Earthquakes are among the most feared and destructive of all natural disasters. The highest-priority mission after an earthquake is to rapidly save lives, and to minimize the loss of life. The reduction of casualties in an area immediately following an earthquake could be improved if the location and number of trapped people in damaged buildings could be rapidly assessed. China is one of the most earthquake-prone countries in the world. Through analyzing the main influencing factors, we constructed an assessment model of people trapped in collapsed buildings (PTE model) caused by the earthquakes. Based on the assessment result of trapped people, we also built a judgment criterion for search and rescue priority, following which search and rescue (SAR) and other emergency response activities can be prioritized and rationally coordinated. The accuracy of the estimation results from the PTE model was then tested against the actual investigation data in 2014 Ludian earthquake-hit area. Meanwhile, based on the estimation results for Ludian earthquake, we give the SAR priority judgment for trapped people in collapsed buildings. And then, we compared our assessment SAR priority with the actual SAR response activities. Some suggestions on improving the accuracy of trapped people assessment and the efficiency of SAR have been provided in the paper.