

报告 12

地震风险下的家庭和社会网络

Family and Social Networks under Earthquake Risk

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报告摘要 **Abstract**

Many unobservable properties of complex social systems are revealed only under special circumstances. We used the 2013 Ya'an earthquake (Ms 7.0) as a natural experiment to discover latent micro- and macro-structural properties of social networks by combining 157,358 earthquake victims' individual-level mobile telecommunication records with socio-economic and earthquake data. On the micro-level, we used initial bursts of post-disaster communications to create an alternative, behavioral-based conceptualization of tie strength, called 'revealed tie importance', which identified core social ties better than frequency-based tie strength measures. On the macro-level, we found that the temporal-spatial evolution of overarching community networks of important ties was not based on distance or homophily, as popular gravity models assume, but exhibited heterophilic hierarchical pathways. We observed a two stage pattern in network activation during the earthquake; important ties were activated locally and then along a hierarchical structure towards county seats and the regional metropolitan city; however, as information diffused over time, attention became directed towards the epicenter of the disaster. How individuals' important ties aggregated over time and space to form the embedded structure of rural-urban community networks reflected phenomena disparate as information and empathy transmission, migration patterns, and economic development.