Disaster Recovery Annotated Bibliography - Damage Assessment

This document was developed to provide information on the state of knowledge on disaster recovery. This document includes a list of articles collected in the Fall of 2018. To obtain relevant articles, a list of keywords was used to search Google Scholar and University Library Databases. These keywords were: “community disaster recovery”, disaster recovery”, “post recovery planning” “pre disaster planning”, and “national planning recovery”. An additional search of academic journals that are related to the planning field was then undertaken to ensure that articles from these journals were not overlooked. These journals included: Journal of the American Planning Association, Journal of Planning Education and Research, Applied Geography, Land Use Policy, Environment and Planning A, Planning Theory, Progress in Planning. After collecting articles, each article was then systematically reviewed to ensure relevance. The articles needed to address community level recovery (including issues related to housing, economic, infrastructure, planning, etc.) or note issues that affect recovery outcomes (e.g., differences in housing outcomes for rental versus owned housing). Next, we reviewed the reference list of identified articles to determine if any articles had been missed in the initial collection process. If there were additional articles that were missed, we collected the information and searched for the title of the article. After processing each article, the articles were than compiled into the Zotero software.

The Zotero bibliographic database is open to the public to view at:
https://www.zotero.org/groups/2278263/recoveryguidancetamu/items

Damage Assessment

Articles that discuss damage assessment processes, focusing on planning practice (rather than specifics of damage estimates).


Background: Assistance from non-professional disaster volunteers (hereinafter, volunteers) is essential for disaster victims to recover physically and rebuild their lives; however, disaster victims in some areas are reluctant to accept assistance from volunteers. This study explored factors that may influence collaborative activities between volunteers and victims of earthquake disasters. Methods: From July to September 2008, a self-reporting questionnaire survey was conducted with all 302 leaders of neighborhood associations in a city within Niigata Prefecture at the time of the Niigataken Chuetsu-oki Earthquake in 2007. Each factor was determined based on the Health Belief Model. Multiple regression analysis was conducted, using collaborative activities as the objective variable. Results: From 261 valid responses received (response rate 86.4%), 41.3% of leaders collaborated with volunteers, and 60.2% of associations had residents who collaborated with volunteers. Collaboration with volunteers was significantly and positively related to perceived severity of an earthquake disaster (standardized partial regression coefficient beta = 0.224, p<0.001) and neighborhood association activities during the
earthquake disaster (beta = 0.539, p<0.001). A positive and marginally significant relation was found between such collaboration and sense of coherence within a community (beta = 0.137, p = 0.06), social capital (beta = 0.119, p = 0.08), and perceived benefits (beta = 0.116, p = 0.09). Conclusion: Collaboration between disaster victims and volunteers during the response to an earthquake may require the preemptive estimation of damage by residents during normal times and the enhancement of neighborhood association activities during a disaster. For residents to have such estimation abilities, public institutions should provide information related to anticipated disaster damage and appropriate disaster prevention training and education. In addition, residents should create a disaster prevention map with other residents. Lastly, promoting neighborhood association activities may require the participation of many residents in disaster drills and education as well as a preemptive discussion of neighborhood activities during a disaster.


In this paper we propose to explore the complex node of post disaster reconstruction, knowledge and data necessary to support spatial planning, and new information technologies. The methodology that is illustrated assumes that post-event damage assessments are useful to verify to what extent hazard and risk assessments that were available to planners to make decisions before the disaster were correct and if they were actually used as a basis for locational and zoning choices. Our contribution is aimed at the creation and design of knowledge bases accounting for the dynamic evolution of disasters. New web based technologies provide the opportunity to collect and analyse dynamic territorial crisis data using crowdsourcing and crowdmapping platforms. The proposed methodology permits to sort and classify a very large set of different types of data generated through the web. Semantic conceptualization using ontologies is performed to identify and select the information produced during the emergency that can support spatial planning in the post disaster reconstruction. The city of Tacloban in the Philippines, affected by the Super Typhoon Haiyan in November 2013 constitutes the test case for applying the methodology that has been developed.


Problem, research strategy, and findings: U.S. communities rarely plan for recovery after a disaster, but planners have the skills to help communities redevelop, particularly in rebuilding housing, a key to community recovery. Planners, however, need appropriate and timely data on initial damage and rebuilding over time to apply for available funding, determine needs for temporary housing, address equity issues, develop appropriate policy interventions, track progress, and communicate transparently with all stakeholders. There is no accepted cost-effective and systematic method of providing those data. We developed a scalable method in which we photograph and assess the extent of home damage and rebuilding by reorienting existing damage assessment methods to provide data that can be linked to GIS and other local data to meet planning needs. We test the utility of our approach in West (TX), the site of a catastrophic fertilizer facility explosion in 2013. We compare our damage assessments to county property tax reappraisals after the disaster, finding that our approach is more accurate, generally identifying less damage and greater rebuilding than the county assumed. We conclude that our method improves on windshield surveys and other suggested methods of collecting damage and rebuilding data; it can provide
efficient assessments of damage and rebuilding in technological disasters. Takeaway for practice: We created a simple and cost-effective method of assessing initial damage to homes after a disaster and of measuring the extent of rebuilding. This method provides photos and easy-to-understand data that planners can use to meet multiple reporting requirements, to reassess redevelopment strategies, and to report progress to stakeholders.


The study described in this report focuses on developing an educational tool for illustrating concepts of community recovery, and identifying data collection and research needs for more refined recovery models in the future. A conceptual framework of disaster recovery, guided by insights from the empirical literature, is introduced. The resulting model focuses on simulating recovery processes, rather than on estimating dollar losses. It emphasizes the dynamic or temporal processes of recovery; simulates impacts at the individual agent level of analysis; relates recovery across business, household, and lifeline infrastructure sectors; relates recovery across individual, neighborhood, and community scales of analysis; highlights the key role of lifeline systems in recovery; and is designed to explore the complex consequences of mitigation, planning, and policy decisions. The model was applied to both a hypothetical community and to an area affected by a real earthquake, Kobe, Japan, and it was able to replicate broad trends from the disaster. The next step in this research is to formalize the insights obtained in the development and application of this model as recommendations for future research and development.