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Resilient Communities: Understanding Networks for Post-Disaster Recovery

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Community response and recovery from a disaster can vary widely based on community characteristics. Many disasters leave little time for preparation prior to arrival and can cause widespread death and destruction. Regardless of the impact of the disaster, response and recovery rates vary based upon several factors including resource availability, social and physical infrastructure, and policies in each community. For example, it is possible that a well-organized city with access to resources can recover from a disaster faster than a city with few accessible resources.

Natural and man-made disasters can have lasting negative impacts on people within a community. Four years after Hurricane Katrina swept through New Orleans, the population was 66% of its pre-impact population [4]. Lack of adequate emergency planning resulted in evacuation and sheltering problems once the levees broke, ultimately creating a ripple effect that hampered the recovery efforts and resulted in a community that was left shattered after the disaster occurred [8].

Policies at local and regional scales can help communities develop desirable characteristics as well as prepare for disaster scenarios. A disaster can negatively affect the physical, psychological, social, environmental, and economic state of individuals as well as communities. The leaders of a community may feel a responsibility to rebuild as fast as possible as they attempt to bring order back into the lives of the residents. It is important that decision makers think carefully through policies intended to rebuild a community. After the 2004 Tsunami in Sri Lanka, for example, the government instituted a reactive coastal rebuilding program that prohibited rebuilding in a buffer zone. The policy displaced individuals from their homes, excluded residents from areas that were not affected by the tsunami, and created non-equitable reconstruction [1]. The short-term rebuilding plan left some populations, particularly those on the lower end of the socio-economic scale, more vulnerable after the disaster and did not bring the community together [1].

Community resilience relates to the capacity of a community to respond to and recover from a disaster, and this depends on factors such as social and physical networks. The United States Department of Health and Human Services (DHHS), through the National Health Security Strategy of the United States of America (2009), defined community resilience as the "sustained ability of
communities to withstand and recover—in both the short and long terms—from adversity, such as an influenza pandemic or terrorist attack” (p.5) [2]. Resilience to a disaster depends on connections of social systems and processes that organize the functionality of a community. These include economic systems that allow communities to be connected through markets, telecommunications networks that allow communication over great distances, and civil society made up of NGOs and faith-based organizations that connect residents to each other. Social systems also include less formal networks of people and everyday interactions in public spaces and markets of a community. The more these different systems combine and connect in a community prior to a disaster, the better the chance of a faster and stronger recovery after a disaster [3,4].

This policy brief highlights some community factors that should be considered when planning disaster response policy, discusses more vulnerable populations that may need special consideration after a disaster, and illuminates research currently being conducted about community resiliency after a disaster. The current research highlighted here, regarding tornado recovery, supports an emerging body of work pointing to the importance of community characteristics such as social networks.

Preparation Affects Response

Current preparatory actions like hazard and vulnerability analysis can help mitigate damage from a disaster. As identified in the definition of community resilience by the DHHS, it is not only important that a community can recover from a disaster, but also be able to mitigate the event as well². Planning and preparation prior to a disaster can reduce the physical impact of a disaster in terms of casualties and damage, which can help reduce social and psychological tolls after a disaster⁴. In order to appropriately institute an emergency management plan, the vulnerabilities of a community first need to be identified. A hazard/vulnerability analysis (HVA) can systematically identify segments of the community most at risk. Once the leaders of a community understand its vulnerabilities, they can undertake mitigation tactics to reduce the impact of future disasters [4]. It should be noted that there is not a single mitigation strategy or emergency plan that will address every potential disaster. Using risk analysis techniques will help communities identify the most critical threats and prioritize resources when funds are limited.

Full preparedness requires comprehensive and coordinated involvement of governments and citizens. The Federal Emergency Management Agency (FEMA), under the auspices of the U.S. Department of Homeland Security (DHS), realized that in the wake of the 9/11 terrorist attacks and the ill-prepared response to Hurricane Katrina in 2005 there was a need for better preparation, organization, and coordination through all levels of government. The National Incident Management System was established to provide a template for emergency management that can be consistent across jurisdictions and organizations for any potential incident [5]. The raised awareness is an effort to make sure that “every citizen in this country is part of a national emergency management system that is all about protection—protecting people and property from all types of hazards” (p. 8) [6].

Strong communities with active social networks in place prior to a disaster may respond and recover more effectively. Preparedness can involve the development of broader community characteristics such as the strength of social networks and related organizations in the community. As response and recovery to a disaster is highly complex in nature, strong social networks may help provide more pathways for information and resources, as well as physical and emotional support. For example, though rebuilding periods will be different for different segments of the community depending on the actual amount of damage, social networks can still play an important role. Overall, the stronger ties that exist within a community, the quicker a community can fully recover. When disasters strike, those impacted will reach out to the people they know for help and support. The support can range from physical labor for repairs to emotional and mental support to cope with stress of the disaster.

Vulnerable Populations

Residents who have special needs may be more vulnerable to the effects of a disaster. These vulnerable populations may include families with small children, older residents needing
assistance, those who lack monetary resources, and those with few connections outside the community. When considering emergency disaster plans, older residents are particularly vulnerable to disaster. Elderly populations often need extra services and care provided to them, especially those in assisted living centers or nursing homes [9]. Despite the daily routine of nursing homes caring for individuals who need additional help with daily activities, they often do not have plans in place to cope with disasters and do not address the actual needs of their residents [8]. Further, when emergency planners and lawmakers discuss emergency planning, citizens with health disorders do not receive sufficient consideration, particularly those with emotional, mental, or intellectual disorders [7].

Many people lack access to transportation, live in areas that are not walkable or wheelchair accessible, or have vehicles that are not reliable during or post-disaster. Many young, poor, and older citizens may not have adequate access to transportation. Further, they may not live in a walkable or wheelchair-accessible community, which further increases their dependence on vehicles and transportation infrastructure. Vehicles and transportation infrastructure are commonly damaged or inoperable during and after natural disasters. Therefore, a lack of transportation access and lack of walkability and wheelchair access in many communities directly affects emergency evacuation, response, and recovery efforts.

Community Resilience and Recovery after Tornado Disasters

Tornadoes pose a particular threat to communities because they are unpredictable and can appear with very little warning. As a result, tornadoes present a unique set of challenges for emergency planners and leaders trying to build a resilient community. Current research on resilient communities has yielded insights that can help communities withstand tornadoes and successfully rebuild.

It is helpful to consider resiliency at both the household level and at the community level. Current research investigated the recovery of communities and households after a tornado disaster. Looking at overall recovery time from a tornado disaster, this recent research identified trends in vulnerability and resilience for households.

Current research demonstrates that households with strong social networks were able to recover faster in response to a tornado disaster. Examining rural communities affected by a 2012 tornado outbreak in southwestern Indiana, we conducted a mail survey to identify the factors that sped recovery. Focusing on recovery at the household level, our survey asked about each household's connection to the people around them and the extent to which those people came to their aid during the recovery process. We demonstrate that households with strong social networks were able to recover faster than those with weaker social networks. Further, distance matters: if a helper in one’s social network lives less than one mile away, they were reported to be more helpful. Those who were able to rely on their neighbors and community for help were able to bounce back from the disaster a bit faster than those who were not. People affected by the tornado indicated that assistance from friends and neighbors was crucial for cleanup and recovery.

The longer residents live in a community the faster they recovered. People who lived longer in a community recovered more quickly. This may hint at the ability for individuals in a community to develop close social networks.

Summary

Social connections and ties between citizens are a critical element in creating communities resilient to disaster. Recent research, including our research on community recovery from a tornado disaster, has demonstrated the important role strong social networks can play. Since building community resilience should involve emergency management planning that takes place well before an actual disaster strikes, it is important for policymakers, community leaders, and emergency planners to understand and plan for the social, physical, and geographical characteristics and related limitations of a community when preparing for any disaster. Community leaders need to understand the social networks that exist in a community prior to developing emergency plans. Communities may need to be more proactive about getting their citizens involved with community events to help people get to know each other and find common ties.
References


