

Mobilizing Voluntary Organizations in Taiwanese Emergency Response: Citizen Engagement and Local Fire Branch Heads

Wei-Ning Wu¹, Ssu-Ming Chang² and Brian K. Collins³

This article assesses factors that affect the ability of local fire branch heads in Taiwan to mobilize volunteer organizations in local emergency responses. Data from a survey of local fire branch heads in Taiwan is analyzed by using an OLS model to test three hypotheses regarding the relationship between the dependent variable, perceived ability to mobilize volunteer organizations in emergency response, and three explanatory variables: organizational capacity, quality of communication, and the quality of citizen engagement ex-ante to emergency response. The model indicates a positive relationship between the ability to mobilize volunteer organizations in emergency response, the quality of communications, and the quality of citizen engagement in preparedness. The research suggests that local fire branch heads and volunteer organizations should begin the process of emergency response mobilization in the preparedness stage. The quality of the citizen engagement in preparedness stages should increase the ability of local fire branch managers to mobilize external resources in emergency response.

Keywords: voluntary organization, citizen engagement, communication and information delivery, Taiwan

INTRODUCTION

Many studies about the participation of voluntary organizations in emergency management focus on the roles of nonprofit organizations in mobilizing volunteers in emergency response, mitigation, and planning (Comfort et al., 2001). Local governments that are able to identify and to promote “genuine” volunteer and voluntary organization engagement can decrease emergency losses, mitigate potential risks, and offer recovery services to those in need (Nelson & French, 2002; Kapucu, 2008; Stevens, Berke, & Song, 2010; Rotolo & Berg, 2011; Arlikatti, Bezboruah, & Long, 2012). In short, voluntary organizations are critical inputs to effective emergency man-

¹ Assistant Professor, Institute of Public Affairs Management, National Sun Yat-Sen University
E-mail: weiningwu@mail.nsysu.edu.tw

² Professor, Department of Public Administration and Policy, Dean of International Affairs, National Taipei University. E-mail: ssuming@gmail.com

³ Associate Professor, Department of Public Administration, University of North Texas; Corresponding author:
brian.collins@unt.edu

agement because they share resources and offer assistance to supplement and to complement public organizations (Perry & Lindell, 2003; McEntire & Myer, 2004). Accordingly, public managers must mobilize these voluntary organizations to access the benefits of this participation.

This research examines how emergency managers perceive their ability to mobilize voluntary resources with a specific emphasis upon what factors affect the ability of Taiwanese local fire branch heads to mobilize voluntary organizations in local emergency response. We argue that the quality of communication and information delivery as well as the quality of citizen engagement affect the ability of fire branch heads to mobilize voluntary organizations in emergency response.

LOCAL EMERGENCY MANAGEMENT IN TAIWAN

Because the Chi-Chi earthquake caused extensive damage in the central part of Taiwan in 1999, Taiwanese legislators approved the Disaster Prevention and Response Act (DPRA) in 2000. DPRA is national legislation that regulates the four phases of emergency management for all natural and human-made disasters (Tso & McEntire, 2011). DPRA comprises a comprehensive emergency management network that includes the three levels of governments (the Central, Municipality/County, and Township), armed forces, militia corps, nongovernmental organizations (NGOs), and community organizations. For nationwide disasters that are beyond the response capacity of the municipality/county and township governments, the central government must supply resources and deploy armed forces to assist in recovery. For regional-level disasters, township governments collaborate with the municipality/county governments to gain resources and assistance if the damage from disasters impacts multiple township governments.

The management of regional-level disasters is largely shaped by the National Fire Agency of the Ministry of the Interior (MOI), which was created as an independent public agency in 1995. This agency is charged with regional emergency planning and preparedness, rescue, and emergency medical service delivery (Chen, 1997). The township mayor and local fire branches focus on different parts of regional emergency management (Yang, 2010). First, the township mayor manages rescue actions, organizes rescue forces from nearby local areas, and contacts the municipality/county governments to request resources or other assistance. Local fire branches are the first responders and main intermediaries for mobilizing emergency resources from other local fire branches, voluntary organizations, and citizens.

Volunteers are critical resources for local fire branches. In Taiwan, the Phoenix Volunteer Team, Women's Fire Prevention Promotion Team, and volunteer firefighter units are the primary local emergency voluntary organizations. Each township has at least one volunteer firefighter unit to assist local fire branches in response to regional emergencies, such as fires, floods, earthquakes, and typhoons (Yang, 2010). The Phoenix Volunteer Team offers medical services in support of local fire branches. Volunteer firefighter units and the Phoenix Volunteer Team offer first responder assistance when regional emergencies occur. In addition, the Women's Fire Prevention Promotion Team focuses on the implementation of emergency preparedness plans, especially emergency preparation exercises and delivering emergency response information to the public. Additionally, faith-based organizations, such as the Buddhist Compassion Relief, Tzu Chi Foundation, and the Red Cross, provide rescue and recovery support (Tso & McEntire, 2011). In each case, the local fire branch heads are central to the process of mobilizing these volunteer resources for disaster migration, planning, and response.

MOBILIZING VOLUNTEER ORGANIZATIONS IN EMERGENCY RESPONSE

The literature regarding mobilizing volunteer organizations in emergency response often focuses upon underlying determinants of demand, especially in the context of local governments. Local governments face severe capacity constraints that hamper response efforts, but voluntary organizations present alternative and additional resources that can enhance emergency preparedness, planning, and the delivery of emergency response services (Stallings & Quarantelli, 1985; Saidel, 1991; Zakour & Gillespie, 1998; Lowe & Fothergill, 2003; Brennan, Barnett, & Flint, 2005; Caruson et al., 2005; Kapucu, Yuldashev, & Feldheim, 2011). In short, the dominant narrative holds that local emergency managers need additional resources from volunteer organizations to provide both more and better emergency response, and thus emergency managers will mobilize those resources. However, this assumes that emergency managers have both the ability and incentive to mobilize volunteer organizations.

Even if voluntary organizations present potential resources, emergency managers often find that volunteer participation is too costly relative to the potential benefits. For example, Wenger (1991:12) suggests that "...there is an unfortunate tendency for established emergency organizations to view volunteers and extending organizations as a problem that must be managed and controlled." The tension between utility and liability arises from volunteers entering a sphere of public service typically reserved for a hierarchical management model that relies upon command-and-control. This often makes it difficult for volunteers to fit into governmental emergency response even if they are technically needed (Kendra & Wachtendorf, 2003). Therefore, a significant question remains about which factors improve the ability of emergency managers to mobilize volunteer organizations in emergency response. The next section of this paper develops a framework to explain the ability of emergency managers to mobilize voluntary organizations in emergency response.

This framework for explaining volunteer organization mobilization begins with two pre-assumptions. First, emergency managers exercise important, if even partial, discretion in the mobilization of voluntary organizations in emergency response. Second, mobilization of voluntary organizations entails some level of hierarchical direction, command, or control of voluntary organization activities and resources. Voluntary organizations can certainly self-organize and respond to emergencies, but emergency managers hold sufficient authority to impose meaningful constraints on the actions of voluntary organizations, up to and including the prohibition of voluntary organizations from emergency sites. Yet, emergency managers cannot compel genuinely voluntary organizations to act, so mobilization requires emergency managers to induce or to facilitate action. In sum, to mobilize voluntary organizations means that emergency managers exercise the discretion of public authority to facilitate cooperative actions with voluntary organizations that are coordinated under the authority of governmental power. The ability to accomplish the cooperation and coordination of mobilization activities is driven by three critical factors.

First, the ability of emergency managers to mobilize voluntary resources depends upon the incentive structures derived from internal organizational constraints. As a general proposition, managers in greater need of externally-sourced resources have stronger incentives to seek collaborative resource sharing by mobilizing voluntary associations (Pfeffer, 2003; McGuire, 2006; Weber & Khademian, 2008; O'Toole & Meier, 2010). The proposition holds even more importantly for emergency response because the very nature of emergencies suggests situations that overwhelm system capabilities over a short time period. Kapucu (2008) highlights limited

budgets and human resources as a motivation for more collaborative emergency management. In contrast, Marschall (2004) argues that higher levels of internal resources are needed to mobilize participation from community-level organizations and groups. However, even if some threshold effect or relationship exists between organizational resources and the ability to mobilize voluntary organizations, the general proposition that government agencies seek out shared resources in light of their own resource limitations should hold in the context of emergency response because emergency managers will dedicate more resources to volunteer mobilization as need increases. Therefore, a negative relationship between organizational resources and the ability to mobilize voluntary organizations is specified in the first hypothesis below:

H1: A decrease in organizational resources is associated with an increase in the ability of emergency managers to mobilize voluntary organizations in emergency response, all else being equal.

Second, the ability of emergency managers to mobilize voluntary organizations depends upon their ability to communicate and deliver information to other actors in emergency response. Communication and information delivery is important to emergency management because actors have different goals, skills, and organizational norms that necessitate effective communication and information delivery to coordinate actions and information toward common goals (Wang & Kapucu, 2008, Herrick, 2009; Kapucu, 2008; McEntire & Myers, 2004; Quinn, 2008; Andrew & Kendra, 2012). Solving the coordination puzzle is a necessary condition for unlocking the benefits of collaborative resource-sharing in two ways. First, governmental command and control provides the authority to allocate resources to the areas most in need without unnecessary duplication or confusion, and thus government to voluntary organization communication is critical for allocative efficiency. Yet, voluntary organization to government communication is also critical for allocative efficiency because volunteers often hold vital local information unavailable to the centralized government command and control (Helsloot & Ruitenbergh, 2004; Gillmor, 2004). Therefore, emergency managers assess their ability to mobilize voluntary resources in light of their capacity to communicate and deliver information among the voluntary participants in an emergency response, as summarized below:

H2: An increase in communication and information delivery capability with external actors is associated with an increase in the ability of emergency managers to mobilize voluntary organizations, all else being equal.

The first two factors in this framework are standard tenets in emergency management, but the third factor is an innovation in that we assert that citizen participation in planning and preparedness can improve mobilization at the response stage. The interaction between emergency managers and voluntary organizations rarely begins at the emergency response stage. In many cases, managers are engaging citizens in structured dialog, joint planning, and other preparedness activities (Wynne et al., 1992). If the quality of these ex-ante interactions is sufficient, emergency managers can strengthen community values, decrease uncertainty during an emergency, offer more flexible emergency response approaches, and stimulate organized citizen groups in emergency response (Axelrod & Cohen, 1999; Jaeger et al., 2007; Luna, 2007). The implication of this literature is that managers who incorporate quality citizen engagement (ex-ante response phase) are better able to “translate” volunteer resources into better outcomes (Horlick-Jones, Rowe, & Walls, 2007). Yet, citizen engagement in response stages is neither the observed nor

prescribed objective of many emergency managers. One possible reason is that the quality of ex-ante citizen engagement is not sufficient to mobilize desired or qualified volunteer support.

We argue that the quality of citizen engagement in the early stages of emergency management is a critical lever for mobilizing voluntary organizations in emergency response. The planning and preparation for response activities are the first steps in emergency response, even if significantly removed in time from the emergency event itself. To the extent that emergency managers can effectively collaborate at the beginning stages of emergency management, they will be more able to mobilize voluntary organizations during response because many of the coordination concerns have been addressed and mutually understood in the collaborative planning and preparedness exercises (Kweit & Kweit, 2004; Waugh & Smith, 2006). Consequently, trust levels between emergency managers and voluntary organizations are increased and expectations are clarified which reduces the information asymmetries and goal ambiguity undermining collaboration during the response phase (Pearce, 2005). In short, mobilization really begins in the planning and preparedness stages with higher quality engagement in the early stages by laying the foundation for a stronger ability to mobilize volunteer organizations during response as specified below:

H3: An increase in the quality of citizen engagement in planning and preparedness stages of emergency management is associated with an increase in the ability of emergency managers to mobilize voluntary organizations during response, all else being equal.

In sum, the ability of public managers to mobilize voluntary organizations in emergency response is a function of a managerial calculus. Even under the assumption that all managers face resource constraints and could theoretically benefit from volunteer collaboration, managers who facilitate quality citizen engagement early in emergency management processes can reap returns when events require the mobilization of voluntary organizations. The next section uses survey data from Taiwanese fire branch heads to assess the hypotheses above.

RESEARCH DESIGN

This study uses a 2013 mail survey to local fire branch heads to test the hypotheses. The role of local fire branch managers is important because they are familiar with local emergency management processes and serve as the public agents tasked with mobilizing voluntary organizations. The survey was mailed to 245 fire branches with 133 valid responses from local fire branches in seven local governments: Changhua County, Yunlin County, Chiayi County, Chiayi City, Tainan City, Kaohsiung City, and Pingtung County. Table 1 and Table 2 present the descriptive statistics and correlation coefficients for the major independent variable of this study.

The dependent variable in the analysis is the ability of local fire branch heads to mobilize voluntary organizations in emergency response. Local fire branch heads responded to the survey question: "To what extent is your organization able to mobilize voluntary organization in emergency response process," using a five point Likert scale ranging from very poor (1) to excellent (5). The responses are approximately normally distributed around a mean of 3.2, so we employed an OLS model to assess the proposed hypotheses.

The three key explanatory variables are also taken from the survey responses of local branch managers and each represents a branch head's assessment. First, we employ two indicators of internal organizational resources. We include human resources, which is operationalized as the number of firefighters in each local fire branch and reported from the Statistics Yearbook

of Local Fire Departments. Another indicator of organizational resources is budget resources. This is operationalized as the response to the question “Does your fire branch suffer budget challenges relative to emergency prevention and rescue,” with responses ranging from no challenges (0) to severe challenges (1). The quality of communication and information delivery is operationalized by asking fire branch heads to “... grade the degree of communicating and delivering emergency information the fire branch has.” This survey question is graded by a five-point Likert-scale format from very poor (1) to excellent (5). The quality of citizen engagement in emergency preparedness is operationalized through responses to the following question: “Please grade citizens’ engagement in the emergency preparedness in the jurisdiction area of your fire branch.” The question is graded by five point Likert-scale format from very poor (1) to excellent (5).

Variables designed to control for relevant external environmental conditions are also included in the model. Cities that are located in high-risk areas develop certain capacities for emergency response and recovery with other emergency participants (Waugh, 1999). The emergency risk level is operationalized based on a survey question stating, “Generally (in the whole), your organization is located in a vulnerable area,” with a five-point response scale ranging from strongly disagree (1) to strongly agree (5). Previous catastrophic events uncover the lack of communication, preparedness, and coordination among all levels of governments and the urgency of emergencies compel participants in the same or adjacent areas to work together (Caruson et al., 2005). To control for capabilities upgrades in response to recent emergencies such as additional technical communication equipment, rescue vehicles, internal response equipment, rescue equipment, emergency monitoring mechanisms, and performance monitors, each upgrade received a score d. The five questions are summed to create a single response that ranges from 0 to 6. Finally, we control for local branch relations with other local governments. For this dummy variable, respondents either answered their local fire branch had problems in resource scheduling and cooperation with other local governments (coded one) or did not have problems with other local governments (coded zero).

Table 1. Descriptive Statistics

	N	Min.	Max.	Mean	S. D.
Voluntary Organization Involvement in EM	133	1	5	3.2	0.97
Citizens Participation of Emergency Preparedness	133	1	5	3.02	0.84
Communication and Information Delivery	133	1	5	3.52	0.80
Emergency Risk Level	133	1	5	3.12	1.09
Number of Fire Fighters	133	6	38	14.43	6.47
Relations with Local Governments	133	0	1	0.44	0.50
Challenges of Budget	133	0	1	0.68	0.47
Previous Emergency Experience	133	0	1	0.31	0.25
N	133				

Table 2. Correlation Coefficient

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
1. Citizens Engagement of Emergency Preparedness	1						
2. Communication and Information Delivery	.43**	1					
3. Emergency Risk Level	-0.01	0.06	1				
4. Number of Fire Fighters	-0.18*	-0.09	-0.02	1			
5. Relations with Local Governments	-0.18*	-0.08	0.06	-0.02	1		
6. Challenges of Budget	-0.14	-0.15	0.15	0.03	0.11	1	
7. Previous Emergency Experience	0.08	0.15	0.06	0.11	0.06	0.09	1

** P < 0.01

*P < 0.05

RESULTS AND FINDINGS

Table 3 presents regression results with an F test that suggests the model is statistically significant at the .01 level (F-value = 4.07) and multicollinearity is not a problem. In short, the model shows support for H2 and H3, but not H1. The quality of communication and information delivery is positively associated with local fire branch heads' ability to mobilize voluntary organizations in emergency response. In addition, the quality assessment of citizen engagement is positively related to the perceived ability to mobilize voluntary organizations. However, there is no relationship between indicators of internal organizational resources and the ability to mobilize voluntary resources which counters the first hypothesis. The only control variable of statistical significance is the positive relationship identified between the perceived emergency risk and the ability to mobilize.

DISCUSSION AND CONCLUSION

Although some question the function and role of citizen engagement in collaborative governance (Irvin & Stansbury, 2004), this study finds that local fire branch heads report a greater ability to mobilize voluntary organizations when higher quality citizen engagement occurs in the planning stages of emergency management. The normative case for active citizens who take civic responsibility is clear, but this study suggests a performance justification as well. Undoubtedly, citizen engagement in emergency management should be viewed as context-dependent with many manifestations and functions (Shaw & Goda, 2004), but the increased scope of natural-disaster threats makes citizen engagement in emergency planning and preparedness crucial for improved response performance. Local residents are more familiar with the environment around their homes than emergency experts, and they can organize to provide not only information but also action in preparedness activities and responses. However, local fire branch heads are best served by developing response mobilization during the preparedness stages of emergency planning. Simply put, high quality interactions between local fire branch managers and citizens at the beginning of the process translates into a greater ability to mobilize volunteer organizations in the emergency response stages.

Table 3. Regression Results Exploring Voluntary Organization Involvement in EM

	B		Std. Error	VIF
Citizens Engagement of Emergency Preparedness	0.29	**	0.11	1.35
Communication and Information Delivery	0.21	*	0.11	1.32
Number of Fire Fighters	0.01		0.01	1.05
Budget	-0.17		0.17	1.07
Emergency Risk Level	0.13	*	0.07	1.03
Relations with Local Governments	-0.20		0.16	1.05
Previous Emergency Experience	-0.02		0.32	1.06
Constant	1.19		0.53	
R Square	0.19			
Adjusted R Square	0.14			
F	4.07	**		
N	133			

**Significant at $p < .01$

*Significant at $p < .1$

However, high quality interactions between local branch heads and the public should not be considered a sufficient condition for successful response mobilization. A finding concordant with the importance of citizen engagement is the positive relationship between communication and information delivery and the ability to mobilize voluntary organizations. This capacity strengthens the ability to mobilize voluntary organizations by reducing the costs of cooperation and coordination between governments and voluntary organizations and increasing the quality of that communication and information (McEntire & Myers, 2004).

From a practitioner's perspective, this study suggests that local fire branch heads find their ability to mobilize volunteer organizations in response to emergencies to be a function of high quality previous interactions and effective communication abilities during the response. These findings provide a more nuanced interpretation of the role of citizens in emergency response providing that the public is neither a nuisance nor a panacea. As managers of first responders, local fire branch heads in Taiwan recognize the potential benefits and costs of citizen engagement. Therefore, constructive and quality engagement early in the planning process provides a foundation for mobilizing volunteer organizations during the response phase. Yet, the presence of volunteer organizations does not guarantee effective mobilization in time for response, especially if the necessary communication and information delivery systems are absent or ineffective. Local fire branch managers must manage volunteer mobilization from the beginning of planning to the implementation of volunteers in times of response.

The findings of this research should also be interpreted in light of typical limitations. The survey is contextually constrained to local governments in Taiwan, but the respondents hold the necessary managerial discretion and scope of authority that is central to the question of voluntary organization mobilization. Of course, these results are based upon subjective evaluations of practitioners. Additional research using more objective indicators should be pursued to corroborate these findings. Moreover, more specific questions regarding attributes of citizen engagement

would provide more precise measurements and should be addressed in future research. These findings should be corroborated with additional research from other countries, but can be reasonably generalized to local fire safety managers and emergency managers in the global region.

In conclusion, this study explores the ability of local fire branch heads to mobilize voluntary organizations in emergency response in the context of Taiwanese local fire districts. Local officials know the importance of voluntary organization engagement in emergency management, but mobilizing citizen resources remains a challenge. When emergency managers have confidence and trust in citizen engagement at the early stages, they are better able to mobilize these resources in times of emergency if communication systems allow.

REFERENCE

- Andrew, S. A., and Kendra, J. M. (2012). An adaptive governance approach to emergency related behavioral health services. *Disasters*, 36(3), 514-532.
- Axelrod, R. and M.D. Cohen. (1999). *Harnessing complexity: Organizational implications of a scientific frontier*. New York: The Free Press.
- Arlkatti, S., Bezboruah, K. C., & Long, L. (2012). Role of voluntary sector organizations in post-tsunami relief: Compensatory or complementary? *Social Development Issues*, 34(3), 64-80.
- Brennan, M. A., Rosemary V. Barnett, and Courtney G. Flint. (2005). Community volunteers: The front line of emergency response. *Journal of Volunteer Administration*, 23(4), 52-56.
- Caruson, K., MacManus, S. A., Kohen, M., & Watson, T. A. (2005). Homeland security preparedness: The rebirth of regionalism. *Publius: The Journal of Federalism*, 35(1), 143-168.
- Chen, M. (1997). On the edge of disaster Taiwan's disaster relief network. *Taiwan Panorama*, 11, 112-121.
- Comfort, L. K., Sungu, Y., Johnson, D., and Dunn, M. (2001). Complex systems in crisis: Anticipation and resilience in dynamic environments. *Journal of Contingencies and Crisis Management*, 9(3), 144-158.
- Gillmor, D. (2004). We the media: The rise of citizen journalists. *National Civic Review*, 93(3), 58-63.
- Helsloot, I. and Ruitenber, A. (2004). Citizen response to disasters: A survey of literature and some practical implications. *Journal of Contingencies and Crisis Management*, 12(3), 98-111.
- Herrick, C. (2009). Homeland security and citizen response to emergency situations: A perspective on the need for a policy approach to information access. *Policy Sciences*, 42(3), 195-210.
- Horlick-Jones, T., Rowe, G., & Walls, J. (2007). Citizen engagement processes as information systems: The role of knowledge and the concept of translation quality. *Public Understanding of Science*, 16, 259-278.
- Irvin, R. A. & Stansbury, J. (2004). Citizen participation in decision making: is it worth the effort? *Public Administration Review*, 64(1), 55-65.
- Jaeger, P.T., Ben S., Kenneth R. F., Jennifer P., Yan Q., and Philip F. W. (2007). Community response grids: E-government, social networks, and effective emergency management. *Telecommunications Policy*, 31(10), 592-604.

- Kapucu, N. (2008). Collaborative emergency management: Better community organizing, better public preparedness and response. *Disasters*, 32(2), 239-262.
- Kapucu, N., Yuldashev, F, and Feldheim, M. (2011). Nonprofit organizations in emergency response and management: A network analysis. *European Journal of Economic and Political Studies*, 4 (1), 83-11.
- Kendra, J. M., & Wachtendorf, T. (2003). Reconsidering convergence and converger legitimacy in response to the World Trade Center disaster. *Research in Social Problems and Public Policy*, 11, 97-122.
- Kweit, M. G and Robert W. K. (2004). Citizen participation and citizen evaluation in emergency recovery. *The American Review of Public Administration*, 34(4), 354-373.
- Lowe, S., and Fothergill, A. (2003). "A need to help: Emergency volunteer behavior after September 11th. " In *Beyond September 11th: An Account of Post-Emergency Research*, edited by J. L. Monday. Boulder, CO: Institute of Behavioral Sciences, Natural Hazards Research and Applications Information Center.
- Luna, E. M. (2007). Mainstreaming community-based emergency risk management in local development planning. In *Forum on Framework-Building for Investigation of Local Government Settlement Planning Responses to Emergency Mitigation*.
- Marschall, M. J. (2004). Citizen participation and the neighborhood context: A new look at the coproduction of local public goods. *Political Research Quarterly*, 57(2), 231-244.
- McEntire, D., A. and Myers, A. (2004). Preparing communities for disasters: Issues and process for government readiness. *Emergency Prevention and Management*, 13(2), 140-152.
- McGuire, M. (2006). Collaborative public management: Assessing what we know and how we know it. *Public Administration Review*, 66(1), 33-43.
- Nelson, A. C., & French, S. P. (2002). Plan quality and mitigating damage from natural disasters: A case study of the Northridge earthquake with planning policy considerations. *Journal of the American Planning Association*, 68(2), 194-207.
- O'Toole Jr, L. J., & Meier, K. J. (2010). In defense of bureaucracy: Public managerial capacity, slack and the dampening of environmental shocks. *Public Management Review*, 12(3), 341-361.
- Pearce, L. (2005). The value of public participation during a hazard, impact, risk and vulnerability (HIRV) analysis. *Mitigation and Adaptation Strategies for Global Change*, 10(3)411-441.
- Perry, R. W. and Lindell, M. K.(2003). Preparedness for emergency response: Guideline for the emergency planning process. *Disasters*, 27(4), 336-350.
- Pfeffer, J. A. (2003). *The external control of organizations: A resource dependence perspective*. Stanford University Press.
- Quinn, S. C. (2008). Crisis and emergency risk communication in a pandemic: A model for building capacity and resilience of minority communities. *Health Promotion Practice*, 9(4), 18S-25S.
- Rotolo, T., & Berg, J. A. (2011). In times of need: An examination of emergency preparedness and emergency relief service volunteers. *Nonprofit and Voluntary Sector Quarterly*, 40(4),740-750.
- Sadie, J. R. (1991). Resource interdependence: The relationship between state agencies and non-profit organizations. *Public Administration Review*, 51(6), 543-553.
- Shaw, R. and Goda, K. (2004). From emergency to sustainable civil society: the Kobe experience. *Disasters*, 28(1), 16-40.

- Stallings, R. A., and Enrico L. Q. (1985). Emergent citizen groups and emergency management. *Public Administration Review*, 45, 93-100.
- Stevens, M. R., Berke, P. R., & Song, Y. (2010). Creating emergency-resilient communities: evaluating the promise and performance of new urbanism. *Landscape and Urban Planning*, 94(2), 105- 115.
- Tso, Y.E. and McEntire, D. (2011). Emergency Management in Taiwan: Learning from Past and Current Experiences. *Comparative Emergency Management: Understanding Disaster Policies, Organizations, and Initiatives from Around the World*, edited by David McEntire. Emmitsberg, MD: Federal Emergency Management Agency. Retrieved July 25, 2014, from <http://training.fema.gov/EMIWeb/edu/CompEmMgmtBookProject.asp>.
- Wang, X., & Kapucu, N. (2008). Public complacency under repeated emergency threats: Some Empirical Evidence. *Journal of Public Administration Research and Theory*, 18(1), 57-78.
- Waugh, W. L., Jr. (1999). "Assessing quality in emergency management. " In *Performance and Quality Measurement in Government: Issues and Experiences*, edited by Arie Halachmi (65-82). USA: Chatelaine Press.
- Waugh, W. L., and Smith, R. B. (2006). Economic development and reconstruction on the gulf after Katrina. *Economic Development Quarterly*, 20(3), 211-218.
- Weber, E. P., and Khademian, A. M. (2008). Wicked problems, knowledge challenges, and collaborative capacity builders in network settings. *Public Administration Review*, 68(2), 334-349.
- Wenger, D. A. (1991). Emergent and volunteer behavior during disasters: Research findings and planning implications. Hazard Reduction and Recovery Center, Waco TX.
- Wynne, B. (1992). Risk and social learning: Reification to engagement', in *Social Theories of Risk*, edited by Sheldon Krimsky and Dominic Golding (275-297). Westport, CT: Greenwood Publishing Group.
- Yang, Y. (2010). The 9/21 earthquake in Taiwan: a local government disaster rescue system. *Disasters*, 34 (1), 112-136.
- Zakour, M. J., and David F. G. (1998). Effects of organizational type and localism on volunteerism and resource sharing during disasters. *Nonprofit and Voluntary Sector Quarterly*, 27(1), 49-65.