THE ROLE OF LOCAL GOVERNMENTS IN DISASTER RESILIENCY: FINDINGS FROM A SURVEY OF GULF COAST MUNICIPAL OFFICIALS

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ABSTRACT

Generally understood as "bouncing back", resilience refers to the ability to resist, absorb, or adapt to disruption or shock (Norris, et al. 2008). The term originated in the fields of mathematics and physics to define a quality of a material or system that returns to equilibrium after stress rather than breaks. While Holling (1973) was the first to employ resilience as a metaphor to designate ecological systems, today it has been adopted by a variety of disciplines to describe the adaptive capacities of entire societies, communities within these societies, and individuals (Norris, et al. 2008).

Since the introduction of resilience in government circles during the past decade, resilience has been adopted as a guiding principle. It is widely accepted that "if communities can increase their resilience then they are in a much better position to withstand adversity and to recover more quickly than would be the case if there were few or no investments in building resilience" (Cutter, et al. 2010). While the policy community has embraced resilience as a way to reduce disaster impacts, scholars struggle with the study of resilience, particularly in terms of conceptualizing and defining the concept. One area in which our understanding of resilience is lacking is the role of local governments in supporting disaster resilience.

Scholars and policy-makers recognize the critical role local governments have in disaster preparedness, response and recovery. Local governments are the first responders to a disaster; their emergency management practices determine the success of preparation for and response to disasters. They are also the closest level of government to citizens, and, therefore, should be able to best assess and address the needs of their community following a disaster event. While this role is recognized, it is not fully understood. There is a broad assumption that all local governments play this role similarly with some disparities due to economic, social or institutional characteristics; however, this may not be the reality. It is important to recognize that local government is not a black box that with certain inputs automatically generates specific outputs, varying only by the socioeconomic and political context of which it is situated. Rather, it is an organizational structure comprised of individuals who have their own perceptions and experiences that shape the policies and actions of local government. There is a general void in disaster research regarding this that we attempt to address in this study.

We examine the disaster perceptions individuals within local government hold and how these influence disaster resiliency. Specifically, this study seeks to answer: *What factors are associated with municipal government officials' perceptions of disaster resilience?* Results of this analysis are important for understanding perceptions of resilience that may, in turn, affect policy actions of local governments.

Method: Original Survey

To examine the perceptions municipal officials hold regarding disaster resilience, we must assess their perceptions, priorities, and strategies regarding disasters and emergency management. To accurately measure these attitudes and actions, it is best to ask officials themselves. We created an online survey and invited over 1,800 mayors and council members from 324 incorporated cities (those within 25 miles of the Gulf Coast) to participate; 11.65% of the invited municipal officials responded to the survey. Forty-three percent of the respondents were from Texas, 30% from Florida, 10% from Louisiana, 9% from Mississippi, and 8% from Alabama.

The survey was carefully constructed from the results of over thirty pilot interviews with mayors and council members conducted in fourteen cities across the Gulf States. The survey questionnaire focused on five areas: 1.) past disaster experience, 2.) municipal characteristics, 3.) disaster management, 4.) vignettes regarding disaster response, and 5.) personal background.

The survey was distributed in three stages: 1.) initial contact with municipalities, 2.) invitation to participate, and 3.) follow-up communication. The first action we took involved sending a letter via traditional mail to each municipality's mayor and council office to introduce them to our research project and alert them to our upcoming invitation to participation via email. The second stage of distribution focused on emailing invitations to participate. After distributing the survey via email, we sent two follow-up emails encouraging participation. We also contacted city offices by phone and in person to boost the response rate.

Modeling the Role of Local Government in Disaster Resilience

To explain disaster resilience perceptions of municipal officials, we combined the survey results with contextual data on social, economic, natural, and built environments. Our model includes eight explanatory variable sets: 1.) municipal officials' perceptions of disaster management; 2.) municipal officials' individual characteristics; 3.) municipal social capital; 4.) municipal disaster experience; 5.) municipal infrastructure; 6.) municipal natural environment; 7.) municipal economy; and 8.) municipal vulnerabilities. Our empirical model is represented in Figure 1.

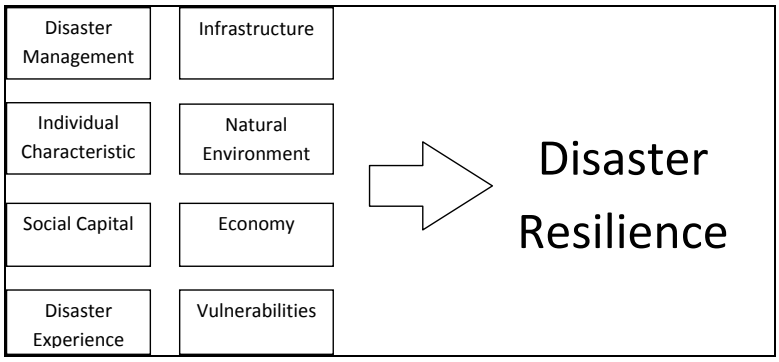

Figure 1: Model of Disaster Resilience Perceptions

Our dependent variable – perception of municipal disaster resilience – is based on the survey question: "Thinking about the worst disaster your municipality experienced in the past ten years, how easy was it for your community to 'bounce back' both economically and socially?" Possible responses included: very difficult, somewhat difficult, average – not difficult or easy, easy, very easy. The variable is coded 1 to 5 with 1 indicating a response of "very difficult" and 5 indicating a response of "very easy".

The mean of our dependent variable, disaster resilience, is 2.6 with a median value of 3. Responses varied considerably by state, as shown in Table 1. Alabama and Mississippi as compared to the other three states had much higher incidences of responses that indicate low disaster resilience. They also had more survey responses indicating greater disaster severity in the past ten years.

Table 1: Disaster Resiliency Responses by State

	AL	FL	LA	MS	TX
Very difficult	12.5%(2)	10%(6)	18%(4)	68.5%(13)	10%(9)
Somewhat difficult	62.5%(10)	21%(13)	27%(6)	31.5%(6)	28%(25)
Average	12.5%(2)	43%(27)	41%(9)	0	46%(41)
Easy	12.5%(2)	13%(8)	13%(3)	0	15%(13)
Very easy	0	13%(8)	0	0	1%(1)

Preview of Findings

We find that the perceptions of disaster management, particularly ratings of sufficiency of disaster resources, influence municipal official's perceptions of disaster resilience. We also find that individual characteristics of the respondents matter. In particular, respondent ethnicity, profession, and leadership experience tempered their perceptions of the municipality's disaster resilience. In addition, the results indicate that the level of municipal social capital is important to perceptions of resilience; greater social capital engenders better resilience. On the other hand, negative disaster experience, measured as greater hurricane, tornado, and oil spill damages, is associated with poorer resilience perceptions. Indeed, bigger disasters incur greater costs, which make it more difficult to "bounce back". The results also indicate that the natural and built environment matter for perceptions of resilience as does economic conditions. Finally, we find that municipal vulnerability has a small but significant effect.

In all, the results of our admitted "garbage can" model indicate that individual perceptions and characteristics as well as the social, economic, natural and built environment affect perceptions of disaster resilience. In other words, resilience as traditionally studied in terms of adaptive capacities continues to be significant, but individuals within local government also matter. Knowing this, we cannot continue to treat local governments as black boxes, but rather must recognize that they are comprised of individuals with their own experiences and biases. These may not only influence their viewpoint on disaster resilience but also on policy. Future analyses will examine if the disaster resilience perceptions held by municipal officials affects their propensity to support hazard mitigation efforts, grant administration, and other disaster-related policy actions. Understanding that disaster resilience perceptions are influenced by the individuals that hold them is a first step in better understanding the role of local governments in disaster resilience, broadly.