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Not in my Backyard: How Citizen Attitudes and Local Politics Affect Disaster Preparedness Policies

—Tegan O’Neill (Editor: Dylan Schiff)

I got involved in natural disaster studies the old-fashioned way.

June 1, 2011 was my first day of work as an undergraduate research assistant on a study of New Hampshire politics. I got home to my apartment that afternoon, turned on the news to CNN, and saw my family's home with a stop sign stuck through its fence. My hometown, Monson, Massachusetts, had been struck by a tornado. The storm had ripped through the historic downtown area, devastating my house and dozens of others. Our community was fortunate: no lives were lost as a direct result of the storm and there were few injuries.

That summer, I travelled between campus and my hometown. In Monson, I helped fill dumpsters, inventory supplies, and organize volunteers. At UNH, I analyzed exit polling, mapped demographic changes, and learned about the research process. It didn't take long to begin to view the recovery process through a researcher's lens, and to start thinking of ways in which better information could address the issues towns face when a natural disaster strikes.

It was clear throughout the rebuilding process that the storm's impact on my town was as much a function of local politics and social conditions as it was one of atmospheric circumstances and bad luck. The tornado itself occurred by chance, but the town's level of preparedness, its institutional response to the disaster, and the differences in outcomes for affected citizens were the result of underlying social and political structures. When the following school year began, I started to focus on learning about the policy surrounding
natural disaster preparedness and response.

I applied for a Summer Undergraduate Research Fellowship (SURF) in 2013 to study local disaster policies in New Hampshire. My goal was to determine what shapes or impedes natural disaster preparedness at the local level. The central questions that my research was designed to address were: how are local disaster mitigation policies made and what are the consequences of this decision-making process? For the purposes of this research, disaster mitigation policy was defined as any government undertaking aimed at reducing the impacts of a potential natural disaster. Understanding the modes of decision-making that lead to disaster preparedness policies can help explain the degree to which communities are prepared to deal with the impacts of natural hazards. If my community, for example, had relied on scientific data about natural hazards rather than a community-wide assumption that “tornadoes don’t happen in Massachusetts,” we would have had a very different disaster preparedness policy. In addition, I wanted to build and publish an interactive natural hazards map to help citizens and policymakers in New Hampshire easily access scientific data about their local risk factors.

**Methods**

Due to the project's time constraints, I decided to limit the study to two counties. I chose to study Rockingham and Strafford Counties due to their high population densities and exposure to natural hazard risk factors (NHDHS, US Census Bureau). Further, my initial review of the academic literature related to disaster mitigation revealed that the historic communities located along rivers and the coastline in these counties were particularly vulnerable to natural hazards. Newmarket, New Hampshire, for example, has a densely developed downtown area along the Lamprey river floodplains. Many of the historic buildings situated in this high-risk area are prone to storm damage.

I also decided to limit my analysis to the local government level, due to its role as the “first on scene” in both preparedness and response scenarios (FEMA 2011). Local governments form the foundation of the United States' disaster mitigation and emergency response paradigm. This is to say that, while state and federal governments provide guidelines and occasional support for mitigation projects, towns and cities are ultimately responsible for both the long term planning and first response in the event of a disaster. Local governments are arguably the most important factor in the success or failure of disaster mitigation in the United States (FEMA 2011).

In order to answer my research questions, I broke them down into the three crucial components of the disaster decision-making process (see Fig. 1):

**Who makes local disaster policies?**

**What sources of information or input do these policymakers use?**

**How do these sources of information and input impact policy outcomes?**

Due to the relatively small size of the sample population, all local emergency managers in Rockingham and Strafford counties were included. Of the 46 emergency managers, 21 chose to participate in the study.
Mapping Natural Hazards

In order to visualize the vulnerability of towns in Rockingham and Strafford Counties to various natural hazards, I compiled scientific data from government agencies and universities to create an interactive map of natural hazard risk factors. I used Quantum GIS, a free and open-source mapping platform, to map this information. The hazards I mapped included earthquakes, hurricanes and tropical storms, high velocity winds, and flooding. I was able to “georeference,” or illustrate these hazards in a spatial context, because the probabilities of their occurrence are based primarily on location. The scientific studies that provided the data I used measured probabilities for specific zip codes or towns, and as a result were “map-able.” I was able to incorporate FEMA’s maps of flood zones as well. Other hazards, including tornadoes, wildfire threats, and drought, are far less predictable based on location and are much more dependent on unpredictable events. In order to provide access to information regarding this group of hazards, I provided links to historical studies and current threat levels. I then used Tilemill, another open-source mapping platform, to build interactivity and to host this map on the internet.

The map can serve as a tool for citizens and local policymakers who may be unaware of the hazards to which their communities are most vulnerable. For example, this screenshot (See Fig. 2) of the mapping tool shows where the floodplains (orange) and areas of dense development (dark blue) overlap. By clicking on Newmarket, the panel to the right allows the user to view the probabilities that several types of natural disasters will occur in the next fifty years, based on scientific studies conducted by different government agencies and research universities. The chance of hurricane force gusts occurring in Newmarket within fifty years, for example, is 42.5%.

Fig. 2: A screenshot of the interactive map created, indicating different natural hazards in Rockingham and Strafford counties. The full interactive tool is available at http://elloni.com.

Studying Disaster Decision-making at the Local Level

For this part of my research, I designed and implemented a survey of local emergency management directors in Rockingham and Strafford Counties. I decided to take the most straightforward approach possible: by speaking directly with town government officials. The goal of the survey was to gather information regarding the sources of information that shape natural hazard mitigation policy on the local level, and what barriers, if any, exist to implementing mitigation practices.

In order to determine which questions to ask emergency management directors, I conducted a literature review of academic work and other publications on disaster mitigation policy and local governments. Two issues discussed in the literature were stakeholder proximity, or the amount of access that citizens have to government decision-making processes, and local government capacity, which is the town's ability to gather resources and mobilize actors to implement a policy. The smaller scale of local governments and the responsiveness of local governments to citizen
input present potential challenges for local leaders in preparing for disasters. Municipal governments operate with fewer resources and fewer leaders, and are more responsive to citizens’ input than higher levels of government.

Further, the literature review revealed that the scientific data that is critical to achieving positive policy outcomes may play less of a role in the local decision-making processes than at higher levels of government. Recent scholarship suggests that scientific data plays a limited role in municipal decision-making processes due to the lack of funding for local data collection and the lack of scientific expertise among public administrators and officials (NHDHS 2013). Disaster governance that is not data-driven can result in gaps where unlikely, but plausible events are ignored and changes in environmental risk are not considered.

Based on these issues, I designed the survey to measure the weight which scientific data, citizen input, historical data, and other information were given in the decision-making process. The survey’s design was based on similar polls of local-level public officials conducted by the University of Michigan’s Center for Local, State, and Urban Policy. After drafting several sets of survey questions, I worked with my mentor to finalize a survey that included ten questions. The first three questions asked about how long the respondent has served as emergency management director, and how and when they participated in mitigation policymaking. The next three questions addressed the sources of information used in this policymaking process, asking respondents to rank sources of information, including citizen input, scientific data from government and public organizations, and historical data, in order from most-used to least-used. I also included a question regarding the “greatest challenges” to disaster mitigation that emergency managers faced in their communities. In addition, I included one question about any additional public offices or roles the emergency management director may hold in the town.

Results

The survey results indicated that issues of local capacity and stakeholder proximity are, in fact, impacting disaster mitigation practices in Rockingham and Strafford County. The survey reveals that citizen input has a significant impact on local natural disaster preparedness policies (see Fig. 3). 67% of emergency management directors reported citizen input to be the most important or equal to the most important source of input in forming disaster policies.

Conversely, the use of scientific data in the decision-making process appears to be extremely limited in Rockingham and Strafford Counties (see Fig. 4). Only 12% of emergency managers rank scientific data as the first or second most important sources of information. 37% of Emergency managers consider scientific data to be equal to all other sources of information used in the planning process.

Given the public attitude that disasters, apart from the occasional snowstorm, won’t occur in a community is prominent in Rockingham and Strafford Counties, these trends may prove problematic for emergency management in this area. Moreover, as the natural hazard map illustrates, there is a significant chance that natural hazards such as wind gusts could cause damage in this area.

Fig. 3: A pie chart indicating the rank at which “citizen input” was placed in regard to impact on local natural disaster preparedness policies, according to surveys.
Emergency managers in this area are faced with the challenge of communicating the reality of natural hazards despite the public tendency to underestimate or ignore them.

In addition, the survey revealed that a majority of the emergency management directors in Rockingham and Strafford Counties also serve as the fire chief or police chief in their communities. While this may be helpful in integrating emergency management and disaster mitigation into the town's everyday functions, it also places an enormous task on an already busy public official. Further, this dual role creates a bargaining problem for the emergency manager, who cannot vie for funds for one aspect of his or her job without necessarily reducing funds for the other. In other words, the police chief who is also the emergency manager is faced with the difficulty of bargaining for funds for new police cars and backup generators at the same time. The survey reveals that this lack of funds is problematic for mitigation policy-making. When asked to identify the greatest challenge to natural hazard mitigation in their communities, 44% of respondents answered that funding was the most serious barrier to the implementation of mitigation policies; 31% responded that public mindset was the greatest challenge; and only 12% and 13% said that bureaucracy and adequately trained responders were the most serious barriers, respectively (see Fig. 5).

After reviewing the hazard mitigation plans in Rockingham and Strafford Counties, and my informal discussions with regional officials, it became clear that scientific data is actually well-used on the county and state levels. State and regional leadership, offered by organizations such as the Rockingham Planning Commission, Strafford County Planning Commission, and Southern New Hampshire Planning Commission, is helping to compensate for the lack of capacity at the town level by collecting and providing scientific data that is used in each town's hazard mitigation plan in Rockingham and Strafford Counties. Further, the regional commissions facilitate communication between the local, state and federal levels to ensure that these hazard mitigation policies are written and updated every three to four years.

Fig. 4: A pie chart indicating the rank at which "scientific data" was placed in regard to impact on local natural disaster preparedness policies, according to surveys completed by emergency managers. The percentage of emergency managers to rank "scientific data" as having a large impact is lower.

Figure 5: A pie chart showing the distribution of responses by emergency managers regarding what they believe are the greatest challenges they face.
Future research regarding the role of regional organizations in disaster mitigation, especially the amount of input local leaders are given in the process when regional organizations are involved, would be valuable for state and federal agencies hoping to improve inter-governmental communication on disaster mitigation. However, while cooperation between levels of government seems to be contributing to science-based mitigation policies in Rockingham and Strafford Counties, the survey results indicate that implementation of these policies at the town level is still limited by public outlook and funding. This data highlights the challenges that citizens’ attitudes toward natural hazards and limitations in local government capacity create for emergency managers. The field of disaster studies is still relatively new, and new data provides important insights into the reality of local mitigation efforts.

Conclusions

The overwhelming and seldom-questioned sense of, “That won't happen here,” is rarely noticed until after something like a tornado or a flood takes place. It is only after the storm that this feeling is replaced with, “How on earth did we not see this coming?” Despite the fact that natural disasters are more severe and occurring more frequently than ever before, many people refuse to accept the possibility that one could happen in their own backyard. The problem with mitigation at the local level, where government is the most responsive, is that this reluctance to accept the possibility of a disaster has a direct impact on the degree to which a community is prepared.

This project was formative for me as a social-scientist-to-be, and as someone whose life has been brushed by disaster. It gave me an opportunity to improve my mapping skills, gain experience with survey methodology and implementation, and to address the issue of disaster mitigation, which is extremely important to me personally. I plan on continuing to research disaster mitigation and response as a graduate student next year because I believe that scholarship in this field can help remove barriers to preparedness.

I would like to recognize the incredible guidance provided throughout this process by my mentor, Professor Stacy VanDever. In addition, this study could not have taken shape without the participation and support of local emergency management directors. I am also extremely thankful for the support of the Hamel Center for Undergraduate Research, and the generous contributions from donors such as Mr. Dana Hamel and Mrs. Elizabeth Lunt Knowles (my sponsors), that help students like me conduct research through programs like the Summer Undergraduate Research Fellowship (SURF). Finally, I would like to thank my family for being the resilient, hard-working, and generally fantastic people that inspired this research and supported me every step of the way.

Works Cited


Author & Mentor Bios

Tegan O'Neill is a University Honors Program student from Monson, Massachusetts, who will graduate from the University of New Hampshire in May 2014 with a degree in political science. After her hometown was struck by a tornado in 2011, Tegan was inspired to research local policy on nature disaster preparedness and was awarded a Summer Undergraduate Research Fellowship (SURF) to do so in 2013. She chose to study the New Hampshire seacoast region because it is an area that has a significant risk factor but has not experienced a major natural disaster in recent years. Tegan learned that local disaster mitigation is influenced by town politics and individual attitudes, more than by scientifically measured risks and conditions. She found this project to be enjoyable in that it allowed her to engage with an excellent group of public officials, citizens, and regional personnel. Tegan chose to submit to Inquiry because her own brush with disaster made this topic very important to her, and she hopes that her findings can help the New Hampshire seacoast region. The project reinforced her belief that disaster mitigation is an underrated part of community life and helped her to develop analytical and research skills, which will serve her in future work in this field. After graduation, Tegan will enter a master’s program in political science, and hopes to work with international development organizations to help developing communities prepare for and rebuild after natural disasters.

Stacy D. VanDeveer is professor and chair of the Department of Political Science at the University of New Hampshire. His research interests include international environmental policymaking and its domestic impacts, comparative environmental politics, connections between environmental and security issues, the roles of expertise in policy making, and the global politics of consumption and environmental and humanitarian degradation. As such, it was a natural fit for VanDeveer to serve as Tegan’s mentor. “Tegan is a fantastic student whose research connects important global and national issues to local communities in New Hampshire,” he said. “She is an extremely organized and independent researcher and I enjoyed the experience of working with her and learning from her research.”

In addition to authoring and co-authoring over 70 articles, book chapters, working papers, and reports, VanDeveer co-edited six books, including, most recently, Comparative Environmental Politics (MIT Press 2012). He also co-edits the journal Global Environmental Politics (MIT Press).