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Role of Stakeholder Knowledge, Trust, and Responsibility in Seismic Safety: A Longitudinal Study of Households in California and Washington

Hazards impacts would be less of a problem for communities if households became proactive in hazards mitigation and preparedness actions (Burby 1998; Tierney, Lindell, and Perry 2001, 2004). Much of a person's hazard knowledge, behavioral intentions, and actual behavior come from social and governmental stakeholders (Fishbein and Ajzen 1975; Slovic 2000). However, previous research on household adoption and implementation of protective actions/hazard adjustments has paid scant attention to these. Hence, risk area residents' perceptions of various stakeholders' attributes (knowledge, trustworthiness, and responsibility for protection), and the consequences of these, on their decisions to adopt protective actions at the household level need to be considered along with other impacting variables.

With this in mind, a longitudinal panel study collected data from households in high and medium seismic risk areas of three southern California communities (N=92) and three Western Washington communities (N=141) in 1997 and 1999, respectively. The seven stakeholders identified were the following: risk area resident and his/her family; news media; employer; friends; and federal, state, and local governments. Respondents' were asked for their perceptions of key attributes—hazard knowledge, trustworthiness, and responsibility for protection—ascribed to these stakeholders. Furthermore, to gauge the stability of perceptions, these attributes were correlated with other variables, including risk perception, hazard intrusiveness, hazard experience, demographic characteristics, resource adequacy, and the self-reported adoption of 16 seismic protective actions at both points in time.

The key findings indicate that risk perception, gender, and demographic characteristics do not predict hazard adjustment. By contrast, hazard intrusiveness, hazard experience, resource adequacy, and stakeholder knowledge, trustworthiness, and protection responsibility do increase household adoption of seismic hazard adjustments. Particularly stable over time are the peer groups (employers, friends, and family), knowledge, trustworthiness, and responsibility. This suggests that planners cannot count only on the federal, state, and local government advisories put out through the news media to affect community decisions and, thereby, households' decisions to take protective actions. They need to work through peer group networks, such as service organizations, industry groups, neighborhood organizations, faith based groups, and educational institutions, to increase the knowledge, trustworthiness, and responsibility of all in the peer group. By so doing, emergency managers, planners, and

policy advocates will be assured of higher household hazard adjustment adoption levels, thus facilitating a reduction in postdisaster losses and recovery time.

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The Color of Politics and Poverty in the Aftermath of Hurricane Katrina

Following Hurricane Katrina, evacuees reported dramatically low approval ratings of the government's handling of the situation, particularly at the federal level. Additionally, many evacuees felt that the federal government would have responded more quickly if those trapped were wealthy and white rather than poor and black. These attitudes are indicative of a racialized perception of the social world that is structurally located in a context of poverty in the New Orleans area.

Utilizing quantitative data of 680 evacuees and qualitative data of 46 evacuees in Houston, we investigated the effects race, geography, education, and income have on perceptions of government. Preliminary regression results suggest a cumulative negative effect of being black, from a high poverty neighborhood, high school educated, and low income on perceptions of government. Additional qualitative support is found from interviewees who believed that the government did not effectively handle the preparation for Hurricane Katrina or the evacuation of New Orleans.

Findings are theoretically grounded in the sociological and political literature on race and urban politics and have significant implications for future public policy in New Orleans. Specifically, if government officials expect neighborhoods to provide community redevelopment plans, they must take into account the lack of confidence many evacuees have in the government's ability to provide effective solutions to the current conditions. Finally, it is argued that by creating disaster mitigation and community development policy that actively seeks to ameliorate the structural determinants of poverty, negative attitudes toward government will likely improve.

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Are New Urban Communities Prone to Flood Hazard? A Reality Check*

Since its inception in the mid-1980s, the New Urbanism movement has been rapidly expanding. To date, New Urbanist Developments (NUDs) contain approximately 560,000 dwelling units and 1.5 million people. As evident by recent long-range plans for guiding reconstruction after Hurricane Katrina along the Mississippi River, advocates of New Urbanism have failed to recognize what may be an unintended consequence from compact development: by adding higher density developments instead of conventional development (i.e., sprawl), NUDs have the potential to expose more people, residential and commercial buildings, and infrastructure to natural hazards.

To determine the number of NUDs exposed to flood risk, we conducted the following multistep procedure:

- Inventory all NUDs completed or under construction in the United States
- Geocode each NUD
- Compile data on floodplain boundaries
- Apply a spatial algorithm to screen the NUDs with potential flood exposure
- Conduct a telephone interview of planners to confirm NUDs exposed to flood hazards

Preliminary findings reveal that NUDs may have substantial exposure to flood hazards. We found that 30 percent of NUDs (115 out of 319 completed or under construction) contain flood hazard-prone areas. Of these 115 NUDs, 27 percent have building structures in the floodplains, with the remaining 73 percent using the floodplain as open space. These 115 NUDs contain 64,083 acres, 135,488 dwelling units, and about 362,000 people. The implication is that New Urbanist planners and designers must pay more attention to exposure to flood hazards.

If this early warning message is recognized and a range of appropriate hazards mitigation measures are integrated, NUDs can be exemplary in building resilient communities. The next steps in our research will entail a survey and case studies of matched pairs of New Urban and conventional developments to determine whether New Urban design has a positive influence on the incorporation of mitigation techniques into site designs of development projects.

*The findings reported here are part of a larger National Science Foundation funded project with the goal to provide guidance on how hazards mitigation can be integrated into New Urban development plans, codes, and implementation practices (NSF Grant # CMS-0407720).

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Examining the Impact of the Built Environment on Flood Losses in Texas

Despite the prevalence of policy and engineering measures to reduce the adverse impacts of floods, they remain the greatest threat among all natural hazards to the property and safety of human communities in the United States. Flood losses are exacerbated by increasing development, particularly in the coastal margin for residential, commercial, and tourism uses. Rising population density in coastal areas is associated with greater amounts of impervious surfaces, the alteration of hydrological systems (i.e., watersheds), and an overall diminished capacity for these systems to naturally hold and store surface water runoff. As a result, communities, households, and private property are becoming more vulnerable to damage from repetitive floods. While the importance of maintaining the integrity of hydrological systems is well understood, the degree to which the increasing presence of the built environment affects the level of damage sustained by a community and the resulting economic impact has never been thoroughly investigated at the regional scale.

Our study addresses this lack of research by examining the relationship between the built environment and flood impacts in the eastern portion of Texas. Texas is an ideal study area because it consistently has the most deaths and damages from flooding of any state. We calculated property damage and human casualties resulting from 874 flood events over a seven year period between 1997 and 2003. Using multiple regression analysis, we identified the impact of several built environment measures, including wetland alteration, impervious surface, and dams, on flood losses while controlling for biophysical, socioeconomic, and demographic characteristics. The results provide important information to environmental planners and flood managers on how development can influence the adverse impacts associated with flooding. Such information is critical given the continued development of coastal areas and the increasing vulnerability of human populations to coastal flooding and may provide guidance on how to build more sustainable, resilient communities over the long term.

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Community-Based Preparedness: The Role of Social Capital and Middle-Level Institutions

Community preparedness can help curtail staggering losses from natural disasters in developing countries, but poor communities face other pressing concerns and tend to underinvest in disaster preparedness. Community preparedness programs funded by donor agencies seek to build capacity at the local level but typically show mixed results across communities. In particular, effective loss reduction is compromised because local involvement tends to decrease over time and because a lack of recognition of local initiatives at the national level often limits access to the resources needed to sustain efforts over time.

My dissertation research, supported by a National PERISHIP Award, builds on the idea that the role of community level factors and middle-level institutions are relatively under-theorized. In particular, I explore how community social capital and the strength of linkages between community and state actors matter in addition to disaster management capacity building in explaining the effectiveness and sustainability of community preparedness arrangements in underdeveloped countries. Using key informant interviews and a household survey in Dominica in the Caribbean, I compare community social capital, community organizational preparedness, and levels of household disaster awareness and preparedness in six coastal communities. The study communities are split equally between the west and the south local government districts, each staffed with distinct district officers with similar responsibilities.

Preliminary findings at the community level show considerable variations in community preparedness, the strength of district officers, and social capital across communities. While typical aggregated models of social capital show correlations between a variety of indicators of participation and mutual support, this study reveals more fragmented results. In some villages, interactions between people seem to support collective goals, while in others they are put to use for more private purposes. These different forms of social capital in turn seem to have implications for different aspects of disaster preparedness: for instance, private forms of social capital appear to facilitate information flow better. These findings will be further examined in relation to the strength of district officers and the type of preparedness training received. Finally, levels of household preparedness will be analyzed at the individual level using hierarchical modeling to test linkages between community and individual factors. Because household outcomes may be more correlated within villages than across villages, a multilevel regression analysis will be used to test for the relative importance of community level factors, such as social capital, and individual variables on household disaster awareness and preparedness.

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The Culture of Communication:
Methods of Information Sharing Pre-, During, and Post-Disaster

The means by which members of global communities perceive and respond to various hazard threats often depends on the source of information by which impending disaster is received. While media outlets and outreach may be abundant, the perception of these sources as reliable or consistent with conventional values may be challenged by the status quo. Additionally, accusations against media sources of sensationalizing disaster and waiting until impoverished or marginalized groups' "predictable plight becomes news," suggests that media sources do not provide adequate coverage of the causes of disaster (Nieman Reports 2006). Along with other forms of communication, media sources are one part of the entire infrastructure of preparedness and mitigation of disaster events.

No one factor contributes to the dissemination of information (or lack thereof) during times of crisis. Media outlets alone are not responsible for the collection and release of vital reports to communities. Media may provide the most rapid means of providing news on threats, but the ability of the public to receive and accept the information may be difficult. For instance, in 1985, residents of the town of Armero were advised against evacuation by religious and other community leaders. While a lahar from an eruption of Nevado del Ruiz was on a path to Armero, some people reportedly were watching a soccer match on television, and others were unable to hear or disregarded Red Cross volunteers shouting warnings in the streets (Bruce 2001). In the case of Armero, the scientific community developed sufficient monitoring systems to predict the event, but the transmission of information to inhabitants of Armero failed.

After over 23,000 individuals perished in the 1985 Nevado del Ruiz event, the United Nations declared a decade on disaster reduction in the attempt to raise awareness to causes of and preparation for disaster. The resulting efforts contributed immensely to disaster research; however, the causes of disaster, including poverty, factors of political economy and ecology, and reliable systems of warning and communication, are still in need of improvement. Communication sources can be considered but one factor in an infrastructure of disaster reform.

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Leveraging Social Networks for Evacuating Vulnerable Communities during Disasters

Objectives: Hurricane Katrina demonstrated that impoverished communities are less likely to evacuate and are more affected by disasters. While poverty, lack of transportation to or shelter in safe areas, and experiences riding out hurricanes safely were certainly factors in delaying evacuation, social networks (the web of relationships that surround individuals) may also have played a role. We interviewed evacuees from Hurricane Katrina to give voice to those issues influencing evacuation in impoverished, minority communities.

Methods: From September 9 (11 days after the hurricane) to September 12, 2005, we performed qualitative interviews with 58 adult evacuees randomly sampled from Houston's three major evacuation centers. Interviews focused on factors influencing evacuation behavior prior to the hurricane's landfall. We analyzed the transcribed interviews using grounded theory methodology. Three investigators independently coded and resolved disagreements by consensus.

Results: Participants were mainly African American, low income, and from New Orleans Parish. We identified 1,194 statements coded into the following domains: 1) instrumental—the resources and practicalities related to evacuation; 2) cognitive/affective—the receipt, understanding, and processing of evacuation messages; and 3) social/cultural—the influence of social networks and attitudes about hurricanes.

Participants affirmed the importance of the widely reported instrumental and cognitive reasons for nonevacuation, including income, transportation, jobs/property, health, and risk perceptions. However, these factors were mediated by the influence of social networks (a social/cultural subdomain) that facilitated or hindered evacuation decisions. For some, the extended family was a resource: "My sister, she had called me. So I went to pick her and her children up, and grand children, and we just started driving…." For others, church members encouraged evacuation: "So our clinical manager called back. She says, 'Stella, the Lord said get out of that house.' I said, 'We're on our way out now if you would hang up.'" Participants described networks outside of New Orleans that provided "an open invitation" as facilitating evacuation or noted the absence of networks outside of New Orleans as hindering evacuation: "Really truly, we had cars, but we didn't know anybody to go to." Obligations to the elderly influenced evacuations: "…We had to come back home. My mother-in-law had called for us to come back…. You know when they get a certain age they get confused." Participants who sheltered extended family members in their homes were subsequently unable to evacuate: "I

could have made it on my own, but it was just my aunt and my uncle. Every few steps he made…she forgot his walker…every few steps he made he was falling down."

Conclusions: Improving disaster plans for impoverished, minority communities requires more than remedying access to shelter and transportation. The influence of social networks demands better community-based disaster programs. Programs should address social units (households, extended families, neighborhoods), and risk communications must account for social networks if they are going to sway those whose norms, risk perceptions, and decision making are highly influenced by their social networks. Public health and disaster planners should leverage these networks by teaming with indigenous helpers and civic and community organizations when devising their communications and plans.

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Social Capital and Disasters: Is There a Link between the Two?

Although the term "social capital" is not a new concept, it has gained great popularity in recent years following the works of Coleman (1988), Bourdieu (1986), and Putnam (1993). By the term social capital, I refer to two different components: (1) civic networks (both formal and informal) that enable collective action (called the *structural components of social capital*) and (2) norms, values, and understandings that facilitate such action within or among groups, such as trust and reciprocity (called the *attitudinal or cognitive components of social capital*). Across the disciplines, there are now many studies suggesting that the benefits of social capital flow from individuals and households to communities, regions, and even nations.

The disaster literature has recently acknowledged the role of social capital in preparing for, responding to, and recovering from disasters (e.g., Wisner 2003, Nakagawa and Shaw 2004). Although the earlier studies on disasters did not use the term social capital per se, they suggested that norms, such as solidarity and cooperation (i.e., the cognitive components of social capital), do emerge in the aftermath of disasters but do not have long-term impact on communities since they are usually short-lived, lasting a week to 10 days.

This research builds on these studies and examines the following questions: (1) Can disasters stimulate the formation of social capital in communities? (2) Even though norms such as solidarity and cooperation that emerge in the immediate aftermath of disasters may be short-lived, can they pave the way for the emergence of civic networks (i.e., the structural components of social capital) and have a long-term impact on preparedness in disaster-hit communities? (3) Through their interventions (e.g., policies, programs, and projects), how can external actors—the state, donors, and nongovernmental organizations—contribute to the emergence of civic networks in disaster-hit communities? This research is based on qualitative field research, drawing particularly on the case study method. The case is the city of Golcuk, Turkey, the epicenter of the August 17, 1999, earthquake that officially claimed 17,480 lives.

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Lessons for Building Sustainable, Hazard-Resilient Coastal Communities

Coastlines provide resources of incredible value, sustain the livelihoods, and are home to the majority of the world's population. Over the last three decades, the practice of integrated coastal management (ICM) has evolved to transform the intense and growing pressure, and the associated conflict, along this narrow land-sea interface into sustainable coastal development. However, insufficient attention has been focused on the role of ICM in dealing with coastal hazards. Media coverage of disasters has shown graphically the devastating consequences of living in hazard-prone coastal areas, such as the 2004 Indian Ocean tsunami, Hurricane Katrina, and, more recently, Cyclone Larry (the worst cyclone to hit the Queensland coast of Australia since 1931). If prevailing patterns of intensified development continue, coastal communities will become increasingly vulnerable to hazards, especially given the prospects of global climate change and sea level rise. How then can we build sustainable, hazard-resilient coastal communities?

To answer this question, this research develops a conceptual foundation, substantive and process principles to guide action, and identifies key challenges and opportunities for translating these principles into practical reality. Insights are drawn from ICM experience, selected coastal disaster case studies, and a brief survey of related fields, including natural hazards planning, collaborative planning, sustainable communities, sustainable livelihoods, ecological economics, environmental governance, adaptive management, and comanagement.

A preliminary literature review reveals a convergence of 'planning imperatives' that are central to the evolution of natural hazards planning and to building sustainable, hazard-resilient communities (table 1). We need to reconceptualize prevailing ICM and natural hazards planning practice: sustainable, hazard-resilient coastal communities are founded upon robust critical infrastructure (ecological, social, and physical) that is secured by planning processes that build 'layers of resilience' to overcome 'waves of adversity'.

Table 1: Evolution of Natural Hazards Planning (Adapted from Pearce 2003:213[1])

Early	Emerging	Future
Hazards	Vulnerability	Adaptive capacity and resilience
Reactive	Proactive	Proactive and precautionary
Single agency	Partnerships	Social capital
Science driven	Multidisciplinary	Holism and social learning
Response management	Risk management	Sustainable development
… for communities	… with communities	… by communities

[1] Pearce, L. 2003. Disaster management and community planning and public participation: How to achieve sustainable hazard mitigation. *Natural Hazards* 28:211-28.

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Disaster Vulnerability in Relation to Poverty in the Katrina Event
Reconnaissance Survey and Preliminary Analysis

Columbia University's Earth Institute, in collaboration with Tulane University's School of Public Health and Tropical Medicine, has received a small National Science Foundation grant to carry out an exploratory study on resettlement and recovery in low-income neighborhoods of New Orleans. This study will include a series of field reconnaissance visits in the areas affected by Hurricane Katrina and phone interviews with displaced residents to examine the links between poverty, hurricane damage, community connection, and recovery potential. In doing so, we will incorporate an engineering assessment of damage with a sociological study of residents' desire to resettle and their connection to their predisaster neighborhoods.

We have partnered with the local chapter of the Association of Community Organizations for Reform Now (ACORN), who is working to identify and clean flooded homes in predominantly poor and working poor neighborhoods of New Orleans. In the first stage of research, we have completed structural and flood damage assessments of 81 houses in the Lower Ninth Ward, Bywater, and East Orleans, drawing this sample from a list of residents participating in ACORN's hurricane recovery program. Our engineering assessment will be compared with census-based income statistics and city damage assessments, which can significantly impact the cost of residential reconstruction. We will identify potential dependencies that may make recovery difficult for low-income residents. In the second stage of research, we will seek information on displaced residents' experience of the hurricane and posthurricane recovery. This information will be gathered through phone and in-person interviews, again a sample of ACORN program participants. Finally, we will conduct a comparative analysis of damage assessments and residents' interviews for intersections between poverty, damage, community networks, and recovery potential in the short as well as long term.

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Earthquakes in Istanbul:
Vulnerability, Trust, and Clientelism in Residents' Management of Risk

A recently completed study of risk perception and vulnerability in the megacity of Istanbul, Turkey, illustrates how culturally derived perceptions of risk shape the strategies that people use to reduce their vulnerability to hazards. Over the past 60 years, urban migration has strained the housing market in urban centers of Turkey. This has resulted in the construction of illegal housing and legal housing that fails to meet minimum building code safety standards. The houses that Istanbulites now live in are highly vulnerable to seismic hazards. With threats of future large earthquakes in Istanbul and recent devastating earthquakes elsewhere in Turkey, Istanbulites are faced with complex choices regarding where to live, how to assess existing buildings, and how to construct new housing.

Using a series of in-depth qualitative interviews and engineering assessments in four Istanbul neighborhoods, I examined the process by which residents come to trust their homes as safe and the implications this trust has on their vulnerability to earthquakes. Many residents highly distrust professional contractors and engineers when it comes to the construction and assessment of their homes. Rather, residents turn to informal relationships with engineers and contractors among their kin and friendship networks to negotiate issues of housing and vulnerability. These relationships, following clientelistic social patterns of interaction, have become a means by which construction costs are reduced, bureaucracy avoided, trusted inspectors found, and safety ensured. Yet, by engaging in these clientelisitic relationships as a strategy to obtain housing and reduce seismic vulnerability, residents and engineers have shaped the manner in which housing is being created and used. At times, these relationships have even amplified the very seismic vulnerability that residents are attempting to reduce.

A planned follow-up study will continue this work by examining the issue of trust and risk perception in postdisaster housing built after the 1999 Kocaeli earthquakes. I will conduct a series of interviews with residents in two housing complexes. The first will be a complex of government built postdisaster housing. The second will be a housing complex funded through an international aid organization and constructed in partnership with residents. The follow-up study will examine aspects of housing and construction that influence residents' trust of their homes and will consider the implications this has on effective postdisaster resettlement strategies.

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The Salience of Natural Signs of Tsunamis in Thailand, December 26, 2004

Natural geophysical precursors or signs of tsunamis are important to understand because they may provide the first and only alert of future tsunamis, especially in areas near the source of tsunamis. Despite this importance, prior to December 26, 2004, no study had systematically examined the salience of the natural signs and how people interpret and act on them. However, the Indian Ocean events offered an unprecedented opportunity to do so.

The earthquake of December 26, 2004, was felt widely in Thailand and the tsunami affected all six of Thailand's provinces along the Andaman coast. We collected over 6,000 pages of social data on Thai adults' experiences with the earthquake and tsunami events in all six provinces. This study quantifies the conspicuousness of the natural signs of the tsunamis and explores the normative, attitudinal, and cognitive influences on decision-making processes that affected interpretation of and behavioral response to them and other official and unofficial warnings, including the events of March 28, 2005.

Clear findings emerged from 663 interviews with Thai adults. The conspicuousness of the natural signs was variable. Some 24 percent of the sample population felt ground shaking from the 2004 earthquake, yet all but 6 percent ignored it or linked it to anthropogenic causes. Over two-thirds (69 percent) reported that they saw something unusual about the ocean, such as a tsunami trough or unusual wave form, and a majority (55 percent) heard something unusual,

such as when tsunami crests arrived onshore. However, the link to danger came too late. Most people saw tens to hundreds of people in and/or moving toward the danger zone when the first wave struck.

We conclude that natural warning signs were widely detected as something unusual, but, not surprisingly, not linked to tsunamis. The low levels of awareness of the tsunami hazard and danger and understanding of appropriate response suggest that even if official warnings and evacuation messages had been issued, they would have been ineffective in motivating the desired response. Notwithstanding, the salience of natural signs means that they can be interpreted accurately in the future and acted on by the public with proper education. They may also serve as a means to personalize and confirm messages from tsunami early warning systems, making the latter more effective.

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Modeling of Tsunami Preparedness and Effectiveness of Warnings in the United States

Plans for expansion of the U.S. Pacific tsunami warning system to the Atlantic and Caribbean underscores the tsunami risk in much of the United States. A model that can predict the factors influencing preparedness and identify key performance indicators for use in designing and guiding outreach education is an essential tool for helping communities prepare to meet the demands required for effective response.

A new National Science Foundation funded study looks to refine a proven empirical model developed in multicultural settings for hazards, such as earthquakes, volcanoes, and wildfires, and to test its capability to predict preparedness, including response to warnings, for tsunamis in seven U.S. coastal communities in Alaska, California, Florida, Hawaii, North Carolina, Oregon, Puerto Rico, and Washington state. Data will be obtained with questionnaires administered to adults in two phases separated by six months (i.e., a robust longitudinal study). We propose to 1) develop a model predicting responsiveness to warnings and other personal preparedness, 2) describe the structure of the cognitions that underlie motivation to prepare and the personal and normative decision processes that determine response to warnings, 3) develop cognitive maps of the preparedness and warning processes for education, and 4) develop measures that can be used to develop cost-effective interventions and that represent key performance indicators.

This research aims to provide the capability to predict the factors that facilitate and hinder tsunami preparedness as a supplement to the U.S. expansion of the tsunami early warning system. Our theoretical ideas, methodology, and findings could be adapted to fit evolving systems elsewhere, such as those in the Mediterranean Sea and Indian Ocean.

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U.S. Coastal City Residents' Post-Katrina Household Mitigation Intentions, Actions, and Concerns Regarding Hurricane and Long-Term Climate Threats

Hurricane Katrina's impacts may have grabbed the attention of residents of vulnerable U.S. coastal cities. Does this make any difference as a window of opportunity for heightened citizen interest in hurricane hazard preparedness and mitigation efforts outside of the impact area? Does concern decay later, and do any immediate intentions get converted to action? With emerging evidence of the links between weather hazards and long-range global warming trends, and the question of how the public forms a "planning" attitude about more abstract threats, does an event like Katrina also influence perceptions, intentions and actions regarding a longer-term issue like global warming?

This investigation is partly motivated by survey methods innovator Don Dillman's early argument (1978) that policy-related public attitude and intention surveys should be "synchronized" more closely with current issues and proposals as part of an intentional process that might also help to sharpen public understanding and intentions as a result of asking people to probe themselves. Groups such as America Speaks, Inc. have pragmatically pursued this notion on a number of public issues, but it has not been applied to regional disaster preparedness.

Funded by the National Science Foundation at an exploratory scale (N=300 respondents), this pilot study is designed to query an urban study population panel at two points in time (one month after Katrina hit and again in early 2006) to examine how post-Katrina mitigation intentions may persist and/or become actions as well as the methodological issues regarding the longitudinal approach. The sampling frame intentionally focuses on six urban (not rural or suburban) areas vulnerable to coastal hazards and outside of the Katrina impact area. There are difficulties in random digit dial surveying of urban populations with respect to yield, but a 72 percent longitudinal response rate (28 percent attrition) was achieved.

Both survey rounds probed the intentions of individuals to take action on any of nine household mitigation actions ranging from merely seeking information on hurricane and global change threats and local emergency plans; to expenditures/efforts for family response planning, flood insurance, home hurricane proofing, and fuel-efficient cars to reduce greenhouse gases; to actually relocating to avoid coastal hazards. Not surprisingly, intentions to seek information or to plan were more frequent (39 to 53 percent) than some of the more taxing or costly actions, such as buying insurance or relocating (24 to 27 percent). A surprising 42 percent voiced intentions to buy a fuel-efficient car to reduce greenhouse gases. However, only one-tenth of

that number actually reported converting their intent to action on purchasing a greenhouse-friendly car some months later, and when controlled for other reasons for that purchase (e.g., economy), these numbers are much smaller. Overall, more than half of the second-round respondents reported taking at least one new action, again somewhat favoring information-seeking and planning.

Intents and actions are being tested against a number of predictive influences suggested by prior research and measured here (demographics, political values, sources of information, personal disaster experience, the influence of institutions versus social networks, and the survey process itself). Regarding very long-term threats, 79 percent of the second-round group believed the nation needs to take action on global warming (compared to 77 percent in the initial group of 300 before attrition). Of that 79 percent, 60 percent believed action must start right now (0 years), while 23 percent believed there is up to 10 years to act, 10 percent between 11 and 25 years to act, and the remaining 7 percent anywhere from 30 to 200 years.

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Disaster Diplomacy

Disaster diplomacy explores the questions: Can disaster-related activities induce cooperation among enemy countries? Could predisaster actions, such as mitigation and prevention, and postdisaster actions, such as response and recovery, positively affect relations among states that are not normally prone to cooperation?

The following case studies were analyzed:

- The 1999 earthquakes in Greece and Turkey (by James Ker-Lindsay)
- Climate-related disaster diplomacy between Cuba and the United States (by Mickey Glantz) supplemented by hurricane response for both countries (by Ilan Kelman)
- Preventing a drought disaster across southern Africa (by Ailsa Holloway)
- Response to the December 26, 2004, Indian Ocean tsunami (by Ilan Kelman)
- India and Pakistan following the January 26, 2001, and October 8, 2005, earthquakes (by Ilan Kelman)

In addition to more than two dozen specific cases, global topics include disease diplomacy, discrimination in international disaster aid, and cooperation for near-Earth object threats.

The main conclusion from these investigations is that evidence exists that disaster-related activities can catalyze diplomacy, but evidence does not exist that disaster-related activities can create diplomacy. Disaster-related activities can significantly spur on a diplomatic process that had a pre-existing basis, but they are unlikely to generate new diplomacy.

Research has examined why disaster-related activities catalyze but do not create cooperation. Louise Comfort used a complex adaptive systems approach to seek patterns among case studies. Ilan Kelman identified international affairs pathways that actors could select to promote or to inhibit disaster diplomacy. Mark Pelling and Kathleen Dill proposed seven hypotheses regarding disasters and political change, which they based on an analysis of large environmentally-related disaster events between 1899 and 2005. Spin-offs of disaster diplomacy include environmental diplomacy, seeking nonenvironmental outcomes from multilateral environmental agreements, and disaster para-diplomacy, examining whether or not disaster-related activities affect the autonomy interests of nonsovereign territories. Work is continuing to further identify and analyze case studies, to test the robustness of the initial conclusions, to determine the relevance of the spin-offs, and to turn theory into practice.

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Island Vulnerability

Island vulnerability explores the challenges that isolated locations face when dealing with risk and disasters by examining the processes that create, maintain, and could be used to reduce their vulnerability. Islands and other isolated locations face extensive vulnerabilities, some resulting from island characteristics of small size, isolation, insularity, and marginalization, and some resulting from external influences and decisions. For example, due to their small size, islands tend to experience large proportional impacts from even small events. Meanwhile, their marginalization often precludes detailed predisaster activities and rapid postdisaster actions.

Yet, these same island characteristics yield methods for coping with those vulnerabilities and for turning the apparent disadvantages into advantages. For example, small size permits kinship-based systems for dealing with extreme events to link directly into national structures, potentially strengthening them. Highly-localized economies also build a flexibility that larger economic structures cannot emulate. Many islanders suggest that the inherent vulnerabilities of islands are also what make islands appealing, inspiring, and able to deal with the challenges.

Island vulnerability adopts this broader view to analyze and promote the lessons of experiencing and countering vulnerabilities on islands. Links with development and sustainability processes are necessary in order to highlight capacities and capabilities as well as to emphasize and implement exchange between islands and non-islands.

Background to the topic is explored through defining islands, vulnerability, and island vulnerability and discussing the significance of each. Case studies include Europe (e.g., the Faroe Islands, the UK Overseas Territories, and European Union islands) along with Caribbean and Pacific states. Some of the projects with publications are "Early Participatory Intervention for Catastrophe to Reduce Island Vulnerability" and "Island Anthology" by James Lewis and "Managing Vulnerabilities of Small Island Heritage." Examples of ongoing work are:

- "Island Affairs," to ensure that the collective knowledge of islands and islanders is exchanged among isolated locations and transferred elsewhere.
- "Environmental Diplomacy," such as the possibilities for using island biodiversity reserves to promote regional peace.
- Island disaster para-diplomacy, examining the disaster diplomacy implications for nonsovereign islands, such as Nevis and Niue.

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Young, Healthy, and Safe–Does Risk Reduction Matter?

The allocation of goods financed by public funds should meet the requirements of efficiency. In our analysis about the efficiency of public spending in the context of protective measures against natural hazards, the focus is on the most important output of such investments: the protection of human life. In order to measure these benefits monetarily, we conducted a survey that elicited the individual willingness to pay (WTP) to reduce mortality risk. Thereby, risk was referred to as the probability of dying in an avalanche. The study was carried out in Tyrol, an Austrian federal state. The stated WTP is used to calculate the value of statistical life, which serves as an instrument to monetarize the protection of human life. This information allows for examination of social welfare associated with the financing of protective measures. In this paper, we refer to previous studies that found differences in the valuation of risk reduction for specific groups. In particular, we want to analyze whether younger/older, healthier/unhealthier, and endangered/less endangered people differ in their statements concerning the willingness to pay for a certain risk reduction. If this is the case, one could conclude that it is justified to separate public spending depending on target groups.

Keywords: contingent valuation, risk reduction, age effects, background risks

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Determining the Accuracy of Storm Surge Assessment Methods

Numerous methods were used to determine the inundation area occurring from Hurricane Katrina, yet the results of these methods can vary. This project uses data from a field study in Mississippi and Alabama conducted by the Hazards Research Lab at the University of South Carolina to determine the incongruity between multiple storm surge assessment methods. The Hazards Research Lab field data were compared with one pre-event model run by the National Hurricane Center (SLOSH) and one post-event assessment conducted by the Federal Emergency Management Agency (FEMA).

Overall, the results show that over half of the areas estimated by FEMA and SLOSH are in agreement with the Hazards Research Lab field data. Discrepancies within the assessment methods led to overprediction and underprediction of storm surge by both SLOSH and FEMA. Both models were generally consistent with the field data right along the coast, but varied greatly in the projected inundation and damage in the back-bay and estuarine areas, where surge-induced flooding was also evident. Determining where the models vary in their spatial extent of inundation and by how much is important not only for calibrating the models themselves, but also for leading to significant improvements in disaster recovery and future preparedness.

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Understanding RN Disaster Response Volunteerism in Colorado

Our survey of 90 Colorado registered nurses (RN) in 2004 revealed that 53 percent of the participants volunteered to perform a community disaster response role through such organizations as Colorado Nurse Alert (44 percent), American Red Cross (3 percent), and Medical Reserve Corps (2 percent). While the Colorado Nurse Alert boasts a membership of more than 8,000, other disaster response organizations report a lack of healthcare volunteers.

Following national reporting of recent natural disasters, including the devastating hurricanes of 2005, a survey was developed to better understand the reasons why nurses choose to participate or refrain from volunteering for community service. The survey found a slightly smaller percentage of individuals (49 percent) reporting volunteering for a community disaster response role with Colorado Nurse Alert, American Red Cross, and Community Emergency Response Teams (CERT). Individuals not involved in disaster response reported volunteering over 3,500 hours during the year for church, community, and healthcare issues. These individuals reported a number of reasons why they chose not to volunteer for disaster relief. As might be expected, family responsibilities (17 percent) and financial concerns, including employers not allowing time off (17 percent), headed the list. Surprisingly, another 17 percent felt they lacked the necessary skills to be of use, and 6 percent reported the required classes and meetings associated with volunteering were a problem. However, 95 percent of all respondents indicated that they would respond if their local Red Cross chapter made a public request for volunteers to work in a shelter in their community.

This suggests that disaster response organizations may be able to increase their volunteer nursing base by:

- Clearly defining the skill sets required for different roles.
- Identifying support roles that require limited or no travel.
- Finding creative ways for nurses to meet educational requirements.
- Recruiting a mix of retired and actively practicing nurses as appropriate.

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Evaluating a Multihazard Mitigation Plan under the Disaster Mitigation Act of 2000: A Case Study of Houston-Galveston Area Council Plan

The U.S. Congress enacted the Disaster Mitigation Act of 2000 (DMA2K) to get state, local, and tribal governments proactively involved in hazards mitigation. One major requirement of this act is that jurisdictions must have a Federal Emergency Management Agency (FEMA) approved multihazard mitigation plan in order to qualify for predisaster federal funding. Using the Houston-Galveston Area Council (H-GAC) Regional Hazard Mitigation Plan as a case study, this paper intends to evaluate the plan using the elements required under DMA2K as the criteria. The required elements are that a plan must address multiple hazards and must provide documentation of collaboration with neighboring communities and active public participation, information, and risk awareness.

The study's specific objectives are to identify and evaluate the types of public participation strategies adopted during the development of the plan, to identify and evaluate the extent of collaboration and coordination between the political and administrative jurisdictions involved, to investigate the extent to which the plan addresses hazards mitigation issues that are common to several hazards, and to identify the level of priority assigned to these issues by the jurisdictions involved. Mitigation issues in this study that are considered to be common to several hazards include evacuation and transportation routes; shelter, including food and other supplies; and risk communication.

The analysis of the H-GAC plan indicates that despite DMA2K's requirements, only 39 percent of the 85 jurisdictions included collaboration with neighboring communities, 45 percent addressed evacuation, and 69 percent included public information and awareness in their plans. Of the 95 actions that directly involve public awareness, one was designated as "very high" priority and 18 percent were designated as "low" priority. None of the jurisdictions assigned very high priority to any evacuation action. Although the DMA2K was enacted for multihazard mitigation planning, the inclusion of technological hazards was not required by FEMA, and only 34 percent of the jurisdictions studied here addressed technological hazards. Finally, while DMA2K was enacted prior to September 11, a substantial portion of the planning process for the multihazard mitigation plan must have taken place post-September 11. Yet, only six percent addressed terrorism in their individual plans. The experiences of Hurricanes Katrina and Rita underscore the importance of evacuation, collaboration with neighboring communities, and risk communication and awareness in hazards mitigation plans. However, the plans reviewed in this study do not seem to place much or enough emphasis on these elements.

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Surviving Catastrophe: A Study of Children in Hurricane Katrina[1]

During the emergency period following Hurricane Katrina's landfall, parents, school officials, mental health professionals, politicians, and members of the media expressed widespread concern about children's reactions following exposure to such a traumatic event. Over one million children lived in the counties most directly affected by Hurricane Katrina, while approximately 300,000 school-aged children in Alabama, Louisiana, and Mississippi were displaced as a result of the storm. In many cases, these children lost their homes, toys, pets, schools, friends, and some were even separated from their immediate family for prolonged periods following the disaster.

In this research, we examined children's experiences in the aftermath of Hurricane Katrina in an effort to contribute to the disaster literature on this important, and seriously understudied, topic. Drawing on suggestions from Anderson's (2005)[2] call for more research on children and disasters, we developed the following research questions for this study: 1) What were the children's experiences in the disaster? 2) What are others doing for the children to lessen their vulnerability? and 3) What are children doing for themselves and others to reduce disaster impacts? Data were gathered through participant observation, focus groups, informal interviews, and in-depth formal interviews with parents, grandparents, day care service providers, school administrators, elementary school teachers, mental health service providers, religious leaders, and evacuee shelter coordinators in Louisiana. We found that despite the diversity of experiences and family situations, there were also many commonalities in terms of

[1] This work was supported by the Natural Hazards Center at the University of Colorado at Boulder and the National Science Foundation Quick Response Research Program (Award Number CMS-0408499).

[2] Anderson, William A. 2005. Bringing children into focus on the social science disaster research agenda. *International Journal of Mass Emergencies and Disasters* 23(3):159-175.

the ways in which parents and others worked to safely evacuate children, get them enrolled in school, and re-establish routines and the ways in which children formed new friendships and tried to adjust to the upheaval in their lives. Our study supports the idea that children are both vulnerable in disasters and need assistance from adults, but also that they are resilient and can find ways to effectively cope.[3]

[3] For preliminary findings from this research, see: Peek, Lori and Alice Fothergill. 2006. Reconstructing childhood: An exploratory study of children in Hurricane Katrina. Quick Response Report #186. Boulder, CO: University of Colorado Natural Hazards Center. www.colorado.edu/hazards/qr/qr186/qr186.pdf.

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The Culture of Risk in Homeland Security and Emergency Management

The U.S. Department of Homeland Security (DHS) and its secretary, Michael Chertoff, have been widely praised for pledging to take a "risk-based approach" to disaster preparedness. Such an approach has been moderately successful in directing greater proportions of federal preparedness grants to urban areas. The risk based approach mantra may obscure more than it reveals, however. The risk of death from terrorism, though terrible, is still relatively low compared to other risks. Even taking into account the September 11 attacks, the number of Americans killed by international terrorism since the late 1960s is about the same as the number killed by lightening, automobile collisions with deer, or allergic reactions to peanuts.

This paper briefly reviews the history of risk as it has evolved from a perception of danger to an understanding of probability. It argues that advocating a risk-based approach absent explanation about the social utilities of risk neglects the necessary tradeoffs of time and attention and diffuses accountability. The paper concludes with a review of DHS's interim National Preparedness Goals and preparedness vision. Key DHS planning documents fail to make the hard choices involved in attaching utilities to risk. Emergency management policy would be best served by prioritizing dangers to national existence, loss of life, individual rights and liberty, and property damage.

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Response Issues with Evacuees from Hurricane Katrina Relocated to Pope County, Arkansas

Hurricane Katrina displaced hundreds of thousands of people from their homes along the Gulf Coast. Many individuals lost their homes and most of their possessions. This project examined the response of different agencies and individuals that assisted approximately 300 survivors that came to Pope County, Arkansas. Information was received from survivors through surveys and interviews. Respondents discussed the services received along with the quality of services from local, state, and federal governments. This included the Hughes Center, Operation KARE (Katrina Assistance Relief Effort), and the Federal Emergency Management Agency. The analysis examined the perspectives of both the survivors and the providers. Some of the actors included faith-based organizations, local politicians, county and state emergency management officials, and private citizens. In addition, the organizations and individuals discussed procedures utilized and their effectiveness. The analysis concluded with suggestions and lessons learned. This research was funded by an Undergraduate Research Grant from Arkansas Tech University.

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The Mechanism of Community Recovery from Hanshin-Awaji Great Earthquake in Japan

After the Taiwan Chi-Chi earthquake, reconstruction of the damaged community became an important issue. Some problems occurred during the community recovery timeline, such as the aging of population, outflow of population, insufficient economic ability, industry recession, and difficulty in achieving community consensus, which made the community recovery difficult. In Japan, over 10 years have passed since the Hanshin-Awaji Great Earthquake occurred in 1995, and most communities have had various experiences of recovery. To consider the value of taking reference of the recovery experience, it is necessary to grasp the whole scale of the reconstruction process and experience from the Hanshin-Awaji earthquake. Thus, five communities damaged in the Hanshin-Awaji earthquake were chosen as case study subjects. The purpose of the research is to reveal the important factors and processes of community recovery after the Hanshin-Awaji earthquake.

Government, experts, and residents were the dimensions of analysis set by the researchers. Through the analysis, factors related to community recovery and classifying resources for community recovery were identified. The community recovery timeline was defined and the time span for recovery phases was found to be related to factors, such as the scale of the disaster, types of community recovery plans, community consensus, exterior resources, and interior roles. Furthermore, from the community recovery experience of the Hanshin-Awaji earthquake, the mechanism of community recovery was derived and the experience can be shared and suggestions made for community recovery after the Chi-Chi earthquake in Taiwan.

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The Disaster Management Plan for the Vulnerable in Taiwan

Much suffering has occurred in recent disasters. We have found that those that suffer most are often the elderly, the disabled, etc. How to decrease damage on the vulnerable becomes an important issue in disaster management policy in the near future. In Japan, typhoons and heavy rain occurred frequently in 2004, and many vulnerable people were killed in these events. The damage drove out the consideration of disaster management countermeasures for the vulnerable. Recent research in Japan has found that an important key to supporting the vulnerable is, to not only to provide efficient evacuation, but also to grasp the conditions of the vulnerable in daily life before disaster occurs.

In Taiwan, community-based disaster management planning (neighborhood level) has developed recently; however, the support system for the vulnerable in community-based disaster management planning is quite weak. The disaster management plan at the local government level is not combined well with support for the vulnerable and community-based disaster management plans. Thus, this research addresses disaster management planning involving supporting systems for the vulnerable in daily life between neighborhoods and the local government. The purpose of this research is to establish the supporting mechanisms for the vulnerable at the neighborhood level and local governmental ones to fulfill local disaster management system.

Several goals of the research are as follows:

- To analyze the literature about supporting systems for the vulnerable in disaster.
- To verify supporting systems and countermeasures for the vulnerable in disaster management phases in Taiwan.
- To establish disaster-preventing countermeasures at different levels such as neighborhood and local public sectors.

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Federalism and Assistance after Hurricane Katrina

Evacuation after Hurricane Katrina led to disaster declarations in states not directly affected by the hurricane, including Colorado. This inverted the usual order of disaster response, which moved from national to local in states like Colorado, instead of beginning locally and moving nationally. Service providers were drawn to the disaster via television coverage, their jobs, and, for many, connections to New Orleans. The states, localities, and federal government delivered services with great sympathy for evacuees on one hand and looming concerns over fiscal stress and potentially new obligations to evacuees on top of their existing ones to long-term local residents.

Integrating disaster relief for a disaster that was not local into local assistance proved a challenge, even in Colorado, which did not receive as many evacuees as the Gulf States. First, the Federal Emergency Management Agency reimburses for overtime work, not for deploying state workers to disaster relief during their ordinary work days. Second, existing state relief programs for the poorest people are based in part on the state and locality, whether it is Temporary Assistance to Needy Families (TANF) or general assistance. For example, TANF funds are block-granted to states for allocation to counties, which are responsible for assessing eligibility and managing caseloads. Congress enacted a statute that promised to reimburse states, which could then reimburse localities for the additional caseload from TANF that Katrina evacuees might bring. Even some need-based federal programs, such as section eight housing vouchers, are administered by local housing authorities who may not have capacity to meet additional need. Most states maintain long waitlists for housing vouchers. These promises immediately bring up a tension for both public officials and activists for the poor between attention to the "newest residents," as volunteers quickly called Katrina evacuees, and attention to the local poor, including the homeless. Americans are free to move between states and residency requirements have been abolished for many programs, including TANF. Nonetheless,

differential treatment based on residency and evacuee status can be seen in the commitment by the federal government to reimburse for new TANF recipients in disaster-affected states, in maintenance of limits on reimbursement for service provision, and in litigation over termination of housing assistance to Katrina evacuees.

This analysis comes from an ongoing qualitative study of service coordination and delivery in Colorado. We use data collected in interviews with more than 40 workers or volunteers in voluntary agencies and local, state, and federal agencies as well as in observations of more than 80 hours of meetings of community groups, casework management, and the long-term recovery committee. Additionally, we have interviewed 94 evacuees in semistructured interviews that averaged three hours in length. We interviewed these evacuees within six months of relocating to Colorado and are now beginning a second wave of interviews, six months after the initial ones.

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Arsenic and Plague: Examining Assignment of Blame in Newspaper Reports of Hazard Events

Societal practices of blame are commonly witnessed in a variety of social settings. In risk literature, the importance of blame has been shown by illustrating the presence of blame, *or* moral blame, *or* blameworthiness. However, how the assignment of blame varies with different hazards is poorly documented. Also, there is little evidence on cross-cultural comparison of blame. In other words, is nonmoral blame (blaming failure of a concrete bridge for the crashing of a car, for example) predominant in the reports of natural hazards? How do the social, political, economic, and cultural contexts of a hazard event assist in signifying blame, especially blameworthiness, for societies? By addressing these questions, a richer interpretation on blame/blaming can be developed. Furthermore, this knowledge can be employed in assessing, for instance, the communication of risk information. There is urgency in developing evidence for this strand of theorization, because for nearly three decades hazards researchers have suggested a conceptual link between assigning blame and risk consequences.

Most citizens experience hazard events indirectly by receiving information from numerous sources, including and importantly, from the mass media. Hence, it is pertinent to investigate assignment of blame in media reporting. Further, assignment of blame may even indicate the "gravity" of hazard events. In this paper, I discuss results of analyzing the assignment of blame in the newspaper reports of two hazard events in India: arsenic pollution of groundwater in the state of West Bengal and the episode of pneumonic plague in Surat in 1994.

Risk consequences varied widely in the two cases. There was a heightened public concern at geographic scales—local to global—in the case of pneumonic plague. However, relatively subdued or attenuated public responses were witnessed in the arsenic case. Public concern and responses in the arsenic case were puzzling because, for instance, over 200,000 individuals (a significantly large number) were exhibiting severe health effects of arsenic poisoning. In news reports of the two cases, I investigated how blame was assigned (direct/indirect, ambiguous/sharp), who was blamed (individuals/organizations/other entities), and reasons for assigning blame. To provide a theoretical anchor for analysis and interpretation of results, I employed the social amplification and attenuation of risk framework. This framework was proposed by a team of multidisciplinary researchers in 1988 and proved robust when applied in a variety of settings (see Pidgeon et al. 2003 for details). The salience accorded to blame/blaming in news reports was found in words, sentences, paragraphs, and, at times, in the entire news article. In the context of the framework, they are known as blame signals. I find that the blame

signals depict a complex picture of blaming. For example, I found victim blaming in one case to be minimal, although most analysts of hazard events have noted its significant presence in other cases. Similarly, intensity of blaming was different in the two cases. More broadly, I will discuss results of blame/blaming in the theoretical context and also highlight the practical import of these findings.

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Cost Benefit Analysis—
A Sound Basis for Decision Making in Natural Hazard Management?

The societal exposure to natural hazards demands the implementation of an integral risk management approach that combines active and passive, as well as temporary and long term, mitigation and adaptation measures. Needed public and private decisions can be supported by cost benefit analysis (CBA), a method that systematically compares all possible impacts of potential alternatives on a monetary level and, therefore, enables an optimal societal outcome, in other words it provides an optimal decision basis. This paper aims 1) to outline the main characteristics of the CBA as a decision support system in the area of natural hazard management and 2) to compare the CBA with other approaches known from natural hazards management, such as cost effectiveness analysis. For this reason the emphasis lies on closing the gap between the more technical approaches stemming from civil engineering or natural science, and the economic methods dealing with the societal level of decisions in the area of natural hazards management. The introduction of these economic approaches and criteria can help to combine the scientific and societal demands for the optimal provision of mitigation/adaptation measures and simultaneously support the relevant decision maker in finding the most transparent, suitable, and efficient solution for the allocation of protective measures against natural hazards.

A critical discussion on the possibilities and boundaries of the method of CBA will conclude this paper and underline the necessity to take decision support systems under consideration when working with an integral risk management approach in the area of natural hazards.

Keywords: cost benefit analysis, cost effectiveness analysis, natural hazards management

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Contrasting USAR Response in the WTC and Pentagon 9-11 Disasters: Trust Building, Pre-Existing Bonds, and Interorganizational Response

This paper examines the Urban Search and Rescue (USAR) task force component of the Federal Emergency Management Agency (FEMA) in two contrasting deployments on September 11, 2001: the World Trade Center (WTC) and the Pentagon. These sites each held unique characteristics where loss of emergency response personnel, geography, politics, pre-existing social bonds, and professional knowledge created contrasting environments that affected the integration of USAR task forces in the response. This analysis highlights the multiple strategies of action enacted on the scene to integrate USAR agencies into search and rescue activities.

At the WTC, USAR task forces engaged in acts of trust building in an attempt to foster interorganizational development on site. At the Pentagon, USAR task forces relied upon pre-established professional and personal relationships and a history of training with other response agencies on site to successfully integrate themselves into response efforts. This paper highlights the importance of localized familiarity of USAR task forces, in terms of capability, terminology, and personnel, as key facilitators of interorganizational operations in response to disasters. Based on these results, future disaster response efforts could be rendered more efficient by the development of regional and state level USAR task forces. Localized USAR teams would facilitate ongoing interagency operations and training, socialization, social relationships, and the emergence of trust among the staff of these various agencies, leading to integrated disaster response.

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Loss and Survival: An Ethnographic Examination of Post-Disaster Recovery among Hurricane Katrina Evacuees[1]

In the harrowing days and weeks following Hurricane Katrina, approximately 2,500 evacuees from the Gulf Coast relocated to Colorado. Some came by choice, but the majority were placed on airplanes and flown out of the most storm-ravaged areas of Louisiana. Most of the evacuees lost almost all of their material possessions in the storm, and they were offered shelter at the former Lowry Air Force Base as well as at hotels around the Denver metro region. Today, some of the evacuees have returned to the Gulf Coast, but a large number are now living in temporary housing around Denver and are attempting to reconstruct their lives. In September 2005, we began documenting the life-altering reach of Hurricane Katrina's devastation. Through the use of multiple methods, including in-depth interviewing, participant observation, kin maps, and video documentary work, we have examined the impact of severed family, social, and economic networks for the disaster survivors who have relocated to the Denver area. We have interviewed over 40 survivors of Hurricane Katrina regarding their experiences in the time period following the disaster. We have also gathered observational data at churches, emergency relief shelters, aid distribution centers, community gatherings, people's former home sites, and in the temporary homes of the evacuees.

Some of the most difficult challenges survivors are facing include the lack of available transportation, the lack of job opportunities, the high cost of living, the lack of social spaces for gathering, the isolation from each other, and Denver's unfamiliar geography, climate, and culture. These problems are made worse by the uncertainty about insurance claims and government support, and by the frustration many feel about not being able to contact or communicate with disaster relief officials. Separation from the unique culture that was New

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Orleans—the food, the music, the style of interaction, the whole way of life—has been difficult for many of the evacuees. Most people we interview express a longing for "down home" comfort food, the kind of church they knew, and for the warm friendliness of people on the street. But the tugs of home and hopes for returning are complicated by many realities, such as the monumental scale of loss, the cost of returning home and rebuilding, the fear of another bad storm, and the sense of having been betrayed by the government. The continuing separation from the wholeness of their communities has left many people grieving for the life they knew. At the same time, many are observing the contrast in Denver where they report better race relations and less violence. Many parents have told us they believe the public schools here are much better than those from home, and they see the evidence in their children's improving performance. We hope the findings from this work will help people and organizations better manage profound and rapid social change such as that caused by Hurricane Katrina.