DISASTER MITIGATION IN HOSPITALS: 
FACTORS INFLUENCING ORGANIZATIONAL DECISION-MAKING ON 
HAZARD LOSS REDUCTION

by

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This manuscript is dedicated to:
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ABSTRACT

Focus group interviews were conducted with representatives from thirteen hospitals in California, Tennessee, and New York in order to identify impediments and incentives for the adoption and implementation of loss-reduction measures in hospitals. The economic and organizational characteristics of hospitals along with state and community regulatory environments were found to influence the likelihood that they would actively pursue hazard mitigation strategies. The themes that emerged most strongly in focus group discussions were: (1) the influence of legislation and regulation on hospital disaster mitigation; (2) the economic considerations affecting risk mitigation decisions; (3) the role of hospital disaster champions in the risk decision-making of health care institutions; and (4) the impact of disasters and imminent disaster threats on agenda setting and policymaking. The adoption of loss-reduction measures in hospitals is quite often hampered by financial restrictions and other organizational concerns. As a result, mitigation measures were found to be most common when proactive mitigation measures were mandated by regulatory agencies and legislation.
Chapter 1
INTRODUCTION

From the spring of 2000 through the autumn of 2001, researchers at the Disaster Research Center (DRC) conducted focus group interviews with representatives from thirteen hospitals in California, Tennessee, and New York. These areas were chosen because they represent varying levels of seismic vulnerability, from high to relatively low. The objectives of the research were to: (1) identify impediments and incentives for the adoption and implementation of loss-reduction measures, with an emphasis on the rehabilitation of existing hospitals (2) gain insight on factors that influence these impediments and incentives; and (3) determine the units and systems that are critical to maintain the functionality of a hospital in the time period following a disaster event.

Because hospitals serve as key elements of a community’s emergency response infrastructure, their continued functionality during times of disaster is an essential contributor to community resilience in the face of earthquakes and other disasters. Disaster events create an immediate and urgent need for medical care in communities. In times of crisis, hospitals must continue to provide medical service to those that were hospitalized before the disaster event as well as those that need medical attention
as a result of the event (Alesch and Petak 2002a). Quite often, hospitals are expected to function more efficiently in these times of crisis due to the heightened level of importance of hospital services in the disaster period. However, community-wide disaster events may threaten the functionality of health care institutions. Hospital functionality may be disrupted by structural damage to hospital facilities, damage to nonstructural elements, or disruption of utility and transportation lifelines. This was seen, for example, following the 1994 Northridge earthquake when hospital facilities were closed due to structural failures as well as to non-structural damage, and earthquake-related damage to lifelines and utility services. Hospital operations can also be seriously compromised if the number of fatalities and injuries exceeds the health care system’s capacity for response (Webb 2000).

Despite the obvious importance of hospital functionality following earthquakes, the adoption of loss-reduction measures for natural hazards has met with resistance (Alesch and Petak 2002a). In an industry where mergers, acquisitions, and increased competition have been accompanied by continual pressures for cost reduction, the adoption of expensive risk management measures (in particular, costly seismic retrofits) is simply not a priority for many hospitals. Even in Southern California, where the structural integrity of hospitals has been affected in various earthquake events (most significantly in the 1971 San Fernando and 1994 Northridge earthquakes) and where hospital seismic safety legislation has been passed, the implementation of earthquake safety measures has been difficult (Alesch and Petak
2002a). The willingness of hospital organizations to adopt and implement proactive disaster preparedness and mitigation strategies has also been diminished by other important and urgent organizational concerns. As a result of these factors, many health care institutions fail to properly mitigate against risks that may threaten their ability to provide safe and reliable health care to their communities.

This paper seeks to identify key factors that serve as incentives or impediments for the implementation of loss-reduction measures in hospitals. Those loss-reduction measures include both mitigation actions that hospitals can take well in advance of earthquakes to enhance the seismic resistance of structural and nonstructural systems\(^1\) and preparedness measures such as the development of disaster plans and disaster training and exercises. In particular, I hypothesize that a combination of economic, organizational, and political characteristics of health care institutions influence the likelihood that they will actively pursue hazard mitigation strategies. Utilizing qualitative data collected from the hospital focus groups, the paper focuses on the major factors influencing hospital decision-making with respect to hazards and risks, including: earthquake and hospital safety regulations, hospital financial concerns,

\(^1\) As used here, structural mitigation encompasses measures to prevent damage and losses through increasing the seismic resistance of structural elements in hospital facilities. Non-structural mitigation measures focus on elements in hospital facilities that are not part of the structure itself, such as heating, ventilation, and air conditioning systems, electric power lines and water pipes, and elevators. Nonstructural mitigation also includes measures designed to prevent damage or loss to building contents, such as expensive medical equipment.
organizational disaster champions, and disasters and imminent disaster threats as focusing events for agenda setting and policy.

The sections that follow will: frame the central questions regarding hazard preparedness and mitigation in hospitals that are addressed in this project; outline the methodology utilized in the study; and, using material from the focus group interviews, identify factors that are important for understanding earthquake loss-reduction decision-making in hospitals.
An array of complex and varied factors influence whether organizations devote their resources to mitigate potential risks. Hospital decision-making with respect to seismic loss-reduction measures can best be understood by drawing upon the research literatures on policy adoption (specifically, the adoption of seismic hazard policy), as well as on risk decision-making in organizations. The unique features of hospitals as highly bureaucratic organizations and as businesses that must remain economically viable, as well as regional variations in risk, also influence the tendency for health care organizations to adopt loss-reduction measures.

Seismic Hazard Policy

Seismic safety policies have historically been difficult to implement in organizations. It is important to note that the stakeholders in seismic safety—a diverse group that includes structural engineers, architects, public policy analysts, social scientists, economists, and building owners—typically have divergent perspectives on building safety strategies (EERI 1996). Analyses of the policy process have emphasized that effective seismic hazard policy must consider the divergent interests and priorities of these various stakeholders (EERI 1998). In the
case of health policy, the number of stakeholders is increased, and the policymaking process becomes more dynamic and complex (Longest 1998). Indeed, health care institutions are subject to both public policies—authoritative decisions made by governmental and nongovernmental actors that establish rules, laws, and standards (Birkland 2001)—and policies that are constructed in the private sector by decision-makers that attempt to influence the actions, decisions, and behaviors of hospitals (Longest 1998). For example, the Joint Commission on Accreditation of Healthcare Organizations—a private organization that, among other duties, regulates the environment of care in hospitals—plays a key role in developing regulatory standards for hospital disaster preparedness, which in turn influences how hospitals perceive and respond to risks.

Hospital risk decision-making with respect to the adoption of loss-reduction measures for natural hazards in hospitals can be effectively understood using the “Garbage Can Model” of organizational decision-making. According to this framework, organizational choices are viewed as crowded into a garbage can, where the various problems, solutions, participants, and organizational choice opportunities are part of the decision-making process (Cohen, March, and Olsen 1972). The garbage can model views choice as embedded in an organizational context of other choices, actors, and relationships (March 1978). Policy decisions emerge when a “window of opportunity” is created when there is a propitious convergence of problems, possible solutions, and a favorable political environment (Kingdon 1995).
Quite often, however, problems are not recognized or are poorly defined, or circumstances do not result in the creation of windows of opportunity. As a result, seismic hazard policy does not represent a salient issue for organizations. Similarly, the “solutions” offered may be unacceptable to those charged with making decisions, or doubts may exist regarding the efficacy of those solutions for hospital organizations.

Windows of opportunity may occasionally open due to large-scale disaster events; these events may focus the attention of policy makers and the public and facilitate the speedy passage of planned disaster proposals. For example, Senate Bill 1953—a bill that establishes stringent standards for medical facilities in the state of California—was drafted by the California legislature following the 1989 Loma Prieta earthquake and was passed in response to the damage caused to hospitals in the 1994 Northridge earthquake. These separate events were crucial steps in the formation of the SB 1953 seismic regulations. Conversely, if action is not pursued during the brief amount of time that the window of opportunity is open, the potential for effective policy change may be diminished (Berke and Beatley 1992).

The cost of hazard reduction has served as one of the primary impediments to the adoption of earthquake rehabilitation measures. Although safety is a major focus of seismic hazard policy, concerns about financing seismic mitigation may constrain the limits of mitigation goals (EERI 1996). Health policy decisions must increasingly take into account the economic limits of the proposed action (Longest 1998). In
particular, recent trends in the health care industry, such as mergers, consolidation, and concerns about profitability have led to an increasing focus on the financial status of hospitals. At the organizational level, any proposed mitigation policy must make financial sense in order for decision-makers to consider undertaking loss-reduction measures. Risk policymakers must weigh the costs and benefits associated with a proposed action. While seismic mitigation may increase organizational safety and the likelihood that the hospital will remain functional following a disaster, the direct and indirect costs of mitigation could inhibit the hospital from providing affordable health care (EERI 1998). In the health policy field, cost-benefit analyses must consider the life and death prospects of decisions; for example, the economic magnitude of life-saving policies can be calculated, as well as the financial value that patients place upon their own survival (Reisman 1993). Thus, a mindset that refuses to acknowledge or consider the economic limits of policy decisions is unrealistic, especially for hospital organizations (Longest 1998).

The priority that seismic mitigation policy receives in the public and private policymaking agenda is largely dependent upon the degree of political salience the earthquake threat has in a region, state, or community. Public officials are often reluctant to implement mitigation activities because seismic events and other disasters have low probability of occurrence, although the potential losses from such a disaster event may be catastrophic (Drabek, Mushkatel, and Kilijanek 1983; Alesch and Petak
Accordingly, public policy initiatives that address seismic and hazard vulnerability have achieved varying levels of success in different regions.

**Risk Decision-Making**

In the absence of public policy that address seismic risks, organizations have considerable discretion with respect to the handling of earthquake-related vulnerabilities. Consequently, the role of risk decision-makers is particularly significant in areas that have a low probability of seismic events and other disasters and a lack of proactive public policy initiatives that address risk. In order for an organization to reduce its exposure or vulnerability to earthquakes and other natural hazard threats, organizational decision-makers must believe that there are practical steps that can be taken in order to reduce the risks associated with these events. Quite often, organizational innovation is the result of the efforts of an organizational champion; in health care institutions, hospital disaster coordinators play an important role in promoting mitigation and risk awareness (Whitney, Dickerson, and Lindell 2001).

A significant body of risk literature examines decision theory, the process by which individuals determine the potential outcomes of an event. Decision theorists define risk as circumstances:

in which the decision maker has a mutually exclusive and collectively exhausted list of all chance events that exist within the time horizon selected for the decision analysis (Alesch 1998, p. 3).
In this definition, the “chance events” represent the potential risks associated with a hazard. In the decision risk perspective, the decision-maker has an idea of both the likelihood of the risk and the level of desirability of the different impacts of an event (Sitkin and Weingart 1995).

However, it is not always possible to know the potential risks that may be associated with a hazard event. As a consequence, an important element of the decision theorist view of risk is uncertainty. Many risk theorists see the concept of uncertainty as the central feature of risk. Thus, risk can be defined as:

the extent to which there is uncertainty about whether potentially significant and/or disappointing outcomes of decisions will be realized (Sitkin and Pablo 1992, p. 10).

In particular, seismic safety decisions are marked by a sense of uncertainty; for example, in any given year, there is no way of predicting the probability of a large seismic event in a particular area. Uncertainty can also be a consequence of outcome variability (Libby and Fishburn 1977); in other words, a broad range of outcome possibilities creates a sense of ambiguity about risk. For example, because there is no recent precedent for a large-magnitude earthquake in Tennessee, there is more ambiguity and uncertainty regarding the outcome of such an event than for a similar magnitude event in Southern California. As a result, a sense of ambiguity underscores the available knowledge on seismic risk of the New Madrid fault zone. Organizational experience with disaster events may facilitate risk decision-making, compensating for an absence of policy mandates.
Hospitals as Bureaucratic Institutions

Hospitals are complex and unique institutions that incorporate a broad range of professions, occupations, and areas of interests. The hospital is a “professionalized locale;” that is, a site where individuals in multiple professions perform interrelated functions towards a common organizational goal (Strauss et al. 1963). While the central purpose of a hospital is to provide care to patients (Garber, Sparks, and Korngold 1978), hospitals must also perform numerous other functions in order to fulfill these patient-care responsibilities. The modern hospital can be viewed as a self-contained city, representing a health care facility as well as a hotel, pharmacy, chapel, gift shop, meeting hall, and laboratory (American Hospital Association 1972). As a result, although it is tempting to view hospitals strictly in terms of caregivers such as physicians and nurses, an effective analysis of a hospital as an organization must consider the numerous occupations and roles that constitute the modern hospital. As Chambliss (1996) observes in his treatment of the role of nurses in health care facilities, each occupational role must be viewed within its organizational context. Occupational roles are ultimately subordinate to institutional bureaucracy and, more specifically, to the hierarchy that defines the organization. Therefore, although hospital disaster coordinators play a fundamental role in promoting risk mitigation and disaster planning, the adoption of loss-reduction measures requires the cooperation of disaster champions, departmental leaders, and hospital administrators (Whitney, Dickerson, and Lindell 2001).
As the perspective of the modern hospital as a self-contained city suggests, hospitals are highly bureaucratic institutions characterized by a horizontal division of labor, a hierarchal system of authority, and a complex system of regulations for controlling actions (Matcha 2000). This conception of hospitals as bureaucratic systems largely follows the tenets of Weber’s classical theory of bureaucracy. In “Bureaucratic Structure and Personality,” Merton provides an effective summary of Weber’s theory:

[B]ureaucracy involves a clear-cut division of integrated activities which are regarded as duties inherent in the office. A system of differentiated controls and sanctions is stated in the regulations….Within the structure of hierarchically arranged authority, the activities of ‘trained and salaried experts’ are governed by general, abstract, clearly defined rules which preclude the necessity for the issuance of specific instructions in each specific case (1940, p. 561).

In addition to detailing the central features of a bureaucracy, the passage from Merton suggests that decision-making ability in bureaucratic organizations is somewhat decentralized in nature. In other words, bureaucratic decisions are not strictly mandated from a governing body such as a board of directors or through institutional regulations. Instead, different levels and specialized units within a bureaucracy play an important role in the decision-making process. Along these same lines, organizations simultaneous pursue official, operative, and unofficial operative goals (Perrow 1961). Official goals are the general purposes of an organization. For example, the general purpose of a hospital is to provide medical care for patients. Operative goals are the goals established through the actual purposes of the
organization. In addition to providing medical care, hospitals are businesses that pursue decisions that ensure the profitability of their operations. In contrast, unofficial operative goals are related to group interests and can either reflect or subvert organizational goals. Therefore, although the pursuit of risk management strategies does not directly support the official and operative goals of hospitals, the implementation of safety measures may ensure the continued functionality of health care institutions. Bureaucratic decisions quite often reflect a compromise between these three perspectives on organizational goals.

Decisions with regard to seismic safety are further complicated because the benefits of investing organizational resources and money into loss-reduction measures may not be immediately apparent. Essentially, the debate for or against the adoption of loss-reduction measures is largely dependent upon the *time horizon* of mitigation. If looked upon “today” or in the short-term, seismic safety measures do not appear to contribute to the official goals of hospital organizations. Quite simply, the adoption of expensive mitigation measures interferes with the profits of hospital organizations. However, when examined by a long-term perspective, the adoption of mitigation measures may be viewed as contributing to the official goals of hospitals. Indeed, a hospital that is able to maintain functionality following a large-magnitude seismic event due to its decision to mitigate against earthquakes is, in fact, adhering to the official goals of health care institutions.
Accordingly, risk decisions in hospitals must be placed within an organizational context. Because professionals in an organization must continually balance bureaucratic expectations with the particular aspects of their occupations, organizational approaches to risk are complicated. A host of considerations can influence whether or not an organization will adopt loss-reduction measures including concerns about profitability, cost reduction, safety, and organizational liability (EERI 1998).

**Hospitals as Businesses**

In addition to being highly complex bureaucratic institutions, hospitals are businesses that must consider the economic consequences of organizational decisions and policies. The business function of health care organizations is central to hospital operations and agenda setting. Health policy decisions must increasingly be made with an eye upon economic limitations (Longest 1998). The health care industry has experienced a rapid increase in expenditures due to technological changes in medical care and equipment, rising patient demand, and the growing cost of labor and supplies (Snook 1981). As a result of these and other economic strains, health care institutions may be reluctant to allocate organizational resources to difficulties allocating monetary resources to expensive mitigation proposals.

The ownership type of a hospital is an important determinant in the decision to mitigate against hazards. Different types of hospital owners have different
organizational and economic goals. Proprietary hospital organizations need to remain profitable, and the organizational decision-making of these hospitals will reflect this explicit operational goal. The shareholders in the organization may be adversely affected if a for-profit hospital fails to consider the economic viability of its decision-making. In addition, the employment of hospital board members and key administrators may be terminated if these institutions fail to deliver on profit projections. While public and non-profit hospitals are less likely to focus so exclusively on the economic impacts of decisions, these organizations must also pursue decisions and policies that ensure the economic viability of their institutions. The risk decision-making of public and non-profit organizations is also affected by the very limited funding choices available to these organizations (EERI 1998). Whitney, Dickerson, and Lindell (2001) found that public and private non-profit hospitals were better prepared for earthquake hazards than proprietary facilities. Regardless of ownership, hospitals are most likely to pursue activities and decisions that immediately affect the “bottom line” or help to maintain operations.

Because of the fundamental importance of the business function of health care organizations, disaster issues in hospitals are quite often framed in terms of medical risk and liability. In this conception, risk management attempts to identify the potential hazards in order to reduce the professional liability of the organization. A basic risk management program attempts to evaluate risk in order to avoid the causes of loss, decrease the operation and financial impact of unavoidable losses, lessen the
likelihood that an organization is found to be negligent for not providing a reasonable level of safety patients, employees, and visitors, and provide cost-effective solutions for inevitable losses (Brown 1979). This conception of disasters is primarily focused on maintaining business operations and preserving the economic viability of the organization in disaster events. Therefore, the day-to-day risks that hospital organizations face (such as liability for physician negligence) are perceived as paramount to disaster risks that may only occasionally prove the hospital to be negligent.

**Regional Variations in Risk**

As noted earlier, regional variations in risk vulnerability and exposure to natural hazards play a significant role in determining loss-reduction policies and standards. These trends are particularly evident in seismic regulations. Seismic hazard policies in California are informed by the region’s significant history with major earthquake events. As a result, the state (and, more specifically, the areas in the state that are particularly vulnerable to seismic events) has been a leader in enacting building rehabilitation and retrofitting standards. Conversely, the political salience of proactive loss-reduction strategies is much lower in areas that have a low probability of a major earthquake occurring during a specific time frame (Hoover 1992).

Because the public and political acceptability of costly seismic standards is highest in the aftermath of devastating earthquake events, states and regions that lack
these experiences are less likely to enact public policies that address seismic risk (Alesch and Petak 2002b). In the absence of “active triggers” of seismic mitigation—such as physical damage caused by seismic events or proactive building ordinances—the implementation of seismic safety policy is dependent upon “passive triggers,” in which the process is initiated by building owners or organizational leaders (Hoover 1992). Consequently, the adoption of seismic safety policies tends to be reactive rather than proactive and anticipatory of potential losses (Drabek, Mushkatel, and Kilijanek 1983).

An important exception to this reactive policy towards risk decision-making was evident in the health care industry’s treatment of the Y2K computer problem. Y2K represented the potential for a date-specific failure of technological systems that required hospitals across the nation to critically examine the shortcomings of their emergency preparedness. In response to the hard deadline imposed by Y2K, hospitals significantly reassessed contingency plans, critical-care technology, and emergency supplies (Connell 2002). However, without an event that focuses attention on a hazard or a hard deadline for compliance with a risk, hazard policy is difficult to implement in areas that have limited experience with a particular hazard.

Regional and state variations in risk and vulnerability affect the behavior of public and private organizations, including hospitals. States have been playing an increasingly important role in defining health related standards in medical facilities. Since the responsibilities for operating the Medicaid program were shifted to the states
in the early 1990s, many states have used their increased funding roles to guide health policymaking in medical facilities. States also exert control over the health insurance industry, regulate health-related professional organizations, and are responsible for protecting public health (Longest 1998).

Due to California’s rich history with seismic risk and earthquake regulation, the important of state policymaking on hospital disaster safety is most evident in California. The state’s history with seismic risk has informed legislative actions in the state and local jurisdictions (Hoover 1992), as well as the establishment of mitigation standards by accreditation organizations such as JCAHO. The state of California enacted the Alfred E. Alquist Hospital Seismic Safety Act in order to increase seismic safety standards in new construction and existing structures. More recently, the state enacted Senate Bill 1953 in 1994—a set of regulations that required stringent structural and non-structural standards in California hospitals.
METHODOLOGY

The findings presented here are based on research that was conducted by the Disaster Research Center (DRC) at the University of Delaware in acute-care hospital organizations. Researchers from DRC (including the author) visited hospitals in regions of the United States that face three different levels of seismic vulnerability: Southern California, which has a high level of risk; Tennessee, which has a moderate risk of seismic activity; and the New York metropolitan area, which has a low level of vulnerability. The following sections discuss the study’s strategy and methodology.

Hospital Selection and Participation

The geographic areas selected for study were Greater Los Angeles, Tennessee, and Greater New York City. In order to identify all hospitals in these three geographic areas, information was collected from the American Hospital Association (AHA) Guide to the Health Care Field, an annual directory of hospitals and health-related organizations in the United States. The AHA guide provides basic background information on hospitals, including bed count, type of ownership, and facilities within hospitals such as trauma centers, emergency rooms, and maternity wards.

Once the sampling frame of acute care facilities in each of the three regions was determined, several criteria were used to select the hospitals. First, the hospitals were required to have emergency rooms or trauma centers. This requirement
disqualified a number of specialty hospitals and clinics, including mental hospitals, children’s hospitals, and veteran’s hospitals. Second, hospitals in each region were selected based on the size of the hospitals as determined by the number of beds. For the purpose of our study, a hospital with less than 150 beds was considered a small facility, a hospital with 151 to 300 beds was considered a medium-sized facility, and a hospital with 301 or more beds was considered a large facility. Third, hospitals with different types of ownership were selected. The study hospitals included public facilities, proprietary or private organizations, and nonproprietary (or not-for-profit) organizations. The sample includes seven non-profit health care institutions, three for-profit organizations, and three government-owned and operated facilities. Fourth, while most of the selected hospitals were in a major metropolitan city in each of the three regions, a hospital in a smaller city in the same county was selected for each of the regions. The non-metropolitan facilities were selected in order to study the impact of city safety and building codes on hospital mitigation, as well as the role that hospital networks and health-related associations in the city may play in risk perception and preparedness.

DRC faxed letters to potential study hospitals explaining the purpose of the study. The invitation was followed up by a telephone call from a DRC researcher.

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2 Because of the lack of medium-sized health care facilities in the Tennessee study region, a focus group interview was not conducted with a medium-sized Tennessee hospital.
Initial meetings were arranged with representatives from hospitals that expressed interest in the study. These preliminary meetings were attended by one or two administrators from each of the hospitals, and typically included the hospital’s disaster coordinator. During these brief meetings, DRC researchers outlined the goals of the hospital mitigation study and presented an overview of the focus group process. In addition, potential study participants were assured of the confidentiality of the study. Potential interview subjects were informed that their identities and the name of their organizations would not appear in any reports from the data set and that individual and organizational identities would be kept confidential. When hospital representatives agreed to participate in the study, a date for the focus group was arranged.

DRC contacted a total of twenty-nine health care facilities to participate in the study, and thirteen agreed to do so. Sixteen hospitals in the New York region were originally contacted to participate in the study. Initial meetings were held with a total of eight New York hospitals, and focus groups were conducted with four of these hospitals. The New York study hospitals were comprised of one large-sized facility, one medium-sized facility, and two small-sized facility. A total of seven hospitals in Tennessee were contacted about the study, and initial meetings were conducted with

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3 In New York, a focus group interview was initiated with an additional hospital. However, a hospital administrator aborted the focus group a few minutes into the interview. The termination of the focus group interview was blamed on the lack of communication between the hospital employee that arranged the focus group and hospital administration. Apparently, DRC’s initial contact person at the hospital did not adequately explain the hospital mitigation study to the other focus group participants and, more importantly, to the hospital administration.
Focus Group Participants

Once the hospitals were selected, DRC researchers contacted hospital administrators in order to organize focus groups with key decision makers within the hospitals. The focus groups that were conducted included a diverse mix of hospital personnel. Group diversity was essential in order to reflect varying views on hospital mitigation in the organization. Typically, groups consisted of: hospital administrators, physicians, nurses, safety and facility engineers, risk managers, and other hospital employees with safety-related responsibilities. Several of the focus group interviews included high-ranking members of hospital administration. Focus group participants were assured of the confidentiality of the study in order to facilitate open answers to the interview guide. A total of seventy-six individuals participated in the study.
The focus group interviews primarily consisted of open-ended questions on hospital experiences and perceptions of internal and external risk. However, there was a quantitative component to the focus groups in which the participants were asked to rank the importance of operational units in the hospital (examples include emergency room and trauma center), internal physical systems (examples include heating and cooling units and lighting), and external lifeline systems (examples include transportation routes to the facility and data communication systems). In addition, the focus group participants were asked to rank the priority level of various emergency preparedness measures.

Chapter 4

STUDY FINDINGS

The sections that follow discuss key findings that emerged from discussions in the thirteen focus groups. The themes that were found to be most common and significant in the focus groups were: (1) the influence of legislation and regulation on hospital disaster mitigation; (2) the economic considerations affecting risk mitigation
decisions; (3) the role of hospital disaster champions in the risk decision-making of health care institutions; and (4) the impact of disasters and imminent disaster threats on organizational agenda setting and policymaking.

Chapter 5

REGULATION AND LEGISLATION

Federal, state, and local government requirements and regulatory standards greatly influence the organizational adoption of loss-reduction measures (EERI 1998). Regulatory standards and legislation establish a base level of regulatory compliance in health care organizations. Because these safety regulations set guidelines for structural and non-structural measures of mitigation, decision makers typically react to
the regulatory standards rather than adopting more ambitious organizational goals (von Winterfeldt 1999). Accordingly, the presence of regulations and legislation that mandate disaster mitigation measures is the strongest impetus for seismic compliance in health care organizations.

Each of the study hospitals acknowledged the role that the Joint Commission on Accreditation of Health Care Organizations (JCAHO) plays in establishing national hospital safety standards. JCAHO is the predominant standard setting agency and accreditation organization in the health care field. Roughly half of the JCAHO standards are related to safety within hospitals. In particular, JCAHO has numerous standards related to the environment of care in hospitals, including fire drills, emergency preparedness, hospital security, and medical equipment standards. All of the study hospitals must meet the JCAHO environment of care standards in order to receive federal funding for health care, meet Medicare certification requirements, and fulfill state licensure requirements. (JCAHO 2002).

JCAHO is the most prominent organization that establishes national safety standards for health care institutions. However, local and state governments and organizations play a crucial role in going beyond JCAHO requirements and setting stricter disaster mitigation standards in hospitals. Local and state policymakers play a particularly prominent role in states and regions that have a high probability of seismic events or other disasters. For example, policymakers in states like California that have a high risk of seismic activity are much more likely to initiate proactive mitigation
measures than a state like New York that has a low probability of earthquakes. The following sections will detail the different requirements and standards that were discussed in the California, Tennessee, and New York focus groups.

**Regulation and Legislation in California Hospitals**

Hospitals in California are required to meet the nation’s most stringent seismic and safety standards. The current seismic mitigation standards were developed in response to multiple seismic events that affected health care functionality and destroyed or damaged hospital structures. A growing focus on proactive seismic policies in the 1960s and 1970s significantly advanced the state’s existing mitigation regulations and legislation. In particular, efforts to regulate the seismic performance of public schools in the late 1960s had created a new awareness of California’s earthquake problem and resulted in more public policies to improve the seismic safety of buildings (Holmes 2002). Thus, when the San Fernando earthquake damaged multiple hospital buildings in California (most significantly, the Olive View Medical Center), the stage was set for the passage of proactive seismic legislation for healthcare facilities. The resulting legislation—the 1972 Alfred E. Alquist Hospital Seismic Safety Act—required new hospitals to meet minimal seismic standards. The 1989 Loma Prieta earthquake resulted in minimal losses to hospital structures in the San Francisco Bay Area and Santa Cruz County. However, the event damaged
nonstructural units in hospitals and, in turn, focused policymakers on the seismic vulnerability of these systems (Holmes 2002).

The widespread damage to hospitals resulting from the 1994 Northridge earthquake radically affected seismic policy in California. The California legislature enacted SB 1953 following the widespread damage to Los Angeles area hospitals in the 1994 Northridge earthquake. Although no hospital structures experienced failure comparable to the Olive View devastation, the total damage to hospital facilities from the Northridge earthquake has been estimated at three billion dollars (California Healthcare Association 1999). SB 1953 requires health care facilities to meet intermediate structural and nonstructural standards by the year 2008 and complete compliance with the bill by the year 2030. It has been estimated that thirty-nine percent of the state’s facilities are at a high risk of collapsing in a large seismic event; while seventy-two percent of the facilities have severe nonstructural problems (Alesch and Petak 2002a). The bill is particularly significant because it mandates new and existing structures to comply with the stringent seismic codes. For the majority of health care institutions, the SB 1953 standards require the hospitals to allocate significant financial resources to seismic retrofitting, structural design advisement, temporary relocation of hospital departments and systems, and construction work.

4 The most common non-structural problems in health care facilities include inadequate anchoring of equipment, failure of water-related components such as broken pipes and water leaks, emergency power problems, and failure of telephone and radio communication (Whitney, Dickerson, and Lindell 2001).
Opponents of the law argue that there is a strong possibility that many hospitals will be driven out of business due to the high costs of these retrofit measures, creating a shortage of health care facilities and services in many areas (California Healthcare Association 1999).\textsuperscript{5}

Clearly, the potential impacts of the SB 1953 legislation on hospitals were a central concern of the study participants from the Southern California hospitals. While focus group participants devoted considerable attention to the financial implications of SB 1953 for their operations,\textsuperscript{6} they also discussed other difficulties that their organizations experienced or expected to experience in planning for and adhering to the SB 1953 requirements.

The focus group participants generally viewed the requirements of SB 1953 as an effective and useful guideline for seismic mitigation in health care institutions. In particular, one hospital representative observed the value of SB 1953’s focus on the seismic compliance of nonstructural units in hospitals:

Non-structural [mitigation has] been proven to be key to the whole facility to keep it running. [Hospital Name] medical center was a seismically well built hospital facility. I was there when they built it.

\textsuperscript{5} Focus group participants specifically addressed the destructive impact that the legislation may have on structures that were built before the 1972 Alquist Act, larger health care facilities, and smaller doctor-owned or doctor-sponsored hospitals.

\textsuperscript{6} For a complete analysis of focus group discussions on the economic impacts of SB 1953, see the following section: “Financial Impediments and Incentives.” However, several of the quotes in the current section either directly or indirectly address the financial implications of the bill. Quite simply, this is due to the fact that much of the opposition to SB 1953 is based on the high costs of compliance with the regulations.
But they did forget about the non-structural aspects and they had water lines and we didn't have any service to the facility to keep it running. I think the non-structural [elements are] very important.

However, the hospital representatives noted that, while SB 1953 would certainly improve the seismic performance and safety of hospital buildings, the regulations would be impractical if not impossible to put into operation in California hospitals. As a hospital representative stated:

I think that everybody agrees with the idea of having superstructures, having a building that is going to keep you safe no matter what happens. But it's very unrealistic. I know a lot of people and a lot of companies wouldn't be able to afford that. Many are going to actually go out of business instead of trying to comply with them.

Similarly, a representative from the same hospital observed that it might not be possible for hospitals to remain functional organizations while meeting high life safety standards:

The public impression will never allow one life to be lost in a facility due to not meeting the highest standard. So therefore the cost [of regulatory compliance] is very, very high. We all agree with that public impression that it is not acceptable that a life is lost. But, at the same time, where do those funds come from?....So when you ask about the feasibility of it, I'm not sure if it is feasible. We all agree that we've got to maintain the highest standards, but where does the money come from. That was never really considered when they passed the bill.

A representative from another California noted that, although his hospital initially sought to use the process of complying with SB 1953 as an opportunity to exceed seismic regulations and dramatically improve the overall facility, the financial realities of code compliance quickly became apparent:

We wanted to be, you know, we want the Taj Mahal. We want the bells and the whistles. What we found out is that we could not afford the bells
and the whistles and we needed to rethink what we need for [Hospital Name] based on cost.

Hospital representatives continually expressed their frustrations with the SB 1953 regulations during the focus group interviews. During the time of the interviews, each of the hospitals was in the process of preparing its plans and budgets for SB 1953 compliance. California hospitals were required to submit building evaluations and facility compliance plans to the Office of Statewide Health Planning and Development (OSHPD) by January 1, 2001. Thus, much of the frustration that was expressed during the focus group interviews reflected feelings of uncertainty during this initial planning process.

Hospital representatives noted that the standards for SB 1953 compliance that were established and enforced by OSHPD were often unclear and inconsistent. According to many of the focus group participants from California, hospitals received conflicting interpretations of the SB 1953 regulations. A hospital representative detailed the difficulties that his organization experienced in developing facility compliance plans in an environment where the standards and guidelines are continually changing:

We submitted [our facility compliance plans] to OSHPD…Six months ago I sat down with OSHPD and I made a list of what exactly what we had to do within our hospital. We sent them a letter telling them exactly how we were going to submit our drawings to meet the requirements…We submitted those drawings, we got those drawings approved and we are ready to start construction based on what they said we had components that we had to handle. And it occurred that they changed the process. So I went to a meeting three weeks ago with OSHPD and currently the whole process has changed….So they are really
kind of just blowing them up and it is starting to cost facilities a lot more money then making it harder to meet the requirements….OSHPD is running their own rules as they go. The law is there but it is based on their interpretation and how they want to put it out. Sacramento is trying to lead the process and Los Angeles is trying to do it the way they want to do it. It is chaos.

The hospital representative further described his organization’s difficulties with changing interpretations of SB 1953:

We went through and evaluated our equipment based on what OSHPD had told us was the critical components under the code. In turn we evaluated those and we completed the plans and we are starting the project next month. Now additionally they are adding additional components that we have to go back to and so that would put us instead of being one hundred percent complete in which we thought we were we are probably fifty percent of the way there now due to their changes interpretation.

In light of the difficulties experienced by some hospitals in the initial planning stages, hospital representatives expressed doubt that the SB 1953 regulations would be enforced in the long term. One hospital representative noted that his organization had some hesitation to devote organizational resources to drafting compliance plans in the event that elements of SB 1953 were to be revoked or if OSHPD experienced significant delays in processing and approving facility plans:

You don’t want to be the first [hospital to file facility compliance plans]. Well, in some cases you want to be the first one because maybe you can get away with not doing as much as everybody else. But, in turn, you might as well wait to the drop-dead date and say, ‘Well, we can’t meet our obligation, give us a couple more years.’ I think that is what is going to happen, same thing is going to happen with the code. I really feel as soon as we get to [January 1, 2001] we are going to find out that, number one, the state can not handle the volume of plans and submittals and things like that. So they are going to have [a] backlog [of plans] and all of the hospitals are going to say, ‘We are [being] held up by the state.’
expect OSHPD to say, ‘Well we will extend [the deadline] for another year.’

Similarly, focus group representatives speculated that the controversial nature of SB 1953 suggests that some or all of the code might be revoked in the future. From this perspective, those organizations that planned for SB 1953 and devoted financial resources to code compliance would be at a disadvantage to hospitals that were delinquent in code compliance. As a hospital representative observed:

Somebody says, ‘Well, wait a minute we can't afford to lose thirty percent of the hospitals [due to their failure to comply with SB 1953], what do we do now?’ Then, all of a sudden, everybody says, ‘Well, I guess maybe we're going to have to change this regulation.’ Now what happens to all the facilities that maybe tried to some planning, spent [preliminary funds on planning] and they met the regulations. Now they're out of pocket with that money and have to operate at losses and now are trying to compete with other hospitals that [are not required] to operate on the same set of rules.

The representative also noted that health care organizations in California procrastinated in developing and submitting plans in case the requirements of SB 1953 were significantly revised or revoked.

In addition to specifically addressing the shortcomings of SB 1953, the hospital representatives from California expressed doubts about the reliability of seismic technology and regulations. Some representatives from California hospitals argued that seismic technology and knowledge are undependable and that the implementation of seismic mitigation measures does not necessarily ensure that buildings will not fail in large magnitude earthquakes. Several focus group respondents observed that the
California hospitals were simply “guinea pigs” to test the effectiveness of seismic policies and regulations. A representative from a California hospital observed:

Seismic technology is still a mystery anyway. Until the Northridge earthquake [structural engineers] talked about shaking ‘this way’ and ‘this way.’ That baby went this way—totally changed structural engineering techniques. I bet you can’t get two structural engineers in this nation who would agree on how to seismically make this place safe for an [8.0 magnitude earthquake].

Some hospital representatives observed that in the final analysis structural damage will be the result of a hospital’s geographic proximity to the earthquake’s epicenter, rather than its failure to adopt seismic mitigation policies. A representative from a California hospital recounted her experience in a pre-Alquist Act health care facility:

[The amount of structural damage] depends were the earthquake hits, and where you are. There are so many [factors that can influence building performance]. I can remember the San Fernando earthquake back in the early seventies and being at the big county hospital. We just swayed on ball bearings. There was no damage so we just did surgery as we swayed.

While SB 1953 was clearly the focus of the discussion on regulatory standards in the California hospitals, the hospital representatives also discussed the safety standards of numerous regulatory agencies. In addition to the safety standards that are required for JCAHO accreditation, the focus group interviews mentioned the safety requirements of a number of regulating agencies, including: Department of Health Services; OSHPD; Certification of Statewide Health Planning and Development; the American Association of Blood Bankers; and local fire departments. The duties of these accrediting, oversight, and inspection entities include monitoring disaster drills,
approving disaster plans, requiring evacuation and fire drills, issuing construction and building permits, and requiring hospital plans for incidents involving hazardous materials in the community. As a hospital representative observed, California hospitals must adhere to the safety requirements of multiple agencies and organizations, “We get so many accrediting agencies, every week we have somebody out inspecting.”

Regulation and Legislation in Tennessee Hospitals

Hospitals in Tennessee are subject to significantly less seismic regulation than health care organizations in California. The lack of recent seismic events coupled with the lack of salience in Tennessee has resulted in a relatively lenient regulatory climate with regard to earthquakes. However, the representatives from Tennessee hospitals readily acknowledged their regional vulnerability to seismic events. Hospital representatives observed that the large majority of both critical and general use structures in Tennessee would fail in a large magnitude earthquake.

The focus group representatives typically maintained that their facilities would perform better in a seismic event than most structures in the New Madrid Fault Zone. However, hospital representatives did identify the seismic shortcomings of a few structures that are utilized by hospitals. A representative from a Tennessee hospital noted that his hospital’s core buildings should remain functional in a seismic event. However, the representative provided a less optimistic perspective of the resilience of
the lifeline systems that serve the hospital and the performance of the corridors that connect the hospital complex:

Without doing some huge engineering studies, I think the wisdom is that the [local high school] will sit down like a pancake when it folds. [Our hospital facility] would probably remain standing...it is a fairly stiff compact building, a lot of mass... it would probably do fairly well. Everything else would crumble, and the problem is as it crumbled, all of our buildings are connected by breezeways and utilities, so it wouldn’t be pretty.

Hospital representatives noted that the seismic performance of buildings is primarily dependent upon the seismic codes and standards that were in place at the time of construction. As one hospital representative stated:

As far as [seismic retrofits for] the building itself goes, [we have done] nothing. Because when it was built, it was built for seismic regulations and all of the additions as well. So from the building standpoint, there’s not a whole lot more we could do....[The hospital decision-makers] were wise enough to go with that level of [seismic safety], because they didn’t have to. I mean there’s no code that I know of that requires seismic specifications. But due to the nature of the beast...it only makes good sense to say, ‘Well...people need the [hospital] center, so we need to still be standing.’ So they chose to do the extra, to go the extra mile. So as far as the building goes, I don’t think that we really would have done anything other than, maintaining the same standards.

According to the representative, the seismic performance of a hospital is largely dependent upon the proactive seismic safety decisions made by the organization at the time of the construction. Another focus group participant also observed that his hospital’s level of seismic resistance is largely the result of building code utilized in construction:
This hospital is also supposed to be ‘earthquake resistant,’ I guess you would say, from the building code established in the building in [the mid 1970s]. So, at that time, they gave it the moniker of “earthquake resistant”. It is supposed to have some flex in the structure. That is from my understanding.

According to focus group participants, existing hospitals in Tennessee are not required to retrofit in order to meet the seismic standards of new building codes. Therefore, health care institutions in Tennessee do not have to absorb the direct and indirect costs of retrofitting procedures. However, hospitals that are renovating a large percentage of the total area of a department or the entire facility must completely retrofit these sections to the current seismic code. As a result, health care organizations will purposely limit renovation projects in order to avoid having to retrofit entire departments of the hospital.

According to the focus group participants, the JCAHO safety standards are the primary source of safety and hazard requirements in Tennessee hospitals. As one hospital representative stated:

I think the Joint Commission is clearly number one as far as what we would try to follow. The protocol is issued by them, which they have redone for this year and changed some of their mandates for emergency preparedness. [They focus more on] mitigation and different things than in the past….I think that the [primary] source [of disaster mitigation guidelines] would be them.

A representative from another hospital observed that the JCAHO safety standards essentially cover the disaster requirements of other regulatory agencies:

The Joint Commission requirements [for disasters] are based on other organizations too….If they don’t exceed what the fire department would require, or would require, they basically meet the same criteria. And
then we basically [meet those standards]. As far as anybody coming in here other than the Joint Commissioner saying that, “You got to do this, this, this, and this.’ I’m not going to deal with it—other than we do have the required fire drills, which the city…fire department overrides anybody else’s jurisdiction on that in the state of Tennessee.

The above quote is also of interest because it suggests that many health care organizations in Tennessee regard only JCAHO and local fire department agencies as the acceptable sources of regulatory standards for disasters. However, a representative from the non-metropolitan study hospital in Tennessee noted that the Local Emergency Planning Committee (LEPC) requires all of the hospitals in the county to participate in an annual hazardous materials drill.

Regulation and Legislation in New York Hospitals

The hospital regulatory climate for disasters in New York strongly resembles the mitigation policies of Tennessee. Because the New York metropolitan region has a low probability of seismic activity, structural and nonstructural units in hospitals are not expected to meet intensive seismic safety standards. Additionally, the safety requirements for New York hospitals do not exceed JCAHO’s basic standards for accreditation.

Safety and disaster standards in New York hospitals are primarily regulated by JCAHO. A representative from a New York hospital observed that the majority of the regulatory agencies defer to JCAHO’s safety and disaster standards. Hospitals also
cited the disaster standards established by local fire departments and emergency medical services organizations, the New York State Department of Health, and the New York Department of Buildings. The non-metropolitan study hospital in New York noted that the county requires hospitals to prepare for hazardous materials incidents.

Similar to the Tennessee hospitals, building code standards are not retroactive in New York hospitals. Therefore, older buildings are not required to meet the same structural standards as new construction. As a hospital representative noted, elements of existing structures are “grandfathered” into current structural standards, thereby eliminating the need to devote organizational resources to retrofitting or renovating units that are not compliant with current building standards:

In New York, none of the building codes are retroactive. In other words, we already have an existing facility and you can grandfather in [that facility to meet current standards]…. Nobody goes back and [requires these structures to meet current code]. If that happens I’m pretty sure a lot of the [smaller] problems in hospitals would [cause] big trouble…. I don’t think [requiring older structures to meet current standards] would fly in New York.

In the event of extensive renovation projects in existing structures, building owners are expected to bring the entire department or building up to current structural code. Much like in Tennessee, however, hospital officials avoid these requirements by planning smaller renovation projects.

It is possible that, in the wake of the terrorist events of September 11, 2001, policymakers in New York may increasingly regulate the structural safety of critical
facilities and other buildings. According to representatives from the New York focus group that was conducted after the terrorist attacks, the failure of several buildings in the World Trade Center complex during the terrorist attacks may serve to heighten the awareness of structural safety. Quite simply, an increased focus on the structural reliability of key buildings in New York may provide the added benefit of improving the seismic safety of structures. However, because the majority of the New York focus groups were conducted before the events of September 11, 2001, it is not possible to determine whether this change in perspective is common among the region.

Chapter 6

FINANCIAL IMPEDIMENTS AND INCENTIVES

Financial considerations can serve as both impediments and incentives to the adoption of risk mitigation measures. Clearly, undertaking mitigation measures is an expensive proposition for building owners and organizations. For example, the projected costs for the structural and nonstructural retrofits that are mandated by SB
1953 legislation have been conservatively estimated at ten billion dollars for the year 2008 improvements and an additional fourteen billion dollars for full compliance with the year 2030 standards (California Healthcare Association 1999). While such structural and nonstructural improvements may ultimately prove to be beneficial in a large magnitude earthquake, the retrofits to health care institutions that are mandated by SB 1953 represent a significant investment to a financially stressed industry. Not surprisingly, financial incentives for seismic retrofits are not found to be effective outside of California (FEMA 1990). Therefore, financial investment in hazards is more likely to be viewed as an unnecessary expenditure in areas with a moderate- and low-probability of earthquakes.

Much of the literature on financial incentives for adopting mitigation measures stems from California earthquake policies. Financial incentives (or, as they are sometimes identified, “carrots”) include:

- those encouraging the community as a whole and those encouraging individual owners, developers, financiers, insurers, and other business persons to undertake seismic mitigation.
- In addition to mechanisms which lessen the design and construction costs or other difficulties associated with building retrofit activities, they also include mechanisms to alleviate societal impacts (e.g., relocation costs, loss of affordable housing for the needy) (FEMA 1990, viii).

In short, the more appealing the “carrots” are to building owners and organizational decision makers, the more likely that structural and nonstructural retrofits will be performed.
The adoption of mitigation measures can be appealing to organizations for three primary reasons. First, organizations that have lower levels of vulnerability to disasters may sustain minimal damage in an event. For example, the cost of hospital seismic mitigation may be offset in the long term if the facility suffers minimal damage in a large magnitude earthquake. Second, the prospect of organizational liability in a disaster is also an incentive for mitigation. If a health care organization makes a good faith effort to reduce potential losses in hazard events, it may be less likely to be found negligent of providing an adequate standard of life safety care. As a study participant from a California hospital observed in a discussion concerning the high level of financial support for Y2K mitigation measures, the potential for liability may influence how organizations allocate funds:

I think it has to do with potential. The administration would surely put more money into earthquake preparedness here than maybe a bomb threat or something like that because of the role of responsibility.

Third, facilities that are needed during the response period must remain operational following a disaster (California Seismic Safety Commission 1988). Therefore, while the failure of such structures following an event could be catastrophic to the community response and recovery process, loss of functionality would also be extremely harmful to the reputation and prestige of the critical facility.

**Financing Seismic Safety Initiatives**
Representatives from hospitals in each of the three study regions discussed the prohibitive cost of structural mitigation improvements in their facilities. Most structural improvements, particularly those aimed at enhancing the seismic performance of structural systems, are an extremely costly endeavor for health care facilities (EERI 1998). Not surprisingly, the focus group interviews with California hospitals devoted a considerable amount of discussion to the costs associated with compliance with SB 1953.

Financing Seismic Mitigation in California Hospitals

Representatives from the California study hospitals discussed the financial impact that the structural and non-structural upgrades that are required by the SB 1953 legislation would have on their organizations and other health care facilities. Representatives from the hospitals observed that, due to the high cost of seismic retrofits, compliance with the state regulation could potentially cost more than the construction of new facilities. A hospital representative noted that his facility would have difficulty meeting the regulation despite the fact that the facility was built to the seismic safety standards of the 1972 Alfred E. Alquist Hospital Seismic Safety Act:

Well the first thing is the cost. [The SB 1953 mandated renovations are] going to be a humungous cost. We've already been given some preliminary numbers by the architect. He estimates by the time the project is one hundred percent complete it will cost the hospital the neighborhood of around twelve million dollars. This is a fairly new building, this was built to [1972] codes so therefore it's fairly new technology. So, imagine what it's going to do to other hospitals out there that have been around for quite a period of time. I'm only...
speaking in relationship to this building, the main hospital building. We do have older buildings...you know at this point we're even considering tearing that down...or doing something with the land other than keeping the building. I think is really what it's going to boil down to.

A representative from another health care facility also noted that enhanced seismic regulations for hospitals might necessitate rebuilding due to the high cost of retrofitting existing structures:

[Y]ou pretty much need to rebuild. The cost is so enormous throughout the state of California that I don't even see how it is possible to be able to rebuild that many hospitals in short period of time. Your average project from start to finish based on one hundred bed hospitals at least five years for the state of California. So if you look at [the current year is] 2001 you have got a 2008 deadline you are right at the back door and plus you need to get financing and right now the current financing for a hospital is about a million dollars a bed. So if you wanted to build a brand new hospital it would cost you one million dollars a bed. No one has that money. There is not a hospital in our area that is making any money. You are lucky if there is a hospital in southern California that is making any money and I don’t know if there is.

Hospital representatives also discussed the indirect and ancillary costs of the regulation. In addition to the high costs that are directly linked to structural rehabilitation, hospitals face numerous costs associated with structural improvements, including management costs, permit costs, and costs related to the temporary or permanent relocation of patients, facilities, and equipment (EERI 1998). A representative from a California hospital noted that his facility’s initial estimates of the cost of compliance with SB 1953 did not consider the impact of structural renovations to hospital functionality:
[The estimate for SB 1953 compliance was ] nineteen million dollars. We took that price and threw it out the window because that is a bare bones cost that did not include the operational cost. What are we going to have to relocate in order for them to do [the seismic retrofits]? That is a major stumbling block. They did not included architectural design or engineering, so the nineteen million is a [an insufficient estimate].

Hospital representatives from California discussed the financial strain that compliance with the SB 1953 regulation would have on their own facilities as well as the economic viability of California health care systems in general. Hospital representatives conveyed an image of a health care system that has become financially insecure, due in part to the costs associated with the state’s stringent seismic safety regulations. According to a representative from a California hospital, the seismic requirements of the SB 1953 regulation will provide additional financial stress on an industry that is already experiencing difficulties meeting operational costs:

These facilities don't have the money to operate. I read an article one time that said why should anyone invest money in a hospital. You get more return on your money if you put it in the bank in a savings account. So they are running a very tight profit margin and you come along and you are subjected to sixty million dollar increases in retrofits.

Hospital representatives also opined that the financial responsibility for compliance with SB 1953 should be shared between the health care facilities and other organizations that have a financial interest in the maintenance of hospitals, such as health maintenance organizations and insurance companies. In addition to suggesting that other health-related organizations should absorb the costs of the mandated seismic improvements, a representative from a California hospital observed that profit-oriented
groups such as structural engineering professionals and construction groups clearly benefit from the legislation:

I have an editorial addition. I think it's another example of a very specific group of professionals for making big bucks, out of making the public happy or politicians happy, I am talking structural engineering groups....I think the HMO should pay for it, and the insurance agencies. Take it out of their profits!

Another representative from the same hospital added that it is unrealistic to expect existing structures to meet these heightened seismic requirements:

Let them share in the risk with us, because then they might change some things real quick. If you're building a new facility, yeah, absolutely, now is the time to go to the latest and highest standard. But to require this of some already existing facilities, it's just almost more expensive or as expensive as building a whole new facility.

Financing Seismic Mitigation in Tennessee Hospitals

Focus group participants from the Tennessee study hospitals recognized the threat that seismic events pose to their facilities. However, hospital representatives observed that seismic mitigation was not a priority due to the lack of seismic structural codes for health care facilities and the high cost associated with retrofitting existing facilities. As a result, hospital representatives from Tennessee are aware that their facilities would not perform well in the event of a high magnitude earthquake. In addition, hospital representatives from Tennessee observed that very few of the
structures in their area would remain functional following a high magnitude seismic event.

Although the hospital representatives from Tennessee generally recognized the need for heightened seismic regulations for health care facilities, the retrofitting of structures to seismic safety standards was seen as too expensive an undertaking for hospitals. Hospital representatives from Tennessee communicated a reactive approach to seismic mitigation; namely, the hospital would simply rebuild or replace structures that become damaged in earthquakes. As one hospital representative remarked:

Nobody can afford [seismic retrofitting]. Tear down the place. We just hope it doesn’t happen when we’re on [shift].

As a result, the study hospitals in Tennessee plan to deal with the consequences of a seismic event instead of actively preparing for these low probability threats. A representative from another hospital discussed the reactive approach to earthquakes in Tennessee:

I think that that is the general citywide thinking…that everybody is on the fault. If it shakes, it shakes. There is nothing that you can do…I think what [that is what the community is] resigned to. If it comes, it comes.

The focus group representative later noted that, in the event of structural damage to the facility, the hospital would “keep rebuilding” the affected areas.

Financing Seismic Mitigation in New York Hospitals
The New York study hospitals did not report devoting any hospital resources to ensuring the seismic safety of their facilities. Quite simply, the hospital representatives did not see the low probability threat of earthquakes as salient enough to devote financial resources to mitigate against seismic events. Hospital representatives did state that their organizations have invested some money in order to reduce losses. In particular, one hospital was in the process of reconstructing brickwork on the exterior of the building as well as improving ceilings in the building. A representative from another hospital observed that, while the cost of structural improvements was a key consideration, the organization was prepared to invest funds to improve necessary structural shortcomings:

The resources are, limited, you know. So there are, there are probably things we would like to do, but we never say no to the things that need to be done. Is that fair?

**Financing Hospital Mitigation for Y2K**

Hospital representatives acknowledged that their organizations devoted monetary resources to mitigation measures intended to lessen the impact of the Y2K computer problem. While many health care organizations cited the prohibitive cost of seismic mitigation as the primary reason that they were not adequately prepared for their natural hazard threats, hospitals did devote monetary and organizational resources to reducing their vulnerability to the Y2K problem. Representatives from
the majority of the study hospitals reported spending money to improve and upgrade technological systems in the hospitals and increase the supply of essential and emergency items.

**Technological Improvements**

The threat of technological failure motivated many health care organizations to update or replace non-compliant computers and equipment. The Y2K threat required hospitals to assess the risks of technological failure in their organizations, including cataloging computer systems; determining the Y2K compliance of equipment; prioritizing and planning equipment replacement or updates; and performing impact analyses for mission-critical systems and applications ("Medical Schools and Teaching Hospitals" 1998). For many hospitals the process of assessing risks in technological systems was complex; for example, representatives from a New York hospital pointed out that computers stored inpatient and outpatient information as well as an automated system to order medication.

According to the study hospitals, the threat of Y2K-related systems disruptions resulted in the upgrading of critical equipment. The hospitals listed a variety of technological equipment that was either replaced or upgraded in order to meet Y2K compliance, including defibrillators, biomedical equipment, personal computers, and elevators. Indeed, many study hospitals expressed concern about the compliance of defibrillators, which are utilized in cases of cardiac arrest.
While the hospitals acknowledged that the Y2K threat improved the reliability of many mission-critical systems, the study participants observed that budgeting for technological improvements was restricted. Accordingly, focus groups reported that only a few essential items had been replaced or upgraded in the hospitals. In fact, a study hospital from New York indicated that it had rented some equipment, such as emergency radios, in order to save money.

**Essential Supplies**

In addition to upgrading equipment to meet compliance with Y2K, hospitals also increased the number of essential supplies in case of an emergency. Study participants observed that certain goods and supplies would be critical in a systems failure, and hospitals cited a number of essential supplies that were stockpiled in preparation for the Y2K threat, including medications, flashlights, batteries, bottled water, and antibacterial hand sanitizers.

Because many hospitals increased the supply of non-perishable and general use items, emergency reserves proved to be useful in facility operations following the passing of the Y2K threat. Indeed, many of the items that were stockpiled for Y2K were those that are typically purchased by hospitals. A hospital from New York noted that the increase in essential supplies alleviated the need for the hospital to purchase these supplies for everyday use, thereby making funds available for the next fiscal year. In the hospitals that experienced small internal disasters following Y2K, the
reserve of emergency supplies assisted in the organizational response to these events. For example, stockpiles of water were utilized in one hospital that experienced a disruption in water services due to an internal construction accident. As a representative from another hospital that utilized essential supplies in an internal emergency observed, the value of Y2K emergency supplies was demonstrated in that emergency event:

Well, I think with the example of the flood, probably two weeks prior to [the internal flood], the answer would have been, ‘Yes, we spent too much money.’ The day after [the flood], I think the answer would have been we just spent enough. I think we used every bit of supplies.

Implications for Earthquake and Natural Hazard Preparedness

The health care industry’s widespread acceptance of Y2K preparation measures raises two important questions. First, what was it that caused hospitals to focus so much on the Y2K threat? Second, why did Y2K have such an impact on hospital operations, when health care organizations continually face natural hazard threats, but do not generally commit significant organizational resources and funds to their mitigation? For example, hospitals in the Central United States prepared for the potential impacts of Y2K; in contrast, hospitals in this region have done little to address seismic risk despite the continual threat of earthquake hazards on the New Madrid fault.
Hospitals throughout the United States devoted significant organizational resources to mitigating the Y2K threat for several key reasons. First, because Y2K was a date-certain event, health care organizations were forced to mitigate against its risks in a specified timeframe. In contrast, natural hazard events are difficult to predict, and, as a result, there is rarely a perceived deadline for compliance to mitigation measures. Instead, the mitigation of natural hazard risks is most likely to occur when “windows of opportunity” for policy change present themselves. For example, in the case of earthquake hazard mitigation, the occurrence of high magnitude seismic events facilitates the opening of the windows (Alesch and Petak 1986). Second, Y2K received massive media coverage and scrutiny. The level of media coverage devoted to Y2K is generally not present for natural hazards. Third, because the Y2K threat had the potential to disrupt the functionality of countless systems, mitigation efforts in health care organization involved the participation of a diverse group of departments and occupations. In contrast, the responsibility for mitigating natural hazards is typically assigned to disaster coordinators and members of hospital safety committees. As a result, Y2K was treated as a risk issue that was relevant to entire organizations rather than specialized departments or groups of risk decision-makers. Fourth, because existing regulations and codes such as JCAHO safety standards address the mitigation of natural hazards, there is little incentive for organizations to exceed these compliance guidelines. However, the lack of industry-wide guidelines for Y2K compliance required health care organizations to
independently assess their vulnerability to the millennium bug. As a result, many hospitals were aware of their vulnerabilities to the Y2K threat and mitigated against these risks.

The manner in which hospitals responded to the Y2K problem suggests the potential for these organizations to effectively mitigate against other risks. Clearly, if hospitals were inclined to devote the same degree of attention and resources to the natural hazard risks that continually threaten their functionality, these organizations would significantly decrease their vulnerability to seismic events and other hazards.
Chapter 7
ORGANIZATIONAL CHAMPIONS

Risk management personnel have a significant influence on how health care institutions perceive, plan for, and respond to emergency events. In particular, hospital disaster coordinators and safety committee members play an integral role in framing risk decision-making in hospitals. The hospital disaster coordinator typically performs numerous tasks, including: coordinating all aspects related to security, safety, and risk identification; analyzing risks in the facility; and developing operational procedures in order to avoid or minimize potential losses in emergency events (Brown 1979). Safety leaders in hospitals must have knowledge of management principles and organizational dynamics, an ability to effectively communicate with all levels of the hospital, an understanding of safety evaluation requirements, and a capacity to define safety issues and priorities (Tweedy 1997).

The hospital safety committee is a multi-departmental grouping of administrators and lower-level personnel that address risk issues as part of their organizational duties (American Hospital Association 1972). The safety committee is responsible for evaluating safety measures and procedures in the facility and among the departments in the hospital. In addition, the safety committee reviews the
effectiveness of safety programs and initiatives (Tweedy 1997). As a result, a select group of individuals in health care institutions accept primary responsibility for promoting, assessing, and directing loss-reduction efforts. However, this group may well be the only group of stakeholders within the hospital organization for which disasters and hazards are salient. As the chair of a disaster committee in a New York hospital explained:

> It is almost like everybody else is oblivious [to disaster issues], and then there is this small group of people left dealing with the reality of what happens if [an event occurs].

Because hospital disaster coordinators and safety committee members play a key role in the promotion of disaster issues, they can be conceptualized as potential champions for organizational innovation. Champions provide a professional perspective on risk issues to administrative leaders in the organization and play an influential role in the decision-making process (EERI 1998). In order to be effective, however, they must collaborate successfully with other stakeholders and obtain high-level support. Hospital disaster champions have found to be most effective in their efforts to educate and motivate their organizations when they frequently interact with other hospital disaster coordinators, receive adequate administrative support for their initiatives, and have educational backgrounds and other knowledge that helps them understand earthquake hazards (Whitney, Dickerson, and Lindell 2001). It is thus important to consider the role that organizational disaster champions play in the organizational framing of disasters.
According to the decision theory perspective, decision makers play a key role in how organizations analyze risk. Leaders successfully impose their values on organizations through decision-making processes (Wally and Baum 1994). Because of the specialized nature of their occupation, hospital disaster coordinators\(^7\) may exert a significant influence on the decision to adopt mitigation measures despite the fact that they are typically not high in the organizational hierarchy in health care institutions (Whitney, Dickerson, and Lindell 2001). Middle-level managers are typically the source of key decisions due to a combination of technical expertise and a broad set of professional responsibilities and objectives (von Winterfeldt 1999). Therefore, champions can significantly affect an organization’s perception of risk and, therefore, its tendency to adopt loss-reduction measures.\(^8\)

It is important to note, however, that occupational roles (such as a disaster coordinator or a member of a safety committee) must be viewed within their organizational context. Because hospitals are defined by a horizontal division of

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\(^7\) Because of the presence of more specialized staff and greater access to financial resources, larger hospitals are more likely than smaller-sized hospitals to have a staff member designated as a disaster coordinator. Accordingly, these larger facilities are more likely to implement hazard mitigation policies and strategies (Whitney, Dickerson, and Lindell 2001).

\(^8\) While hospital disaster coordinators and other champions play an important role during the preparation of emergency plans and procedures, the decision to utilize disaster plans during times of crisis is typically the responsibility of the senior employee in the hospital (see Garber, Sparks, and Korngold 1978). According to a hospital in Tennessee, the decision to declare an incident a disaster is solely the responsibility of the lead administrator on duty during the event. A California hospital
labor, a hierarchical system of authority, and a complex system of regulations for controlling actions (Matcha 2000), unilateral decisions are rare in such complex organizations (Whitney, Dickerson, and Lindell 2001). Occupational roles are ultimately subordinate to the institutional bureaucracy and, more specifically, the hierarchy that defines the organization (Chambliss 1996).

Four common themes were evident in the hospital discussions on organizational champions. First, hospital representatives acknowledged the fundamental role that organizational champions play in the development of emergency plans and hospital disaster policy. Second, the study hospitals viewed hospital safety committee members as champions. Third, hospital representatives noted that organizational champions must work with administration in order to garner support and funding for disaster plans. Fourth, the focus group participants recognized the role that hospital disaster champions play is not limited to the hospital facilities. Rather, the focus groups indicated that organizational champions extended their knowledge and experience to the greater community.

The Role of Champions in Emergency Planning

According to the focus group interviews, disaster champions play an instrumental role in the development of emergency plans and disaster procedures in health care institutions. Quite often, the hospital disaster coordinator and other key

noted that the house supervisor and nursing supervisor have been responsible for the internal declaration of disaster in the past.
members of the hospital safety committee indicated that they were responsible for developing new disaster plans and evaluating existing emergency procedures. As indicated earlier, because hospital disaster coordinators and other organizational champions possess knowledge of and experience with disaster events, they provide an important professional perspective on risks that may affect hospital functionality.

While organizational champions serve an important professional role because of the specialized expertise they possess, they also provide an essential bureaucratic function in their ability to communicate their knowledge to the organization. Accordingly, hospital disaster coordinators and other organizational champions educate hospital employees about disasters, evaluate safety management programs and emergency planning measures, and ensure that the organization meets regulatory requirements.

Representatives from several of the study hospitals reported that they had developed or were in the process of developing emergency plans in order to facilitate a greater degree of involvement from hospital employees in the event of a disaster. In these facilities, hospital disaster champions observed that it is essential to educate hospital employees about their roles in disaster events. An essential element of this increased focus on disaster education includes the development of more generic, multi-hazard plans that can be understood and utilized by a variety of hospital employees.
Representatives from several hospitals observed that their previous disaster plans were too dependent upon particular disaster scenarios and were quite often difficult to implement during a disaster event. While each of these hospitals observed that its previous plans were adequate, hospitals noted that the development of easy-to-use plans that can be incorporated in a variety of emergency events may be more effective in the case of unexpected or unusual disaster events. The Manager of Support Services at a California hospital observed that the previous hospital disaster manual was so complicated that it was not effectively utilized in the hospital response to large-scale seismic events. The representative described the development of a new “user-friendly” emergency plan that utilizes disaster grids:

We wanted to identify procedures and things that were real quick and easy to read when you didn’t have time to read three or four pages….We have done a lot of things with quick grids…to get everybody going in the same direction at the same time.

In addition to simplifying emergency plans, hospitals reported developing emergency plans that were less dependent upon the experiences and professional contributions of particular individuals. For example, representatives from a New York hospital observed that the hospital’s previous disaster plan was overly dependent upon the professional background of organizational champions. According to hospital representatives, it was imperative that an emergency response plan be developed that would not be affected by the absence of organizational disaster champions. Consequently, the hospital recently developed an incident command system that can be applied by a variety of individuals within the hospital organization. The new
hospital emergency plan utilizes checklists in order to provide temporary solutions to problems that exist during times of crisis. Similarly, a hospital in Tennessee recognized the importance of involving a wide variety of hospital employees during a disaster response. Representatives from the hospital reported success with a newly implemented emergency system that required individual units within the hospital to file their departmental emergency plans in red binders. According to a hospital representative, the establishment of a standard system of filing assisted in the communication of emergency instructions to the different units within the facility:

[I] would call up to other units and they would say, ‘Get out your safety manual.’ And you might hear this ‘Huh?’ But then I’ll go, “The red book.’ ‘Oh, Okay.’ And then everybody goes to the red books.

As a result of the standardization of departmental emergency plans in the Tennessee hospital, individuals or departments that do not have significant safety knowledge or experience with disasters are still able to contribute in a hospital-wide emergency response effort.

While disaster champions play an important role in the framing of hazards in hospitals, their influence is particularly notable in the development of emergency plans in their organizations. As the above examples suggest, the contributions of hospital disaster coordinator are most significant in terms of the preparation and mitigation of emergency events. In the case of a disaster event, organizational actors that typically have little participation in safety issues must modify their behavior in response to the challenges that disasters create. Therefore, the development of clear,
“user-friendly” disaster response strategies (such as emergency event checklists, grid systems, color-coded safety manuals, and emergency plans that can be effectively carried out by a wide variety of individuals) provides some of the essential tools for an organization to respond to a disaster event. As a result, the influence of disaster champions is perhaps most significant with respect to organizational preparation for disaster events.

The Safety Committee as Organizational Champion

In each of the focus group interviews, participants discussed the influence of the hospital safety committee on organizational disaster policy and procedure. According to the focus group members, the hospital safety committee is typically responsible for a range of disaster-related responsibilities, including: developing disaster plans and procedures for hospital departments; scheduling, leading, and critiquing facility-wide disaster drills; discussing JCAHO requirements and ensuring that these policies are met; assessing safety problems that exist within the organization; and managing safety programs within the hospital.

Because the focus group interviews were conducted with hospital disaster coordinators and key members of hospital safety committees, the study participants

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9 Despite the fact that JCAHO removed the requirement for organizations to have safety committees in its 1996 revisions to the JCAHO Environment of Care standards (Tweedy 1997), each of the study hospitals reported the active presence of a safety committee. In addition, many of the facilities also have implemented disaster subcommittees that specifically address natural and technological hazard-related institutional risks.
were involved in risk and safety issues as part of either their primary or secondary occupational duties. Thus, on a cursory level, all of the study participants can be viewed as champions for disaster mitigation and preparedness in their respective organizations due to their participation in the hospital safety committee. This inclusive view of organizational champions was evident in the focus groups. At the same time, however, the focus groups also stressed that only certain individuals (such as hospital disaster coordinators) could be considered true organizational champions. These individuals were seen as champions due to their level of commitment to hazards, their specialization and knowledge in the field, and their level of influence on administration.

The Relationship between Organizational Champions and Hospital Administration

One of the fundamental roles of both the hospital safety officer and the safety committee is to recommend disaster actions to hospital administration (Tweedy 1997). Organizational champions cannot effect change in hazard mitigation and preparedness measures without the support of senior hospital administrators (Whitney, Dickerson, and Lindell 2001). Such support is imperative for the success of hazard prevention initiatives (see Drabek, Mushkatel, and Kilijanek 1983).

Despite the priority that the relationship between administration and disaster officers receives in the literature, there was very little discussion of that relationship in the focus group interviews. The limited discussion that did address the relationship
between organizational champions and senior administration took place in California focus group interviews. The greater focus on administrative participation in the California study hospitals is perhaps a result of the high level of seismic risk in California and the higher level of disaster experience in these facilities.

Focus group respondents indicated that organizational champions inform hospital administrators about safety and hazard problems that exist within their health care institutions. Hospital disaster champions identify shortcomings that exist within hospital facilities and recommend policy changes or equipment upgrades. Hospital disaster champions help raise awareness and support for improvements in emergency preparedness and mitigation measures.

According to the focus group representatives, hospital disaster champions help voice the concerns, ideas, and policy recommendations of the safety committee to hospital administration. The safety officer from a California study hospital discussed the role that he plays along with the chairperson from the hospital’s safety committee:

[I]f there are any issues that come up within our safety committee as we go forward with policy and change in our process, if we identify an issue that we bring it forward to the administrative and they provide us with the funding necessary.

Similarly, the chief operations officer from another California hospital noted that interacting with hospital administration in order to obtain funding for safety improvements is one of his primary disaster-related responsibilities:

[As] the disaster coordinating chair in the [safety] committee, [I am able to] carry their voice to the executive staff and provide the funding that is
needed relative to some of the issues that we need to address from a financial or operational standpoint. There is nothing …that doesn't require money. We need to find out how we manage that particular need within the confines of the budget….So in that regard I work very closely and try to find from an operational standpoint the requirements that are regulatory in an operational perspective.

In both of these examples, key organizational members serve as the “voice” of the hospital safety committee in their health care institutions, communicating the committee’s assessments of organizational hazard vulnerability to hospital administration.

The Role of Organizational Champions Outside of the Hospital

Focus group participants also discussed the critical role that hospitals play in providing community-wide disaster plans and procedures. In addition to ensuring the continued functionality of their institutions during disaster events, hospital representatives see an obligation to provide disaster leadership in the community. Indeed, JCAHO requires health care facilities to develop comprehensive emergency plans that will ensure continued patient care during disasters or emergency situations (Tweedy 1997). As a result, the hospital facility as well as individual hospital employees are champions for disaster mitigation and preparedness within the community. Health care institutions are expected to provide leadership in times of crisis, as this passage from an essay on disaster policy in hospitals states:

We in the hospital and health field have a solemn obligation to the members of our community in times of major disasters, either natural or man-made, for without our thoughts, plans, and meaningful actions, their very existence may hang in the balance (Kadrovach 1966, p. 1).
Two primary themes were evident in the focus group discussions of the relationship between the hospitals and their communities. First, hospital representatives observed that their facilities were perceived as a vital element of community disaster preparation and response. Hospitals quite often provide specialized services such as trauma medical services and emergencies shelters to the community following disaster events. In these examples, the hospital itself is recognized as a champion of disaster issues within the community. Second, the focus group discussions identified individual hospital employees that actively participate in programs that reduce community vulnerability to crisis events.

Hospital representatives acknowledged the unique contributions that their facilities provide to the community. In some cases, a hospital that provides specialized services may be particularly important in an emergency event. For example, as a representative from a New York hospital observed:

Our role [in a community disaster event] would automatically be enhanced because of our status as the level one trauma center. So, in a regional point of view, our role would be more prominent than the surrounding hospitals that are not traumas.

Hospitals may also help to organize the community’s medical response in the event of a disaster. For example, a Tennessee study hospital staffs the regional communication center. A representative from the hospital explained the purpose of the communication center:

We communicate our control and communications for all the hospitals in a disaster. If we have any type of disaster, our communication center notifies the other facilities of what is going on. And in most
cases, we get the influx of patients [from the disaster event]. We also sort of control the destination of the other patients through communications.

Similarly, a representative from a New York hospital discussed her organization’s duties as the information center for the press in the event of a disaster:

[The hospital serves as] an essential information center for the press. We do have an organized approach to that and we have a public relations director who is a designated spokesperson. And I would imagine the press would kind of cover this area of activity to see how many people got injured and what was going on in terms of progress.

Hospital representatives also noted that their facilities were specifically prepared for disasters that may occur within their community. These plans were typically developed in response to the proximity of a potential hazard to the health care facility. Examples of community-specific disaster preparedness that were discussed in the focus groups include: the preparation of emergency response plans for a Tennessee hospital located near a airport; a California hospital’s evaluation of the emergency plans of local industrial plants; and the preparation of terrorist response plans in a New York hospital located near major downtown attractions.

Study hospitals also recognized that their facilities provide a safe place for community residents in the case of a disaster event. While the primary function of a hospital is health care, it must also be a safe house for patients, employees, and visitors (American Hospital Association 1972). Representatives from a New York hospital noted the facility’s formal role as a shelter in community-wide emergencies.
The vice president of administration at the hospital discussed the role that her facility would play in a community disaster:

We are also a designated shelter for those people who are homeless or displaced during a disaster....[our hospital is responsible for] designating areas that we could move people out or combine people to make rooms available to house people who have been displaced.

According to focus group representatives, a hospital in Tennessee has served as a storm shelter during tornadoes and hurricanes. Similarly, representatives from a California hospital noted that their facility was widely recognized by the community as a safe location to congregate following a seismic event. One hospital representative explained the community’s perception of the hospital as a secure environment:

We feel that the hospital…[is] a safe place. We are one of the largest employers in the community. We are pretty much very visible within the [region]. In the event that there is an emergency, people [come to the facility to] seek out medical treatment or a safe place to the go.

Another representative from the hospital recounted how community residents gathering at the hospital facility following the 1994 Northridge earthquake:

We really learned that from the earthquake in Northridge. People come to the hospital to get away from the fear that they have when everything is piling around them. They come to our parking lots.

The quote suggests that there is a good deal of psychological security that is associated with health care facilities. Indeed, in this example, the hospital’s parking lot was viewed as a secure location for community residents to congregate following a significant seismic event.
Individual hospital employees also indicated that they were involved in community disaster preparedness groups. Because discussion in the focus groups was largely devoted to steps that the entire hospital is taking to reduce the risk of hazard events, the focus group participants generally did not elaborate on their participation in community associations. However, a number of individuals briefly discussed their participation in external disaster groups during their introductory statements in the focus groups. A number of individuals from the Tennessee focus groups stated that they were actively involved in the city’s hospital disaster planning council. Hospital representatives also discussed their participation in regional planning groups for the potential Y2K disaster event. A hospital representative from a New York focus group participated in a citywide planning group that examined the potential impact of a major flood in the New York metropolitan area. Thus, individual hospital employees can be characterized as *community* disaster champions as well as *organizational* disaster champions.
Chapter 8

DISASTERS AS FOCUSING EVENTS

As shown throughout this paper, it is quite often difficult to implement mitigation measures in hospital organizations. A wide variety of factors may discourage hospitals from adopting loss-reduction measures—including the expense of mitigation measures, the divergent opinions of stakeholders on disaster mitigation, the lack of regulations that mandate loss-reduction measures, and the absence of organizational champions that advocate proactive disaster policies. However, health care organizations are likely to view mitigation as salient when disaster threats are particularly prominent. Disasters are more likely to be given a high priority in planning forums if the hazard is widely recognized as potentially catastrophic. Therefore, disasters can serve as focusing events for policymakers. A focusing event is defined as:

an event that is sudden, relatively rare, can be reasonably defined as harmful or revealing the possibility of greater future harms, inflicts harms or suggests potential harms that are or could be concentrated on a definable geographical area or community of interest, and that is known to policy makers and the public virtually simultaneously (Birkland 1997, p. 22).

Focusing events raise the risk awareness of the general public and policy-makers. More importantly, disaster events can push mitigation into the spotlight and motivate decision-makers to act in order to prevent damage in future events.
The process through which risk decisions are made following a disaster event is best understood through the garbage can model. The garbage can model posits that four separate streams must converge in order for organizational policy decisions to emerge: problems, solutions, participants, and opportunities for choice (Cohen, March, and Olsen 1972). Quite often, these separate streams do not effectively converge in order to create an opportunity for policy formation or change. However, a “window of opportunity” for policy formulation is opened when there is a favorable confluence of problems, possible solutions, and political circumstances (Kingdon 1995). In terms of disaster policy, windows of opportunity are opened by a significant disaster event such as an earthquake (Berke and Beatley 1992).

Indeed, many recent disaster events have initiated policy formulation and change. The disastrous impact of the Exxon Valdez oil spill played an instrumental role in the passage of the Oil Pollution Act of 1990. Title III of the 1986 Superfund Amendments and Reauthorization Act, also known as the Emergency Planning and Community Right-to-Know Act (EPCRA), was passed largely as a reaction to the 1984 explosion at a Union Carbide factory in Bhopal, India. Most recently, the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act (or the USA PATRIOT Act) was promptly signed into law following the terrorist acts of September 11, 2001.

10 For an excellent overview on the link between disaster events and policy formulation and change, see the disaster timeline developed by Rubin, Renda-Tanali, and Cumming (2001).
This section will specifically examine the role that disaster events play in focusing hazard mitigation decision-making in hospital organizations. More specifically, it proposes that both disaster events and imminent disaster threats can serve as focusing events. Disaster events, such as earthquakes, tornadoes, and other large magnitude natural hazards, can motivate decision-makers to adopt proactive measures to reduce the risk of future disasters. Disaster threats—events that have not occurred but rather are widely perceived as likely to occur in a specific time frame—can significantly influence the risk decision-making process. Perhaps the best example of an imminent disaster threat that has significantly influenced organizational decision-making is the Y2K computer problem. Y2K was widely regarded as a credible and significant threat to computer systems. More importantly, Y2K was a time specific disaster threat; as a result, organizations were required to meet Y2K compliance goals within a specific time frame.

**Agenda Setting Following Disaster Events**

Focus group representatives widely reported that disaster events play an important role in focusing organizational attention on hazard mitigation. Hospital representatives frequently referred to particular disasters as “benchmarks” of their disaster knowledge: events that shape their organizational perception of hazards and vulnerability. Interestingly, while focus group participants noted the impact that local and regional disasters have on agenda setting, they also stated that large-magnitude
disasters in other regions and nations serve to focus organizational attention on disaster issues. Consequently, disasters do not necessarily have to be local events in order to have relevance to a hospital organization. Indeed, many large-scale disaster events transcend geographical boundaries; events such as the Exxon Valdez oil spill, the Three Mile Island nuclear power plant accident, and the 1989 Loma Prieta earthquake conjure vivid memories of destruction and devastation (Birkland 1997). Hospital representatives discussed various types of disasters that have served as focusing events for their organizations, including: recent California earthquakes, terrorist attacks, and industrial disasters.

California Earthquakes as Focusing Events

Hospital representatives observed that recent earthquakes in California have significantly shaped agenda setting and hazard policy in hospitals. The representatives from the California focus groups described recent earthquakes as focusing events for statewide seismic policy initiatives. As discussed earlier, California’s history of earthquake events has informed legislative action in the state and local jurisdictions, and stimulated the development of mitigation standards by accreditation organizations. The Field Act, a provision that mandated seismic safety in public schools, was enacted following the damage caused to unreinforced masonry school buildings in the 1933 Long Beach earthquake. Following the structural damage of health care facilities in the San Fernando earthquake, the Hospital Seismic
Safety Act of 1972 required new hospital construction to meet seismic standards. More recently, the hospital seismic standards of SB 1953 were drafted following the 1989 Loma Prieta earthquake and were signed into law following the 1994 Northridge earthquake.

Representatives from the Tennessee hospitals also cited the role that recent seismic events in California have played in shaping local seismic policy. In particular, hospital representatives noted that seismic codes in Tennessee have changed in order to reflect the seismic knowledge that has been gained following large magnitude earthquakes in California. As a representative from a Tennessee hospital noted:

Codes come from a national basis. [Seismic codes are developed from] the problems that other people have, [particularly, earthquakes in California]. A lot of the [changes in seismic code that] we see today are driven by the codes from the west coast and California. They’ve had a bunch of quakes out there. [That new hazard] awareness is coming down for new construction.

Therefore, California is clearly a leader in seismic mitigation. In particular, decision-makers in geographic areas that are vulnerable to earthquake risks (such as the New Madrid Fault Zone) utilize the seismic mitigation standards that are developed in the wake of large magnitude earthquakes in California.

**Terrorist Attacks as Focusing Events**
Hospital representatives in each of the three study regions observed that their hospitals have recently started devoting organizational resources to mitigating against terrorist attacks. Indeed, many focus group participants noted that emergency plans for nuclear, biological, and chemical incidents were emerging as a salient hazard for hospitals. Clearly, hospital representatives from the two focus groups conducted shortly after September 11, 2001 noted that the terrorist attacks in New York City and Washington, D.C. were significant focusing events for their organizations. As a representative from a New York hospital observed:

[We] learned after September 11 to take a different perspective on the way we look at things. Who would have ever thought that the [World] Trade Center would come tumbling down? …[We are now] asking ourselves whether we are vulnerable to XYZ? How can you prevent terrorists from doing that twice? I think our perspective has changed a little bit, though. Things we would normally take for granted we no longer do take for granted.

A representative from the Tennessee focus group that was conducted on September 26, 2001 stated that the hospital had already begun changing disaster policy in order to reflect changing perceptions of organizational vulnerability to terrorist attacks:

[W]e had a little task force, where we actually pulled out our bomb threat policy…and so we’re right in the middle right now of revising that whole policy. [As] we went through it we saw some things that need to be altered for 2001.

While the majority of the focus group interviews were conducted before the terrorist attacks of September 11, 2001, virtually all of the study hospitals reported that their organizations have developed or were in the process of developing mitigation plans for terrorism-related events. Indeed, many focus group participants
noted that emergency plans for nuclear, biological, and chemical incidents were emerging as a salient issue for hospitals.\textsuperscript{11} Hospital representatives most commonly cited the 1993 terrorist bombing at the World Trade Center and the 1995 Oklahoma City bombing at the Alfred P. Murrah Federal Building as focusing events. According to a representative from a Tennessee hospital, these events considerably shaped hazard awareness in her facility:

The bomb in the World Trade Center, these things made us step it up, and then the Oklahoma bombing really made us really work. Some of the emergency management team went [to Oklahoma City] to help everybody. [These events have] really got us focused on [terrorism events]. We really need to be cohesive and really [communicate]. We need to know where our help lines are and what to do, and also if our help lines can’t get here. We [need to] know what to do as an individual unit, because the city might be cut off where [support cannot get in].

Interestingly, some hospital representatives noted that their perception of organizational vulnerability to terrorism was based more on emerging terrorist threats in the world. A representative from a Tennessee hospital observed that her organization began focusing on mitigating against terrorism due to a perception of an emerging worldwide terrorist threat:

Desert storm was also focused the possibilities of an anthrax [attack] and all that stuff that they could put out in the environment…Saddam Hussein and [the possibility of biochemical weapons]. If it could easily come over to America, what would we do, if that happened? Also, it

\textsuperscript{11} Ironically, the Tennessee hospital that was interviewed after the terrorist attacks in New York City and Washington, D.C., was forced to cancel a terrorism-related drill that had been planned for September 11, 2001.
was beginning to make us really focus on what we need to do disaster wise.

Similarly, a representative from a California hospital noted that most health care institutions are unprepared for a large-scale terrorist attack due to the potential scale of terrorist attacks and the lack of regulatory guidelines for terrorism:

America is not ready for this [a large-scale terrorism] disaster. Nobody is ready. How can you see these things? It can happen anytime…Israel is very, very prepared…. [The Occupational Safety and Health Administration] as well as the Joint Commission guidelines and rules and regulations about decontamination are just related to internal incidents. It does not cover this type of thing. So we need an authorized policy somewhere. We need to be prepared. We need to buy equipment.

A representative from another California hospital, however, observed that emergency drills, plans, and training have increasingly focused on potential terrorist threats:

The county and FEMA [have] been concentrating a lot this past year on biological hazards. They seem to be gearing up and are more concerned about that for some reason, because a lot of these third-world countries have been creating these chemicals and biological warfare things. So, they've been concentrating more efforts on training and having disaster drills for that, and inviting facilities to come in and attend seminars and hands-on training.

**Industrial Disasters as Focusing Events**

Hospital representatives from California and Tennessee noted that their facilities were vulnerable to industrial accidents in nearby chemical and manufacturing plants. Because the large majority of the study hospitals were located in major metropolitan areas, industrial accidents were particularly salient to many of the hospital organizations. A hospital representative noted that Southern California
may be vulnerable to an industrial accident on the scale of the 1984 Bhopal chemical explosion that killed over 2,5000 people:

Right along this area and in the communities there are many manufacturing companies and a lot of industries and so forth. We anticipate a major explosion and a major chemical release like what happened in India.

In addition, many hospital representatives expressed specific concern about the potential of terrorist attacks in facilities that manufacture harmful chemicals.

Disaster Threats as Focusing Events

Focus group participants acknowledged that salient disaster threats can also act as focusing events for disaster mitigation in health care organizations. While focusing events are typically large-scale disasters that demand immediate attention from policymakers and the general public, disaster threats that appear credible and imminent were also found to significantly influence organizational decision-making in hospitals. Hospital representatives observed that the Y2K threat was widely viewed as a credible threat to hospital functionality. The Iben Browning “prediction” of an earthquake in the central United States in December 1990 served to focus many hospital organizations in Tennessee on the seismic vulnerability of the New Madrid Fault Zone.

The Y2K threat and the Iben Browning earthquake prediction share three main elements: (1) a deadline for the potential events; (2) a high level of media attention;
and (3) uncertainty concerning the potential impacts. First, both Y2K and the Browning prediction were projected to occur during fairly specific time periods. Although hospitals were uncertain whether or not disaster events would actually occur or how disrupting they would be, the date of their potential occurrence was specified. Therefore, hospitals were motivated to mitigate against the potential impacts of these events within a specific time period. Second, both Y2K and the Browning prediction received media attention in the months prior to their projected dates of occurrence. Indeed, the Y2K problem was the subject of massive domestic and international media attention. The Browning prediction received media attention in large part due to an increased media focus on seismic events following the 1989 Loma Prieta earthquake. The media focus on the Browning prediction was particularly strong throughout the central United States region. Third, the potential consequences of both Y2K and the Browning prediction were difficult to estimate. Clearly, the world had never faced a potential computer problem on the scale of Y2K. The potential impacts of a large-magnitude earthquake in the central United States were also difficult to anticipate due to the lack of recent seismic events in the area.

**The Y2K Threat as a Focusing Event**

Hospital representatives observed that their organizations devoted significant resources to mitigate against the potential Y2K problem. Unlike most disaster events, the Y2K problem represented a time-specific event. Because of the hard deadline for
systems compliance to the threat, Y2K focused the attention of both organizations and
the media. In addition to the time-specific nature of the problem, Y2K analysts
observed that problems that may have impacted the rest of society took on critical
importance in the context of health care facilities (Zuckerman 1998). Hospitals were
seen as particularly vulnerable to the Y2K threat because of their dependence upon a
large number of computer systems. The majority of the daily functions of hospitals
are dependent on computer systems, from the health-related services that hospitals
provide to the basic operations of facilities.

The majority of the study hospitals indicated that existing contingency plans
were altered in preparation for Y2K. Hospitals were not prepared for an emergency
event like Y2K. As a result, the study participants noted that contingency plans had to
be revised to account for the unique aspects of the Y2K threat. Because hospital
facilities are comprised of a diverse group of departments, the failure of any computer
system could threaten the functionality of the entire system (Delevett 1999). Several
study participants observed that the Y2K threat forced hospitals to consider how a
localized systems failure could disrupt the entire organization.

The Y2K threat also required hospitals to plan for emergencies during periods
of low staffing. The fact that the transition into the New Year would occur during a
holiday night shift indicated that employee resources would be somewhat limited.
One hospital stated that these off-hour emergency plans were later enacted during a
computer failure on the night shift. The Y2K threat also demonstrated to hospitals
their dependence on technology. Hospitals also observed that the Y2K threat required their organizations to consider operating without computers. As a hospital representative from Tennessee stated:

Y2K probably helped us get better prepared, because we looked at every process that goes on in the hospital, and what will happen to this process, if this one doesn’t have power or you know if these computers are not available, how are you going to do this process, so we look at every process and how are you going to do it, all the way down to the utilities and everything. How are you going to process the patients, how are you going to process the papers along with the patients and all that.

The Iben Browning Earthquake Prediction as a Focusing Event

Much like the Y2K threat, the Iben Browning earthquake prediction established a deadline for hospital organizations to mitigate against a disaster threat. In October 1989, Iben Browning, a biophysicist and self-taught climatologist, made a statement at a conference indicating that a major earthquake could occur in the central United States sometime around December 2 or 3, 1990. Browning’s statement initially received attention in some media sources. However, the devastating impacts of the 1989 Loma Prieta earthquake in the San Francisco Bay Area heightened the media focus on seismic events and most likely made the prediction more salient (Tierney 1994).

Hospital representatives from Tennessee observed that the Browning prediction focused organizational attention on seismic risk. Indeed, many of the focus group participants from Tennessee hospitals observed that the prediction was at the
time considered as salient as the Y2K threat would be in the late 1990s.\textsuperscript{12}

Representatives from Tennessee hospitals noted that the prediction did significantly increase public and organizational awareness about the seismic threat in the New Madrid Fault Zone. One hospital representative noted the widespread focus on seismic safety around the time of the Browning prediction, “Everybody was living earthquakes.” A representative from another hospital observed that the prediction significantly improved seismic preparedness in the region:

> It probably was the most prepared for an earthquake in this area that anybody was. Matter of fact, I just threw out my bottled water I bought for that. It was kind of old.

A representative from the same hospital stated:

> The school that my children attend purchased water, did all these things to get ready. And they, you know, they were talking the other day, that’s the last time that they [have significantly prepared for earthquakes].

Similar to hospital preparations for Y2K, hospitals in Tennessee reported that they improved contingency plans and increased emergency supplies in order to decrease organizational vulnerability to the seismic event. A focus group representative recounted his hospital’s preparations for the predicted seismic event:

> We prepared for it here. I wasn’t in the position I am now, but we did prepare for it. There were kits all over the hospital that contained hard hats, flashlights, hammers, that type of deal. [We] made preparations for it, and they lasted a good two or three days, instructors taking the

\textsuperscript{12} A representative from the non-metropolitan hospital in Tennessee observed that his facility did not view the risk as particularly salient, “You are in the heart of the Bible Belt here. I don’t believe in any prophetical things except from the Lord!”
helmets and flashlights. Everything was really a lot of wasted effort, trying to prepare for it. But we were ready.

In general, hospital representatives viewed the organizational preparations that were made for the Browning prediction as beneficial to the disaster mitigation effort in the New Madrid Fault Zone. A representative from a Tennessee hospital noted that, as a result of the earthquake prediction, the city was motivated to hire a knowledgeable emergency manager to address seismic issues:

It helped in that, at the time, we were [lacking a city emergency manager]. There was a post downtown, that was supposedly for the emergency manager for [the city]. And it wasn’t filled for a long time. They didn’t have anybody [in that position]. And then they got somebody doing it, who wasn’t really an emergency manager…But yes, it helped gear up them to go out and find somebody that could do this job, who knew what, theoretically, who knew what they were doing. And it organized the local [emergency management initiative]. [There were] all these news media, they had to have somebody to come talk to. So they hired somebody who knew what they were doing…. [The Iben Browning earthquake prediction] helped them focus on the fact that you’ve got to have some agency that can influence other agencies, and vice versa. So it was good.
CONCLUSIONS AND QUESTIONS FOR FUTURE RESEARCH

This paper identified four factors that influence the adoption of loss-reduction measures in hospital organizations: (1) legislation and regulation on hazard mitigation; (2) the financial impediments and incentives of mitigation; (3) the role of organizational disaster champions in determining hospital policy and agenda setting; and (4) disaster events and imminent disaster threats as focusing events for mitigation policies and actions.

The focus group interviews with hospitals in California, Tennessee, and New York demonstrated that hospital organizations are quite often willing to take steps to improve their facilities from seismic events and other natural hazards. However, the adoption of loss-reduction measures is quite often hampered by financial restrictions and other organizational concerns. As a result, while hospital disaster champions—such as disaster coordinators, safety officials, risk managers, and safety committee members—may actively promote mitigation to hospital administrators, these individuals are not always able to effect proactive solutions to disasters within their organizations. Similarly, organizations are not always able to fund mitigation measures to lessen their vulnerability to recognized disaster risks.
Hospital representatives identified the high cost of mitigation projects—in particular, seismic mitigation and structural retrofit projects—as the primary impediment to the adoption of loss-reduction measures. In particular, representatives from the California focus groups discussed the financial impact that the structural and non-structural seismic regulations that are mandated by the SB 1953 legislation would have on hospital organizations. Representatives from the California hospitals noted that the majority of health care institutions are unable to afford the costly seismic retrofits and earthquake mitigation standards that are required by the legislation. Hospital representatives feared that hospital organizations may be forced to close due to an inability to comply with SB 1953’s seismic standards.

Because of the financial limitations that are imposed on health care organizations, the level of mitigation that a hospital adopts typically reflects the mitigation standards and guidelines that are established by regulatory agencies such as JCAHO. As a result, the presence of state and local seismic regulations and legislation was the most effective indicator of the level of mitigation in the study hospitals. In states and localities that have a high level of vulnerability to hazards, heightened loss-reduction standards for hospitals are required by accrediting, oversight, and inspection entities.

Accordingly, the seismic safety of the California study hospitals was more highly regulated than the hospitals from Tennessee and New York. Seismic codes and regulations in California have advanced due to the high level of regional risk to
earthquakes and the occurrence of large magnitude seismic events that have opened windows of opportunity for policymakers. In particular, seismic standards in California hospitals have increased due to the destruction caused in health care institutions during the Northridge and San Fernando earthquakes. In Tennessee and New York, however, new construction and existing hospital buildings were expected to meet minimal seismic regulations and seismic retrofit projects were rarely initiated.

Representatives from the California study hospitals were generally supportive of the safety standards that were established by the controversial SB 1953 legislation. More specifically, some focus group participants praised the heightened safety requirements for nonstructural units in hospitals. However, many hospital representatives observed that the seismic standards required by SB 1953 were impractical due to the exorbitant costs of compliance. Some hospital representatives opined that insurance companies and health maintenance organizations should provide economic assistance to California hospitals in order to help these organizations meet the SB 1953 standards. Hospital representatives also noted that many essential health care facilities might be required to cease operations in the event of noncompliance with the SB 1953 standards. As a result, hospital representatives expressed their doubts that the bill would ultimately be enforced in California. Consequently, some focus group respondents indicated that their organizations were hesitant to devote significant organizational funds and resources to comply with SB 1953.
Hospitals in each of the three study regions devoted monetary and organizational resources to help mitigate against the potential Y2K disaster. This was particularly interesting because many of these organizations were unable or unwilling to devote similar resources to mitigate against natural hazard threats. The Y2K problem was taken seriously as an organizational priority due to four factors: (1) the date-certain nature of the Y2K risk; (2) the higher level of media coverage of Y2K; (3) the fact that Y2K was framed as a problem that was relevant to entire organizations rather than a specialized department or group of risk managers; and (4) the fact that the lack of industry guidelines and standards for the Y2K problem required hospitals to assess their vulnerability to the problem.

The study hospitals noted that organizational champions played a key role in determining how a hospital conceptualizes and addresses disaster events. Organizational champions for disasters were typically hospital disaster coordinators, safety officials, and safety committee members. Hospital disaster champions help to shape emergency plans and disaster policy and work with administration to gain support and funding for disaster mitigation initiatives. Quite often, hospital disaster champions also play a role in shaping disaster policy in the community.

Focus group representatives observed that large-scale disaster events increase the amount of organizational attention that is devoted to disaster issues. Local disasters quite often open a “window of opportunity” for policy formulation and adoption. As a result, a series of large-magnitude earthquakes have shaped
California’s current seismic mitigation codes and regulations. In addition, non-local disaster events that are particularly devastating and rare facilitate the adoption of loss-reduction measures. For example, a representative from a California focus group feared that local industrial and chemical companies could cause a chemical accident on par with the devastating 1984 Bhopal explosion.

Disaster threats may also serve as focusing events, particularly if the threat is widely perceived as credible. Hospital representatives reported that their organizations devoted considerable attention to the Y2K computer problem. Similarly, representative from hospitals in Tennessee noted that the Iben Browning earthquake prediction motivated their organizations to adopt loss-reduction measures for seismic events. The Y2K problem and the Browning prediction were particularly salient to hospitals due to the time-specific nature of the threats.

Clearly, organizational decision-making with regard to mitigation is influenced by a variety of factors. This paper demonstrates that these factors are quite often very complex and intertwined in hospital organizations. While both hospital disaster champions and the occurrence of large-magnitude disaster events can help draw attention to disaster issues and hazard vulnerability in hospital organizations, decisions to implement loss-reduction measures are also influenced significantly by regulatory standards and economic considerations. If a hospital organization is not required to meet specific seismic safety standards, mitigation measures will be a
difficult sell. Similarly, hospitals are unlikely to implement costly mitigation measures if they do not perceive the disaster threat as salient.

This paper raises a number of questions that future research should explore. For example, it appears likely that current moves to rescind SB 1953 will succeed in whole or in part. However, at the time of the focus group interviews, the study hospitals had already devoted considerable organizational resources in planning for SB 1953 compliance. In the event that the legislation is completely or partially repealed, will hospitals continue to pursue these seismic mitigation plans? Future research could examine whether or not hospitals decide to follow through on the planned seismic mitigation measures, and, more specifically, which types of mitigation measures were pursued in the absence of legislative requirements. Also, if a hospital performs a risk assessment of its facility in accordance with SB 1953 requirements and fails to address these risks following the abolition of the legislation, can the hospital be found liable for future damages suffered in these vulnerable systems?

Future studies on disaster mitigation in hospitals should investigate the role that hospital disaster champions have on the decision to adopt loss-reduction measures. In this paper, disaster champions were primarily found to influence emergency preparedness in health care organizations. The presence of legislation and regulations that mandate seismic safety measures was found to be the most important factor that influences hospital decision-making on mitigation. It would be interesting
for a future study to specifically determine if disaster champions play a central role in the organizational decision to invest in loss-reduction measures.

Another research opportunity could examine the impacts of positive financial incentives, or “carrots,” on risk decision-making in hospital organizations. As this paper demonstrated, the adoption of loss-reduction measures in hospitals is quite often framed in terms of the negative financial impact that these measures may have on organizations. The study hospitals were not presented with financial benefits or forms of assistance that would encourage hospital decision-makers to undertake seismic mitigation strategies. Further research into loss-reduction in hospitals could examine the role that increased financial incentives have on organizational decision-making with respect to disaster mitigation. In particular, in the wake of the terrorist attacks of September 11, 2001, hospitals are likely to receive grants and financial assistance to help mitigate against and prepare for terrorism. It would be interesting to study how these monies are used and whether some anti-terrorism measures may afford additional protections against other types of hazards.

Indeed, the terrorism events of September 11, 2001 have significantly changed the landscape of disaster mitigation and preparedness in the United States. Future research could investigate the impact that the increased focus on homeland security is having on the success of disaster mitigation initiatives in hospital organizations. Relatedly, further study is need to explore whether the new focus on homeland
security and terrorism-related mitigation will influence organizational decision with respect to loss-reduction measures for earthquakes and other hazards.
Appendix A:

DETAILS OF THE FIELD WORK PROCESS

DRC researchers quite often encountered difficulties in establishing and maintaining contact with key disaster personnel from health care institutions. Outside researchers seeking to carry out studies in closed settings are most successful when they utilize connections, accounts, knowledge, or courtesy (Lofland and Lofland 1995). In the hospital mitigation study, courtesy was the most effective strategy to gain entrée into the health care institutions. As mentioned earlier, DRC researchers scheduled preliminary meetings with the potential study hospitals in order to provide information about the study, the focus group research process, and the goals of the research. During the initial contact process, the potential study hospitals were provided with numerous opportunities to ask questions about the study. Hospitals were continually assured that the names of their organizations and the focus group participants would be kept confidential. Hospitals were also informed that they would receive the results of the study. Several hospitals indicated that the results of the study (particularly the qualitative ratings of hospital systems and utilities) might help them focus on disaster mitigation goals.
Many hospitals also experienced difficulties organizing their group of participants due to conflicting professional schedules and time constraints. The focus groups were delayed in several hospitals due to organizational preparations for inspections from the Joint Commission on Accreditation of Health Care Organizations (JCAHO), the predominant standard setting agency and accreditation organization in the health care field. As a result of these difficulties, the length of time between the preliminary meetings with hospitals and the focus group interviews varied considerably. While several focus groups were scheduled in the weeks following the preliminary meetings with hospitals, the scheduling date for other hospitals was sometimes delayed for several months. In a few cases, hospitals that had expressed interest in participating in the study failed to respond to scheduling requests from DRC researchers.

DRC researchers quite often encountered difficulties in establishing and maintaining contact, and many of these problems in this phase of the research process can be linked to the bureaucratic nature of hospital organizations. Because of their very nature, bureaucratic organizations can present significant institutional barriers to social science research (Lofland and Lofland 1995). Because hospitals are extremely bureaucratic organizations, these research barriers were particularly evident in the hospital mitigation study.

The difficulties experienced in arranging focus group interviews with the study hospitals were also related to the “part-time” nature of many of the hospital
employees’ disaster responsibilities. Because a large majority of the focus group participants had an array of organizational responsibilities, disaster issues represented a fraction of their occupational duties. Even the focus group participants who were most responsible for disaster policy in their organizations quite often balanced multiple occupational roles. In the study hospitals, the hospital disaster coordinator often held many other organizational roles; examples of these roles include director of engineering, director of facilities management, vice president of administration, and director of security. This trend was also evident among the other focus group participants; many of the interviewees “wore many hats” in their respective facilities. As a result, it was quite often difficult to collect a group of these busy individuals to participate in lengthy focus group interviews.
APPENDIX B:
HOSPITAL MITIGATION STUDY QUESTIONAIRRE

1. First, could (each of) you tell me what your position at the medical center is and how it is related to disaster preparedness or the safety of the facility?

2. What is this hospital’s role in a community-wide (or larger) mass emergency or disaster; that is, what do you expect the medical center to be doing in such an event? (PROBE: Is this a specific part of the city’s/ county’s disaster plan)

3a. How would you define “normal” functionality of the hospital? That is, what is a routine inpatient load, a routine out patient load, what are your routine staffing requirements, etc.?

3b. What types of non-disaster emergencies have you experienced over the last three ears that have challenged the routine functionality of the hospital?

3c. What type of event triggers activation of the hospital’s disaster plan; that is, does an event need to be of a certain size in order for the hospital to activate its plan?

4a. We know that there are state agencies and national organizations (such as JCAHO) that regulate or require hospitals to prepare themselves for a disaster. Can you tell us how has this facility met those requirements?

4b. Does this hospital offer any teaching programs? If so, are there any requirements
4c. Is this hospital designated as a trauma center? Are there certain guidelines or standards that the hospital must follow in order to get that designation? (PROBE: What organization sets these standards/requirements?)

5a. What are the major natural, technological and/or human-caused disasters that you believe could affect this hospital? That is, what disaster events do you plan for? And what types of threats do you try to protect the facility from?

5b. What types of internal or on-site disasters are most likely to occur? That is, what types of internal events do you plan for?

6. What types of measures have been taken to lessen damage and loss of function in the event that one of those disasters struck this area, including the hospital itself? (PROBE: Which ones are aimed at reducing damage, and which ones are aimed at maintaining functionality?)

7. Obviously, large medical centers like this one face many different types of pressures—upgrading equipment and facilities, hiring new staff, keeping up with technological and scientific advances in health care, meeting patient expectations, and controlling costs among other things. On a scale of 1-10—“1” indicates the issue has a very high priority and a “10” indicates that the issue probably isn’t even under consideration, please tell me where you would rank the following issues. (PROBE FULLY TO UNDERSTAND WHY SOMETHING IS HIGH OR LOW PRIORITY.)

A. Disaster response planning
B. Disaster preparedness training—preparing the staff to meet challenges produced by disaster situations

C. Disaster preparedness—getting ready to deal with the potential failure of external utility systems (back-up generators, etc.)

D. Conducting hazard/risk assessments of the physical facility to identify potential structural and non-structural problems that could occur in a disaster

E. Investing in rehabilitating or retrofitting non-structural systems to ensure they would not fail

F. Investing in rehabilitating or retrofitting structural elements to ensure they would not fail

8. In addition to what we have already talked about, are there any other things that hospitals must consider in disaster preparedness and response that are important?

9. Do you have copies of any disaster plans for the hospital or any reports that would help us better understand how hospitals prepare for and respond to disasters?


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