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Disaster Research Center

Preliminary Paper
#250

EMERGENCY RESPONSE FOLLOWING THE
1994 NORTHRIDGE EARTHQUAKE:
INTERGOVERNMENTAL COORDINATION
ISSUES

Joanne M. Nigg

1997

*EMERGENCY RESPONSE FOLLOWING THE 1994
NORTHRIDGE EARTHQUAKE:
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JOANNE M. NIGG
DISASTER RESEARCH CENTER
UNIVERSITY OF DELAWARE
NEWARK, DELAWARE 19716

The January 17, 1994 Northridge earthquake is the most severe in a series of moderate-sized earthquakes that have stricken California in recent decades. Even though this event was not "catastrophic," the governmental response to the Northridge earthquake was massive by any standard, involving extensive organizational mobilization at the local, state, and federal levels. Given recent governmental "innovations" intended to facilitate the cooperation and coordination among different levels of government--the Federal Response Plan, the state-mandated Standardized Emergency Management System, and disaster recovery plan--this earthquake provided a timely opportunity to assess how well those innovations were implemented and functioned to facilitate governmental efforts in response to this damaging event.

With funding from the National Science Foundation, the Disaster Research Center conducted research on the emergency response and early relief activities undertaken in response to the many problems and consequences of this destructive earthquake in a major metropolitan area.² In order to assess how well these efforts functioned for different types of communities, our study focused on three cities in Los Angeles County: a very large metropolitan city in which most of the fatalities, casualties, and earthquake damage occurred; a medium-sized city within the urban area near the ocean which was heavily damaged by the quake; and a medium-sized community in the suburban fringe of the metropolitan area that was particularly hard hit. Using these three communities, cross-community comparisons were made to determine whether different interorganizational and interjurisdictional patterns developed with respect to (1) the intergovernmental management of the response; (2) the impact that prior planning and disaster experience had on the response; and (3) the utilization of innovations and their impact on emergency management activities. This paper focuses on the coordination issues between the three cities and other levels of government in their quest for resources and assistance.

COMMUNITY PROFILES

The three communities in this study were uniquely different in their characteristics, their geographic location in the impacted area, and their relationships to other governmental units involved in the response to the Northridge earthquake.

FRINGE CITY

This jurisdiction is a relatively "new" city, having been chartered in the late 1980's. It is composed of several previously unincorporated, older community centers surrounded by newer commercial and residential developments. At the time of the earthquake, the city had a population of about 150,000, with a building stock that consisted of relatively new residential and commercial buildings. Despite the recency of construction of the building stock, the city conducted over 11,000 damage inspections, and tagged 320 buildings with red or yellow tags.

Private property damage in the city amounted to \$148 million, with an additional \$15.5 million to property in the unincorporated area around the city. The city itself sustained \$99 million of damage to public property.

The city is in the mountains north of the San Fernando Valley--the epicentral location of the earthquake--making it somewhat "isolated" from material and personnel resources in the Los Angeles basin. This isolation, as will be discussed below, had both positive and negative consequences for the city's emergency response efforts.

The city sustained two major impacts for which external resources were needed: the loss of potable water, due to extensive failures of the four water distribution systems that serve the area; and traffic control through the city due to the surface street detours needed because of the collapses of highway overcrossings on the freeways at the edges of the city.

Emergency shelter and the provision of emergency housing were both problems faced by the city; four shelters were eventually opened. Emergency shelter became a problem because of nursing homes in the area that had to be evacuated, necessitating establishing a separate shelter for the elderly to meet their special medical needs. Also, 80% of the mobile homes in parks located in unincorporated areas outside of the city were knocked off of their foundations. Because mobile home parks come under the jurisdiction of the state for inspection and certification to be allowed to reopen, the city took on the additional responsibility of sheltering (and later providing assistance to) residents of these trailer parks for several months.

OCEAN CITY

This jurisdiction is an "old" city in the Los Angeles metropolitan area, containing a stock of masonry buildings, older residential areas, and a mix of new and old commercial buildings. The city is desirable as a place to live given its beach location, well tended residential neighborhoods, and rent-controlled apartments.

With respect to the Northridge earthquake, Ocean City could be characterized as "lucky." The immediate impact of the earthquake was deceptive; fire and police resources were not strained during the emergency response period. However, severe damage to residential structures, medical facilities, and commercial properties was extensive, causing damage assessment, evacuation, and temporary shelter problems for the city. The severity of the damages to many of these structures were discovered during the second week or so after the earthquake, causing damage assessments to rise and the need for temporary housing to become pressing issues.

At the time of the earthquake, the city had approximately 89,000 residents, 70% of whom resided in multi-family residential units which made the red- and yellow-tagging of buildings a particularly sensitive issue. Landlord-tenant relationships became a major issue for the city as the community shifted into the recovery phase, with ordinances being passed to put a moratorium on eviction of tenants from tagged buildings for non-payment of rent and to require landlords to repair buildings as quickly as possible to allow residents to return to their rent-controlled apartments.

This community abuts the largest city in the county, making it an integral part of the urban fabric. However, the extensive damage in the city was not immediately recognized outside of the city, because the media's attention focused on the collapsed structures in the San Fernando Valley and the disruption created by the damage to major transportation arteries into and through the Los

Angeles basin. However, the city sustained damage to many of its multi-family housing units, and to a major hospital that had to be evacuated.

Still, the damage did not debilitate the city. The city only had to open one shelter that housed about 350 people; although 3,500 were estimated to have been made homeless by the quake. Utilities were never lost for any extensive period of time, and potable water was never a problem. Three hundred eight buildings were wither red- or yellow-tagged and 14 were demolished. Approximately \$250 million in damages to structures occurred.

METRO CITY

This city of over four million people is the largest city in the metropolitan area. The major impacts of the Northridge earthquake took place within this city, in terms of the number of lives lost, the number of collapsed and damaged structures, and the dollar amount of losses experienced. This city had extensive damage to its water transmission and distribution systems in the epicentral area, resulting in the need to provide potable water for up to two weeks to thousands of residents in the northern part of the San Fernando Valley.

This disaster resulted in more than 681,710 applications for state and federal assistance--more than double the amount in any previous single U.S. disaster--and most of the applicants were residents of Metro City. Even though the city had actively sought to retrofit unsafe structures, the earthquake was found to have caused unexpected damage to a class of buildings that was thought to be earthquake-resilient: multi-story steel frame buildings. Because Metro City has more of these structures than any other jurisdiction in the impact area, safety inspections are still continuing and the cost of damages are still rising (about \$25-30 Million).

The Northridge earthquake has been characterized as a "housing disaster," and this is particularly true for Metro City. Emergency shelter and the provision of temporary housing were major response needs. The city eventually opened 44 shelters that served 21,000 homeless at its peak of operation, the last of which closed about a month after the earthquake . The city also had to provide support services for people who took refuge in spontaneous "tent cities" open spaces and parks. Although the city did not want to encourage these informal camps, they began to distribute family-sized tents to these areas because of a growing concern about health. The city began to provide security, feeding programs, and medical assistance at these locations; while, at the same time, developing "reassurance teams" who would attempt to get families into formal shelters or to return to their own homes and establishing new programs that would provide expedited housing assistance.³

JURISDICTIONAL DISASTER MANAGEMENT PROFILES

One facet of the research focus of this study looked at (1) the effect of previous disaster experiences and (2) the extent of disaster response and recovery planning, to determine whether these factors had an impact on the level of effectiveness of local jurisdictions' response to large-scale disaster incidents. Each of the three cities in this study had a very different organizational pattern which developed in response to earthquake-generated problems, especially with respect to their coordination with Los Angeles County, the State's Office of Emergency Services (OES), and the Federal Emergency Management Agency (FEMA). Table 1 summarizes the disaster management profile of the three communities.

TABLE 1
 JURISDICTIONAL DISASTER MANAGEMENT PROFILES:
 THE NORTHRIDGE EARTHQUAKE

| Study Cities | Recent Disaster Experiences | Quality of Planning Efforts | Type of Plan Implementation | Level of System Integration |
|--------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Fringe City | Some | High | Communal | Moderate/ Horizontal |
| Ocean City | None | Modest | Individualistic | Low/ Diffused |
| Metro City | Extensive | Very High | Centralized | High/ Verticle |

FRINGE CITY

Fringe City could be characterized as having a "high" level of governmental preparedness for an earthquake, due to recent disaster experiences and city-wide planning efforts. In the two years before the earthquake, the city was included in three Presidentially-declared disasters. None of these events did extensive damage to the city itself, but it did give city officials an understanding of the processes that would occur if they were directly effected by a disaster.

Also, the city had purposely hired an Emergency Preparedness Coordinator (EPC) shortly after incorporation who was given the task of developing a disaster response plan. Unlike other communities, the EPC was located in the Department of Recreation to make it "community-based." The department has both possible shelter facilities and a volunteer coordinator available, which gives the EPC a conduit to community resources. The EPC also brought the private sector--including utility systems and schools--into disaster planning and exercise functions. Disaster response exercises had been conducted once a year in the city; and the city's department heads had attended a week-long training course at the California Specialized Training Institute (CSTI) on the development of a multi-hazard functional plan (the predecessor planning strategy to SEMS used by local jurisdictions in California). The EPC also acts as the liaison between the city and other levels of government.

As a consequence of this type of purposive community planning, there was a uniform positive assessment of coordination among city departments and county agencies during the response period. This was especially surprising since the building housing city hall (and the EOC) had to abandoned the day of the earthquake due to structural safety concerns; and an EOC was set up in the building's parking lot for almost two weeks until the city offices could move into temporary quarters while their facility was being repaired. Many of the city's EOC members and department heads actually referred to this "communal" implementation of the plan positively because it put them into constant contact for problem solving and decision making, made them immediately accessible to the public, and gave them good public visibility during the emergency. Since both operational staff and city officials were in the same location, response efforts were well

coordinated within the city itself.

Because of the city's isolation from the Los Angeles basin, they were only moderately well integrated with the intergovernmental emergency management system. Because the city contracts with the county Fire and Sheriff Departments for service, substations existed in this northern county area, adjacent to the city. Working relationships with these department's EOC's and department heads went very smoothly because of extensive "normal-time" interactions. Coordination, however, with the county's EOC for physical resources did not go as smoothly. The city tried to comply with Los Angeles County's formal emergency response plan which required that contacts through the County's EOC to request assistance. The city attempted to follow this plan to meet their emergency and relief needs, but they did not meet with success. Reasons for using alternative sources included: not being able to physically access available resources because they were in the basin and could not be delivered in a timely fashion; frustration with the turnover in personnel at the County's EOC (necessitating the repeat of resource needs); a lack of coordination between the city, the County and Caltrans (thereby causing traffic pattern changes in the city without their prior knowledge); and a belief that the County's resources were overtaxed. The alternative sources used were: informally-requested mutual aid with other nearby, less effected communities for building inspectors and traffic management equipment; contact with the Regional Office of the state's Office of Emergency Services in Los Alamitos (with whom they worked during non-emergency times); and direct contacts with the FEMA at the Disaster Field Office in Pasadena.

OCEAN CITY

Ocean City had no recent experiences with either local or regional disasters in recent years. The city's level of preparedness for an earthquake could be considered "modest" at best. Although some emergency planning had been undertaken by the city, there was substantial criticism of the plan by many local governmental officials. Also, the plan had not been fully exercised by all departments in the city, and some seemed unaware of their expected roles. One elected official in the community stated that little credence should be given to the importance of a plan; rather, "bright personnel" were what was needed.

The plan did not result in good interorganizational relationships among different agencies in the city or with other levels of government. Although the city's EPC had the EOC operational within the day of the earthquake, many departments did not bother to send representatives to the EOC nor did they use it to channel requests for personnel or material resources.

Despite the fact that City Hall and the EOC were structurally undamaged and able to function, the city's internal response could best be described as uncoordinated and "individualistic." Three centers of operations were established: the EOC, in the basement of the Police department building; the City Manager's office, where policy decisions were made; and the building safety offices, that carried out damage inspections. Poor communication and coordination existed among these three centers throughout the emergency period.

Unlike Fringe City, there was much less adherence to using a formal disaster response plan chain-of-command when requesting outside assistance. A common complaint was that the EOC couldn't produce resources and decisions couldn't be made quickly enough to meet developing needs. Department heads, instead, went around the EOC process and made calls directly to other communities for assistance or to the state. Although some officials in Ocean City attempted to follow the formal disaster response plan by making resource requests to the County's EOC, they

often experienced dissatisfaction. Because they felt that the county's response was too slow, department heads used their informal contacts with other cities to meet many of the physical resource needs that they had during the response period and early recovery period. Their integration into the regional plan was low and their assistance-seeking activities diffused.

METRO CITY

Metro City has a reputation throughout the United States as being an extremely pro-active and well-prepared city with respect to emergency management and planning. The city passed one of the first mandated retrofit ordinances for unreinforced buildings in the country, developed an earthquake prediction response plan, had a state-of-the-art disaster response plan, and had a disaster recovery plan available at the time of the Northridge earthquake. Although the city had not engaged in any exercises in the years before the quake, they had had six Presidentially-declared disasters in the two years prior to the earthquake and, routinely, their EOC got mobilized about once a month for various local emergencies. This level of activity resulted in both refinements to their disaster response plan as well as to the establishment of numerous informal relationships between city staff and their state counterparts. From the perspective of the city, the response phase of the disaster went smoothly.

To coordinate its emergency management functions, the city used its Emergency Operations Board (EOB), chaired by the Chief of Police and containing the head of each department in the city. This body, originally envisioned as a planning group, met at least once a day during the emergency period to resolve problems, make decisions, and identify resources within the city that could be used to handle earthquake-related problems. These meetings provided a centralized method of dealing with the myriad of problems that arose during this period and provided a high level of intra-city integration of response activities.

However, the city did not go through the county when extra-city resources were needed. The city went directly to the state with mutual aid requests and concerns about the early recovery period (e.g., where and how many Disaster Application Centers to open). Metro City even had a liaison representative in the DFO, the only city to have had this privilege.⁴ Part of the city's explanation for vertically by-passing the county was that the county EOC was responsible for responding to 88 other local jurisdictions as well as the unincorporated areas of the county. Because the city felt they had established good working relationships with state and federal personnel on numerous recent occasions, they believed they could more effectively satisfy their needs by going directly to the DFO.⁵

CONCLUSIONS

Past research on the emergency response period has demonstrated time and time again that the major problems between governmental jurisdictions during this period result from a lack of coordination and communication, often resulting from a lack of prior planning. Again, we see evidence of this lack of coordination, both within a city and between cities and the county. In this instance, the lack of coordination appears to be related, primarily, to perceptions by city officials of the county's inability to fulfill their needs on a timely basis. The reasons for these perceptions are several, including: logistical incapacity (the inability to get resources to the requesting jurisdiction quickly); lack of a consistent contact in the County EOC; and inquiries concerning resource needs to other governmental entities (e.g., sister cities or the DFO).

Another major impediment to following a formal disaster assistance request plan exists, however,

that results in "going around" the county's EOC. During non-emergency times, the independent cities in the County primarily interact with the State's OES Regional Office in Los Alamitos in terms of getting assistance with emergency response and preparedness planning. On a routine basis, then, the cities develop working relationships with the personnel in that office. The formal disaster plan changes the path of information flow, adding a county level between the cities and the state's regional office. As has repeatedly been found in post-disaster research as well as in the investigation of this earthquake, these informal relationships become very important as ways to resolve problems and get needed information quickly. Any formal disaster assistance plan should take these relationships into account in order to facilitate the provision of resources.

ENDNOTES

1. This research was conducted with funding from the National Science Foundation (Grant CMS- 9415738), Joanne M. Nigg and Kathleen J. Tierney, Co-Principal Investigators. The Principal Investigators wish to thank NSF for its support of the research, but all conclusions and observations are solely those of the researchers.
2. Emergency Response and Early Recovery Activities in the Northridge Earthquake (CMS-9413270 and CMS-9415738), Joanne M. Nigg and Kathleen J. Tierney, Co-PIs.
3. For more information on innovative practices and policies initiated during the Northridge earthquake, see Joanne M. Nigg and Richard K. Eisner, "Earthquake Response: Intergovernmental Structure and Policy Innovation." In Proceedings of the 5th U.S./Japan Workshop on Urban Earthquake Hazard Reduction. Oakland, CA: EERI. Forthcoming. 1997.
4. The only other local jurisdiction to have representation in the DFO was the County of Los Angeles. Perhaps surprisingly, the two liaison representatives were perceived to have worked together effectively, especially with respect to recovery-related problems and issues.
5. Given the perceptions and actions of the three cities in our study, one might conclude that the county was overburdened with requests for assistance that could not be provided, necessitating alternative methods of resource assistance to be sought. The county's view, however, was quite different. The county's EOC was fully functional throughout the emergency response and early relief periods. The county maintained that it had adequate resources to satisfy the requests that came through their EOC and that their capacity was not overextended. Especially since the state's Regional Office was not operational during the first day of the earthquake due to electrical outages, the county believed that their functioning was vital to a rapid, effective response. County EOC officials did not believe that the formal assistance request process needed to be violated by cities in their attempts to meet earthquake-related needs.