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Poverty and Disasters in the United States: A Review of Recent Sociological Findings

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Abstract. This article synthesizes the literature on poverty and disasters in the United States and presents the results from a wide range of studies conducted over the past twenty years. The findings are organized into eight categories based on the stages of a disaster event. The review illustrates how people of different socioeconomic statuses perceive, prepare for, and respond to natural hazard risks, how low-income populations may be differentially impacted, both physically and psychologically, and how disaster effects vary by social class during the periods of emergency response, recovery, and reconstruction. The literature illustrates that the poor in the United States are more vulnerable to natural disasters due to such factors as place and type of residence, building construction, and social exclusion. The results have important implications for social equity and recommendations for future research and policy implementation are offered.

Key words: natural disasters, poverty, social equity, socioeconomic status, United States

1. Introduction

Natural disasters have often been overlooked as a site of social stratification because they were viewed as indiscriminate "acts of God" that affected communities randomly. In fact, due to this notion of randomness, disasters were believed to be "status levelers" or events that democratized the social structure. While a disaster does indeed threaten *everything* in its path, and for a brief period of time during and immediately following the event there is a loss of "culturally derived discriminations and social distinctions" (Fritz, 1961, p. 685), disasters do not affect all members of society equally. Disaster scholars, and to a lesser extent the general public, have acknowledged that disasters do not indiscriminately distribute risk and vulnerability or eliminate pre-existing systems of stratification (Couch and Kroll-Smith, 1985; Fordham, 1999; Morrow, 1997). As Blaikie *et al*. (1994) argue, there has been a false separation of hazards and the social system because of the lack of widespread recognition of connections between the daily risks people face and the reasons for their vulnerability to hazards and disasters. Indeed, disasters are the products of the social, political, and economic environment, as well as the natural events that cause them (p. 3).

Poor people around the world suffer the greatest disaster losses and have the most limited access to public and private recovery assets, both in developing societies as well as wealthy industrialized nations like the United States (see for example, Blaikie *et al.*, 1994; Peacock *et al.*, 1997). Socioeconomic factors play a significant role in all areas of social life, including in disasters, as they, too, are social phenomenon. Sociological scholarship demonstrates that one's location in the social strata often determines one's life experiences, relationships, opportunities, and overall life chances. At issue here is how being poor or disadvantaged affects one's experiences in a disaster, from risk perception, to the post-disaster reconstruction of lives and communities.

During the early 1990s, social scientists who study disasters began examining issues of vulnerability. Vulnerability, in the disaster context, is a person's or group's "capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard" (Blaikie *et al.*, 1994, p. 9). Scholars have found that vulnerability may be increased due to factors such as a person's age, gender, social class, race, and ethnicity (Aptekar and Boore, 1990; Morrow and Enarson, 1998; Peacock *et al.*, 1997). Some disaster researchers now use a "socio-political ecology of disasters" as a theoretical framework to study disasters, as such an approach includes the critical analysis of minority, gender, and inequality issues in disasters (see for example, Bates, 1993; Hewitt, 1983; Peacock with Ragsdale, 1997).

To continue this critical analysis, this article takes stock of what is known on these issues of differential vulnerability. Past articles have reviewed the literature concerning how gender (Fothergill, 1996) and race and ethnicity (Fothergill *et al.*, 1999) play a role in disaster vulnerability in the United States, but no such review has been done on the literature on poverty, inequality, and disasters.[1] By examining what is known on the topic of poverty and disasters in the United States, this review can assist in identifying gaps and thus help direct future scholarship on the topic.[2]

This paper reviews and synthesizes the literature on poverty and disasters and discusses the noteworthy findings, paying particular attention to research done on U.S. populations over the last 20 years. The findings are organized into eight categories utilized to delineate the literature review findings.[3] The categories are based on the following stages of a disaster: risk perception; preparedness behavior;

[1] In 1986, Thomas Drabek published *Human System Responses to Disaster*, a thorough review of the disaster literature. In this important book, he reviews data from research on socioeconomic factors in disasters through the early 1980s. This review is designed to pick up where he left off in 1986, as well as to elaborate briefly on some findings that he reported – when they assist in the discussion of more recent research on poverty and disasters.

[2] The authors recognize that gender, race, and class are interconnected and they have complex effects on human social behavior. The authors also understand the problems with separating these dimensions for literature reviews. Given space limitations, when possible and applicable, the intersections are explicated in the review.

[3] This model has been used by many hazards researchers, but also criticized by some (see for example, Neal, 1997). While not dismissing their concerns, for this review, it makes the most sense for clarity and consistency to use the same model that was used with the gender and disasters literat-

warning communication and response; physical impacts; psychological impacts; emergency response; recovery; and reconstruction. In the review, an attempt is made to be as exhaustive as possible, citing all the studies, diverse in size and methodology, that could be located. Within these studies, authors use a range of social labels for individuals and groups that are disadvantaged. For example, some researchers use "low socioeconomic status," while others use "the poor," "working class," or "low-income," and they measure these concepts in somewhat different (but not contradictory) ways. When possible we use the original terminology, in an effort to stay close to the authors' intentions and measurements. However, we treat the terms as similar concepts, all of which are trying to describe those who live with the fewest monetary and social resources in the United States. The paper concludes with policy and research recommendations.

2. The Findings

2.1. RISK PERCEPTION

This section reviews the literature on how people have perceived the threats and risks of hazards and disasters, and the ways in which income and resources affect such perceptions. The research findings of how socioeconomic status affects hazard and disaster risk preparation, while minimal, show that poor individuals perceive threats as more serious. The specific studies on these issues follow.

Some research has revealed that low-income individuals have greater risk perceptions. Flynn *et al.* (1994) found that people of lower socioeconomic status experience heightened levels of risk perception, which the researchers argued may be because poorer people have little control over their lives, and hold little power in the world. In a study of California residents and their views on technological hazards, the results showed that low-income individuals, women, and less educated groups reported the highest levels of concern (Pilisuk *et al.*, 1987). While "experts" claimed these groups' concerns were due to technological ignorance, the authors argued that the concerns were legitimate and should not be discounted. The authors also discussed the relative lack of power of the poor, women, and the less-educated when considering risk perception and communication, and called for improved mechanisms for public participation of these marginalized groups. In their study of culture and risk perception, Palm and Carroll (1998) found that lower income groups tended to worry more about the loss of their homes to earthquakes than higher income groups.

Some have suggested that hazard and risk perception vary by occupation (Lamson, 1983). People who are of a lower socioeconomic status are more likely to be involved in higher risk or more hazardous occupations, and thus are more likely to employ coping mechanisms to deal with the daily risks they face. For example,

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ure review (Fothergill, 1996) and the race, ethnicity, and disasters literature review (Fothergill *et al.*, 1999).

Vaughan (1995, p. 174) found that lower socioeconomic status has been associated with denial or minimization of chronic risks, particularly when economic concerns are salient. Other researchers have found that while people may be engaged in hazardous occupations and aware of the risk they "... tend not to define day to day exposure as continually life threatening" (Beach and Lucas, 1960). Research has noted that logging near Mt. St. Helens provided a source of livelihood for working class families who lived in the immediate area of the volcano, and residents in the area had difficulty in seeing volcanic activity as a real threat to them (Greene *et al.*, 1981, p. 53).

Older research, however, posited that socioeconomic factors play no role in risk perception. White (1974, p. 5) argued that variances in hazard perception was not related to common socioeconomic indicators such as age, education, and income.

Although researchers may disagree on the degree that socioeconomic factors play in risk perception, it is widely recognized that those living in poverty have different social and risk event histories, as well as differential access to economic and other resources that may be relevant in any particular risk situation. Thus, a characteristic such as socioeconomic status should be considered as a possible contributor to, and predictor of, how risks are perceived and interpreted (Vaughan, 1995).

2.2. PREPAREDNESS BEHAVIOR

Preparedness behavior includes a variety of actions taken by families, households, and communities to get ready for a disaster. Preparedness activities may include devising disaster plans, gathering emergency supplies, training response teams, and educating residents about a potential disaster (Mileti, 1999). The limited research record, which shows that there is a relationship between socioeconomic status (SES) and preparedness, follows.

Researchers have concluded that various socioeconomic indicators appear to be related to preparedness levels. Turner *et al.* (1986) revealed that education, income, and ethnicity are related to earthquake preparedness. They discovered that preparedness increases steadily with income levels. Further, they reported that education combats fatalism and thereby fosters preparedness, but only up to the level of entering college. Vaughan (1995) noted that people living in poverty or those with inadequate resources may be less likely to perform prescribed or necessary actions to mitigate the effects of hazardous agents because of a lack of a sense of personal control over potential outcomes.

Additional studies concur. Research conducted by Nigg (1982, p. 94) indicated that the "level of acceptance of disaster planning ... varies directly with socioeconomic status." Palm and Carroll (1998) reported that income level was particularly important in the adoption of some of the more costly earthquake mitigation measures, such as purchasing earthquake insurance, strengthening of the home, and purchasing fire extinguishers. Fothergill (2004) discovered that poorer residents

could not afford flood insurance, even though they were aware of its availability and benefits. Research on Hurricane Andrew (Gladwin and Peacock, 1997) also established some relationships between income and preparedness. The researchers found that income levels were not associated with preparation times. In other words, poorer residents did not start preparing for the storm, such as buying bottled water or placing shutters on windows, any earlier or later than wealthier residents.

2.3. WARNING COMMUNICATION AND RESPONSE

The warning communication and response phase entails receiving formal warning signals, such as emergency broadcasts and flood sirens, or other risk communication of an immediate danger and taking action with some type of response to the warning, such as evacuation. Most of the literature demonstrates that socioeconomic status is an important variable in this stage.

The Panel on the Public Policy Implications of Earthquake Prediction concluded that groups of people with lower socioeconomic status were especially likely not to receive, understand, or believe earthquake warnings (1975, p. 52). Indeed, warning belief, or definition of situational danger, is directly related to whether individuals and groups respond to and comply with warning messages (Mileti *et al.*, 1975). Moore (1958) reported that lower income groups were less likely to believe that warnings of impending natural disasters constituted an issue which should be taken seriously. Similarly, Mack and Baker (1961, p. 49) found that low-education, low-income respondents were less likely to interpret a warning signal as valid than individuals of moderate education and income (passage from Perry, 1987, pp. 148–149).

Beyond belief of warning messages, another important factor for consideration is whether all groups receive warning messages. In his study of the 1987 tornado that hit Saragosa, Texas, Aguirre (1988) discovered that many of those who died were residents at a Head Start graduation ceremony who had not received any warning messages. These victims most likely did not receive the warnings because of language and cultural barriers. However, Roy Popkin (pers. comm., 2002) noted that since the early 1990s, warnings (as well as recovery information after a disaster) have been released in as many languages as practical in most disaster situations in an effort to reach increasingly diverse populations.

Research following Hurricane Andrew provides more information on warning communication and response. For example, Morrow and Enarson (1996) found that poor women heard the storm warnings, but were unable to take action because they did not have enough money for supplies or transportation. In their study of warnings and evacuation for Hurricane Andrew, Gladwin and Peacock (1997) reported that people with lower incomes were less able and thus less likely to evacuate. This was mostly due to constraints caused by a lack of transportation and affordable refuge options. Morrow (1997) stated that before Hurricane Andrew hit, there were reports of public housing residents being left to walk or hitchhike out of

evacuation zones. Similarly, in her study of the Red River Valley Flood, Enarson (1999b) discovered that homeless, unemployed, and low-income women were less able than more affluent women to evacuate to alternative shelters.

Some studies found no relationship between socioeconomic status and warning response. Bourque *et al.* (1993) discovered that socioeconomic status, as measured by household income and completion of a college degree, was not associated with evacuation behavior in the emergency response phase following the Loma Prieta earthquake. Perry and Lindell (1991) also reported no significant difference in evacuation compliance between SES groups.

2.4. PHYSICAL IMPACTS

The physical impacts stage is concerned with who is hit hardest in a disaster, who suffers from the most serious immediate consequences, and what patterns emerge in rates of mortality, morbidity, and injury. The data show that socioeconomic status is important in this phase of a disaster.

According to Aptekar (1991), disaster loss is more pervasive for those with lower SES. This is largely due to the types of housing that people of low socioeconomic status occupy. Low-cost, affordable housing exposes the residents to greater risks of hazards because of lower quality construction (Austin and Schill, 1994; Bolin, 1986; Greene, 1992; Phillips, 1993; Phillips and Ephraim, 1992). Comerio *et al.* (1994) reported that in California, low- and moderate-income rental housing units tended to be older, and thus more vulnerable to disaster, particularly to seismic and fire damage. Difficulties emerge in earthquake disasters because of the damages to low-rent and unreinforced masonry (URM) buildings, which are primarily inhabited by residents having lower SES. Mobile homes, also most often occupied by lower and working class groups, are the most dangerous types of buildings in a tornado. In 1994, almost 40% of all tornado fatalities occurred in mobile homes (U.S. Department of Commerce, 1995). While Bolin and Bolton (1986) acknowledged that living in beachfront property exposes all residents, regardless of SES, to the risks of hurricanes, Bolin and Stanford (1991) affirmed that victims with the lowest incomes experience the greatest proportionate losses to their housing.

Another immediate impact of a disaster is the number of newly homeless who are present following an event. For example, Phillips (1998) reported that the Loma Prieta earthquake was most likely to displace the elderly, the already homeless, and low-income Latinos living in Santa Cruz County. In South Carolina, 60,000 people, many of whom were low-income and ethnic minority residents, were reported to have become homeless as a result of Hurricane Hugo (Federal Emergency Management Agency, 1990).

Aguirre (1988), in his study of a 1987 Texas tornado, found that less powerful groups, such as the poor, faced higher disaster impacts, such as injury and death. Research by Rossi *et al.* (1983) on loss from natural hazards in the U.S. from

1970 to 1980, further confirmed that lower income households experience higher rates of injuries in disaster than more affluent households. The difference was most pronounced in floods and earthquakes, where none of the higher income groups suffered any injuries. Fires showed a slight tendency for lower income households to suffer more injuries (p. 102).

In a Midwest heat disaster in 1980, there were 148 heat related deaths and most of the victims were from the inner-city, elderly, and from a low socioeconomic bracket (U.S. House of Representatives Testimony, 1980). Many of the victims, poor and on fixed incomes, were afraid of high utility bills so they did not turn on fans, many of which had been given to them for free as part of emergency relief measures (p. 3). In another heat wave disaster in Chicago in July 1995, 739 people died, the majority of whom were low-income (Klinenberg, 2002).

Another, albeit understudied, physical impact of disaster is the consequence of domestic violence. While domestic violence affects women across all social and class lines, resources may make a difference for victims of domestic violence following a disaster. In the 1997 Grand Forks flood, there was limited evidence that middle class women may have had more financial, educational, and occupational resources available to them to leave and stay away from abusers, while poor women did not have the same resources and thus had a more difficult time leaving and staying away from abusers (Fothergill, 1999).

2.5. PSYCHOLOGICAL IMPACTS

This section examines work on the emotional stress, trauma, and other psychological impacts of a disaster event. The research available indicates that socioeconomic status influences who experiences and reports more emotional problems and distress following a disaster.

More general social psychological research has shown that socioeconomic status is a critical factor to consider for emotional vulnerability, yet relatively little disaster-specific research has been conducted on this topic (Aptekar, 1990). Overall, however, the studies that have been done show that higher-income victims of disaster suffer fewer psychological impacts than lower-income victims (Bolin, 1993). Aptekar (1990) stated that the working class were embittered by the losses they sustained following Hurricane Hugo and the Loma Prieta earthquake. Furthermore, if these residents knew they were not going to be compensated for their losses, they were said to have been less likely to reach psychological resolutions. Another study found that poorer people and those with larger families were more likely to report emotional problems following a disaster (Bolin and Bolton, 1986). Fothergill (2004) discovered that poorer residents reported greater stress over the possibility of losing their jobs after a flood disaster. While middle- and high-income salaried professionals found that collecting paychecks throughout the crisis alleviated stress, those paid hourly wages, such as those in most service-oriented jobs, were not paid during the crisis.

It is important to note that psychological impacts could be caused by the poverty, the disaster, or a combination of the two. Yet, no matter if the poverty causes the psychological conditions, the disaster undoubtedly exacerbates the situation. Muller and Mulhern (1977) found many victims of the Big Thompson flood in Colorado were in the "lost hope" stage after they lost their homes. The victims, most of whom were over 55 and had no jobs and no income, felt enormous despair and were more vulnerable to strokes and heart attacks. Garrison (1985) also found that the financial devastation of the disaster created mental stress. She explained that after a disaster, people generally have increased debt burdens. Poor people were more likely to be financially devastated by the disaster and subsequent relocation than were wealthy or middle class people, thus increasing the likelihood of mental stress for those of low SES. Moreover, the poor were less likely to have access to physical resources and mental health care than middle- or upper-class individuals, further exacerbating emotional vulnerability. In a study of the "tent cities" that were established as temporary housing following Hurricane Andrew, Yelvington (1997) reported that a number of post-traumatic stress disorder cases were evident. Many camp residents, most of whom were poor or working-class ethnic minorities, reported psychological depression and strained familial relations.

2.6. EMERGENCY RESPONSE

The post-impact, emergency response stage of a disaster is characterized as the immediate aftermath of a disaster, typically including the first hours or days, perhaps up to one week, depending on the event. The emergency response stage of a disaster provides a unique opportunity to observe social patterns, roles, processes, and behaviors. Socioeconomic factors appear to be significant in some ways during the immediate post-impact stage.

In a study of disaster relief officials from a variety of organizations in the United States, one of the major conclusions was that the poor are one of the groups most likely to "fall through the cracks" during emergency relief operations (Colorado State University, 1985). Rubin and Popkin (1990) studied response problems to Hurricane Hugo. They discovered that many of the victims had special needs because of extreme poverty, high illiteracy rates, physical isolation in rural communities, fear and distrust of government officials, and lack of electronic media for weeks following the storm. These issues resulted in members of service agencies reporting that providing assistance to the rural poor following the hurricane was unusually difficult and time consuming. Indeed, Miller and Simile (1992), in their investigation of the effect of Hurricane Hugo on poor residents of South Carolina, found that being poor was a significant factor in the response phase. Due to the total lack of pre-storm interface with the rural poor, emergency programs were not reaching these people. Many of the poor in the area studied were "invisible" until the hurricane hit, living in unmarked homes, on unmapped roads, or hidden behind large estates. One rescue worker reported that he had never heard of the dirt road

where people lived and were in need of assistance. Emergency response workers commented that until the storm, they had no idea of the extent of the poverty in their own neighborhoods. One remarked that "... there was poverty here all of the time, but after the storm I saw what I've been living around for 34 years" (p. 11).[4] Subervi-Velez *et al.* (1992) reported that following the Loma Prieta earthquake, community-based organizations invited the Red Cross to work with them to do outreach in low-income and non-English speaking communities, but the Red Cross declined.

Research has shown that in the United States, those with lower SES levels are more likely to seek refuge in mass shelters (Bolin and Bolton, 1986; Mileti *et al.*, 1992; Yelvington, 1997). Roy Popkin (pers. comm., 2002) noted that in many disasters those who utilized shelters could not afford gasoline to drive long distances or pay for a motel room. After the Loma Prieta quake, Bolin and Stanford (1990) discovered that sheltering was complicated by the presence of a significantly large population of chronically homeless persons who also sought shelter at Red Cross facilities. Furthermore, evidence suggested that poorer victims tended to remain in emergency, temporary shelters longer after Loma Prieta (Bolin, 1993). After tornadoes hit two Texas towns in 1979, those victims with lower incomes spent more time in temporary mobile homes provided by the Federal Emergency Management Agency (FEMA) (Bolin, 1982). Fothergill (2004) found that higher-income families were less likely to stay at mass evacuation shelters than lower-income individuals and families after the Grand Forks flood of 1997. In addition, people with more money usually do not need the FEMA mobile homes because they typically have more extensive social support networks (Roy Popkin, pers. comm., 2002).

Moreover, those with low SES also may have more trouble in the response period, due to a bias in disaster reporting by the media. Rodrigue and Rovai (1994) posited that poorer communities were more likely to be vulnerable in disasters, as emergency personnel depend on the media, which is biased towards the affluent, to determine where people are in need and respond to those neighborhoods or communities. Rovai (1994) found that the media contributed to the common and incorrect perception that Ferndale, California, a prosperous and affluent town, was more badly damaged than Rio Dell, California, a poorer, more marginalized town, following the 1992 earthquakes in Humbolt County. While the towns, both with predominantly white populations, suffered similar reported dollar amounts of quake damage (Rio Dell had slightly more), Rio Dell had more condemned structures and 300 displaced residents, while Ferndale had none. The research showed that 75% of the print media photos were of Ferndale, and the national media referred to the earthquake as the "Ferndale Earthquake" (Rovai, 1994, p. 60). In addition, surveys of damage by officials, such as FEMA representatives and the governor, mostly took place in Ferndale. As a result, the researcher found that

[4] Disaster scholars have long posited that natural disasters reveal social problems that already existed prior to the catastrophe. Merton (1969: xii), for example, stated that disasters can "bring out in bold relief aspects of social systems that are not so readily visible" in everyday life.

Rio Dell was behind Ferndale in completing all phases of recovery – emergency, restoration, and reconstruction. Rovai determined that Rio Dell's slower recovery was evidence of the effect that pre-existing SES structures have on rates of recovery from natural disasters. In essence, Rovai concluded that the media's bias towards affluent communities contributed to disaster management personnel's perception formation. This perception, in turn, contributed to relief assistance decisions. Dash *et al.* (1997) briefly mentioned a similar case of media bias towards a more affluent Miami community in their study following Hurricane Andrew.

2.7. RECOVERY

The recovery stage, typically the one-year period following a disaster, historically has implied putting a disaster-stricken community back together (Mileti, 1999). This section addresses socioeconomic differences as life returns to a somewhat normal or improved level during this time of allocating resources, rebuilding, and lifeline repair. The material included below indicates that there are considerable differences in this period, especially in regard to housing issues, and that those with lower socioeconomic status may face more obstacles.

The ease with which certain groups are able to negotiate bureaucratic systems may dictate the success or failure of the recovery process. Following the Humboldt county, California, earthquakes in 1992, Rovai (1994) found that the higher-income Ferndale residents knew how to "work the system, fill out the forms, and acquire the financial aid they needed," while lower-income Rio Dell residents did not. Thus, many in Rio Dell did not apply for funds to which they were entitled (p. 72). In the 1997 Grand Forks flood, middle- and higher-income disaster victims felt more comfortable than low-income ones in negotiating disaster recovery bureaucracies for assistance (Fothergill, 2004). Dash *et al.* (1997) noted that poorer victims encountered more obstacles in making trips to the Disaster Assistance Centers following Hurricane Andrew because of transportation, child care, and work difficulties. Moreover, some recovery programs have used a nuclear family model, which serves to award funds to the head of the household. However, this type of model serves to disadvantage poor, minority women, as illustrated following Hurricane Andrew (Morrow and Enarson, 1996). In her examination of women and housing issues following hurricane and flood disasters, Enarson (1999a) included an extensive discussion of why the utilization of the traditional nuclear household model has become increasingly problematic for poor women living in the United States.

Studies have demonstrated that low-income households often lack access to resources and income needed to cope following disasters (Bolin and Stanford, 1998; Hewitt, 1997). During the recovery process, those with lower SES had a more difficult time as they had less insurance, less savings, fewer personal resources, and suffered from the intensification of previous economic stress and problems (Bolin and Bolton, 1986; Cooper and Laughy, 1994; Tierney, 1988). Addition-

ally, working class and middle class women experienced a greater stigma when receiving assistance, public and private, after a flood disaster than low-income and high-income females. Middle class females who had once lived in poverty or accepted welfare experienced the greatest stigma receiving post-disaster help (Fothergill, 2004). Roy Popkin (pers. comm., 2002) stated that relief agencies have long accepted an "X" as a signature in Appalachia and elsewhere when working with disaster victims who were low-income and illiterate.

Research indicates that many who become homeless after a disaster are from a lower SES (Katayama, 1992; Phillips and Ephraim, 1992). Bolin (1993) discovered that after the Coalinga earthquake, Mexican-Americans, with lower SES, had fewer resources and used more federal aid and housing programs than higher SES Anglos. He also reported that Small Business Administration (SBA) loans were only available to those with above average incomes and/or those with reliable employment after a California earthquake. Fothergill (2004) found that some low-income families were denied SBA loans because their total family incomes were too low. In an examination of the disaster loan process following the 1995 flooding in New Orleans, Childers (1999) found that poor elderly women were three times less likely than other elderly households to receive low-interest loans, even though these low-income elderly women were over-represented in the population applying to FEMA for the loans.

Housing is a significant issue for low SES disaster victims. Bolin and Stanford (1993) reported that following the Loma Prieta earthquake of 1989, FEMA received firm political pressure to provide more housing for low-income victims. In mid-November, 1989, FEMA agreed to provide more than 140 mobile homes in Watsonville and Pajaro, two areas with a lack of low-income housing. FEMA had been reluctant to provide this type of temporary housing, though, and one FEMA spokesperson referred to them as "instant slums" (p. B46). There was a formal petition brought against FEMA for the violation of regulations and statutes regarding low-income earthquake victims. The petition claimed that FEMA had unlawfully failed to provide adequate temporary housing assistance for low-income persons, and that FEMA, in the process of distributing relief, discriminated against residential hotel tenants and seasonal workers. Finally, the petition claimed that FEMA failed to help develop plans for temporary and permanent affordable housing and to coordinate disaster relief (U.S. Government Hearings, 1990).

Quarantelli (1994, pp. 76–77) reported that middle class families do not like to use mobile homes as temporary housing and that those with a higher SES prefer rental assistance. Higher-income evacuees, he observed, obtain the surplus housing available in a community and thus there is almost always a problem finding rental housing for low-income victims (p. 77). Comerio *et al.* (1994) posited that in post-disaster repair and rebuilding, the services are geared toward homeowners and legal tenants and not towards multi-family and affordable housing units, which are occupied by low-income tenants. The researchers found that except for the homeless, very low-income renters were the least likely of all households to receive short-

term emergency assistance, and the least likely to have their units repaired (p. 7). In addition, they reported that the FEMA and SBA assistance programs, in particular, were not as effective for affordable housing units as they were for middle-class homeowners. Following Loma Prieta, there were several one-time solutions to get affordable housing funds, but none of the solutions became institutionalized. The researchers concluded that the current recovery programs were wholly inadequate to meet the needs of multi-family and affordable housing recovery (p. vii).

Greene (1992), who also examined housing issues following the Loma Prieta earthquake, agreed that low-income housing was at risk. The U.S. Department of Housing and Urban Development, Greene noted, estimated that it takes 3 to 8 years to replace low-income housing, thus illustrating the need for temporary housing for low-income residents for that time period. Following Loma Prieta, the American Red Cross and local community groups provided grants for the rebuilding of low-income housing and/or shelters for the homeless. Greene reported the most serious problem with low-income housing replacement was that agencies that provide low-income housing in non-disaster times are unable to keep up with the demand in a routine or normal environment. Thus, they operate in a crisis mode all of the time, and are "completely overwhelmed" after an earthquake (p. 13).

Following Hurricane Hugo, researchers Miller and Simile (1992) found that churches, government programs, and some business community service programs came to the aid of the rural poor. The church volunteers built and repaired homes, and provided food, transportation, and medical care. The government, after one of their rescue workers accidentally found a starving family, extended their services to the rural poor, who were mainly illiterate, isolated, and without transportation. The government opened centers aimed at distributing relief to immobile populations. Many of the public officials had never been to the poverty stricken areas of their communities before Hugo, and were not aware of the extent of the problem. The authors noted that the churches, the community service programs, and the government workers were not interested in dealing with the larger problems of poverty and wanted to limit their assistance to Hurricane Hugo damage. One outreach worker said:

> I am still doing Hugo relief, but in all honesty, many of the things that we are doing are things that pre-existed. You cannot replace a roof on a wall that is rotted, and those types of things we ran into frequently because of the level of poverty (p. 11).

Another recovery worker added:

> I try very hard not to call things Hugo that are not Hugo. That does not mean that we did not repair walls that were rotted, we had to do that; but I would flat out say to anybody you can call this Hugo, but most of it is really not Hugo (pp. 11–12).

Most of the recovery workers, agencies, and programs were careful only to respond to problems thought to be caused by Hugo, not by poverty. One county worker explained:

> We had a lot of things where you'd look at the homes and you couldn't tell if it was Hugo damage or not – they were just shacks. You had to make some decisions there about whether or not they qualified for help (p. 15).

Indeed, Bolin and Stanford (1990) noted that the presence of disadvantaged persons, already living in marginal housing, presents disaster service providers with demands that are often unanticipated within the provisions of routine shelter and housing programs.

Furthermore, following Hugo, workers were suspicious of "free riders" and felt that there were many people who were trying to get assistance for problems that were not related to the disaster. One worker expressed: "I don't care what disaster you had, you're always going to have somebody that's going to try to get something for nothing . . . '' (Miller and Simile, 1992, p. 15). The church and the government relief work ceased when they felt they had dealt with all the storm damage. Miller and Simile noted that the recovery agencies and programs were not interested in dealing with the cause of poverty, only the immediate needs from the hurricane (pp. 5–19). Roy Popkin (pers. comm., 2002) stated that while many officials did not know the poor were there, when they were "discovered," there were efforts to help them. For example, FEMA hired a civil rights organization to work with the affected community (most of whom where descendants of freed slaves) due to the populations' general distrust of government workers and agencies (Rubin and Popkin, 1990).

Finally, Bolin (1993) found that in the 1987 Whittier-Narrows earthquake, which occurred on the first day of the month, many low SES victims were evicted for late payment of rent. Due to the timing of the disaster, the landlords were able to avoid the rent-control regulations, evict the tenants, raise the rent, and thereby contributed to the housing crisis for low-income renters. Bolton *et al.* (1993) discovered, in work on low-income Latinos in the Whittier-Narrows earthquake, that there was a shortage of low-income housing before the quake, and this issue became even worse afterwards. They also reported on the problematic situation, for low-income renters, of the earthquake occurring on the rent-due day. Some landlords, it was reported, lied to tenants about the buildings' conditions so they would leave. In one instance, a building evacuation notice had been removed and placed on an undamaged building for the same purpose (p. 245).

2.8. RECONSTRUCTION

Reconstruction is the final stage in the disaster cycle, and hypothetically may occur from one year after the disaster to many years later. This stage includes restoring community services, finding assistance, locating permanent housing, and resuming

a more normal life and routine. This final section examines the significance of socioeconomic factors during reconstruction. The literature shows that those with lower socioeconomic status may be more likely to have trouble during this time, particularly in the areas of housing and relocation.

As discussed in the recovery section, housing is a significant issue for poor disaster victims. The problem may continue throughout the reconstruction phase. In their study of flood disasters in the United States and United Kingdom, Enarson and Fordham (2001) found that structural factors increasing women's poverty and economic insecurity placed women at higher risk than men after the disasters, as poor women had a harder time withstanding material losses and rebuilding their homes. Comerio *et al.* (1994) reported that following the Loma Prieta earthquake, the low-income victims had a more difficult time with housing in the reconstruction period. Nearly three-quarters of the units destroyed in San Francisco were rental units. One year after the disaster, the single family homes were rebuilt, but of the multi-family units, 90% were still out of service. Four years later, 50% of the multi-family units remained unrepaired or unreplaced. The authors explained that the projects that were the most vulnerable and the slowest to recover were those that were occupied by very low-, low-, and moderate-income renters (p. 5). According to the report, the economics of private housing markets hindered the post-disaster reconstruction of low- and moderate-income rental units, as the tenants were low-income so the landlords could not raise rents for rebuilding costs, and they also could not afford earthquake insurance. In addition, replacement units for low- and moderate-income households were in short supply. Similarly, two years after Hurricane Andrew, thousands of poor families headed by minority women were still living in substandard temporary housing (Morrow and Enarson, 1996)

Greene (1992) reported that in the Loma Prieta reconstruction, existing social problems were exacerbated. Therefore, problems of homelessness and low-income housing shortages became magnified following the disaster. Earthquakes, disproportionately damage and destroy older, and thus more often, low-income, housing (Bolin and Stanford, 1990; Greene, 1992; Phillips, 1998). Residents of very low-income housing, such as single room occupancies (SRO's), do not easily qualify for assistance programs. FEMA states that its temporary housing assistance program is designed for those who had "stable housing" prior to the earthquake, and therefore SRO residents, who did not live continuously in their rooms, did not qualify (Greene, 1992, p. 14). The result, Greene concluded, was that the earthquake pushed some of these residents into the ranks of the permanently homeless. Wright (1988, 1989) referred to groups of people who live in doubled-up and tripled-up housing as the "marginally homeless." He also contended that a disaster is likely to displace large numbers of the mostly hidden and marginally homeless population.

Affordable housing appeared in numerous studies as a major long-term problem. After Hurricane Andrew, there was reluctance to rebuild low-income housing. As a result, more than two years after the event, 280 families still needed affordable housing assistance (Morrow, 1997). Examining the reconstruction after three

California earthquakes, Bolin and Stanford (1991) also discovered that low-income residents were faced with a housing crisis. As there was a shortage of low-income housing prior to the disaster, the problem of housing was exacerbated when the earthquakes damaged much of what was available for low-income residents. The authors argued that these housing processes in reconstruction were largely influenced by existing social dynamics. Bolin and Stanford posited that earthquakes, more than other disasters, affect low-income people negatively due to class-based differences in housing type, quality, and location. In Watsonville, FEMA provided mobile homes as temporary housing for low-income families. Because the mobile homes were better quality housing than what some of the families had pre-disaster, the recipients wanted the temporary homes to be a permanent solution. However, research has shown that the situation is different for different social classes. After the Grand Forks flood, some middle class victims were offended that FEMA believed that they wanted to stay permanently in the FEMA mobile homes. They were told they could be there for a year, but started receiving calls from FEMA just a month or two after they moved in, asking them when they were leaving (Fothergill, 2004).

Rubin and Popkin (1990) found that two years after Hurricane Hugo, the social class disparities that had existed prior to the disaster were as apparent in the communities as they had been before. However, on a more optimistic note, some communities used the disaster as an opportunity to improve living conditions. After Hurricane Andrew there was some indication that replaced or restored public housing units were better than the ones there before the storm, and new community projects were implemented to improve poor neighborhoods (Morrow, 1997). After the Loma Prieta earthquake, the city of Watsonville made a concerted effort to create affordable housing for farm workers and low-income families. They established a variety of redevelopment projects and adopted a housing ordinance requiring that 25% of housing built after the disaster be affordable. While not without problems, these efforts have helped create more affordable housing options for low-income residents (Charles Eadie, pers. comm., 2003).

3. Conclusions and Recommendations

The review shows that socioeconomic status is a significant predictor in the pre- and post-disaster stages, as well as for the physical and psychological impacts. The poor are more likely to perceive hazards as risky; less likely to prepare for hazards or buy insurance; less likely to respond to warnings; more likely to die, suffer injuries, and have proportionately higher material losses; have more psychological trauma; and face more obstacles during the phases of response, recovery, and reconstruction. These differences are significant, and they illustrate a systematic pattern of stratification within the United States.

Some findings may seem contradictory, such as the fact that most lower-income groups find disaster threats more serious and risky, possibly due to a lack of power

and control over many things in their lives, and yet low-income groups may be less likely to prepare for disasters and to evacuate. However, these findings also make sense in that many preparedness activities and the ability to evacuate require access to economic and social resources that the poor may not readily possess.

Clearly, disasters often reveal larger societal inequities. Researchers are now recognizing and documenting how disaster vulnerability is rooted in pre-existing patterns of community settlement and development (Morrow, 1999). Moreover, the literature shows us that the underlying issue is one embedded in our social structures, which dictate access to resources, power, and information. Given this knowledge, disasters may be viewed as opportunities to witness, understand, and thus remedy pre-existing social problems. Many disaster scholars have written on the possibility of social change as a result of disasters, while others note that the crisis heightens past problems and solidifies the community's inequities.

3.1. POLICY RECOMMENDATIONS

We believe it is important to take the findings on poverty and vulnerability in disasters, albeit incomplete, and make some concrete changes. First, we recommend more widespread inclusion of members of the lower and working classes in disaster professions and in the research community. Second, national agencies such as FEMA and the Red Cross and other groups that respond to disaster on a large scale need to continue to be educated on the diversity of various communities and plan accordingly. We also recommend that these national agencies develop independent study courses for local emergency managers, students, and other interested individuals. FEMA currently offers college courses on social vulnerability and other related topics, but these courses need to be expanded to a wider, non-classroom audience to better disseminate this vital information. The media also needs to coordinate with emergency managers, public officials, and disaster relief workers to better understand disaster events. This will likely lead to more accurate reporting and inclusion of all groups impacted, not just the affluent.

Further, housing is a significant issue in understanding the vulnerability of the poor in disasters, and thus represents an area that policy changes could significantly impact. Research has shown that older, low-cost housing that is brought up to safety standards often becomes unaffordable, thus creating a situation whereby low-income families cannot find housing that is both safe from natural disasters and affordable. We recommend that policies be initiated that deal with this issue. One idea is to create ordinances so that it is mandatory for landlords to make the improvements, or ensure that they do it voluntarily by offering subsidies or tax breaks substantial enough to make it worth the owners' while. In addition, cities must establish and enforce rent control policies. Another recommendation regarding housing concerns mobile home units. As the gap between the wealthy and the poor increases in the United States, and all indicators show that it will continue to widen in this century, there will be more low-income residents in

risky housing situations, particularly mobile homes. We propose, therefore, that this situation be remedied by enforcing and subsidizing programs to improve the strength of mobile homes in high winds. Moreover, we recommend requiring all mobile home park owners provide tornado shelters for their residents. Disasters are also an opportunity for communities to address the larger issue of a general lack of affordable housing. The town of Watsonville, California, is a good example of how a community can use the political momentum after a disaster to make change for low-income residents.

Finally, we recommend that public and private institutions make a commitment to improving the conditions of the most vulnerable to disasters. The aforementioned recommendations cannot take place without a significant commitment to external resources. Given political pressures from various interest groups, this challenge to protect the vulnerable with public funding is a difficult one. Yet the residents in URM buildings or mobile homes cannot afford to make their residences safer, so as a nation the United States must decide that it is important enough to allocate time, energy, and resources to such endeavors.

3.2. RESEARCH RECOMMENDATIONS

Another important goal of this analysis is to offer recommendations for the disaster research agenda. Our first suggestion is that research be developed in conjunction with practitioners working in communities. As a community invested in reducing the vulnerability of marginalized groups, researchers need to work with people in the field to find out what needs to be known. Also, researchers need to follow up with practitioners to see how research findings are, or are not, being implemented in the field. Second, we recommend that we begin to fill the holes that emerged with this research review. For example, we propose that researchers conduct in-depth, comparative studies regarding vulnerability issues in different regions in the United States, as well as from the impacts of different disasters. Another gap that is worthy of research attention is how forms of diversity – including age, gender, race and ethnicity, religion, and social class – affect vulnerability. Also, as is obvious from the literature review sections above, much research has been conducted on the immediate response and recovery phases of disasters. However, more research is warranted regarding how low-income communities perceive risk, prepare for disasters, and respond to warning communications. Thus, although it is widely recognized that the poor and other marginalized groups are typically more at risk to disasters than other citizens in the United States, there is still very little empirical research regarding risk perception, preparation, and response for low-income populations.

Fourth, we suggest research be pursued in the area of family violence. Sociological research on violence in families demonstrates that there is a connection between stressful situations, such as poverty, and family violence (Gelles and Cornell, 1985). More research is warranted regarding how a disaster event may

further exacerbate domestic violence situations. Fifth, we recommend that barriers to a timely and safe evacuation for marginalized groups be further explored. We also recommend that research be conducted on the impact of mitigation efforts on poverty and sustainable development. The research community has called for mitigation efforts for sustainable development (Mileti, 1999), yet there has been little empirical research that has examined the actual outcome of mitigation projects that have been implemented. Finally, we suggest that a similar review of the literature be completed on global poverty and the implications for disasters and other crisis events. While a global review was beyond the scope of this article, we believe it would be an important undertaking for future research.

The poor are living in crisis before a disaster strikes. Thus, when a disaster does occur, it must be recognized that those already living in poverty are impacted in different and significant ways as compared to other members of society. They have larger problems than just post-disaster recovery and reconstruction so that they can return to "life as normal." Thus, we conclude by emphasizing the need to pursue the aforementioned policy and research recommendations, in an effort to decrease the vulnerability of those living in poverty.

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