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Vulnerable Populations

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"Socioeconomic status is a significant predictor . . .for physical and psychological impacts of disasters. [Vulnerable populations] are. . . less likely to prepare for hazards. . . 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 phases of response, recovery, and reconstruction."[i]

Disaster-related loss prevention encompasses a wide range of activities that should be undertaken to increase the likelihood that homes, workplaces, and essential public buildings can survive a natural or human-induced catastrophe. Improving this capability must be a national priority, public health objective, economic imperative and humanitarian obligation. Nowhere is this more important than in addressing the needs and challenges of vulnerable populations—the poor, elderly, disabled, and others needing special assistance in high-risk areas.

SIGNIFICANT POPULATIONS AT RISK

Despite media images of lavish beachfront mansions, low-income residents account for a meaningful percentage of the population in many coastal communities and other areas that face significant natural hazards.

- People in lower income brackets often live in the most vulnerable housing and lack the resources to undertake recommended loss-reduction or evacuation measures.
  - Residents living in poverty accounted for more than 10 percent of coastal residents in the three states most severely affected by Hurricane Katrina, according to data on coastal and lakefront census tracts in Alabama, Louisiana and Mississippi.[ii]
  - In Texas, hard-hit by Hurricanes Gustav and Ike in 2008, coastal counties are notably poorer than the state as a whole.[iii]
  - In 2008, California wildfires destroyed a large number of expensive homes but also left hundreds of mobile home park residents instantly homeless.
  - Low-income residents of South Carolina were more likely to receive a slower post-disaster emergency response following Hurricane Hugo because many were living in homes and on roads unfamiliar to emergency workers.[iv]
- Senior citizens and the disabled also are at risk. For these populations, taking steps to reduce property losses is not only important for maintaining communities but also as a vital life safety concern.
  - In Florida, an estimated 16.8 percent of the population is age 65 or older, compared to 12.4 percent for the nation as a whole.
    - Senior citizens living on fixed incomes may lack the disposable income necessary to upgrade their homes to withstand hurricane winds.
    - They also may have physical conditions that prevent them from performing lower cost, but more labor intensive, loss prevention measures. Further, these conditions also may complicate the evacuation process.
    - People with disabilities may be unable to undertake self-protective actions before, during or after disasters. According to a 2006 Census Bureau report commissioned by the National Institute on Aging, almost 20 percent of the U.S. population age 65 and older report some level of disability.[v]

HOUSING PROBLEMS

Low income individuals and families often live in lower cost homes that are less able to withstand disasters.

- Older homes, which can be more affordable, may not be subject to the most advanced building codes; deferred maintenance also may increase their vulnerability over time.
- Much of the damage resulting from the Northridge earthquake that struck Southern California in 1994 involved low and moderate income rental housing units that were older and thus more vulnerable to seismic and fire damage.[vi]

Mobile homes, also most often occupied by lower income residents, are the most dangerous places in a wildfire or windstorm.

- Studies have indicated 45 percent of all fatalities during tornadoes occur in mobile homes, compared to 26 percent in traditional site-built houses. [vii]
- Mobile homes also performed poorly during recent California wildfires;[viii] the state is now considering regulations to require residences in mobile home parks to be built with the same non-combustible materials as permanent houses.

Low income residents who live in rental units are dependent on landlords or public housing agencies for structural loss prevention measures.

- Many landlords focus only on short-term financial imperatives and may be reluctant to take actions necessary for long-term property protection, leaving their residents both uninformed and vulnerable. Public housing authorities may not have funding to retrofit properties.
- Following Hurricane Ike, the Houston Chronicle reported that nearly 150 apartment complexes, home to more than 93,000 renters in the city's blighted neighborhoods, were severely damaged.[ix]

LIFE SAFETY ISSUES

Vulnerable populations also are more difficult to evacuate before or after a disaster, raising significant life safety concerns.

- A study published by the Harvard School of Public Health[x] found:
  - African-Americans (73 percent) and Latino-Americans (71 percent) are more likely than Caucasians (59 percent) to say that they would leave in the event of a government-ordered evacuation;
  - In addition, they also are more likely to have problems doing so:
    - 7 percent of the African-Americans and 10 percent of the Latino-Americans indicated that they would need help, compared to 3 percent of Caucasians.
  - Of those surveyed, 36 percent of those 65 and older, and 29 percent of all low-income residents, said they would not evacuate if ordered to do so.
    - One day after Hurricane Ike struck Texas, 1,500 firefighters spent hours going door-to-door in Galveston, rescuing more than 2,000 residents from their swamped homes after they decided not to follow evacuation orders.[xi]

Most community evacuation plans assume that residents have access to private automobiles, but in reality this often is not the case for low income residents, particularly in urban areas.

- Even before Hurricane Katrina, New Orleans officials recognized that some 300,000 residents would not be able to evacuate without government-provided transportation.[xii]
- According to a post-Katrina survey by the Fritz Institute, about 26 percent of those who did not evacuate before Hurricane Katrina had to wait at least one week for outside assistance;
  - Of those, 43 percent were people with disabilities, 33 percent were African-Americans, and 33 percent had household incomes of less than $35,000.[xiii]

Additionally, minorities and low-income residents who are unable to evacuate without help may be less prepared to stay in their homes in the aftermath of a major disaster.

- Approximately one-third of such participants in the Harvard study indicated they are not prepared for a major hurricane;
- More than one in 10 (African-Americans (18 percent), Latino-Americans (11 percent), low-income residents (14 percent) do not have more than a three-day supply of food on hand, compared to Caucasians (6 percent) and those earning more than $25,000 annually (8 percent).[xiv]
- Residents surveyed, who live in households in which someone has a chronic illness or disability that would require them to get help in order to evacuate, are less likely to have a three-week supply of their prescription drugs (39 percent compared to 30 percent of others) and have a first aid kit (30 percent compared to 20 percent).

CHALLENGES

Despite the compelling need for life safety and property protection, the most vulnerable populations may not be in a position to undertake loss prevention and preparedness measures without special assistance.

- Obvious challenges include the lack of disposable income.
- Low-income residents, whose homes have been in their families for generations, may not carry property insurance and because they do not carry a mortgage are not required to do so by a lien holder. Further, low income residents may not be able to afford flood insurance, even though they know of its availability and benefits.[xv]
  - Income level is particularly important when it comes to taking steps to minimize earthquake losses which can be among the most costly, such as purchasing insurance, strengthening the home and purchasing fire extinguishers.[xvi]
- These challenges are particularly evident when involving women in lower socio-economic brackets.
  - Lower-income women told researchers they heard the storm warnings prior to Hurricane Andrew, but were unable to take action because they did not have enough money for supplies or transportation.[xvii]
  - A study of the Red River Valley Flood discovered that homeless, unemployed, and low-income women were less able than more affluent women to evacuate to alternative shelters.[xviii]
- Low-income property owners are more likely to take a "do-it-yourself" approach to home maintenance or rely on neighborhood handymen to keep costs down. These local contractors may be unlicensed, undertake work without obtaining building permits, and unaware of building code requirements or loss prevention measures.
- Enforcement of building code requirements could be viewed by low income property owners as costly and intrusive steps that force them to use unfamiliar, more expensive contractors from outside the neighborhood.
- Tenants in sub-standard housing may be unable under the terms of their leases to undertake actions directed at property protection and may lack a sense of personal control over the outcome of such activities.[xix]
  - In the 1987 Whittier-Narrows earthquake, which occurred on the first day of the month, many lower-income tenants 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.
  - Low-income Latinos were most affected by the lack of affordable housing after the Whittier-Narrows earthquake.[xx]
- Communications problems also may hamper effective mitigation strategies.
  - The Weather Channel, Internet, and other technologies that make disaster awareness information instantly available for many Americans may be less accessible for vulnerable populations.[xxi]
  - Language barriers also pose a problem in some areas:
    - Approximately 18 percent of the U.S. population lives in households where a language other than English is spoken in the home;

- This figure is significantly higher in Florida (23.1 percent), Texas (31.2 percent), and California (39.5 Percent).[xxi]
- Many people killed when a tornado hit Saragosa, Texas, were low-income residents who most likely did not receive the warnings because of language and cultural barriers.[xxiii]

- The Panel on the Public Policy Implications of Earthquake Prediction concluded that groups of people with lower socio-economic status were especially likely not to receive, understand, or believe earthquake warnings.[xxiv]

SOLUTIONS

Fortunately, many mitigation approaches that are proven to work in a broader context also have special applicability to vulnerable populations:

- **BUILDING CODES**, enacted by states or local governments, establish the minimum acceptable construction standards necessary for protecting people and property. They are particularly important for low-income residents and tenants, who may lack the clout to require a builder or landlord to take loss prevention into account. Building codes also provide consistency in building standards and trigger processes, such as public inspections, that help ensure that the structural elements of a building are up to the modern standards. That said, it is critical to make sure that strong building codes not only are enacted but also enforced.
- **RETROFITTING** older buildings can help to make them more disaster resistant. Building codes generally apply only to new construction, or to extensive remodeling when a building permit is required. Many existing homes can be hardened against wildfire, hurricane, high-wind/tornado and other perils using recognized best practices for making improvements to strengthen structural elements such as roofs, soffits, gable ends, load paths, and windows/doors.
  - IBHS is developing a retrofit program for existing homes based on its ***Fortified...for safer living®*** program for new construction. The program will share core elements of the Florida programs outlined below and South Carolina's SC Safe Home, to give consumers specific ways to significantly enhance the resilience and value of their existing homes.
  - Florida is a state with two separate but effective programs aimed at helping low- and moderate-income homeowners to retrofit their homes against hurricane damage.
    - The My Safe Florida Home Program, which is state funded, offers a free home inspection to owners of single-family homes that meet income and other eligibility requirements. The inspections identify structural weaknesses and recommend appropriate mitigation techniques. The program provides matching grants of up to $5,000 to make the recommended improvements.[xxv]
    - REBUILD Northwest Florida is another proven success. Since its inception in 2004, the program has completed house-hardening on almost 2,500 homes and currently is completing loss prevention work to strengthen 40 to 50 homes a week. Federal matching funds cover 75 percent of costs; some additional needs-based funding has been made available through the state.
- **"CODE-PLUS" CONSTRUCTION** exceeds building codes to offer homeowners more protection from natural hazards common in the area where a house is being built, such as through the ***Fortified...for safer living®*** program developed by the Institute for Business & Home Safety (IBHS).
  - Code-plus construction need not be more expensive and can be targeted at low income housing.
    - For example, 15 Habitat for Humanity houses have been built to the ***Fortified*** standard though IBHS partnerships with its member insurance companies. Another affordable home was built to the ***Fortified*** standard through a public-private partnership in Liberty City, Florida.

WHAT MORE CAN BE DONE

Clearly, there must be more focus on the needs of vulnerable populations with respect to loss prevention, disaster preparedness, evacuation, and recovery. Indeed, from both equity and cost-benefit perspectives, this is the best possible investment of public funds.[xxvi]

- All of the proven mitigation approaches for new construction and retrofitting should be expanded with a low-income focus.
  - Federal and state grant programs should recognize the immense needs and the limited resources that vulnerable populations -- many of whom may live in housing that is owned, managed and maintained by government entities -- have in preparing for and responding to disaster.
  - Grant programs, tax credits, and voucher arrangements are some of the ways in which public/private partnerships can help residents to harden their homes.
  - Federal investments in hazard mitigation programs will:
    - create economic activity at the local level in the construction industry while saving lives;
    - minimize property damage;
    - reduce the cost of response and recovery programs.
- Loss prevention education efforts should rely on neighborhood organizations, housing groups, churches and government agencies rather than traditional media outlets as the focus for communications outreach.
- Communications also need to be targeted to vulnerable populations, especially those constrained with respect to access to high-technology media, English language proficiency, and literacy.
  - According to the Harvard study:
    - A higher proportion of African-Americans than non-Hispanic whites said they were very or somewhat interested in learning more about what supplies to have on to be prepared for a major hurricane and how to evacuate if necessary.[xxvii]
    - This information must be made available in a manner that is easy to access and understand.

Finally, while a major focus of any loss prevention campaign should be on avoidance and reduction, there needs to be a recognition that disaster will strike, and that the greatest immediate

need when that occurs will be to get vulnerable populations out of harm's way quickly and effectively. More needs to be done to address the problems that prevent vulnerable populations from evacuating.

- For example, evacuation plans must include effective means of moving and sheltering people without cars, those with physical limitations or medical needs, large families, and pets.
- Standard emergency management practice calls upon localities to take responsibility, at least initially, to evacuate residents. Nonetheless, the complete breakdown in New Orleans' evacuation procedures following Hurricane Katrina[xxviii] underscores the need for planners in all levels of government and non-governmental organizations to develop deliberative evacuation plans that will respond to the real-world needs of vulnerable populations.
- Community-based human service and faith-based organizations (CBOs) also may become a lifeline of survival following a disaster; however, these CBOs must be prepared to be called upon when disaster strikes. In this regard, the BayPrep program developed by the Fritz Institute[xxix] is seeking to assess and establish baselines of preparedness for CBOs and to assure that vulnerable communities are taken into account in disaster planning. While focusing on the San Francisco Bay Area, it is hoped that BayPrep will serve as a national model.

Throughout the United States, there are local strategies at work to try to deal with what clearly is a larger, national problem. Steps should be taken to harness the energies of the grassroots efforts outlined here, as well as countless others underway around the country. This will open the door to establishing a broader partnership to create stronger, safer and more resilient communities.

END NOTES

[i] Fothergill, Alice and Peek, Lori, "Poverty and Disasters in the United States: A Review of Recent Sociological Findings," (2004).

[ii] Sutter, Daniel, "Ensuring Disaster: State Insurance Regulation, Coastal Development, and Hurricanes," Mercatus Policy Series Policy Comment No. 14 (2007), 12. The data collected is from the 2000 census and may underestimate poverty rates in light of Hurricane Katrina and the current recession.

[iii] Ibid, 11.

[iv] Miller, K. S. and Simile, C.: 1992, "They Could See Stars From Their Beds': The Plight of the Rural Poor in the Aftermath of Hurricane Hugo," Westview Press, Boulder, CO.

[v] See www.nia.nih.gov.

[vi] Comerio, M. C., Landis, J. D., and Rofe, Y., Post-Disaster Residential Rebuilding. Working Paper 608,Institute of Urban and Regional Development, University of California, Berkeley, CA (1994).

[vii] Northern Illinois University, "NIU Researchers Say Nightime Tornadoes are Worst Nightmare," Press Release, November 5, 2008, available at www.niu.edu/news.

[viii] The most extensive losses caused by Southern California wildfires in November 2008 occurred in the Oakridge Mobile Home Park in the Sylmar district of Los Angeles, where nearly 500 of 608 mobile homes were destroyed by a wall of flames.

[ix] Houston Chronicle, "Ike damaged more than half of Houston's apartments." Published Oct. 21, 2008. Available at www.chron.com/disp/story.mpl/metropolitan/6069431.html.

[x] Harvard School of Public Health, "Project on the Public and Biological Security, High-risk Area Hurricane Survey," Conducted July 5-11, 2006 of 2,029 adults in high hurricane risk counties of Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas. Blendon, Robert; Benson, John; Buhr, Tami; Weldon, Kathleen J.: Hermann, Melissa J. Complete topline results available at www.hsph.harvard.edu/hurricane/topline.doc.

[xi] Associated Press, "U.S. death toll from Hurricane Ike rises to 33." Published Sept. 15, 2008.

[xii] Tierney, Kathleen, "Social Inequity, Hazards, and Disasters," in Daniels, Kettl, and Kunreuther (ed.) On Risk and Disaster, Lessons from Hurricane Katrina, (2006), 114.

[xiii] Fritz Institute, "Hurricane Katrina: Perceptions of the Affected" (2006), 5, available at http://www.fritzinstitute.org/PDFs/findings/HurricaneKatrina_Perceptions.pdf.

[xiv] See Harvard School of Public Health, "Project on the Public and Biological Security, High-risk Area Hurricane Survey."

[xv] See Fothergill, Alice and Peek, Lori, "Poverty and Disasters in the United States: A Review of Recent Sociological Findings,"

[xvi] Palm, R. and Carroll, J.: 1998, *Illusions of Safety: Culture and Earthquake Hazard Response in California and Japan*, Westview Press, Boulder, CO.

[xvii] Morrow, B. H. and Enarson, E.: 1996, "Hurricane Andrew through women's eyes: Issues and recommendations," *International Journal of Mass Emergencies and Disasters* 14(1), 5-22.

[xviii] Enarson, E.: 1999a, "Women and housing issues in two U.S. disasters: Hurricane Andrew and the Red River Valley Flood," *International Journal of Mass Emergencies and Disasters* 17(1)39-64.

[xix] See Tierney, "Social Inequity, Hazards, and Disasters"; Fothergill and Peek, "Poverty and Disasters in the United States: A Review of Recent Sociological Findings."

[xx] Bolin, R.: 1993, "Household and Community Recovery After Earthquakes," Program on Environment and Behavior Monograph No. 56. University of Colorado, Institute of Behavioral Science, Natural Hazards Research and Applications Information Center, Boulder.

[xxi] According to the Pew Internet and American Life Project, about 57 percent of households earning less than $30,000 have Internet access, compared to 90 percent of households earning $50,000 or more. Internet access also is lower among the population aged 65 and older, and among Hispanics. See www.pewinternet.org.

[xxii] U.S. Census Bureau QuickFacts (2006 population estimates).

[xxiii] Aguirre, B. E.: 1988, "The lack of warnings before the Saragosa Tornado," International Journal of Mass Emergencies and Disasters 6(1), 65-74.

[xxiv] National Research Council, Panel (U.S.) on the Public Policy Implications of Earthquake Prediction, National Academy of Sciences, 1975.

[xxv] Additionally, low-income homeowners can apply for My Safe Florida's direct-pay option, which does not require an advance deposit and allows the state rather than the homeowner to pay the contractor.

[xxvi] See Adler, "Equity Analysis in Natural Hazards Policy," in Daniels, Kettl, and Kunreuther (ed.) On Risk and Disaster, Lessons from Hurricane Katrina, (2006), 129.

[xxvii] Blendon et al, 174.

[xxviii] The Katrina breakdown was entirely anticipated. In 2004, FEMA and Louisiana's Office of Homeland Security and Emergency Preparedness conducted a tabletop exercise that simulated a Category 3 hurricane hitting and flooding New Orleans. The study revealed that an estimated 100,000 people would not be able to get out of the city without assistance; however, the city failed to follow-up aggressively on the finding prior to Hurricane Katrina. Walters, Jonathan and Kettl, Donald F, "The Katrina Breakdown," in Daniels, Kettl, and Kunreuther (ed.) On Risk and Disaster, Lessons from Hurricane Katrina, (2006), 258.

[xxix] www.fritzinstitute.org

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