

Social Science Research

A.1 General

NEHRP agencies have made significant achievements in the area of social science research but the level of achievement is unevenly distributed over these agencies; more coordination among them is desirable and feasible. Specifically, NEHRP should develop improved mechanisms for collaboration between NSF and the mission agencies (FEMA, NIST and USGS) to link the mission agencies' social science research needs (especially program evaluations) with the social science research capabilities available through NSF. With respect to specific areas of research, social scientists are increasingly shifting their research efforts from emergency response to hazard vulnerability, disaster recovery, and hazard mitigation but still greater attention is needed in these areas. Five specific issues and challenges are a) hazard/vulnerability analysis, b) preimpact actions (hazard mitigation and emergency preparedness), c) post-impact actions (disaster response and recovery), d) hazard awareness and public outreach, and e) inducements for household and business adoption of hazard risk reduction measures.

A.2 NEHRP achievements

Social science research has been conducted primarily with NSF funding, although USGS has supported some applied social science research in connection with seismic hazards at Parkfield and the San Francisco Bay area. NSF has supported an increased level of interdisciplinary research, which has been enhanced by recent increases in the involvement of the Social, Behavioral, and Economic Sciences Directorate. FEMA has instituted the *Quakesmart* program, which is similar to *Project Impact* but is more narrowly focused on businesses and has a significantly lower funding level. This project appears to be quite promising in terms of its effects on hazard mitigation but its outcomes have not been systematically evaluated. This project is extremely relevant to social science research; FEMA program managers and social scientists would both benefit from collaboration on a systematic program evaluation.

A.3 NEHRP issues and challenges

Hazard/vulnerability analysis

The major focus of risk assessment research in the social sciences is on social impacts of disasters. The major categories of social impacts are psychosocial, demographic, economic, and political effects. A major deficiency in much of the previous research on social impacts has been what might be labeled the *implicit proportionate effects assumption* that ignored the differential distribution of disaster impacts over population segments and economic sectors. In fact, more recent research has shown that some population segments (low education/income, ethnic minorities, female-headed households) and economic sectors (small businesses and those that are reliant on just-in-time processes) are affected more severely than others. Research is needed to develop compensatory programs designed to reduce the impact of disasters on these segments/sectors, to accelerate their recovery from disasters, and reduce their long-term vulnerability.

Pre-impact actions: Hazard mitigation and emergency preparedness

Social science research has found increasing evidence that household adoption of risk reduction

measures is influenced by perceived effectiveness in protecting persons and property, utility for other purposes, and required time/effort, knowledge/skill, tools/equipment, and social cooperation. To date, there has been no evaluation of household emergency preparedness and hazard mitigation actions to assess their *actual* performance with respect to these criteria. Such an assessment would allow emergency managers to promote the risk reduction measures that are most effective and also most likely to be adopted by households and businesses.

Post-impact actions: Disaster response and recovery

Further research is needed to assess what people can do, or can be trained to do, within the immediate emergency response period (e.g., the first 72 hours). One specific need is for self-assessment (or perhaps Community Emergency Response Team assessment) of home safety to determine if continued occupancy is safe. In addition, there is a critical need for an assessment of temporary housing needs after major earthquakes in major urban areas. There have been only modest housing problems after disasters in which there were high vacancy levels, but problems were significant for vulnerable populations after the Loma Prieta earthquake and were quite severe for the entire population after Hurricane Katrina. More needs to be known about the voluntary or forced mobility of different population segments after disaster and the actions that are needed at the local, state, and federal levels to prepare for post-disaster temporary housing .

Hazard awareness/public outreach

In past decades, federal, state, and local agencies have conducted a number of hazard awareness and public outreach programs, but few of these programs have been subjected to systematic evaluation. *Project Impact* was canceled on the grounds that its effectiveness had not been demonstrated. This was literally true because no comprehensive program assessment had been attempted even though there was substantial anecdotal—and preliminary scientific—evidence of its effectiveness. Scientific evidence of its success might have thwarted efforts to cancel the program. FEMA has recently initiated the *Quakesmart* program but does not seem to have planned an evaluation component. A systematic formative and summative evaluation of this and other hazard awareness/ public outreach programs could provide valuable information about whether they need to be revised and, if so, what components need to be modified.

Inducements for household and business adoption of hazard risk reduction measures

Hazard risk reduction measures generally require households and businesses to make an immediate payment in return for an uncertain return. For example, the payoff for hazard insurance premiums is uncertain with respect to both time (When will an earthquake occur?) and amount (How much damage will it cause?). As a result, people are often unwilling to make the appropriate levels of investment in these measures. This problem of underinvestment in risk reduction raises the question of what inducements governments at various levels could offer to generate appropriate levels of investment. Specifically, how can local governments more effectively influence households and businesses, how can state governments more effectively influence local governments, and how can the federal government more effectively influence state governments? Research is needed to assess the effectiveness of regulations (building codes and land use plans) and incentive programs (federal disaster reimbursement policies, such as increases in the federal share of disaster response and recovery expenditures) at the point of

actual *implementation*, not just jurisdictional *adoption*.