

Chapter 7

STUDY RESEARCH FINDINGS

A summary of key findings from the benefit-cost analysis of FEMA mitigation grants and community studies is presented below.

1. The net benefits of FEMA’s hazard mitigation program to society as whole are positive.

This study estimated that total benefits to the nation of FEMA mitigation grants between mid-1993 and mid-2003 yielded a present discounted value of \$14 billion. Compared to a cost of \$3.5 billion, the overall benefit-cost ratio is 4.0. These results indicate that, on average, FEMA-funded project and process mitigation activities have benefit-cost ratios greater than 1.0 for all hazard types. In fact, for wind and flood projects, the benefit-cost ratios are 4.7 and 4.1, respectively. Earthquake process grants have a high benefit-cost ratio of about 4.0 as well. Moreover, the sensitivity analyses performed indicate that these results are robust, even to extreme variations in key parameters.

2. A federal dollar spent on hazard mitigation potentially saves the federal treasury about \$3.65.

The present value of annual savings to the federal treasury emanating from the FEMA mitigation grants studied is \$968.5 million. When juxtaposed against the federal share of grant costs, a dollar spent on mitigation grants potentially will lead to an average savings of \$3.65 in avoided post-disaster relief and increased federal tax revenues. This potential benefit to the treasury is in addition to the societal savings considered in the benefit-cost analysis. These results are robust as well.

3. Synergistic activities occur in communities that have institutionalized their hazard mitigation programs.

In each of the eight communities studied, federal hazard mitigation grants were a significant part of the community’s mitigation history. As shown in the activity chronologies developed for each community (Figures 5-1 through 5-8), the federal hazard mitigation grants often led to additional or synergistic activities. Interviewees in all communities thought the FEMA grants were important in reducing community risk, preventing future damage, and increasing a community’s capability to mitigate natural hazards. Most interviewees believed the grants permitted their communities to attain mitigation goals that might not otherwise have been reached. Interviewees also believed that the benefits of the mitigation projects went beyond what could actually be quantitatively measured. These included increased community awareness, esprit de’ corps, and peace of mind. Virtually every interviewee believed that their community was better off as a result of FEMA mitigation project and process grants being completed.

4. The findings above are judged to be robust, given an analysis of uncertainties and assumptions.

The impact of uncertainties was analyzed through formal sensitivity studies and informal evaluations of methodological limitations and assumptions for the benefit-cost analysis of individual FEMA mitigation grants and grants within the context of communities. In the case of the benefit-cost analysis of FEMA mitigation grants, benefit-cost ratios remained above one in all sensitivity analyses (13 total cases), with one exception where the ratio was slightly less than one. In the community studies, an analysis of extreme lower-bound values resulted in about half of the cases remaining above one. The Validation and Quality Control Plan described in Appendix S was implemented as part of this study.