Proposal: Develop research-proven strategies for preparing communities to respond effectively to natural disasters and terrorist attacks

In the wake of the 9/11 terrorist attacks and Hurricane Katrina, many promising ideas have been developed on how to better prepare local communities for such events – ideas such as providing local governments with diagnostic tools to help them identify and correct flaws in their emergency response system; conducting media campaigns to educate citizens on how to prepare for a terrorist attack or natural disaster; and developing well-defined command and control plans for emergency response, including community evacuation. However, none of these ideas have ever been rigorously evaluated, making it impossible to determine which are truly effective in preparing communities to respond to large-scale emergencies in a way that minimizes loss of life and property, economic dislocation, and disruption of community life.

This paper outlines how one might conduct a randomized controlled trial—the gold standard study design for evaluating an intervention's effectiveness—to rigorously evaluate various strategies for enhancing community preparedness.

For reasons discussed in more depth below, such an evaluation would require a large sample of communities, and likely need to be conducted on a national or large, regional scale. Thus, it may make sense to incorporate this type of evaluation into the scale-up of a well-defined preparedness strategy that the federal government wishes to rigorously evaluate before disseminating nationally. The study's purpose would be to determine, in a scientifically valid way, whether the strategy is indeed effective above and beyond what communities are already doing.

The study itself would not be particularly expensive if conducted as described below – perhaps $1 million or less (this is just the cost of the evaluation and does not include the cost of implementing the preparedness strategy).

The following is a concrete, step-by-step illustration of how such a study might be conducted:

1) **Identify one or more well-defined, promising strategies for enhancing community preparedness, to rigorously evaluate in this study.**

2) **Identify a large number of communities (e.g. cities or counties) that are susceptible to natural disasters.**

   Rigorously evaluating community preparedness strategies would necessitate measuring how well they limit the impact of *actual disasters*. Such a real-world evaluation would require a relatively large sample of communities (e.g. a large regional or national sample) to insure that a sufficient number of them experience a disaster during the study period (e.g., 2-3 years). To insure this is the case, we would suggest the sample be comprised of communities known to be vulnerable to natural disasters (rather than terrorist attacks, which are much more infrequent and unpredictable). One possibility would be to use, as the study sample, the counties that have been declared federal disaster areas in recent years (in 2005 alone, nearly 700 counties were declared federal disaster areas). These would primarily include counties on the Atlantic and Gulf Coasts historically hit by hurricanes, those in the Midwest and South particularly prone to tornadoes, and those near waterways that frequently flood.

3) Randomly assign these communities to an "intervention group" that would implement the strategy as an enhancement to what they are already doing, or a "control group" that would continue implementing their existing preparedness strategies.

Since communities vary widely in size, population, location, geography, vulnerability to disaster, and other factors, the study might sort the sample into groups of equivalent communities prior to randomization, and then conduct the random assignment within each group. To help gain community acceptance of the random assignment process, the study could be designed so that those assigned to the control group would be eligible to implement the strategy after the study period (e.g. two years later), if the strategy is proven effective. Random assignment of communities is feasible and has been successfully executed in large-scale randomized controlled trials of the PROGRESA anti-poverty program in Mexico, as well as community policing strategies in this country.

4) Collect data to measure the impact of natural disasters that occur in intervention and control communities during the study.

Whenever possible, one should do so using data that 1) are likely to be consistently and accurately collected during, and in the aftermath of, a disaster; and 2) are valid measures of the key outcomes the intervention seeks to affect, such as loss of life, economic dislocation, and disruption of community life. The study could be conducted at a very reasonable cost (e.g., $1 million or less) if it measured these outcomes using administrative data already collected for other purposes -- rather than by administering surveys or collecting other original data. Such administrative data might include, for example:

- Official death certificates and coroner's reports to measure the total number of fatalities caused by the disaster;

- Hospital records to measure how many people suffered serious injuries from the disaster, as well as how many people the health care system was able to treat and release**;**

- Utility company records to measure how quickly power and water services were restored; and/or

- The change in local unemployment rates after the disaster, and duration of any increase in unemployment.

The random assignment of a sufficiently large sample of communities will ensure that any observed difference between the intervention and control communities in these measures (e.g. fewer fatalities in intervention communities) can confidently be attributed to the intervention and not to other factors. The study would therefore generate scientifically-valid evidence on the effectiveness of the intervention under real-world conditions – evidence that policymakers can then apply more widely to effectively prepare American communities for disaster or attack.