

**Research and Training Center  
on Independent Living at the University of Kansas**  
Progress Report #1: Methodology  
January 17, 2005

## **Background**

“Another theme arising from 9/11 was the lack of empirical data on the safe and efficient evacuation of persons with disabilities in disaster planning. This deficit in the literature reflects a deeper chasm of emergency services departments that are unprepared to assist people with physical disabilities during the potentially devastating natural and technological disasters that regularly occur in this nation. The scope of the problem and the potential impact on the welfare of people with physical disabilities is significant.” (White et al., 2002, pg. 24)

Investigators at the Research and Training Center on Independent Living (RTC/IL) at the University of Kansas, under the direction of Glen W. White, PhD, Principal Investigator and Michael H. Fox, ScD, Co-Investigator, were awarded a three year research grant funded by the Centers for Disease Control and Prevention through the Association of Teachers of Preventive Medicine (TS#-0840).

## **Research Mission**

The mission of this research is to investigate a sample of 30 sites in the United States where a federal disaster declaration was issued for natural or man-made disasters in order to: (1) Determine if disaster plans and emergency response systems include the needs of persons with mobility impairments; (2) Evaluate surveillance systems that can identify the morbidity and mortality frequency and prevalence of persons with mobility impairments in these disasters; and (3) Identify Best Practices that meet the needs of persons with mobility impairments in hopes of preventing injuries and saving lives.

## **Methodology**

A federal disaster declaration designation from FEMA is granted after a made-man or natural disaster reaches a specific magnitude of destruction. Most of the declarations are granted at the county level. Eight criteria were used as the sample selection scheme. The first and second criterion required identifying and selecting the FEMA declared federal disaster declarations from 1999 through 2002 for each of the 10 FEMA regions. From this listing, researchers randomly selected one state level disaster from each region. This process was repeated for each of the years. This resulted in the selection of 40 state disasters, which represented the third criterion.

The next step was to select a pool of sites from which the final sample would be derived. To do this, the fourth criterion required each of the state level disasters to include one or more sites in the sample. This involved randomly selecting between 1-10 sites, depending

on the number of sites affected by the disaster. The number of sites selected were as follows: For state disaster occurrences in which  $\leq 5$  sites were affected one site was selected; for state disaster occurrences in which  $>5$  and  $\leq 10$  sites were affected two sites were selected; for state disaster occurrences in which  $>10$  and  $\leq 15$  sites were affected three sites were selected; for 16-20, four sites were selected; for 21-25 five sites were selected; and so on. Two samples were identified in this manner, one with 140 and the other with 133 site disaster occurrences. These represented a pool of potential sites for our final sample that were randomly representative of all regions within the United States.

The fifth criterion required that sites be randomly selected into sets of 30 and this process was repeated multiple times. This was done to assure that replacement sites could be taken from randomly selected sets of 30 to construct a final sample still representative of states within the regions. The sixth criterion allowed for other factors representing the selection criteria to be accounted for in deciding upon the final sample. To do this, the following information was merged for each of the 30 sites: disaster type, site median income, population density as a proxy for urban/rural, access to independent living services through a Center for Independent Living (CIL), and ethnic/racial breakout.

The seventh criterion called for site replacements to be made so that stratification occurred with respect to anticipations in factors regarding regions, disaster types, site median income, population density, access to CILs, and racial/ethnic diversity. It was anticipated that at least: (1) One federal disaster declaration occurrence is within each of the regions; (2) 10% of the sites are man-made disasters; (3) 50% of the sites represented areas above the national median income; (4) 15% of the sites are in areas with a population density that is lower than 20 persons per square mile; (5) 50% of the sites have access to a CILs, and (6) 50% of the sample had non-white populations above the national average.

The sample met the factors for regions, man-made disasters, and access to CILs. However, only 20% of the sites were above the national median income, and more sites than anticipated were rural. In addition, only 20% of the sample had non-white populations above the medium income. Since the original sample did not meet the objectives for diversity and urban/rural, additional sampling was performed. Our final percentages did increase for some of the criteria, but were still somewhat below anticipated figures for median income, population density, and racial/ethnic diversity.

To satisfy the eighth criterion, multiple sites within each region that maintain approximately the same strata were compiled to be used as replacements. Replacements for eight out of the original sample of 30 were required during the course of the research study. In order to get the eight replacements, over 20 additional sites had to be selected and contacted. Once the interviews began a few emergency managers wanted to redirect us to discuss a more recent declared disaster or a similar disaster type that happened at a different date. This resulted in four disasters being studied from 2003, which is beyond the original date ranges of 1998 to 2002 of the sampling formula.

The final sample of 30 sites met the same factors, as did the previous sample, in the areas of regions, disaster types, and access to CILs. The rural/urban distinctions improved slightly but were still above the 15% benchmark. The percentage for site median income and racial/ethnic diversity again rose slightly, but were still considerably below anticipated percentages.

The chart below depicts the site locations of the final sample by region and disaster.

Site Location	Region	Disaster Type(s)
AK, Borough Matanuska-Susitna	10	Severe Winter Storm, High Winds, Freezing Temperatures
AL, Baldwin County	4	Tropical Storm Isidore
AZ, Maricopa County	9	Severe Storms, High Winds, Flooding
CA, Fresno County	9	Severe Freeze
CO, Garfield County	8	Wildfires
FL, Bay County	4	Hurricane Earl
GA, Clarke County	4	Winter Storm
HI, Hawaii County	9	Flooding
IA, Dubuque County	7	Severe Storms, Flooding
ID, Bingham County	10	Wildfires
KS, Coffey County	7	Severe Winter Ice Storm
LA, St. James Parish	6	Hurricane Lili
LA, Terrebonne Parish	6	Hurricane Lili
MA, City of Worcester	1	Severe Storms, Flooding
MD, Charles County	3	Tornado
MO, Lawrence County	7	Severe Storms, Tornadoes, Flooding
MN, Mille Lacs County	5	Flooding
MT, Rosebud County	8	Wildfires
NE, Lincoln County	7	Severe Storms
NJ, Sussex County	2	Snow Storm
NY, Borough of Brooklyn	2	Terrorist Attack
NY, Tompkins County	2	Terrorist Attack
OR, Curry County	5	Severe Winter Storm, High Winds
TX, Jefferson County	6	Tropical Storm Allison
VA, City of Norton	3	Severe Storms, Flooding
VA, City of Hampton	3	Tropical Storm Dennis, Tornadoes
VA, Tazewell County	3	Severe Storms, Flooding
VT, Bennington County	1	Severe Winter Storm
WA, Lewis County	10	Earthquake

All ten FEMA regions were represented with two or more disaster sites. This sample has a cross section of disaster types represented. Twenty of the sites were granted

declarations to cover a single disaster, while ten of the sites were granted declarations to cover multiple disaster types occurring for the same time period.

In the study, there were 12 storms labeled as “severe,” eight as flooding, five as a winter storm or snow storm, three as a hurricane, three as a tropical storm, three as wildfires, three as high winds or winds, two as resulting from a terrorist attack related to 9/11, two as a freeze or freezing temperatures, and two as a tornado, and one as an earthquake. Four sites reported that the incident itself had little impact on them while two sites stated that it was the worst disaster to have occurred in their memory.

Next steps in the research were to develop a survey questionnaire, consent form, and obtain Institutional Review Board (IRB) approval. The IRB approval allowed for oral consent from the managers to be obtained. This also assured approval of the survey language, and survey and consent procedures as appropriate human subjects’ research tools.

A pilot study on six sites selected from the original sample pool was conducted to test the survey questions and the interview procedures. Minor revisions resulted.

The survey questions sought to get information regarding: (1) the impact of the disaster; (2) content of the emergency management plans; (3) any training in special needs populations; (4) any data on the number of persons with mobility impairments; (5) what, if any, guidelines or procedures exist to assist persons with mobility impairments, (6) any plans in place to develop such guidelines or procedures, and (7) what resources are needed to develop such guidelines or procedures.

Collection of emergency management plans proved difficult, since we learned early on that the plan is a “living document,” subject to constant revisions. Thirty directors of emergency management were interviewed over the phone by the research staff with interviews lasting an hour to two hours. Twenty emergency managers initially declined to be interviewed with the primary reasons being that (1) the disaster itself did not hit their area or (2) they were too busy to take time to be interviewed. Preliminary results are forthcoming in another progress report.

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Reference:

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