Disaster Preparedness and Response for Persons With Mobility Impairments

Results From the University of Kansas Nobody Left Behind Study

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The objective of this study was to assess the impact of a major disaster on county-level preparedness for persons with mobility disabilities. The authors surveyed 30 randomly selected Federal Emergency Management Agency (FEMA) disaster sites between 1998 and 2003 to determine disability surveillance capacity, the extent to which the disaster experience influenced changes in policies and practices, whether persons with disabilities were involved in the planning process, what factors appeared to drive the planning process, and whether current policies and procedures could be “best practices.” They found that people with disabilities were poorly represented in emergency planning; federal training on the needs of people with disabilities appeared useful, although only 27% of emergency managers reported completing the training; 20% of emergency managers reported having disability guidelines in place; and county-level surveillance systems were ineffective. Sixty-six percent of counties had no intention of modifying their guidelines to accommodate the needs of persons with mobility impairments, citing limitations from (a) costs, (b) limited staffing, (c) lack of awareness, (d) other security demands, and (e) broader responsiveness to all “special needs individuals.” The authors suggest that improved training, awareness, and surveillance are needed so communities can better respond to the needs of persons with disabilities before, during, and after local disasters. Possible techniques include developing improved technology assistance, providing environmental modifications to improve access for persons with disabilities during disasters, and ensuring far greater participation of persons with disabilities in all phases of the disaster planning and response process.

Natural and human-influenced disasters can have potentially devastating consequences that result in injury and loss of life for those who are unprepared for such emergencies. Personal and property damage estimates from Hurricanes Katrina and Rita in 2005 have been estimated at almost $130 billion (Holtz-Eakin, 2005), with President Bush committing $110 billion for relief, recovery, and rebuilding efforts at the 1-year anniversary of Katrina (Powell, 2006). More routinely, approximately 3,000 earthquakes of varying grades affect the United States each year, and an average of 10,000 severe thunderstorms occur in the continental United States (National Oceanic & Atmospheric Administration [NOAA], 2005; U.S. Geological Survey, 2006), many of which cause damage, death, or personal injury.

Add to these events such as mudslides and flooding, threats of bioterrorism, and other human-guided attempts at creating mass havoc within society, and as a nation we find ourselves facing a public health challenge unique in our history. Katrina did not just expose the fault lines behind our ability to respond to disaster on a massive scale; it also forced us to look at new approaches to securing population health while acknowledging the unique public health challenge of dealing with total human habitat destruction. This is no longer just the realm of science fiction.

The concept of preparedness in disaster management comes from what is usually referred to as “the hazard cycle” (Tierney, Lindell, & Perry, 2001). Disasters are considered the
sentinel and precipitating event in these cycles, characterized by four time-sensitive stages: mitigation, preparedness, response, and recovery. Emergency preparedness refers to all actions taken before the disaster by responders and those directly affected that enable proactive engagement of social units when the disaster occurs.

Disasters disproportionately affect those who are unable to physically escape (National Organization on Disability [NOD], 2005). The most widely accepted prevalence numbers suggest that 19% of the U.S. population, approximately 50 million people, have a self-reported disability (Centers for Disease Control and Prevention [CDC], 2006). The 2000 Census indicates 9.3 million people have a sensory disability involving sight or hearing; 21.2 million have a condition that limits basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying objects; and 18.2 million people age 16 and older report a condition that makes it difficult for them to go outside their home (CDC, 2006). Census figures suggest that at least one in six Americans are at increased risk of injury or death in emergency situations by virtue of their disability. This does not take into account other social determinants such as poverty or lack of social support, which may further exacerbate poorer outcomes by their interaction with disability before, during, and after disasters.

According to a January 2004 Harris Poll commissioned by the NOD:

- 56% of people with disabilities do not know whom to contact about emergency plans in their community.
- 61% of persons with disabilities have not made plans to quickly and safely evacuate their homes; and among those people with disabilities employed full- or part-time, 32% say no plans have been made to safely evacuate their workplace.

While anecdotal information on persons’ experiences is abundant (NOD, 2005), little empirical data exist in the literature on disaster preparedness and safe evacuation of persons with physical disabilities under emergency or disaster conditions. The few reports that exist in the peer-reviewed literature focus on subsets of persons with disabilities based on work-related liability (Loy & Batiste, 2004) or older persons mostly residing in long-term care facilities (Zecher & Jakubowski, 2005). Identifying policy guidelines in more applied program literature can be equally daunting. Outside of a restatement of the CDC’s mission (“to promote health and quality of life by preventing and controlling disease, injury and disability”), a word search of the CDC’s 2001 Strategic Plan for Bioterrorism and Response does not reveal a single reference to the word “disability” (Koplan, 2001).

This apparent knowledge deficit of published literature dealing with the unique needs of persons with disabilities during disasters may reflect practices that exist at the local level on how emergency services to persons with disabilities are themselves delivered. First responders often assume that persons can run or walk quickly to safety before other assumptions are made. Until both 9/11 and Katrina, the paired needs to act quickly and to act with consideration of unique physical and cognitive characteristics of the victims have never been the central driving force behind planning at the county level. It has usually been simply “get them out alive.” Issues of equity have only recently forced their way into broader discussions of disaster planning, as more anecdotal stories are heard of citizens with disabilities stating they were fearful of being “triaged out” so that more nondisabled citizens could get out of harm’s way. The potential impact of more extensive disaster management training to meet the needs of persons with mobility limitations is significant, and its importance was acknowledged by the first Secretary of the Department of Homeland Security (DHS) in remarks he made to a conference DHS convened with the NOD in September 2004. Secretary Tom Ridge noted that “the Administration and the Department of Homeland Security are deeply committed to improving preparedness capabilities for the disability community” (Petty, 2002, p. 2). The secretary went on to describe anecdotal accounts of events that occurred during 9/11, saying

some people with disabilities were left behind in evacuated buildings because rescue agencies didn’t understand how someone could not be aware of the evacuation effort. Relief workers often had difficulty understanding why the public transportation shutdown prevented people from accessing emergency assistance. Emergency housing and shelters were not adequately equipped for people who need access to lodging. (Department of Homeland Security, 2004)

While terrorist-related events continued to make national headlines, in 2004 the Federal Emergency Management Agency (FEMA) designated 975 counties, or about a third of the U.S. total of 3,143, as federally declared disaster areas (FEMA, 2004). These disasters included flooding, winter and tropical storms, tornadoes, hurricanes, thunderstorms, fires, landslides, drought, ice storms and severe freezes, and earthquakes. In all, there were 2,915 county-level disasters in 2004, all eligible for public assistance grants, with many of them also receiving low-interest loans, cash grants, veterans benefits, tax refunds, excise tax relief, unemployment benefits, and crisis counseling. According to data obtained from FEMA regarding disaster costs during 1990–1999, the agency spent more than $25.4 billion for declared disasters and emergencies in the decade ending in 1999, more than six times what was spent in the previous 10 years (FEMA, 2004b). The large increase in the last decade can be attributed in part to the encroachment of urban and suburban living space into what had been sparsely populated parts of the country, where there had been less attention to quality housing, transportation systems, and other forms of human habitation (Warner, 2005).

Although improving the health and quality of life for people with physical disabilities is a national priority outlined in Chapter 6 of Healthy People 2010 (2006), there is an immediate need to translate empirical research into effective
planning to allow disaster planning to be a part of this effort. The University of Kansas Nobody Left Behind project was a 3-year effort building on earlier research that looked at ways to enhance independent living for persons with disabilities and to build empirical evidence in this area. Our research represents an early attempt to document the scope and nature of what county-level disaster managers understand and whether disasters themselves influence county-level efforts to bring persons with disabilities further into the disaster planning process. Work on this project began in October 2002 at the Research and Training Center on Independent Living at the University of Kansas after receipt of a 3-year, investigator-initiated grant from the CDC under the aegis of the Association of Teachers of Preventive Medicine (ATPM) to document county-level disaster preparedness and emergency response for persons with mobility disabilities.

Method

The study sought to understand the relationship of persons with mobility disabilities to county disaster plans in three topic areas:

1. county programs, practices and, policies
2. assessment of risk
3. assurance and policy development

Each of these three topic areas corresponded to research objectives (below) from which specific research questions followed.

Topic Area 1: County Programs, Practices, and Policies

Our first research objective in this topic area was to determine whether counties that experienced a disaster during 1998–2003 had documented plans for workplace, home, and community disaster preparedness and emergency response in place for residents with mobility impairments. Out of this analysis came the following research questions:

1. Have disasters facilitated changes in disaster preparedness and emergency response policies and practices for persons with mobility impairments? If so, how?
2. Has the disaster preparedness and emergency response planning process included community stakeholders representing people with disabilities? If so, what has been their involvement, with what outcomes?

Topic Area 2: Assessment of Risk

Our next research objective was to evaluate surveillance systems in place at the county level that identify morbidity and mortality frequency and prevalence for persons with mobility impairments exposed to a disaster. Out of this came the following research questions:

1. Are counties able to assess prevalence of persons with mobility impairments who reside or work in their jurisdictions and are at risk for disaster exposure (calculating the denominator)?
2. Are counties able to determine how many persons with mobility impairments are affected by disasters?
3. Among counties that have surveillance systems in place, what are prevalence rates of disaster exposure for persons with mobility impairments, and what factors appear to influence these rates?

Topic Area 3: Assurance and Policy Development

Our final objective was to recommend modifications to county disaster coordinating agencies to address the health, safety, and survival needs of people with mobility impairments. Out of this came the following research questions:

1. What surveillance systems appear most effective in assessing risk for people with mobility impairments exposed to disasters?
2. How can counties use surveillance systems to better manage their risk for persons with mobility impairments?
3. What county policies, practices, or programs are exemplars of best practices that can be emulated by counties around the United States? How can these policies, practices, and programs be incorporated into county disaster plans?

Research Design

Our operational definition of mobility impairment that we shared with respondents was as follows:

For our purposes, we are defining a person with mobility impairments as someone who has moderate to complete difficulty walking or moderate to complete difficulty moving around using equipment. This would include, for example, persons with ambulatory difficulties regardless of whether they use assistive devices, such as canes, walkers, or wheelchairs, for their primary mobility or not.

We understood that this definition excluded persons who were deaf, were visually impaired, or had cognitive disabilities. These persons were not included among those for whom this target funding was made available.
Before interviewing the county emergency managers to find answers to our research questions, we developed a survey instrument that would be used in semistructured interviews with emergency managers. The survey was designed and pretested with the help of a national advisory board consisting of emergency managers and disability researchers from many parts of the country considered to be experts in their fields. Examples of these survey questions can be found in Figure 1.

In addition to seeking information about the training and conduct of emergency managers, we also requested copies of county disaster plans in place at the time of the FEMA-declared disaster event and, if possible, more recent county disaster plans. The research team then performed content analysis of the received plans to determine if there were any specific sections of the plan that targeted persons with mobility impairments.

**Data Collection**

Our unit of analysis was county-disaster within a given year. Our first step was to identify all FEMA-declared disasters between 1998 and 2003 across the United States. From this master list, a random sample of 30 counties or equivalent units (i.e., boroughs, parishes, reservations, etc.) was selected, with approximately equal numbers of disasters selected from each year. Census data were used to capture county-level characteristics. To assure that our relatively small sample was still fairly representative of disasters nationally, we sampled across each of the 10 federal regions, ensuring further that counties from both urban and rural areas and from each of the major disaster types were well represented. Table 1 lists these final 30 randomly selected disaster-declared counties or representative units.

**Data Analysis**

The final phase was to work with our national advisory panel to identify best practices or potential best practices included in emergency management plans to help people with disabilities before, during, and after disaster events. These were efforts to translate our findings into practical approaches that could aid in response and recovery at the local level.

Statistical techniques used to analyze the data included chi-squared tests for categorical comparisons and both analysis of variance (ANOVA) and Mann-Whitney tests for comparisons of qualities that were found among disaster sites considered candidates for “best practices” compared to all other nonselected FEMA sites.

**Results**

Our results correspond to the following three topics:

1. county programs, practices, and policies
2. assessment of risk
3. assurance and policy development

To your knowledge was there an emergency management plan in place at the time of the disaster?

To your knowledge has the plan been revised since ______ (date of targeted disaster)?

- If yes, what prompted these changes?

Does your current emergency management plan have standard operating guidelines or procedures to assist people with mobility impairments during an emergency?

To the best of your knowledge, were these procedures developed in response to an emergency or something else? Please explain.

Do you know who authored or helped develop these specific procedures?

To the best of your knowledge, were these procedures related to emergency management plans for persons with mobility impairments modeled after those in place elsewhere?

To your knowledge, were people with mobility impairments included in the process of developing these procedures?

- If yes, could you describe how people with mobility impairments were involved in the planning and implementation process?

How are emergency services personnel trained in procedures related to persons with mobility impairments?

If no written formal procedures exist to assist people with mobility impairments, to your knowledge what do emergency services personnel do to assist people with mobility impairments during an emergency?

Do you feel that it is important to develop standard operating guidelines or procedures to assist people with mobility impairments during an emergency?

Are there any plans currently in place to develop these guidelines or procedures?

If plans are in place to develop specific emergency response procedures for persons with mobility impairments, do you know where the idea for the planning originated?

To your knowledge, are there any unwritten guidelines or procedures followed to assist persons with mobility impairments during an emergency?

Are you aware of approximately how many people with mobility impairments live within your city/county/region?

- If yes, do you know how this number was calculated?
- If no, do you feel knowing the approximate number of persons with mobility impairments would be helpful in case of an emergency?

**FIGURE 1.** Examples of survey questions asked of 30 emergency managers in randomly selected counties or equivalents that had a FEMA-declared disaster: 1998–2003 (complete survey available upon request).
County Programs, Practices, and Policies

Have disasters facilitated changes in disaster preparedness and emergency response policies and practices for persons with mobility impairments? If so, how?

While almost all counties in our sample made changes to their disaster plans subsequent to the FEMA-declared disaster that occurred in their district, only 2 out of 29 (6.9%) told us that these changes were prompted by concerns that arose around the needs of persons with disabilities (see Table 2). Almost 60% of these changes were made in response to federal mandates that required updates between when the disaster occurred and when we interviewed them. Less than a third (29%) of our sample told us that the disaster itself prompted changes to the disaster plans.

Has the disaster preparedness and emergency response planning process included community stakeholders representing people with disabilities? If so, what has been their involvement, and with what outcomes?

Four of six sites reported having operating procedures in place for people with disabilities. Four emergency managers interviewed stated that persons with disabilities themselves were included in the planning process. Overall, 13% of the sample jurisdictions included persons with disabilities as part of a process that led to having emergency management guidelines in place for persons with disabilities.

Are counties able to assess prevalence of persons with mobility impairments who reside or work in their jurisdictions and are at risk for disaster exposure (calculating the denominator)?

Because of the wide divergence in disaster type and scope, we have categorized these data into noncontinuous ranges in Table 3, with our New York site obviously standing out from all others in terms of number of persons affected for each measure we used. Based on our findings, surveillance efforts to identify persons with mobility impairments at the county level appear weak. Overall, 57% of county emergency managers (17 of 30) did not know how many persons with mobility limitations lived within their jurisdiction. Of those who reported knowing, most gave broad estimates based on unreliable sources or best guesses. Thirteen (43%) of the counties used primary data (county self-report registry or census) or best es-

### Table 1

FEMA-Declared Disaster Sites Randomly Selected for Nobody Left Behind Study

<table>
<thead>
<tr>
<th>Year</th>
<th>Region</th>
<th>State</th>
<th>County</th>
<th>Disaster</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>1</td>
<td>Massachusetts</td>
<td>Suffolk</td>
<td>Heavy rain and flood</td>
</tr>
<tr>
<td>1999</td>
<td>3</td>
<td>Virginia</td>
<td>City of Hampton</td>
<td>Tornado</td>
</tr>
<tr>
<td>1999</td>
<td>4</td>
<td>Florida</td>
<td>Bay</td>
<td>Hurricane</td>
</tr>
<tr>
<td>1999</td>
<td>5</td>
<td>Wisconsin</td>
<td>Douglas</td>
<td>Severe storms</td>
</tr>
<tr>
<td>1999</td>
<td>6</td>
<td>Texas</td>
<td>Kimble</td>
<td>Tropical storm</td>
</tr>
<tr>
<td>1999</td>
<td>9</td>
<td>California</td>
<td>Fresno</td>
<td>Winter freeze</td>
</tr>
<tr>
<td>1999</td>
<td>9</td>
<td>Arizona</td>
<td>Maricopa</td>
<td>Severe storms</td>
</tr>
<tr>
<td>2000</td>
<td>1</td>
<td>Maine</td>
<td>Kennebec</td>
<td>Severe storms</td>
</tr>
<tr>
<td>2000</td>
<td>3</td>
<td>Maryland</td>
<td>Frederick</td>
<td>Winter storm</td>
</tr>
<tr>
<td>2000</td>
<td>4</td>
<td>Georgia</td>
<td>Clark</td>
<td>Winter storm</td>
</tr>
<tr>
<td>2000</td>
<td>8</td>
<td>Montana</td>
<td>Rosebud</td>
<td>Wildfires</td>
</tr>
<tr>
<td>2000</td>
<td>9</td>
<td>Hawaii</td>
<td>Hawaii</td>
<td>Floods</td>
</tr>
<tr>
<td>2000</td>
<td>10</td>
<td>Alaska</td>
<td>Matanuska-Susitna</td>
<td>Winter storm</td>
</tr>
<tr>
<td>2000</td>
<td>10</td>
<td>Idaho</td>
<td>Bingham</td>
<td>Wildfire</td>
</tr>
<tr>
<td>2001</td>
<td>1</td>
<td>Massachusetts</td>
<td>Worchester</td>
<td>Storms/flooding</td>
</tr>
<tr>
<td>2001</td>
<td>2</td>
<td>New York</td>
<td>Nassau</td>
<td>Terrorist attack</td>
</tr>
<tr>
<td>2001</td>
<td>2</td>
<td>New York</td>
<td>Tompkins</td>
<td>Terrorist attack</td>
</tr>
<tr>
<td>2001</td>
<td>3</td>
<td>New York</td>
<td>Brooklyn/Manhattan</td>
<td>Terrorist attack</td>
</tr>
<tr>
<td>2001</td>
<td>5</td>
<td>Minnesota</td>
<td>Mille Lacs</td>
<td>Flooding</td>
</tr>
<tr>
<td>2001</td>
<td>5</td>
<td>Minnesota</td>
<td>Redwood</td>
<td>Flooding</td>
</tr>
<tr>
<td>2001</td>
<td>7</td>
<td>Nebraska</td>
<td>Lincoln</td>
<td>Severe storms</td>
</tr>
<tr>
<td>2001</td>
<td>10</td>
<td>Washington</td>
<td>Lewis</td>
<td>Earthquake</td>
</tr>
<tr>
<td>2002</td>
<td>3</td>
<td>Virginia</td>
<td>City of Norton</td>
<td>Storms/flooding</td>
</tr>
<tr>
<td>2002</td>
<td>4</td>
<td>Alabama</td>
<td>Baldwin</td>
<td>Tropical storm</td>
</tr>
<tr>
<td>2002</td>
<td>6</td>
<td>Texas</td>
<td>Jefferson</td>
<td>Severe storms, tornados</td>
</tr>
<tr>
<td>2002</td>
<td>6</td>
<td>Louisiana</td>
<td>Iberville</td>
<td>Hurricane</td>
</tr>
<tr>
<td>2002</td>
<td>6</td>
<td>Louisiana</td>
<td>St. James</td>
<td>Hurricane</td>
</tr>
<tr>
<td>2002</td>
<td>7</td>
<td>Kansas</td>
<td>Coffey</td>
<td>Ice storm</td>
</tr>
<tr>
<td>2002</td>
<td>8</td>
<td>Colorado</td>
<td>Garfield</td>
<td>Wildfires</td>
</tr>
<tr>
<td>2002</td>
<td>8</td>
<td>Colorado</td>
<td>Denver City/County</td>
<td>Wildfires</td>
</tr>
</tbody>
</table>

### Table 2

Reasons for Modifying County Disaster Plans

<table>
<thead>
<tr>
<th>Reason</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revisions prompted by disaster?</td>
<td>27.6</td>
</tr>
<tr>
<td>Revisions prompted by people with disabilities?</td>
<td>6.9</td>
</tr>
<tr>
<td>Revisions prompted by federal mandates?</td>
<td>58.6</td>
</tr>
<tr>
<td>Revisions prompted by other concerns?</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Note: Plans N = 30. None of these 2 × 2 relationships are statistically significant, based on chi-square tests.
Assessment of Risk

Among counties that have surveillance systems in place, what are prevalence rates of disaster exposure for persons with mobility impairments, and what factors appear to influence these rates? Among counties that have surveillance systems in place, what are prevalence rates of disaster exposure for persons with mobility impairments, and what factors appear to influence these rates?

The data on “numerators” listed in Table 3—number of persons killed or injured and number of persons with mobility disabilities killed or rescued—are all based on personal tabulations or best estimates. Our survey results indicate that accurate prevalence rates of disaster exposure for persons with mobility disabilities are not measurable at the present time. There are simply no ways to determine disability-related prevalence rates based upon existing county-level surveillance systems in place among our sample of counties incurring a recent disaster.

Assurance and Policy Development

What surveillance systems appear most effective in assessing risk for people with mobility impairments exposed to disasters? How can counties use surveillance systems to better manage risk for persons with mobility impairments? What county policies, practices, or programs are exemplars of best practices that can be emulated by counties around the United States? How can these policies, practices, and programs be incorporated in county disaster plans?

Relatively few counties revealed elements of what we could identify as best practices in their planning and operations related to persons with disabilities. Only 27% of county emergency managers reported completing the FEMA G197 Emergency Planning and Special Populations course. One in five (20%) told us they had specific guidelines in place to assist persons with disabilities in disasters. In consultation with our national advisory panel, we identified six counties within our sample that passed the test for two agreed-upon criteria. The criteria were (a) having in place guidelines for persons with disabilities and (b) identifying operating procedures in place that follow the guidelines. While these two characteristics by themselves may not warrant exceptional attention being given...
to the needs of persons with disabilities, we felt that these came as close to best practices as our sample was able to generate.

To the extent possible, we wanted to determine what characteristics appeared to be associated with best practice counties. To do this, we compared best practices to all others in our sample on a number of county-level characteristics in Table 4. ANOVA and Mann-Whitney tests were used to compare mean values of these characteristics of best practice sites to those of other randomly selected sites. Regardless of whether the more robust Mann-Whitney or ANOVA tests were used, counties classified as best practices were similar to other sites in all measurable respects except for the ability of best practices to estimate how many people with disabilities lived within their districts. While there were some other apparent differences, none of them approached statistical significance given the relatively small sample size.

### Discussion

Recent events surrounding the hurricanes of 2005 and their impact on the Gulf Coast of the United States have laid bare many of our public health shortcomings in the area of disaster preparation and management. Responses based upon the necessity of persons to flee, remain for extended periods in shelters, or successfully resume their lives, however well intentioned, must take into account the unique needs of the persons affected. If the hurricanes taught us nothing else, it was that a “one size fits all” approach to planning for the different phases of disaster management simply does not work. While the media provided ample documentation and coverage illustrating the impact of poverty, race, and age on persons left behind in the face of the storms, little was originally mentioned about the thousands of persons with disabilities who faced further challenges in their ability to get out of harm’s way. Only in the more recent aftermath has greater attention been given to persons with disabilities left behind because buses were not wheelchair equipped, ventilator-dependent persons who died for lack of back-up power sources, and nursing home residents drowning at blocked doors due (in part) to inadequate staff training on evacuation techniques (NOD, 2005).

Our research data, gathered in the 3 years preceding Katrina and funded against the backdrop of 9/11, revealed many of these shortcomings well before the 2005 hurricane season. Most counties experiencing disasters in our sample lacked specific guidelines for first responders to address the needs of persons with physical disabilities. Yet virtually all the emergency managers we spoke with told us that the guidelines were important to have. One emergency manager summed it up best by simply telling us, “Every person’s life is important.”

The reasons they did not have guidelines that detailed the types of emergency services needed for persons with disabilities should come as no surprise. Two thirds (67%) of jurisdictions with no guidelines told us that extending their disaster plans to include this material was too costly, with one third (33%) telling us that they simply did not have the personnel to train in this area. A substantial minority (17%) told us that greater public education was needed first before they would consider it a priority, while a quarter (25%) would only do it if FEMA or their state emergency management agency required it. In spite of these reluctant adaptors, our conversations point to a willingness among most county disaster managers to make gradual improvements in their disaster planning documents to better respond to the needs of persons with disabilities.

The results of our study lend themselves to several recommendations. Both in public perception and actual training,

<table>
<thead>
<tr>
<th>Disaster county characteristic</th>
<th>Best practice sites(^a)</th>
<th>Other disaster sites(^b)</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population ((M))</td>
<td>571,266</td>
<td>217,711</td>
<td>.285</td>
</tr>
<tr>
<td>Area (square miles)</td>
<td>2,248</td>
<td>2,436</td>
<td>.932</td>
</tr>
<tr>
<td>Persons per square mile</td>
<td>205</td>
<td>1,783</td>
<td>.575</td>
</tr>
<tr>
<td>% in urban area</td>
<td>67</td>
<td>58</td>
<td>.721</td>
</tr>
<tr>
<td>% White</td>
<td>91</td>
<td>76</td>
<td>.097</td>
</tr>
<tr>
<td>Median household income</td>
<td>$36,577</td>
<td>$38,914</td>
<td>.568</td>
</tr>
<tr>
<td>% above median income</td>
<td>33</td>
<td>29</td>
<td>.849</td>
</tr>
<tr>
<td>% below poverty level</td>
<td>13</td>
<td>14</td>
<td>.610</td>
</tr>
<tr>
<td>% w/Center for Independent Living in county</td>
<td>50</td>
<td>63</td>
<td>.429</td>
</tr>
<tr>
<td>% of persons ages 5+ yrs w/physical disability</td>
<td>8.4</td>
<td>9.7</td>
<td>.392</td>
</tr>
<tr>
<td>% of people ages 5–64 yrs w/disabilities</td>
<td>5.1</td>
<td>7.2</td>
<td>.141</td>
</tr>
<tr>
<td>% of people ages 65+ yrs w/disabilities</td>
<td>29.1</td>
<td>30.7</td>
<td>.551</td>
</tr>
<tr>
<td>% w/employee who took FEMA course</td>
<td>17</td>
<td>42</td>
<td>.271</td>
</tr>
<tr>
<td>% who claimed to know how many people w/disabilities lived in district</td>
<td>100</td>
<td>29</td>
<td>.001</td>
</tr>
</tbody>
</table>

Note. All mean differences were tested using ANOVA and Mann-Whitney tests for between-group mean differences; probability values cited are for ANOVA results.

\(^a\)\(n = 6\). Best practice sites consisted of the following counties/jurisdictions: Dubuque County, Iowa; Brooklyn-New York City, New York; Coffey County, Iowa; Maricopa County, Arizona; Norton City, Virginia; Lincoln County, Nebraska. They were selected if they had guidelines in place for persons with disabilities and operating procedures that followed the guidelines. \(^b\)\(n = 24\).
the awareness of county-level emergency managers to the needs of persons with disabilities needs to be enhanced, and participation of persons with disabilities in the planning process needs to be increased. We recommend that county emergency managers increase participation in the FEMA Special Needs Population courses for emergency managers. We suggest that the DHS require the G-197 or the newly developed IS-197 Web course on disaster preparedness and response for persons with disabilities and the elderly as a career track requirement for emergency managers. As part of this increased exposure to disability awareness, we recommend that the national emergency manager examination include additional test questions drawn from G-197 and IS-197. As part of this training, course builders can include information on people with disabilities in the basic course that focuses more on disabilities and less on people with “special needs,” such as persons for whom English is a second language or pregnant women.

Likewise, a similar effort must be undertaken to raise the awareness of persons with disabilities to the hazards of not being proactively involved in disaster planning at both the personal and community levels. Emergency managers must be willing to reach out to the disability community more aggressively, but it is incumbent upon members of the disability community to also reach out to emergency managers if they ignore this opportunity.

Second, our findings point to knowledge gaps that exist among emergency management teams that may require extending disability-related training to new or existing training opportunities. Therefore, we recommend new ways to increase knowledge, relevance, and participation in disaster preparation and emergency response education and training. As part of this recommendation, course builders for first responders could develop a section on persons with disabilities and get this module introduced into the U.S. Fire Administration’s National Fire Academy career track 2-week residency course. Trainers should strongly consider incorporating people with disabilities into training scenarios for first responders instead of using proxies without disabilities who wear signs or stickers designating them as “blind,” “deaf,” or “physically disabled.” Approaches such as these provide more realistic understanding of the needs of people with disabilities and allows participants with disabilities to provide valuable input into the rescue process. County-level emergency managers must also continue their efforts to integrate their emergency management systems with healthcare providers and other community service providers, such as Visiting Nurse Associations, home health agencies, or Area Agencies on Aging. Together they can prepare a plan to remove people with disabilities from harm’s way.

As part of knowledge creation we recommend that marketing materials such as user-friendly fact sheets be created for landlords, emergency services planners, and first responders to help them better assist people with mobility impairments and other disabilities. One example of this is the “Tips for First Responders” developed by the Center for Development and Disability at the University of New Mexico, the New Mexico Governor’s Commission on Disability, the American Association on Health and Disability, and the Office of Health Emergency Management of the New Mexico Department of Health. This helpful tool, consisting of 14 laminated cards bound by a key ring, contains information for emergency responders to work with seniors, people with service animals, people with mobility impairments, people who are mentally ill, people who are blind or visually impaired, people who are deaf or hard of hearing, people who have autism, people who have multiple chemical sensitivities, and people with cognitive disabilities during an emergency (Cahill et al., 2004). The research team at the University of Kansas has also created two sets of disaster preparedness “do and don’t” posters with a similar purpose (Nobody Left Behind, 2006). Materials such as these, with accompanying training, should be developed for direct care staff such as personal care attendants and home health aides and nurses, who can act as intermediaries for disaster planning and response to assist consumers and clients they serve in medical surge situations.

Third, it is clear from our survey that most counties have only a very limited idea of how many persons who have mobility disabilities live or work in their jurisdiction. We recommend that improvements be made in local surveillance systems so that emergency planners know approximately how many persons will need additional services related to their mobility disability in an emergency. County emergency managers, in conjunction with their communications technology administrators, should consider developing systems that require agencies to alert designated people with disabilities in the event of an emergency using advanced technology, such as the reverse 911 that initiates calls or text messages to a developed distribution list of participants. Emergency managers may wish to supplement this outreach system by developing local registries that identify persons with mobility impairments and other disabilities who need assistance with medical needs, transportation, shelter, evacuation, and eventual return to their homes during a disaster or emergency. While this may be more feasible in smaller, more rural counties, it holds promise in larger communities as well. As part of this registry, it is recommended that rationales be developed in collaboration with community-based organizations such as home health agencies, Centers for Independent Living (CILs), and durable medical equipment suppliers to encourage people with disabilities to self-identify and state their most current location, as well as likely services they will need in a disaster. Frequent reviews of this registry are necessary so that prevalence and location of people with disabilities can be systematically and regularly updated. It is recommended that counties arrange contracts with CILs or other organized representatives of the disability community to manage database information related to people with disabilities. It is also recommended that the CILs encourage consumers to have individual disaster evacuation plans and to become active in the community.
to develop evacuation plans at worksites and public buildings.

On a broader surveillance systems level, the federal government should investigate the feasibility of a more adequate national surveillance system that may require revising census data collection to include specific disabilities and locations. National, state, and county governments could supplement this with relevant GIS mapping to identify where people with disabilities are located and what resources, such as accessible emergency shelters and accessible buses in the event of a catastrophic event, are available. Such surveillance systems could work cooperatively with current state data systems, such as state health departments’ Behavioral Risk Factor Surveillance System (BRFSS) survey, to improve disability data.

For each of these recommendations to be successful, there must be greater collaboration with community and state-based disability organizations to increase stakeholder involvement in disaster preparedness and emergency response planning processes at the local, state, and federal levels. There must be continued efforts to stimulate greater interest in emergency preparedness among people with disabilities. Emergency managers told us how important it is to teach people with disabilities to be proactive with emergency management systems and local health providers to prepare for possible future disaster or emergency events. One strategy to increase consumer action in this area might be to encourage local emergency planning centers to recruit people with disabilities to work with their local emergency providers. Such interaction might improve trust needed between stakeholders for people with disabilities to self-identify themselves for an emergency registry.

Summary

As most of us now accept, the terrorist events of September 2001 changed the lives of persons living in the United States in ways that commentators of all social and political stripes acknowledge as being profound. Many would consider the subsequent inconveniences at airports and large buildings, the need for greater computer security, and heightened community awareness as the most visible products of these changes. To many in the disability community, however, these events revealed a much more personal shortcoming in how our country prepared and responded to disaster. Against the stark oral record and visual images of wheelchair users waiting patiently in smoke-filled stairwells until others were evacuated, the nation realized that many persons were being left behind in disasters of all kinds through no fault of their own. Unfortunately, these images were only reinforced further through the hurricane season of 2005.

Our work, which began in the summer of 2003, provides empirical evidence of widespread deficiencies in emergency and disaster response at the county level for persons with disabilities. While the receptiveness of emergency managers to the need for change is encouraging, their reluctance to give greater attention to disability concerns in the face of conflicting priorities and limited resources remains a challenge for persons in public health, emergency management, and disabilities alike. Additional research that evaluates the effectiveness of new and innovative strategies for implementing some of the recommendations we propose could save the lives of many people with disabilities. Strong leadership is needed at the state and federal levels to help give counties the boost they need to “universalize” design of disaster plans in ways that accommodate all the people within their charge, not just those able to walk or run from a disaster. If there is one immediate benefit that came out of the events of September 2001, it may be the understanding, a decade after the passage of the Americans with Disabilities Act (ADA), that in disaster situations, nobody, regardless of their physical or mental condition, should be left behind.

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REFERENCES


Call for Point–Counterpoint Authors

The Point-Counterpoint ethics series editor, on the basis of a survey of the Journal of Disability Policy Research Editorial Board members and others, has identified several priority topics to be addressed by potential authors. All the issues involve competing values and the possible need to strike an ethical balance. Accordingly, the Journal of Disability Policy Studies general editors invite potential authors to respond with a statement of interest in arguing a position on one side or the other of the following list of priority topics.

- Should all children, K–12, be placed in inclusive educational settings regardless of parental desires?
- Should psychotropic medications be prescribed for children with disabilities in view of recent research findings?
- Should “duty of care” prevail over the “dignity of risk” in decisions regarding people with disabilities?
- Should the advancement of medical science prevail over disability rights?
- Should parents be assisted by physicians to stunt the growth of children with severe disabilities in order to facilitate care in the home?
- Should provision of test accommodations for students with disabilities be permitted in face of evidence that, except perhaps for Braille versions, unreliable estimates of academic proficiency result and may diminish the meaning and value of promotion and graduation?

If interested in developing a publishable argument on one side or the other on one of these issues, please respond with (a) a statement of interest, (b) a preliminary outline of your position, and (c) the name of one or more possible authors who might consider developing an argument for the opposing position. The guidelines for Journal of Disability Policy Studies contributions emphasize scholarship and precision of written communication. Manuscripts for the Point/Counterpoint series must be limited to no more than 10 pages, inclusive of references. Please respond to the Point Counterpoint editor, John H. Noble, Jr., at: jhnoble@verizon.net.

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