



Disaster Preparedness and Response for Persons with Mobility Impairments: Results from the University of Kansas Nobody Left Behind Study



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Background

Three year grant, TS#-08040, awarded the University of Kansas, Research and Training Center on Independent Living by the Association for Teachers of Preventive Medicine and the Centers for Disease Control and Prevention.

AIM: To understand county level disaster preparedness and response around needs of persons with mobility impairments.

Nature of the Problem

Typically, disaster preparedness and emergency response systems are designed for non-disabled persons, for whom escape or rescue involves walking or running.

In addition, many plans do not appear to specifically address the transition needs back to pre-disaster conditions that are required for persons with mobility impairments.

Research Focus Areas and Objectives

Focus Area #1: County Programs, Policy, And Practice

Objective:

To determine whether counties that have experienced a disaster during 1998 - 2003 have systems of workplace, home, and community disaster preparedness and emergency response in place for residents with mobility impairments.

Focus Area #2: Assessing Risk

Objective:

To evaluate surveillance systems in place at the county level that can identify morbidity and mortality frequency and prevalence for persons with mobility impairments exposed to a disaster.

Focus Area #3: Assurance And Policy Development

Objective:

To recommend modifications to county disaster coordinating agencies to address the health, safety, and survival needs of people with mobility impairments.

Research Methodology

Identify Federal Emergency Management Agency (FEMA) declared disasters between 1998 - 2003

Select a random sample of 30 counties or equivalent units (i.e., boroughs, reservations, etc.) across each of the ten federal regions

Interview these county emergency managers

Evaluate their disaster plans in place at time of occurrence and more recently for actions targeting persons with mobility disabilities

With assistance of national advisory panel, identify best practices

Administer on-line consumer survey

Research Site Locations and Disaster Types

Site by State, County Location, and Disaster Types

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

Research Questions

Research Question 1: Have disasters facilitated change for people with mobility impairments?

Table 1. Reasons for Modifying County Disaster Plans

Using Chi-squared tests, none of these 2x2 relationships are statistically significant

N=30	Revisions prompted by disaster?		Revisions prompted by people with disabilities?		Revisions prompted by federal mandates?		Revisions prompted by other concerns?	
	Yes %	No %	Yes %	No %	Yes %	No %	Yes %	No %
County disaster plan revised since disaster?	27.6	72.4	6.9	0.0	58.6	41.4	6.9	93.1
Yes (n=29)								
No (n=1)	0.0	100	0.0	100	0.0	100	0.0	100

Research Questions 2: Were people with disabilities included in the planning process?

Four of the six best practice sites had people included in the process. This question was only answered for six counties engaged in the planning process.

Research Question 3: Are sites able to assess prevalence based upon adequate surveillance?

Table 2. Reported Surveillance of Counties Experiencing Disasters

Measure	# Counties	Frequencies		Data	Validity
		Category	Count		
# people with mobility impairments in county	13	< 75	4(13%)	Census -3 Database-5 Estimate -5	Fair Good Poor
		300-400	2 (7%)		
		3,000-10,000	6(20%)		
# persons injured in disaster	30	>10,000	1(3%)		
		None	27(90%)		
		<100	1(3%)		
# persons killed in disaster	30	10,000	1(3%)		
		None	26(87%)		
		1-5	3(10%)		
# persons with mobility impairments killed	30	2,749	1(3%)		
		None	28(93%)		
		1	1(3%)		
# persons with mobility impairments rescued	30	Unknown	1(3%)		
		None	17(57%)		
		2-15	4(13%)		
# persons with mobility impairments rescued	30	25-100	4(13%)		
		>100	5(16%)		
		Unknown	1(3%)		

Research Questions 4&5: Surveillance that allows estimates of prevalence of people with mobility impairments at risk in a disaster?

No way to determine prevalence rates based upon surveillance systems in place.

However, we may want to test this further with our site in Coffey County. Where there are accurate data registries, this measure could be possible.

Research Question 6: Surveillance systems that appear most effective – possible “best practices.”

Six counties identified as possible “best practices” (out of 30) based upon two criteria:

- Having in place guidelines for persons with disabilities; and
- Identifying operating procedures in place that follow the guidelines

Table 3. Differences Between Disaster County Sites Identified as Best Practices and All Other Sites

Disaster County Characteristic	Best Practice Site (6)	Other Disaster Site (24)	Significance, p-value
Mean Total Population	571,266	217,711	.285
Area in square miles	2,248	2,436	.932
Persons per square miles	205	1,783	.575
% urban area	67	58	.721
% White	91	76	.097
Median household income	\$36,577	\$38,914	.568
% above median income	33	29	.849
% below poverty	13	14	.610
% with Center for Independent Living	50	63	.429
% persons with physical disability > 5	8.4	9.7	.392
% people with disabilities 5-64 years old	5.1	7.2	.141
% people with disabilities >64 years old	29.1	30.7	.551
% with employee who took FEMA course	17	42	.271
% knowing how many people with disabilities live within district	100	29	.001

All mean differences were tested using ANOVA for between group differences.

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Table 4. Adjusted Odds Ratio of a Model to Predict the Probability of Being a Best Practice.

Disaster County Characteristic	B	S.E.	Wald Statistic	95% Confidence Interval for Exp(B)	Signif	Odds Ratio (Exp(B))
Urban	-.141	1.554	.008	.041, 18.281	.928	.869
Had CIL in district	-1.630	1.616	1.018	.008, 4.648	.313	.196
Were above median income	.141	1.554	.008	.055, 24.227	.928	1.151
Had taken FEMA or similar disaster course	-1.912	1.549	1.523	.007, 3.078	.217	.148
Knew about how many persons with disabilities lived within district	21.724	9210.681	.000	.000, ***	.998	2.72E+09
Constant	-20.024	9210.681			.998	.000

Using logistic regression, none of these factors in this model were significantly associated with predicting best practice.

What did we find out?

Findings - Emergency Managers:

People with disabilities either were not represented or had minimal representation in the emergency planning process.

The (G197) FEMA Emergency Planning and Special Needs course pertaining to people with disabilities appears useful in increasing county awareness, though only 27% of county emergency managers reported completing it

Only 20% of the emergency managers reported having specific guidelines in place to assist people with mobility impairments during emergencies

20% of emergency managers reported having specific guidelines in place to assist people with mobility impairments during emergencies

Among jurisdictions that did not (24 or 80%):

38% (9) identified transportation accommodations that they have in place

17% (4) identified accessible shelters and other educational programs that sought to reach out to persons with disabilities

Among jurisdictions not having specific details or guidelines in place, all (24) told us that they were important to have

- “Every person’s life is important....”
- “I have never seen a publication that would address many of these impairments....”
- “We have it, just not in our particular plan...covered in council on aging and human resource protocols.”
- “It’s a fact of life. They are out there, they need assistance, and you’ve got to address it.”

Among jurisdictions not having specific guidelines in place (24), 5 (21%) told us they were planning to develop them. 19 (79%) told us they were not. Reasons why not:

- “If need is brought to our attention, we will accommodate....”
- “We are trying to focus on special needs as a whole....”
- “It is covered in other plans....”
- “We don’t need to be any more specific than we already are..”
- “Confidentiality issues...”; “limited local authority...”
- “We are overwhelmed with the demands of Homeland Security....”
- “My office is only staffed by one volunteer....”

Where do we think this will lead?

Improved Surveillance

The need to know how many people are at risk in disasters who may have mobility impairments

Technology Adaptation

Use of new devices that will improve escape, rescue and survival for persons with mobility impairments

Environmental changes

Housing: safe rooms, slide escapes, common shelters, implementing ADA accessibility guidelines, special needs awareness programs (SNAP)

Workplace: space, lighting, energy backup, employee input

Community: participation in planning process by persons with disabilities

Americans with Disabilities Act Accessibility Guidelines (ADAAG) require accessible means of egress, areas of rescue assistance, alarms, and signage in public buildings covered under Title II and Title III of the ADA

Environment Factors: Assistive Technology

Devices such as those that use a tread chair that uses caterpillar-like action to move people with mobility limitations down the stairs and other similar equipment need to be made available.

Enhanced Training and Education for:

- First responders, disaster managers, other county officials
- Employers, employees
- Persons with disabilities

