POPULATIONS WITH SPECIAL NEEDS

Barbara Vogt Sorensen

OAK RIDGE NATIONAL LABORATORY

Populations With Special Needs

Barbara Vogt Sorensen
Environmental Sciences Division
OAK RIDGE NATIONAL LABORATORY

Date Published: October 2006

CONTENTS

LIST OF TABLES

ACRONYMS

ADA	Americans with Disabilities Act
AIDS	Acquired Immunodeficiency Syndrome
CCH	community health center
CDC	Centers for Disease Control and Prevention
CSEPP	Chemical Stockpile Emergency Preparedness Program
DHS	Department of Homeland Security
DOJ	Department of Justice
EPA	Environmental Protection Agency
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FMLA	Family and Medical Leave Act of 1993
GAO	Governmental Accountability office
HIV	human immunodeficiency virus
NAS	National Academies of Science
NLH	National Library of Medicine
NOD	National Organization on Disability
OOSP	Office of Outreach and Special Populations
PAWIPT	Protective Action Workgroup Integrated Process Team
TDD	telecommunications device for the deaf
TTY	teletypewriters

1. INTRODUCTION

This document examines the issues, research, and policies related to special populations when an emergency involves a protective action recommendation such as evacuating or sheltering-in-place. The research was undertaken at the request of the Department of Homeland Security/Federal Emergency Management Agency's (DHS/FEMA) Chemical Stockpile Emergency Preparedness Program (CSEPP) Protective Action Workgroup Integrated Process Team (PAWIPT) because of the potential implications for responding to a chemical agent release accident involving populations with special needs. During the course of this research, Hurricane Katrina and subsequent flooding from destroyed levees devastated the city of New Orleans and brought many of the issues associated with vulnerability and special needs groups to America's attention through media and news reports. This review includes some studies and quick response projects undertaken immediately after that disaster.

The information contained in this report is intended to help planners and officials develop comprehensive emergency plans that include individuals with special needs or who may be particularly vulnerable during hazardous events. Once plans are in place, it is incumbent upon officials and agencies to disseminate the information to appropriate advocacy groups, to the public at large, and to the individuals that may use such services. The document can also be used to assist agencies to better define special needs groups and to coordinate agencies' efforts to insure resources are available to help those residents before, during and after emergencies.

2. SPECIAL NEEDS POPULATIONS

Researchers agree that disabilities affect how people cope with exposure to and the impacts from disasters but there has been limited research about the subject in the United States in the last two decades (Mileti 1999). The focus may change with the media attention to the problems of the poor, the elderly, and people of color in the wake of the Hurricane Katrina disaster in 2005. The first assessment of research on natural hazards noted the social, political, and economic aspects of hazards had been largely ignored by disaster researchers (White and Haas 1975). The authors pointed out that individual material wealth played a major role in disaster recovery. This was later taken up by the social vulnerability school of hazards research, especially for work outside the United States (Mileti 1999).

However, greater thought has been given to the varieties of sub-groups that require special attention from emergency planners, such as those with mobility or hearing impairments or who work in high-rise buildings, and on the timing of warnings to alert and notify all residents of the potential threat. These trends have led to better planning models and more critical attention to factors affecting protective actions in emergency planning and response. What has been missing is a critical examination of groups that, because of their vulnerability or special but unseen physical or psychological characteristics, may be at higher risk in emergencies than other residents. Because of their unique characteristics, such individuals are generally not included in a community's emergency planning process for special needs groups.

Environmental and technological disasters hit some people disproportionately hard, among them the poor, marginalized racial or ethnic groups, single parents, minority-language speakers, recent migrants, children, the elderly, and persons with disabilities (Morrow and Enarson 1999). The relatively high mortality rate of victims over 60 following the flooding in New Orleans and the Gulf Coast from Hurricane Katrina emphasizes the continuing need to address the issue of special needs groups before a hazardous event occurs and to have plans in place to respond afterwards.

Developing plans for special needs groups can be difficult as well as frustrating for emergency officials because of the problem of identifying individuals with special needs and knowing their specific locations at the time of an emergency if they are not residing in a facility or previously registered with emergency managers. Although state, local and federal agencies play the major role in preparing for and responding to emergencies, many are ill-equipped to meet the requirements of special needs populations in disasters unless there has been coordinated planning prior to an emergency with health-care facilities, social services agencies, non-governmental or faith-based organizations, such as the Red Cross and Salvation Army, as well as advocacy groups.

The problem is worsened by the fact that many individuals with special needs are dispersed among the general population and their needs not recognized and planned for unless they self-identify and state their requirements. It is also complicated when the incapacitating condition is temporary and does not fall under the auspices of any agency's definition of special needs. For example, caring for a family member temporarily confined to bed, crutches or a wheelchair places the individual and the caregiver in a unique situation that requires special handling during an emergency, especially if the event requires evacuation. Such situations require involvement of both public information specialists and media outlets to ensure that such residents are informed about the necessity to self-identify and to accurately state their needs when a protective action is recommended for the community. Individuals with special needs, especially temporary needs, may not recognize that normal emergency services such as buses equipped with handicap access may be overwhelmed during an emergency and unable to respond to their needs.

When groups are congregated in health-care or long-term assisted living facilities it can be frustrating for emergency officials to watch facility managers provide less than appropriate attention to the needs of their clients in emergencies, especially if clients are medically dependent and must be evacuated from the residential facility due to its location or proximity to a hazard. Although the Americans with Disability Act has helped enhance evacuation planning for persons with disabilities from commercial facilities and workplaces, little has been accomplished legally to force evacuation planning for long-term health-care private facilities or to ensure that their plans are coordinated with local emergency planners or officials so that resources are adequate to fully accommodate all such facilities in a community-wide emergency.

2.1 TERMINOLOGY OF SPECIAL NEEDS POPULATIONS

Within the emergency management and response fields populations with "special needs" are defined in a variety of ways. This is because a person with special needs can have any number of characteristics – medical, cultural, cognitive, racial, physical, or a combination thereof – that sets them apart from other individuals in terms of needs. The confusion has led to some special needs populations being overlooked because of their invisibility, such as people with cognitive or intellectual disabilities, or being unintentionally ignored, such as the hearing impaired who may not be able to hear announcements provided by public address systems or television stations without scrolled messaging (NOD 2005). Some people also hesitate to voice their needs for fear of being stigmatized or singled out for special treatment which can be embarrassing for them. This can be especially difficult for the mentally impaired who rely on service animals because they often do not carry the appropriate doctor's certification authorizing the animal as a medical need.

Problems can also arise from too narrowly defining groups by a physical or mental disability and thus not addressing problems of other groups such as low-income residents without vehicles or adequate monetary resources to take a protective action when warned. Moreover, state and federal agencies often have different descriptions of special needs populations, depending on the agency's mission. Thus an agency focused on providing health benefits to children may define a child with special needs quite differently from an agency charged with ensuring that school food programs for low-income children are funded properly.

Frequently people with special needs are defined as individuals with one or more disabilities, but how a disability is determined is often vague. Often there is no attempt to distinguish a timeframe between the disabilities that are recurrent with intermittent frequencies, long-term chronic disability acquired from injury, illness or prenatal condition, or those that are temporarily incapacitating that occur after a medical procedure or accident. For example, it is common for employees to apply for temporary disability under the Family and Medical Leave Act (FMLA) following certain surgical procedures or to take maternity leave after the birth of a child. Temporary part-time disability status is sometimes granted to individuals under the FMLA to help those who cannot perform full-time work for either emotional or physical reasons.

The dictionary defines special needs populations as "of, or relating to, people with specific needs, as those associated with a disability such as special-needs housing or a special needs teacher" (Houghton Mifflin Company 2000). This reflects the need to identify those individuals with particular requirements, especially in housing or education, associated with physical disabilities or learning difficulties. The definition may or may not include those with cultural or ethnic characteristics who may have difficulty communicating or those who are poor and need additional resources to access learning tools.

The Americans with Disabilities Act (ADA), Public Law 336 of the 101st Congress, was enacted July 26, 1990, (U.S. Congress. 1990.) 42 U.S.C. 12102). The ADA, which is exercised under the auspices of the Department of Justice, broadly defines a disability as:

> "a physical or mental impairment that substantially limits one or more of the individual's major life activities, such as caring for one's self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, and working."

These definitions essentially describe physical or mental impairments of adults that interfere with performing normal activities but could include children as well if normal routines were construed as performing everyday activities.

The ADA prohibits discrimination and ensures equal opportunity for persons with disabilities in employment, State and local government services, public accommodations, commercial facilities, and transportation. It also mandates the establishment of telecommunications device for the deaf (TDD) and telephone relay services. Employment discrimination is prohibited against "qualified individuals with disabilities." This includes applicants for employment as well as employees. An individual is considered to have a disability if he or she has a physical or mental impairment that substantially limits one or more major life activities, has a record of such an impairment, or is regarded as having such an impairment. The first part of the definition makes clear that the ADA applies to persons who have impairments and that those must substantially limit major life activities such as seeing, hearing, speaking, walking, breathing, performing manual tasks, learning, caring for oneself, and working. An individual with epilepsy, paralysis, HIV infection, AIDS, a substantial hearing or visual impairment, mental retardation, or a specific learning disability is covered, but an individual with a minor, non-chronic condition of short duration, such as a sprain, broken limb, or the flu, generally would not be covered. Individuals with a record of a disability, such as people who have recovered from cancer or mental illness, are also covered. The definition also protects individuals who are regarded as having a substantially limiting impairment, even though they may not have such an impairment. For example, this provision would protect a qualified individual with a severe facial disfigurement from being denied employment because an employer feared negative reactions from customers or co-workers (http://www.usdoj.gov/crt/ada/q%26aeng02.htm).

The federal government has taken some steps to ensure federal employees with disabilities are planned for in emergencies. On July 22, 2004, President Bush issued Executive Order 13347 (2004): Individuals with Disabilities in Emergency Preparedness. The Order requires all executive departments and federal agencies to appropriately support the safety and security of individuals with disabilities in disasters and to:

> "(a) consider, in their emergency preparedness planning, the unique needs of agency employees with disabilities and individuals with disabilities whom the agency serves;
>
> (b) encourage, including through the provision of technical assistance, as appropriate, consideration of the unique needs of employees and individuals with disabilities served by State, local, and tribal governments and private organizations and individuals in emergency preparedness planning; and
>
> (c) facilitate cooperation among Federal, State, local, and tribal governments and private organizations and individuals in the implementation of emergency preparedness plans as they relate to individuals with disabilities."

The Order also established the Interagency Coordinating Council on Emergency Preparedness and Individuals with Disabilities to be housed in the Department of Homeland Security to implement the policies.

The Department of Justice issued "An ADA Guide for Local Governments: Making Community Emergency Preparedness and Response Programs Accessible to People with Disabilities" to assist communities in making community emergency preparedness programs accessible to people with disabilities. The guide lists specific action steps to take in emergency planning, notification, evacuation, sheltering in community shelters, and considerations for returning home for people with disabilities. It can be downloaded at http://www.usdoj.gov/crt/ada/emergencyprep.htm.

The DHS/FEMA web-based training available from the Emergency Management Institute (EMI) defines special needs populations as:

> "individuals in the community with physical, mental, or medical care needs who may require assistance before, during, and/or after a disaster or emergency after exhausting their usual resources and support network."

Special needs populations are defined by disability – people with sensory, mobility, or mental disability or with another medical condition. The training also mentions that some individuals with disabilities are quite self-supporting and that the impact of the disaster on the individual's resources and support network may cause the person to require additional assistance (DHS/FEMA G197, 2003).

The DHS/FEMA training further states that people with special needs can be found in their own residences, adult day-care facilities, assisted living facilities, foster or group homes, long-term facilities, and hospitals (DHS/FEMA G197, 2003). This definition excludes those with distinct cultural, ethnic, or racial characteristics or those with language differences or who lack resources. Such people may find protective action orders or recommendations difficult to understand or to comply with in a timely manner. The training does emphasize that reference should be to "persons with disabilities", not to "disabled persons", which is also advocated by the National Organization on Disability when describing people with physical or mental impairments.

The U.S. Census Bureau is the primary agency that collects national data on persons with disabilities on a periodic basis. People are defined as having a disability if one or more of the following considerations are reported:

- If 5 years old or older and reported a sensory, physical, mental or self-care disability;

- If 16 years or older and reported a disability affecting going outside the home; or

- If 16 to 64 years and reported an employment disability.

Estimates from the 2000 census indicate 48.9 million people at least 5 years old and living in a housing unit had a disability. That represents 19.2 percent of the U.S. population (Census 2005, Stern 2003). The number will likely increase as the U.S. population continues to age with the attendant physical problems such as compromised vision, hearing loss, and loss of driving privileges. The Environmental Protection Agency (EPA) has instituted an aging initiative to investigate the changing needs of elderly Americans because of their vulnerability to environmental challenges due to their age-altered physiological processes and exposure patterns (EPA 2006).

The Social Security and Supplemental Security Income disability programs are the largest of several Federal programs whose mission is to provide assistance to people with disabilities. Only individuals who have a disability and meet certain medical criteria may qualify for benefits under these programs. Disability under Social Security is based on the inability to work. Under Social Security rules if a person cannot perform work he or she did before the medical condition occurred and is unable to adjust to other work because of a medical condition, that individual is considered disabled. The disability must also last or be expected to last for at least one year or to result in death. Social Security pays only for total disability, not for partial disability or short-term disability. "Social Security program rules assume that working families have access to other resources to provide support during periods of short-term disabilities, including workers' compensation, insurance, savings and investments" (found at http://www.ssa.gov/disability/).

2.2 MEDICAL DEFINITIONS

The American Association of People with Disabilities provides the following definition: "Persons are considered to have special health care needs if they have a physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical management, health care intervention, and/or use of specialized services or programs. The condition may be developmental or acquired and may cause limitations in performing daily self-maintenance activities or substantial limitations in a major life activity. Health care for special needs patients is beyond that considered routine and requires specialized knowledge, increased awareness and attention, and accommodation" (AAPD 2005-2006).

In 2000, the National Library of Medicine (NLM) created the Office of Outreach and Special Populations (OOSP) in the Division of Specialized Information Services as a way to improve access to quality and accurate health information in underserved and special populations. Outreach programs are developed in an effort to eliminate disparities in accessing health information by providing community outreach support, training health professionals on NLM's health information databases, and designing special population websites that address specific concerns in various racial and ethnic groups. These outreach programs are designed to teach health professionals, public health workers and the general public about health issues that disproportionately impact minorities such as environmental exposures and AIDS (http://sis.nlm.nih.gov/outreach/aboutoutreach.html). Disparities in health and health care across racial, ethnic, and socioeconomic backgrounds is well documented in the United States but the reasons for the disparities are not well understood (Ver Ploeg and Perrin 2004).

Many community health center (CHC) services are available to people of all ages, regardless of financial, linguistic, cultural or geographic barriers to access. Because CHCs serve the community, they often have multilingual staff or interpreters available on request to ensure quality service to minority populations. CHCs serve Medicaid and Medicare recipients, low-income uninsured and underinsured, high-risk populations, the elderly, as well as insured persons. The Massachusetts League of Community Health Centers describes special populations as encompassing "a broad range of groups served at community health centers including, but not limited to the following:

- minority populations,
- refugees and immigrants from many different countries,
- women,
- children,
- men,
- the disabled,
- gay, bisexual, lesbian, and transgender population,

- the homeless,
- the elderly, and
- migrant and seasonal farm workers."
(http://www.massleague.org/clinicians/special_pops.htm)

One organization, the National Organization on Disability (NOD), has taken the lead in ensuring that emergency planning in communities includes people with disabilities. Initiated after the United Nations International Year of Disabled Persons of 1981, the NOD is a private sector group independent of government funding, although legislators from both the House and Senate serve as NOD sponsors.

Following Hurricane Katrina in 2005, NOD formed an independent task force composed of disability and emergency management leaders to formulate recommendations for decision-makers at all levels of government on the handling of persons with disabilities. In the report they deliberately use the term "disability and aging specific" instead of "special needs" to describe the populations studied. By doing this, NOD combined social vulnerability characteristics with physical and mental disabilities. Some may argue that the elderly or "aging specific" constitute such a diverse population in terms of needs that this classification is still too broad. For purposes of studying Hurricane Katrina victims with special needs, who were mostly Black and over the age of 60, using the term "aging specific" appears appropriate for the report.

Immediately after Hurricane Katrina struck, NOD coordinated and deployed four rapid assessment teams into the Gulf Coast states of Alabama, Mississippi, Texas, and Louisiana to capture data on the impact and service delivery to the disabled, seniors and persons with medical needs (NOD 2005, pg. 4). The preliminary findings indicate that similar to other large scale disasters such as Hurricane Andrew in Florida, the Loma Prieta earthquake in California, and the Sept. 11 World Trade Center collapse in New York, traditional response and recovery systems were not able to successfully handle many of the needs of special populations.

The report recommends that the Federal Communications Commission (FCC) enforce the rules requiring accessible information be made available to all members of the disability community in times of emergency. Critical information to be disseminated includes detailed descriptions of areas that would be affected by the emergency, evacuation orders, specified evacuation routes, approved shelters for individuals with disabilities or instructions on sheltering in one's home, how to secure personal property, road closures, and how to obtain relief assistance (NOD 2005, pg. 12). The report also recommends that these requirements be continued into the recovery period and extended into any community housing evacuees with special needs. NOD's calls for action included:

- a direct liaison position created to coordinate the special needs of people with disabilities at all levels of government;

- emergency information available in accessible formats;

- the need for daily living and medical needs of people with disabilities to be communicated to providers of these services at all levels of government;

- the cross-training of emergency managers and disability organizations to integrate the special needs and requirements of each other; and

- the immediate collaboration between disability design experts and housing contractors to increase the construction of temporary and permanent accessible housing (NOD 2005).

2.3 VULNERABLE POPULATIONS

How vulnerability affects the definition of special-needs populations is less clear but equally important. Vulnerability generally is defined as being susceptible to physical harm, unable to resist illness, debility, and/or failure, or exposed to attack or possible damage (Soukhanov 2001). Vulnerability to environmental hazards generally means the potential for loss (Cutter 1996). Social vulnerability describes the susceptibility of social groups or society at large to structural or non-structural losses from hazards or disasters that have spatial aspects that vary over time.

In the cognitive sense, vulnerability often is used to mean a person being easily persuadable, liable to temptation, or open to emotional harm. Vulnerable individuals may or may not be disabled physically or mentally which makes them even less visible to agencies or officials in emergencies and less likely to self-identify before a hazardous event. Often vulnerable individuals are isolated and less likely to interact with others, especially authority figures. Homeless individuals often choose to remain away from service systems and are known only by law enforcement or medical providers.

While vulnerability is frequently mentioned in the hazards and disaster literature, the way vulnerability is interpreted often depends on the research orientation and perspective of the investigator. Three themes typically categorize vulnerability studies: vulnerability as risk/hazard exposure, vulnerability as social response, and vulnerability of place (Cutter 1996). They are not mutually exclusive and may overlap. Some recent studies place more emphasis on people's capacity to protect themselves in hazardous situations rather than just the vulnerability that limits them (Wisner et al. 2005). There is also a trend at attempts to quantify vulnerability with the understanding that people can move in and out of vulnerable situations over time.

There are distinct connections between the risks people face in disasters and the reasons for their vulnerability to hazards (Wisner et al. 2005). This is because certain groups are more at risk and suffer more harm from changes in the economy and existing social conditions. Many of these marginalized groups – such as low-income families or the mentally impaired but not institutionalized – live daily without adequate resources for food and other necessities. Others, such as the "working poor," live from paycheck to paycheck, have no savings, and have no resources for evacuation or recovery from a disaster. Withdrawal from harm's way when warned of an impending threat may be impossible without direct financial and physical assistance from emergency officials or social services. Determining where these individuals are located when a hazard threatens and how to provide assistance is difficult, but not impossible, for planning agencies.

In the United States, low-income families, young children, the elderly, and rural populations are the focus of many domestic food and nutritional assistance programs. These include food stamp programs, the Special Supplemental Nutrition Program for Women, Children and Infants, and the child breakfast and lunch programs in schools and day-care centers. Critics argue that there is reluctance to change the underlying causes for vulnerability because it is easier to deal with the technical factors of natural disasters, such as providing water, ice, and food rather than changing such policies as enforcing building codes, land-use restrictions, or raising basic minimal wages.

Identifying the connection between vulnerability and victim mortality from hazards is not a new endeavor or an issue that originated with media coverage from Hurricane Katrina. In July, 1995, a team of researchers from the Centers for Disease Control and Prevention (CDC) conducted an epidemiological investigation of seven hundred heat-related deaths in Chicago. The findings indicated that city residents were more vulnerable to dying from the heat if they lived alone, did not leave the residence daily, had a medical problem, were confined to bed, or lacked air conditioning, transportation, and social contacts

nearby (Klinenberg 2003, pg. 80). The findings led the City of Chicago to institute innovative measures to ensure that such individuals were identified as having special needs and tracked in future hazard situations.

Likewise the majority of victims of hurricanes have been identified as elderly, living alone and on fixed incomes. This corroborates findings of other researchers who argue that vulnerability increases the chance that people will become victims of a hazard, a fact that all emergency officials should keep well in mind when developing disaster plans (Wisner 2005). Although less than 10 percent of the elderly are poor, poverty rates for older women who live alone are much higher than for older people in general (http://www.ers.usda.gov/Briefing/Vulnerablepopulations/). Table 2.1 presents a description of characteristics that have been used by some researchers to examine vulnerability across geographic areas.

Table 2.1. Social vulnerability concepts and metrics (modified from Cutter et al. 2003)

Concept	Description	Increases social vulnerability (+)	Decreases social vulnerability (-)
Socioeconomic status (income, political power, prestige)	The ability to absorb losses and enhance resilience to hazard impacts. Wealth enables recovery from losses due to insurance, social safety nets and entitlement programs.	Low income and status	Wealth and high status
Gender	Women have more difficult time recovering than men due to sector-specific employment, lower wages, and family responsibilities.	Female	Male
Race and ethnicity	Imposes language and cultural barriers that affect access to post-disaster funding and residential locations in hazardous areas. Lower wages and low-skill jobs make long-term recovery problematic.	Nonwhite Non-Anglo	Majority race
Age	Extremes of age affect movement out of harm's way. Elderly may have mobility constraints or concerns increasing the burden of care and lack of resilience; children are dependent on adults to provide safe haven.	Elderly Children	
Residential	The value, quality, and density of residential construction affects potential losses and recovery. Expensive coastal homes expensive to replace; mobile home easily destroyed.	Mobile homes	Low density
Geographic location	Rural residents may be more vulnerable due to lower incomes and dependency on locally based resource extraction economies (farming, fishing). Evacuation of high-density urban areas is complicated when egress routes are few and/or overburdened.	Rural resident	Wealthy community
Population growth	Counties experiencing rapid population growth may not have quality housing or social services to adjust to population needs. New migrants may not speak the language or understand bureaucracies for obtaining relief or recovery information.	Rapid population growth	

Children are another special population especially vulnerable to mental and emotional health effects of disasters. Emergency managers should have plans in place to secure adequate shelter, transportation and legal services for children displaced from parents as well as procedures for reuniting families. Even if not separated from parents, children often have psychological symptoms from the trauma of a catastrophic event that they have difficulty expressing given their undeveloped language capacity. Coupled with the aftermath of disaster when schools and day-care centers are often closed, temporary housing confusing, and parents distracted by coping with clean-up or loss of jobs, the needs of this voiceless population are often underserved (NAS 2002).

To overcome the difficulty in describing the terms "vulnerable" or "special needs" populations, some disaster preparedness and response organizations simply use the terms to characterize groups whose needs are not fully addressed by traditional service providers. For example, California defines vulnerable populations as "people who feel they cannot comfortably or safely access and use the standard resources offered in disaster preparedness, relief and recovery. These people include but are not limited to those who are physically or mentally disabled (blind, deaf, hard-of-hearing, cognitive disorders, mobility limitations), limited or non-English speaking, geographically or culturally isolated, medically or chemically dependent, homeless, frail/elderly and children" (http://www.preparenow.org/pop.html).

While the U.S. Bureau of the Census defines those that are disabled, the agency shies away from defining "special needs" or "vulnerable" populations. The Census Bureau is careful about how they define poverty, however. Following the Office of Management and Budget's (OMB) Statistical Policy Directive 14, the Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty thresholds do not vary geographically, but they are updated for inflation using the Consumer Price Index. The official poverty definition uses money income before taxes and does not include capital gains or non-cash benefits such as public housing, Medicaid, and food stamps (http://www.census.gov/hhes/www/poverty/definitions.html).

3. IDENTIFYING POPULATIONS WITH SPECIAL NEEDS

Procedures for identifying individuals with special needs can be challenging for agencies charged with providing them resources and additional help in an emergency. The Red Cross may provide different levels of health care for various shelters but that help may not be available to people who show up unannounced needing the additional care or special resources. Generally Red Cross shelters provide minimum first aid treatment for evacuees and are not equipped or trained to recognize individuals with special needs. Red Cross shelter operators do not routinely screen for convicted felons including pedophiles or those under domestic constraint orders, possibly placing children and vulnerable women under further distress or even potential harm (Enarsen 1998).

Advocacy groups are an important component in the special needs communities. These groups could be direct service providers or non-service providers. Both types should be involved in identifying individuals with special needs as they can bring specialized information, subject-matter experts, and additional resources to the table. These organizations frequently find themselves being the lifeline to people with special needs during and after a crisis. Advocacy groups can also help locate and contact special needs individuals to identify their particular needs, act as information dissemination points, and identify gaps in emergency plans (FEMA 2003). Planners should make special efforts to include them in the planning process with the understanding that as advocates, these groups may bring their own agenda to the table. Others that can bring useful expertise and insight include coordinators of volunteer disaster relief organizations that often work to repair damaged areas for years after a disaster.

Table 3.1 presents a matrix that could be used to obtain data on special need populations within a community. Many communities pro-actively solicit information by providing mail-in forms in local telephone books or in pamphlets distributed at public events to help people with special needs self-identify themselves to emergency agencies. The problem with maintaining an up-to-date registry is that data on individuals with special needs is extremely perishable and requires constant systematic updating which can be labor-intensive. The other issue with registries has to do with legal considerations about privacy and who will have access to the information maintained in the database.

Other data available from national data sources such as the Census on ethnic or racial background of residential populations can be used to determine the number of languages into which public information materials and warnings should be translated. The CSEP program recommends translating public information materials if one percent of a community speaks another language. This one percent figure refers to one non-English language group – it is not a cumulative figure for all non-English languages. Provision for alternative languages should also be made on reader boards along major evacuation routes in communities with large non-English speaking populations.

Communications to individuals with special needs should continue after the disaster and specifically mention services available to those with disabilities. It is important to remember that flooding, debris and other hazards can make it impossible for persons with disabilities to leave or return to their residence. Companion animals are generally not trained to navigate downed power lines or other potential hazards, forcing those dependent on animals to remain inside or away until conditions are safe - which can mean several days or longer after a hazard's impact.

Table 3.1. Examples of data sources to identify special needs populations

Population type	Census data	Data source		
		Special census/ registry	County health department/social services	Other – advocacy, NOD, faith-based organizations
With Disability				
Visually impaired		x	x	x
Hearing impaired		x	x	x
Mobility impaired		x	x	x
Medically dependent		x	x	
Emotional problems		x	x	x
Severe mental problems			x	x
Institutions/Groups				
Hospitals	x		x	
Nursing homes	x		x	
Halfway houses	x		x	
Assisted care facilities	x		x	
Day-care centers	x		x	x
Prisons, jails	x		x	
Homeless shelters			x	x
Spouse-abuse shelters			x	x
Other				
Transients		x		
Tourists		x		
Culturally isolated				x
Migrants				x
People without vehicles		x		
Vulnerable				
Elderly	x			
Socially isolated			x	x
Children	x		x	
Low-income	x			
Homeless				x
Can't leave home	x			x
Non-English speaking	x			

3.1 CONGREGATED POPULATIONS

People with disabilities or other special needs may be congregated in permanent residential facilities, temporarily in health-care or residential facilities such as nursing or transition homes, or living alone or with caretakers and randomly dispersed within a community. Populations with disabilities congregated in facilities such as assisted-living or nursing homes are not homogenous in terms of needs or types of disabilities. For example, mentally competent individuals with impaired mobility may be housed in facilities with other clients who have significant dementia but no mobility problems. Persons in homeless shelters may include a significant number with mental illness or substance-abuse problems, but increasingly include families with young children as housing becomes unaffordable for the working poor.

Spouse-abuse shelters typically house women and significant numbers of children in a highly vulnerable state, without resources and in need of protection from their abusers.

Planners and officials need to coordinate efforts with owners and managers of facilities with congregations of special needs populations because managers are the gatekeepers who develop emergency plans and provisions and decide how residents will be taken care of in a hazardous event. Some facility managers will elect not to evacuate their populations because of the inconvenience, health risks, and the perception that residents would be placed under increased stress. To this end, some health-care facilities provide room and board to employees and their families during weather-related events to maintain adequate care levels for special needs residents (Vogt 1989). While this strategy may work for most events and prevent unnecessary trauma to residents from relocating to another facility, it may not be feasible in a catastrophic situation, as evidenced by problems faced by health care facilities in New Orleans coping with the aftermath of flooding following Hurricane Katrina. Facility managers should be encouraged to have back-up plans in place to alert officials and others when conditions limit or constrain their sheltering plans or cascading events force them to take alternative protective actions.

4. UNDERSTANDING NEEDS

Understanding the needs of special and vulnerable populations requires commitment on the part of emergency officials and planners, advocacy groups and relevant agencies. Some common needs are related to the underlying problems associated with an individual's capability to perform tasks. This could include an individual's reliance on electricity to sustain medical equipment and thus not be able to travel distances, inability to move up or down stairs or to go outside without physical assistance, or not being able to hear or see the warning message or gain further instructions to act appropriately in an emergency. Other issues such as being unable to read normal print text on television or hear normal sound activity may interfere with warning receipt. Planners need to make sure that all residents have access to public education and information materials in appropriate formats both prior to and during the event. Some communities include significant numbers of illiterate adults unable to read at a level allowing comprehension of written materials.

Planners should solicit and incorporate input from people with special needs such as those with disabilities. Issues that have greatest impact on those with special needs include notification, evacuation, emergency transportation, access to medical care and medications, access to mobility devices or service animals while in transit or at shelters and access to information (DOJ, no date). Plans should include accommodations for walkers, wheelchairs, crutches, or people with scooters. Warning procedures should ensure that all residents, including the blind or those with low vision, and the hearing impaired receive information in an appropriate format. Often this requires several forms of alert and notification and may even include sign language interpreters on local media channels.

Unless residing in special facilities, those with cognitive, mental, or emotional problems are the least likely to be recognized as having special needs without self-identifying. While segregation from others may be best to protect those evacuees from harm in shelter locations or during the evacuation process if public transport systems are used, the process is often difficult to administer and requires dedicated follow-up procedures to maintain. Emergency responders should be trained to recognize cognitive impairments by routinely screening for signs of confusion among evacuees and other signs – such as a person being unable to understand or follow simple instructions. Confusion in an elderly evacuee may also indicate other potential health problems. Others that may need to be segregated from other evacuees include the homeless, drug/substance abusers, and halfway house residents who may prey on others in shelters

Providing resources to those with special needs extends to shelter operations and also to the subsequent recovery period. If the State or local government provides the facility, Title II of the Americans with Disability Act (ADA) may apply. The DHS/FEMA (2003) training states that the greater a government's responsibility in selecting a shelter, the greater the responsibility for ensuring access for people with disabilities. If a non-governmental facility is used, Title III of the ADA applies. This requires a "readily achievable" standard of accessibility and is less stringent (DHS/FEMA 2003). Accessibility in a shelter may not be ideal but should be functional. Shelter staff should also be trained to work with people with disabilities, including those with guide or service animals.

A special needs shelter usually means a special <u>medical</u> needs shelter. These shelters are usually run by the jurisdiction or State and staffed by hospital employees, home health-care staff, local health care providers, caregivers and volunteers. These shelters are fully accessible and provide power and specialized equipment such as oxygen tanks (DHS/FEMA 2003). Some jurisdictions announce the location of special needs shelters well in advance of an event such as a hurricane or flood so that people with special needs know their location. Other communities do not announce their locations to avoid

having members of the general public show up and potentially waste valuable resources (DHS/FEMA 2003). It is important to remember that shelters may be needed for vulnerable individuals during events such as heat waves that do not constitute general emergencies for the general public because vulnerable individuals may not have the resources to cope with such events and may die if left alone.

One frequently overlooked problems is the need to maintain security for those with special needs, especially for women with protection orders and for children at risk from sexual predators. Following the Southeast Asian tsunami, Interpol issued a warning urging vigilance against sexual predators who may disguise themselves as aid and relief workers. Interpol noted that children by their very nature are trusting of adults and that individuals with sexual interest in children are aware of this and are known to travel to the region to sexually abuse young victims (Interpol 2005).

Research has shown that domestic violence after disasters increases as women are often forced to return to abuse situations or to suffer more abuse as emotions escalate and family routines are upset (Enarson 1998). Often the demands on emergency personnel during and immediately following a hazardous event are so great that such populations – protected in normal situations – are left without adequate support (Fothergill 1999). Emergency plans should include procedures for addressing loss of law-enforcement security during and following hazardous events, with the help of social service or other advocacy organizations to overcome such hardships.

Children may have unique needs or may exhibit retrogressive behaviors during or after emergencies that may place them temporarily in the special needs category. Often the children's mental health needs are overlooked following a hazardous event. Others that may temporarily vulnerable include mothers of newborns or very young infants, or multiple young children, especially single mothers or those whose spouses are temporarily unavailable or mentally or physically unable to provide support. Coordinating efforts with social service agencies to provide intervention counselors at shelters will help reduce the stress on evacuees, especially those with special needs who may be without familiar services and social contacts. Follow-up measures in schools or other institutions may be required later during recovery efforts.

5. EMERGENCY MANAGEMENT STRATEGIES

5.1 COORDINATING RESOURCES

Often the task of identifying residents with special needs and then providing services when needed appears overwhelming to emergency planners. The problem is exacerbated by the fact that hazardous events and disasters generally stretch emergency services and limit personnel who can be directed toward that effort in a hazardous event. The problem can be attacked by coordination of state and local agencies providing services to special-needs groups, not-for-profit advocacy groups, and community outreach programs prior to the event. Coordinating resources to address the needs of special needs populations involves identifying stakeholders, agencies, non-governmental organizations, health-care providers and grassroots organizations that work with disadvantaged individuals or persons with special needs. Relying on a single agency to coordinate resources conflicts with the multi-dimensional coordination effort needed to support the process.

As the Government Accountability Office (GAO) reported in their preliminary report on governmental response to Hurricane Katrina, it is also critical to have plans and procedures in place prior to an event to coordinate volunteers and voluntary donations from outside sources (GAO 2006). This aspect of convergence behavior, as pointed out earlier in the discussion of sexual predators, is critical to protecting those with special needs or other vulnerable groups. Faith-based organizations or other non-governmental organizations also can provide help in accessing resources for those with special needs. Emergency officials should make sure that those with special needs are made aware of such resources during the recovery period.

5.2 ANTICIPATING NEEDS

Anticipating needed supplies and services of special needs populations before and after an emergency also requires working with partners. Some community organizations distribute emergency kits as part of their public information programs to individuals with special needs or who are without resources to obtain such kits on their own. Public information on general preparations for emergencies should include how to contact emergency officials and the importance of having a personal plan that includes a basic disaster preparedness kit, medications if needed, and an emergency contact with someone outside the area of potential risk. Some faith-based organizations such as the Church of the Latter Day Saints provide information on building up a stock of supplies over a year to make the resource acquisition easier for those on limited incomes.

Facilities housing people with special needs either temporarily or on a permanent basis should have plans in place to provide care to residents for at least 72 hours. Although most states do not require health-care facilities other than hospitals to have back-up generators for emergency use, the use of generators is becoming more popular, especially for facilities that have clients who rely on electrically powered medical equipment. Managers of multi-storied facilities that plan vertical evacuation – moving clients to a higher floor – should be reminded of the difficulty of caring for clients when elevators aren't operable and other systems such as sewer and potable water are unavailable.

Emergency planners need to ensure that shelters designated for special populations or those with disabilities have appropriate accommodations for accessibility and movement to and within the facility. Using a school as a shelter does not ensure that it is handicapped-accessible or equipped for the hearing or sight impaired. Large-spaced shelters such as gymnasiums also may be disorienting to the elderly or

cognitively impaired who may not understand the heightened activity levels or who may become confused by elevated noise levels. Emergency planners should ensure that public address systems are in full working order and that accommodations are in place for the visually impaired before the shelter is occupied.

5.3 DELIVERY ISSUES

Delivery of services to individuals with special needs by jurisdictions is critical in emergencies but may be hampered by a lack of trust of authorities or official agencies, especially by those marginalized by ethnicity and income or culturally or socially isolated. Some agencies have partnered with not-for-profit organizations such as the Second Harvest food bank or Meals-on-Wheels to deliver emergency supplies, including extra food and water before and following an event. Red Cross shelters do not routinely provide medical or security services for evacuees beyond the minimum needed for the operation of the shelter. Nor are many shelters pet-friendly, meaning that those with certified service animals – and their animals – may not be comfortable in shelter environments.

When an event occurs, local community services normally available to special needs groups may be unavailable. Local rescue squads or ambulance services will likely be unable to transport individuals unless they are in critical condition, especially if search and rescue efforts are necessary. Other essential services such as vendor deliveries may not be available for several days after an event. Special needs providers should be aware of response activities and the resources available. Response activities and resources for special needs individuals may fall to fragmented volunteer, advocacy, or faith-based groups. This may make the preparation for emergencies confusing for planners as well as making accessing services confusing and difficult for recipients.

The emergency plan should also identify physically accessible short-term housing (such as accessible hotel or motel rooms within the community or nearby) if people with disabilities cannot return home because of power outages or destruction of ramps or other accessibility devices. The housing should have appropriate communication devices, such as teletypewriters (TTY's) which are also known as telephone communications for the deaf (TDDs), to ensure individuals can communicate with family, friends, and medical professionals (DOJ, no date). Many individuals with disabilities fear losing their independence, and allowing for normal communications can help alleviate that anxiety. If a jurisdiction contracts with another entity, such as the Red Cross or another government, to provide emergency plans and response services, the jurisdiction should ensure that plans are in place to follow these procedures as well.

It is critical to educate, train, and exercise relief and rescue personnel to address the immediate needs of persons with disabilities. Affected individuals may need such items as bladder bags, insulin pumps, blood glucose monitors, walkers and wheelchairs, and relief personnel should be equipped and trained to use such equipment. In addition, personnel and volunteers should be trained on how to support the independence and dignity of persons with disabilities or special needs in the aftermath of a disaster (Blanck 1995).

5.4 PROTECTIVE ACTION ISSUES ASSOCIATED WITH SPECIAL POPULATIONS

5.4.1 Evacuation

Once individuals with special needs have been identified and located, plans for protective actions in emergencies that include evacuation should be developed and distributed through proactive public

information programs. Emergency planners should also recognize that even under mandatory evacuation orders some individuals will not or cannot comply. Reasons for non-compliance include not having access to transportation, being mobility impaired, not being financially able to evacuate, needing to work, needing to provide care for others, thinking one's location is safe, or not hearing a warning message. Some individuals don't evacuate because of a concern for looting or because they can't take their companion animals with them to shelters. Many of these factors accounted for the non-compliance with evacuation orders in New Orleans during Hurricane Katrina in 2005.

A population that requires continual care or monitoring is an issue for evacuation planning. Depending on the threat and the level of care provided, the need for continuing care requires resources and complicates the evacuation and may even place patients and staff in health-care facilities at further risk (Taaffe et al. 2005). While some patients near release may be released to family or evacuated, others with severe conditions may be sheltered-in-place or may only be moved to another location that provides the medical care needed. Another problem is that the primary health-care staff may be distracted or otherwise engaged by the evacuation process and unable to provide the necessary care. Prison populations also require continued security that can place both staff and those incarcerated at significant risk if an evacuation is necessary. National new stories following Hurricane Katrina included accounts of inmates being held for misdemeanors who were then evacuated to other facilities and were mistreated at those institutions (Southern 2006).

While Hurricane Katrina exposed many of the issues of vulnerability and lack of federal agency accountability, research findings indicate that most emergencies involving special needs groups such as those in nursing homes and hospitals are handled well through innovative efforts of staff and others, such as families and friends, recruited to help during the emergency. Tampa Bay, Florida, nursing homes are often successfully evacuated because of the on-going efforts of dedicated emergency managers working in tandem with facility managers and resource providers (Vogt 1990).

Another issue is getting warnings to those with special needs in time for them to mobilize. Mobilization time is measured from hearing the first warning until exit behavior begins. It is important to remember that not all people leave immediately when advised. People generally evacuate more quickly for a fast-moving event such as a chemical spill than for slow-moving events such as hurricanes or river floods. The percentage of the population that evacuates is called the evacuation rate. Those with special needs may need more time to mobilize supplies, arrange transportation, and seek an appropriate destination site. Individuals should be encouraged before an event to make contingency plans for emergencies.

The process of response has been well researched. On hearing a warning, people generally try to gather more information and check to make sure the warning is credible. Often this includes consulting with a family member, friend, co-worker, turning to a media outlet or the Internet. After confirming the threat is real and they are at risk, they make choices concerning their personal safety. Individuals with limited mobility should be encouraged to have prior arrangements for transportation in emergencies. Relying on public transportation is not a viable option in emergencies.

Individuals with disabilities face a number of challenges in evacuations. Mobility-impaired individuals may need help traversing exit stairs when elevators are shut down. Others without sight may have normal evacuation routes closed and lack alternative exits. Public transportation may be unavailable and streets or sidewalks blocked, making evacuation impossible for some. Procedures should be in place – and publicized – to ensure those with disabilities have some form of transportation. For example, some communities have used lift-equipped school or transit buses to evacuate people with wheelchairs during floods (DOJ, no date, pg. 3).

5.4.2 Shelter-In-Place Issues

Individuals with special needs may choose to or have to shelter-in-place during emergencies, and they should be encouraged to make this fact known to emergency officials. Even those that are generally competent to move around, such as the visually impaired who rely on companion animals, may feel that a strange evacuation environment or public shelter is not one they want to experience for themselves or their animals. Those caring for individuals confined to beds or wheelchairs may elect not to evacuate because of the potential trauma to the patient or client and the difficulty of obtaining resources at the evacuation site.

Additional shelter-in-place issues arise as to the level and quality of protection an individual with a disability or special need would have if that person were unable to quickly shut doors and perform other tasks such as taping and sealing a room in preparation for a toxic chemical release. Another issue is that a hearing-impaired person may not hear an all-clear notification that could result in further exposure from a chemical release if they remained in a shelter and did not leave or vent the structure after the toxic cloud had passed. Another problem may be a disabled person evacuating the residence after the all-clear signal is given.

5.4.3 Implications For Protective Action Planning

Governments often cannot take actions to protect special needs and vulnerable individuals if they and their specific needs cannot be identified. While advocacy groups and social service providers can provide input when asked, it is up to emergency planners to seek out such groups and work with them to develop plans that include provisions for people with special needs. Response and recovery activities for people with special needs and our more vulnerable citizens can be overwhelming for disaster workers and service providers, especially if workers were victims of the same disaster themselves.

All emergency plans should include measures to ramp up distribution services quickly after major disasters. While local service providers may be adequate in the majority of hazardous events, provisions for obtaining immediate aid outside the jurisdictions should be considered. A plan to coordinate volunteers, charities and other non-governmental organizations that routinely work with special needs groups can be established. Credentialing volunteers prior to an event who can lend immediate support to those with special needs may be one option to help protect them and find relief more efficiently. Training volunteers, agencies and other organizations is essential to build an understanding of the limits of those with special needs and an awareness of what constitutes vulnerability. Exercises, whether table-top or in the field, should always test the ability to protect and provide services to people with special needs or disabilities to maintain that awareness.

Peter Blanck (1995) of the Annenberg Foundation offered these principles to guide the dialogue on preparing communications for emergencies involving people with disabilities or special needs:

1. Provide accessible disaster facilities and services with adequate communications technology to help people with disabilities assess damage, collect information and deploy supplies. Accessible essentials – housing, beds, toilets and other necessities – should be made available to those with disabilities as well as those who incur a disability during an event.

2. Provide access to technology that includes interpreters, TDD communications and signaling devices, large print or cassette tape for visually impaired, and assistance for those with cognitive impairments or mental or emotional illnesses to cope with new surroundings and minimize confusion.

3. Provide reliable rescue communication technology to ensure competent field treatment and tracking of people with disabilities.

4. Partner with the media to incorporate advisories and other emergency information in broadcast formats accessible to special populations and those with disabilities.

5. Partner with the disability organizations to plan relief and rescue operations and the media to educate and inform the public of self-help plans and necessary precautions to take for imminent disaster.

6. CONCLUSION

Determining the most useful categories to characterize special needs and vulnerable populations continues to challenge researchers, agencies and emergency planners. As the American population continues to age, the number of people with special needs or disabilities will likely increase. The epidemic of obesity may also greatly increase the prevalence of diabetes, stroke, heart conditions, and dementia at earlier ages. This will increase the burden on emergency planners and agencies to further develop and refine strategies to ensure that emergency plans encompass their needs.

Other issues that will need to be addressed are policies that place some of America's most vulnerable populations in assisted-living and nursing homes in known areas at risk from catastrophic storms and floods. Large numbers of assisted living facilities are built every year along coastlines without appropriate means to evacuate in hazardous events. Southern states at risk of severe hurricanes, tornadoes and other hazards still attract large numbers of retirees. Coastal populations are not growing significantly faster than non-coastal populations but it is the continued growth in a limited area of coastal communities with overtaxed resources that is the problem. Coastal counties contain 53% (153 million) of the nation's population yet, excluding Alaska, account for only 17% of the U.S. land area (Crossett et al. 2004).

Human vulnerability, or those circumstances that place populations at risk because of their reduced capacity to respond, is linked to the social and economic factors that interact with the built and natural environments (Heinz Center 2000, 2002). Mitigation of the effects of disasters and other hazards must take into account the social and economic conditions at the heart of risk and vulnerability.

Disasters change lives forever. For the approximately 49 million Americans with disabilities and the other uncounted numbers of people with special needs, surviving a disaster may be just the beginning of a greater struggle. The key to surviving and recovering from a crisis is preparation and continuing dialogue among leaders and experts of the disability communities, managers of relief organizations, media professionals, and local, state and federal emergency planners.

7. REFERENCES

American Association of People with Disabilitie (AAPD)s. 2005-2006. Reference Manual. "Definition of Persons with Special Health Care Needs, Originating Council on Clinical Affairs, Adopted 2004," 2005-2006, http://www.aapd.org/media/Policies_Guidelines/.

Blanck, P. D. 1995. *Disaster Mitigation for Persons with Disabilities: Fostering a New Dialogue*. The Annenberg Washington Program in Communications Policy Studies, Northwestern University, Washington, DC.

Centers for Disease Control and Prevention (CDC). 2004. "Preliminary Medical Examiner Reports of Mortality Associated with Hurricane Charley--Florida, 2004 Sept. 17." *Morbidity and Mortality Weekly Report, 2004*. 53(36): 835–837.

Crossett, K. M., et al. 2004. *Population Trends Along the Coastal United States: 1980-2008*. National Oceanographic and Atmospheric Administration, Rockville, Md.

Cutter, S. L. 1996. "Vulnerability to Environmental Hazards." *Progress in Human Geography*. 20(4): 529–539.

Cutter, S. L., B. J. Boruff, and W. L. Shirley. 2003. "Social Vulnerability to Environmental Hazards." *Social Science Quarterly*. 84(2): 242–261.

Department of Justice. (No date). "An ADA Guide for Local Governments," http://www.ada.gov/emergencyprep.html.

Enarson, E. 1999. "Violence Against Women in Disasters: A Study of Domestic Violence Programs in the US and Canada." *Violence Against Women*. 5(7): 742–768.

Enarson, E., and B. H. Morrow. 1998. *The Gendered Terrain of Disaster*. Praeger, Westport, Conn.

Environmental Protection Agency (EPA). 2006. *Aging and Toxic Response: Issues Relevant to Risk Assessment (Final)*. U.S. Environmental Protection Agency, Washington, DC, http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=156648.

Executive Order 13347. "Individuals with Disabilities in Emergency Preparedness," 69 FR 44573, July 26, 2004, http://www.archives.gov/federal-register/executive-orders/2004.html.

Federal Emergency Management Agency (FEMA). 2003. *Emergency Planning and Special Needs Populations*. FEMA G197. United States Fire Administration, Emergency Management Institute, Federal Emergency Management Agency, Washington, DC.

Federal Emergency Management Agency (FEMA). 2003. *Emergency Planning and Special Needs Populations*, FEMA GI19. Federal Emergency Management Agency, Washington, DC.

Federal Emergency Management Agency and American Red Cross (FEMA/ARC). 2004. *Preparing for Disaster for People with Disabilities and Other Special Needs*, Federal Emergency Management Agency, Washington, DC. www.fema.gov and www.redcross.org.

Fothergill, A. 1999. "An Exploratory Study of Woman Battering in the Grand Forks Flood Disaster: Implications for Community Responses and Policies." *International Journal of Mass Emergencies and Disasters*. 17(1): 79–98.

Government Accountability Office (GAO). 2006. *Enclosure 1: Statement by Comptroller General David M. Walker on GAO's Preliminary Observations Regarding Preparedness and Response to Hurricanes Katrina and Rita*. U. S. Government Accountability Office, Washington, DC.

Heinz Center. 2002. "Human Links to Coastal Disasters," The H. John Heinz Center for Science, Economics, and the Environment, Washington, DC, http://www.heinzctr.org/NEW_WEB/PDF/Full_report_human_link.pdf.

Heinz Center. 2000. *The Hidden Costs of Coastal Hazards: Implications for Risk Assessment and Mitigation*. The Island Press, Washington, DC.

Hooke, W., and P. G. Rogers, eds. 2005. "Public Health Risks of Disasters: Communication, Infrastructure, and Preparedness—Workshop Summary," National Academy of Sciences, Washington, DC. http://www.nap.edu/catalog/11201.html.

Houghton Mifflin Company. 2000, updated 2003. *American Heritage® Dictionary of the English Language, Fourth Edition©*. Houghton Mifflin Company, Boston.

Interpol. 2005. "Protect Child Disaster Victims From Sexual Predators. Report Suspicions to The Authorities." http:/www.interpol.int/Public/Children/asianTsunamiDisaster/.

Klinenberg, E. 2003. *Heat Wave*. The University of Chicago Press, Chicago.

Mileti, D. 1999. *Disasters by Design*. John Henry Press, Washington, DC.

Morrow, B. H., and E. Enarson. 1996. "Hurricane Andrew Through Women's Eyes: Issues and Recommendations." *International Journal of Mass Emergencies and Disasters*. 14(1): 1–2.

National Academy of Sciences. 2002. *Speaking of Health: Assessing Health Communication Strategies for Diverse Populations*. National Academies Press, Washington, DC.

National Organization on Disability (NOD). 2005. "Report on Special Needs Assessment for Katrina Evacuees (SNAKE) Project," National Organization on Disability, Washington, DC, www.nod.org.

Soukhanov, A., ed. 2001. Encarta World English Dictionary. St. Martin's Press, New York.

Southern, B. 2006. "Left to Die." *The Nation*. 282(1): 18–22.

Stern, S. M. 2003. *Counting People with Disabilities-How Survey Methodology Influences Estimates in Census 2000 and the Census 2000 Supplementary Survey*. Proceedings from 2003 Joint Statistical Meetings (May), pp. 4064–4071. http://www.census.gov/hhes/www/disability/ACS_disability.pdf

Taaffee, K. M., R. Kohl, and D. L. Kimbler. 2005. "Hospital Evacuation: Issues and Complexities." *Proceedings of the 2005 Winter Simulation Conference*, eds. M. E. Kuhl. N. M. Steiger, F. B. Armstrong, and J. A. Jones, pp. 943–950. http://www.informs-cs.org/wsc05papers/111.pdf

U.S. Census. 2005. *Disability and American Families: 2000*. US Census Bureau, Dept. of Commerce, Washington, DC.

U.S. Congress. 1990. Americans with Disabilities Act (ADA) of 1990. Public Law 101-336, http://www.ada.gov/pubs/ada.txt

U.S. Department of Justice (DOJ). No date. "An ADA Guide for Local Governments – Making Community Emergency Preparedness and Response Programs Accessible to People with Disabilities." http://www.ada.gov/emerprepguideprt.pdf.

Ver Ploeg, M., and E. Perrin, eds. 2004. *Eliminating Heath Disparities: Measurement and Data Needs*, The National Academies Press, Washington, DC. http://www.nap.edu/books/0309092310/html/R1.html

Vogt, B. 1990. *Evacuation of Institutionalized and Specialized Populations*. ORNL/Sub-7685/1, Oak Ridge National Laboratory, Oak Ridge, Tenn. (reprinted by FEMA).

White, G., and E. Haas. 1975. *Assessment of Research on Natural Hazards*. MIT Press, Cambridge, Mass.

Wisner, B., P. Blaike, T. Cannon, and I. Davis. 2005. *At Risk, 2nd. Ed*. Routledge, London and New York.

Additional Resources

http://www.ready.gov/america/getakit/disabled.html;
http://www.ready.gov/america/getakit/seniors.html(DHS/FEMA)

http://sis.nlm.nih.gov/outreach/aboutoutreach.html (Library of Medicine)

http://www.preparenow.org/pop.html (California definition)

http://www.ers.usda.gov/Briefing/Vulnerablepopulations/ (USDA)

http://www.census.gov/hhes/www/poverty/definitions.html (U.S. Census)