

PHYSICAL DISABILITY AS A FACTOR IN HOME FIRE DEATHS

Marty Ahrens

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**National Fire Protection Association
Fire Analysis and Research Division**

Abstract

NFPA estimates that physical disability was a factor in an average of 360, or 13%, of home fire deaths. More than half of the victims were involved in ignition and in the area of origin when the fire started. More than half had working smoking alarms. When physical disability contributed to the fatal injury, the victims were more likely to have been killed by a fire started by smoking materials, that originated in the bedroom, and that began with either a) mattresses or bedding, or b) clothing, than were home fire victims in general.

These estimates are based on data from the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA's) annual fire department experience survey.

Keywords: fire statistics, home fires, physical disability

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For more information about the National Fire Protection Association, visit www.nfpa.org or call 617-770-3000. To learn more about the One-Stop Data Shop go to www.nfpa.org/osds or call 617-984-7443.

Copies of this analysis are available from:

National Fire Protection Association
One-Stop Data Shop
1 Batterymarch Park
Quincy, MA 02169-7471
www.nfpa.org
e-mail: osds@nfpa.org
phone: 617-984-7443

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Executive Summary

The American Community Survey found that 9% of U.S. residents who lived in the community in 2005-2007 and were at least five years old had some type of physical disability that restricted mobility, reaching, lifting, or carrying. These disabilities can make it difficult or impossible for an individual to escape a fire independently. Twenty-one percent of the people with physical disabilities had incomes below the poverty line. This lack of income makes it less likely they will be able to afford to purchase specialized safety equipment or pay attendants. Four percent of the surveyed population had some type of sensory impairment, including vision and hearing impairments. These individuals may not hear a smoke alarm or oral communication or be able to read printed instructions.

During 2003-2006, physical disability was identified as a contributing factor in an estimated average of 360, or 13%, of U.S. home fire deaths per year. If all the people with physical disabilities in the general population and among fire victims were identified and the definitions of physical disability used were comparable, then people with physical disabilities had a home fire death rate in 2003-2006 of 14 deaths per million. This rate is 1.4 times the 10 deaths per million population from all home fires and assumes the 2005-2007 population with disabilities would be comparable to the population in 2003-2006. It is likely that some victims with physical disabilities were missed because those disabilities were not readily observable (e.g., no wheelchair or other device as evidence of disability). If the estimated number of victims was missing a larger share of people who actually had a physical disability than the American Community Survey's estimate of the disabled population missed, as this logic would suggest, then the 14 deaths per million population would be an underestimate. The true death rate for physically disabled would exceed the general population death rate by an even larger margin. It is unclear whether fire victims with sensory disabilities were coded as having a physical disability as sensory disability was not mentioned specifically.

Providing adequate fire safety for individuals with physical disabilities can be challenging, particularly in cases of severe mobility limitations. Detection requirements consider the time a typical person needs to leave the building. If an individual cannot move out of danger, a working smoke alarm has less benefit. In some cases, particularly when an individual is already in poor health and in the immediate area of the fire origin, fatal injury may occur before a sprinkler operates.

In many cases, however, sprinklers can provide more time even when an individual cannot fully evacuate. In 2005, Kenneth Tremblay described a Nevada fire in which an operating sprinkler saved the life of an elderly woman who used a wheelchair. Her bedding caught fire when she smoked in bed. She got into her wheelchair but was unable to exit the unit. When firefighters arrived, they saw smoke and flame coming from a fourth floor apartment window and the woman under the sprinkler's spray just inside the door of her apartment. The sprinkler controlled the fire and protected her from most of the smoke and heat.

In this analysis, national estimates derived from the U.S. Fire Administration's National Fire Incident Reporting System (NFIRS) and NFPA's annual fire department experience survey are

used to show the causes and circumstances of home fire deaths of victims when physical disability was a factor and highlight differences from overall home fire deaths. This information can help people with disabilities and those who work with or care for them develop and communicate ways to better protect this community from fire.

Compared to all home fire victims, victims with physical disabilities were more likely to be female, live in one- or two-family homes, and to be at least 65 years of age. More than half (53%) of these victims were female, but this percentage was still lower than the 57% female share of the population with physical disabilities.

While home fire deaths in general are much more common between midnight and 6:00 a.m., time patterns were much less pronounced when physical disability was a factor. Fifteen percent of these deaths resulted from fires occurring during the peak period of 3:00 and 6:00 p.m.

Fifty-four percent of these deaths resulted from home fires with working smoke alarms compared to only 37% of home fire deaths overall.

When physical disability was a factor, 53% of the victims were involved in ignition and in the area of origin at the time the incident began. Including those who were not involved in ignition, more than two-thirds were in the area of origin when the fire started. One-quarter of the victims were unable to act to save themselves. Sixty percent of the victims suffered both burns and smoke inhalation.

Twenty-nine percent of these victims died as a result of fires that started in a bedroom or sleeping area; 24% died from fires that began in the living room, family room, or den; and 15% from fires that started in the kitchen. Only 24% of home fire victims overall died from fires beginning in the bedroom or sleeping area. The percentages for the other leading areas were the same.

When physical disability was a factor, two of every five (39%) of the victims were killed by a fire started by smoking materials, compared to 25% of total home fire victims. Only 4% of the physical disability-related deaths resulted from intentionally set fires, compared to 11% of overall home fire victims.

Compared to overall home fire deaths, physical disability was a more common factor in deaths resulting from fires that began with either mattresses or bedding (20% of the deaths associated with physical disability vs. 13% overall), or clothing (12% of victims with physical disability contributing vs. 5% overall). Eighteen percent of the deaths associated with physical disability resulted from fires that began with upholstered furniture compared to 21% of overall fire deaths. An analysis by the type or composition of the material first ignited shows that when physical disability contributed to fatal injury, 57% of the deaths resulted from fires in which a fabric or textile was first ignited compared to 48% of home fire deaths overall.

NFPA has safety information for and about people with disabilities on our website, <http://www.nfpa.org/disabilities>, including an Emergency Evacuation Planning Guide and guides for schools and the workplace to help plan with and for students or employees who may need

assistance. NFPA also produces e-ACCESS, a quarterly newsletter focusing on safety for people with disabilities.

NFPA's former Center for High Risk Outreach, now part of NFPA's Public Education Division, has hosted, sponsored, or participated in a number of symposia and meetings that examined various aspects of the issue. Reports from several of these meetings are also on the website.

Additional steps must be taken to provide maximum safety for people with physical or sensory disabilities. This may be especially challenging for people living in one- or two family homes, the majority of fire victims. Many of the victims might have been saved had home fire sprinklers been present. Working and audible smoke alarms are important but more than one-half of the victims were fatally injured in fires with working smoke alarms. A new provision of the 2010 edition of NFPA 72, *National Fire Alarm and Signaling Code* will require low frequency signals for bedrooms used by individuals with mild to severe hearing loss. Tactile notification appliances will be required in addition to strobes for individuals with profound hearing loss. Improved notification, however, will only help those who can act.

With one-quarter of the victims unable to act after the fire started, and 53% involved in ignition and in the area of origin, it is clear that prevention is the best strategy. Mattresses and bedding, upholstered furniture, clothing, and other furnishings that are harder to ignite could be helpful.

Many people want to stay in the same home as they age. While age by itself does not cause disability, disability becomes more likely with increasing age. Plans should be made for a time when mobility might be impaired. Plans should also be made for short-term disability due to injury or illness that may limit movement.

This is the first of a series of reports on home fire victims based on the NFIRS codes for human factors contributing to injury. A future report will focus on deaths of victims who were "possibly mentally disabled."



Physical Disability as a Factor in Home Fire Deaths

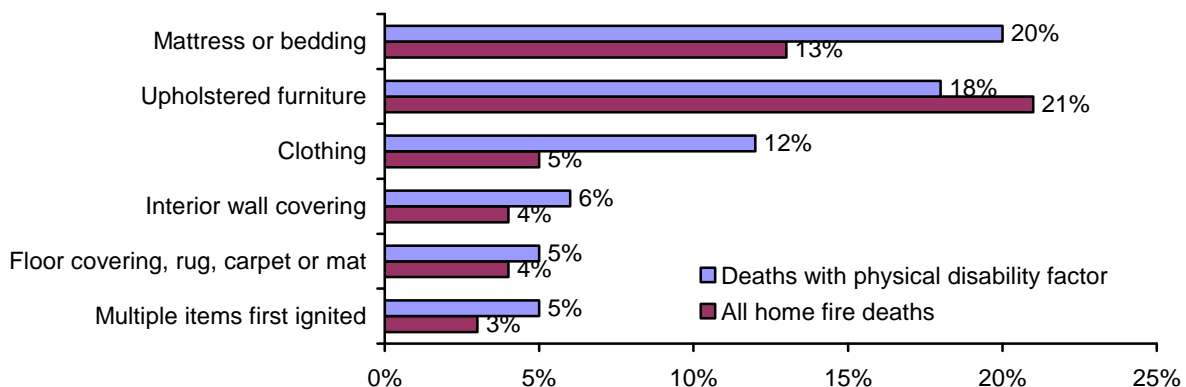
During 2003-2006, physical disability was a contributing factor in an estimated average of 360 (13%) home fire deaths per year. The American Community Survey reported that 9% of community residents who were at least five years old in 2005-2007 had some type of physical disability while 4% had a sensory disability.

Causes and Circumstances of Home Fires Deaths With Physical Disability a Factor in 2003-2006

When physical disability contributed to the fatal injury:

- 54% of the victims died as a result of home fires with working smoke alarms compared to only 37% of home fire victims overall.
- One-quarter of victims with physical disabilities were unable to act to save themselves.
- 53% of the victims were involved in ignition and in the area of origin when the incident began.
- Victims were more likely to die from a fire that began with either mattresses or bedding (20% vs. 13% of all home fire victims), or clothing (12% vs. 5% of all home victims).

Home Structure Fire Deaths with Physical Disability a Factor by Item First Ignited: 2003-2006



- Two of every five (39%) victims were killed by a fire started by smoking materials, compared to 25% of total home fire victims.
- 88% of the victims were killed in fires in one- or two-family homes. Apartment fires killed 12% of the victims.
- Almost two thirds (65%) of the victims were at least 65 years old.