

# **U.S. Fire Administration TOPICAL FIRE RESEARCH SERIES**

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## **Older Adults and Fire**

### **FINDINGS**

- Older Americans represent a high fire risk group. 13% of the population is 65 or older, and this percentage is expected to grow rapidly.
- 1,200 older adults die each year from fire, the sixth leading cause of death in this population group.
- Smoking is the leading cause of fire deaths among older adults, and cooking is the leading cause of injuries.
- Disabilities in the elderly—vision and hearing loss and mobility impairments—exacerbate the fire risk.
- Poverty increases fire risk, and 10% of the older population lives at or below the poverty line.

Older adults (individuals 65 years and older for the purposes of this paper) represent one of the highest fire risk populations in the United States. As a natural result of the aging process, older adults present unique challenges in the fields of fire protection, prevention, and safety. Changes associated with the aging process predispose older adults to ignite a fire yet, at the same time, reduce their chances of surviving it. As our population ages, we are likely to see more fire deaths in older adults unless active steps are taken to mitigate this public health problem.

### **THE GRAYING OF AMERICA**

Thirty-five million Americans are age 65 or older, representing 13 percent of the population, the highest percentage ever.<sup>1</sup> By 2050 the older population is expected to double, reaching nearly 80 million (20 percent of the population). Most of this growth is expected between 2010 and 2030, the years when the so-called baby boom generation enters retirement.<sup>2</sup> The fastest growing age group is the “oldest old”—age 85 and older.

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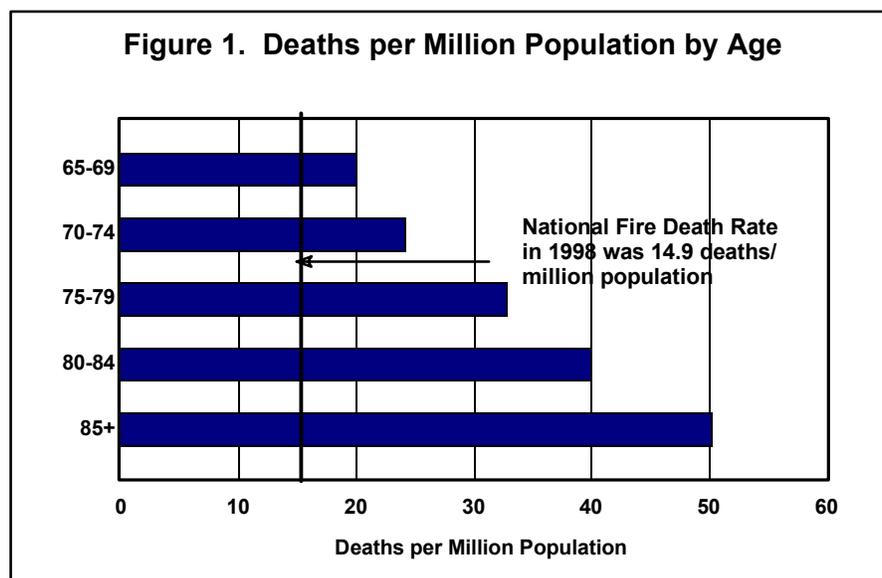
ages, we are likely to see more fire deaths in older adults unless active steps are taken to mitigate this public health problem.

As the older population grows, it will become more diverse, reflecting the demographic changes of the past century. Currently, 84 percent of older Americans are non-Hispanic whites. Historically, African-Americans have significantly higher fire death rates than the national average. Although only 13 percent of the general population, African-Americans comprise 26% of fire deaths. With race and age factored in, older African-Americans have a fire death rate more than 10 times the national average.<sup>3</sup>

## OLDER FIRE CASUALTIES

Each year, unintentional injuries kill approximately 30,000 older Americans.<sup>4</sup> Of these, fires and burns cause 1,200 deaths per year, the sixth leading cause of older adult deaths. Compared with the rest of the population, older adults have significantly higher fire death rates.

As shown in Figure 1, once an individual reaches the age of 65, his or her fire death rate exceeds that of the national average; for those 75 and older, the rate is doubled; for those over 85, the rate is more than tripled.<sup>5</sup>



## CAUSES OF FIRES

Approximately 13% of the older population smokes tobacco products,<sup>6</sup> and fires from smoking is the leading cause of fire death of older adults (Figure 2). The second and third leading causes of older fire deaths are heating and cooking. Cooking fires are the leading cause of fire-related injury to the older person. Often, these cooking-related fires are due to the accidental igniting of loose-fitting sleeves or of clothes that are quite flammable, forgetting to turn a burner off, or leaving food on the stove. Smoking and heating fires are the second and third leading causes of fire-related injuries in older adults.

**Figure 2. Leading Causes of Fire-Related Casualties in Older Adults**

(3-year average, NFIRS data (1996–98), residential structures, )

INJURIES	FATALITIES
Cooking (31%)	Smoking (29%)
Smoking (19%)	Heating (18%)
Heating (10%)	Cooking (13%)

According to a National Fire Incident Reporting System (NFIRS) data analysis, older fire victims tend to be in close contact with the source of the fire that kills them.

### **CASUALTY CHARACTERISTICS**

Nearly 50% of older people who die in fires are intimately involved with the source of the fire that kills them (e.g. their clothing or bedding has ignited). Approximately 40% are asleep and 20% are bedridden at the time the fire is ignited.<sup>7</sup> Further, since older adults have a diminished sensation of pain, they sometimes delay getting treatment for burn injuries. The mortality from burns for individuals over age 65 increases fivefold when treatment is delayed from 2 to 5 hours.<sup>8</sup>

Disabilities pose a significant challenge to fire safety.<sup>9</sup> In the older population, hearing and vision loss are the most frequently reported disabilities, but many experience loss of mobility to varying degrees. More than half of all wheelchair users are over the age of 65.<sup>10</sup>

**Medications and Alcohol Use.** Patients over the age of 65 receive 35% of all prescribed medications in this country.<sup>11</sup> Moreover, older patients may be taking several prescribed medications simultaneously. Taken together or individually, medications may cause drowsiness and impair judgment. These effects can increase the chance of unintentionally starting a fire and decrease the possibility of detecting and escaping from it. Medications prescribed for ailments that are commonly seen in older adults may also interfere with the homeostatic healing mechanisms of the body, which can lead to longer healing times from burns and contribute to higher burn mortality rates.<sup>12</sup>

**Poverty.** Older persons who live alone are more likely to live in poverty; older women are more likely than older men to live alone. This is due in part to women’s higher average life expectancy and their tendency to marry men slightly older than themselves. Overall, approximately 10% of the older adult population lives at or below the poverty line.<sup>13</sup>

Poverty has long been associated with an increase in fire risk.<sup>14</sup> For a variety of reasons, individuals living below the poverty line are less likely to receive and comply with fire safety messages. Housing available to low-income tenants may be less likely to have smoke alarms, and tenants or landlords are less likely to maintain those that are present.<sup>15</sup>

Individuals living in poverty also are less likely to be able to afford or maintain safe heating systems and, as a consequence, may rely on unsafe alternative sources of heat (e.g., portable space heaters).

**Home Health Care.** Many older people choose to stay in their homes and postpone, sometimes permanently, costly institutional health care. From 1992 to 1995, the number of home health care patients over the age of 65 jumped by nearly 30%, and 73% of all home health care patients were over the age of 65 as of 1995.<sup>16</sup> As a result, medical equipment and procedures once restricted to the hospital are now in the hands of family, visiting nurses, and other home care providers. Accounts of fatal fires caused by smoking in the presence of home oxygen are not uncommon. These fires are swift and fatal in nature, leaving victims little chance of survival. Additionally, various electronic monitoring equipment may be used in the home, potentially overloading power outlets. One unintended benefit of this phenomenon is the conversion of ground floor rooms to sleeping areas. Although usually intended to avoid the use of stairs, relocating the bedroom also improves one's chance of escaping or being rescued from a fire.

**Nursing Homes/Assisted Living Facilities.** Approximately 1.6 million Americans live in a nursing or group home setting. Ninety percent are over age 65 and nearly half are over age 85.<sup>17</sup> Older adults residing in such facilities often suffer from illnesses and conditions requiring constant assistance or supervision. A fire places these residents at significant risk for a variety of reasons. First, the number of residents outnumbers the staff, and this ratio may increase depending on the time of day (e.g., fewer staff is used at night). Residents who are bedridden or incapacitated depend solely on the resident staff to evacuate them in the event of a fire.

Also, the construction of some older nursing and group living homes can be problematic, since they were often designed with large, open-air living spaces that facilitate the passage of smoke and toxic gases upward through several stories. In a study of fires occurring in nursing home facilities, most of the injuries and deaths were attributed to relatively small fires that produced toxic fumes before detection or suppression devices were activated.<sup>18</sup> Further, many older retirement homes were built with combustible interior finishes, limited means for egress, and no automatic sprinkler systems.<sup>19</sup> Since modern buildings are generally required to meet more stringent building and fire codes, many of these situations are nonexistent in newer nursing home facilities.

## **CONCLUSIONS**

Older persons are far more likely than the rest of the population to die or be injured in a fire. Along with their families and caregivers, they should take special precautions to reduce the likelihood they will become a victim of fire.

## **NOTES**

<sup>1</sup>. This report is a revised, condensed version of *Fire Risks for the Older Adult*, U.S. Fire Administration, Federal Emergency Management Agency, 1999.

2. *Older Americans 2000: Key Indicators of Well-Being*, Federal Interagency Forum on Aging Related Statistics, August 2000.
3. Ibid.
4. *Fire in the United States 1987–1996*, U.S. Fire Administration, Federal Emergency Management Agency, 1999.
5. Centers for Disease Control and Prevention, *Ten Leading Causes of Death, All Ages, All Races 1998*.
6. Analysis of NFIRS 1998 data in conjunction with the National Fire Protection Association’s 1998 estimates of fire deaths and Census Bureau population projections for 1998.
7. *Morbidity and Mortality Weekly Report*, Centers for Disease Control and Prevention, December 1997.
8. NFIRS 1998 casualty data.
9. A. Danaf et al., “Burn Variables Influencing Survival: A Study of 144 Patients,” *Burns*, Vol. 21, No. 7, November 1995.
10. For more information, see *Fire Risks for the Visually Impaired* and *Fire Risks for the Hearing Impaired*, U.S. Fire Administration.
11. *Trends and Differential Use of Assistive Technology Devices*, National Center for Health Statistics, Centers for Disease Control and Prevention, November 1997.
12. Pollock, B. G., “Psychotropic Drugs and the Aging Patient,” *Geriatrics*, 53, Supplement 1:S20–4, September 1998.
13. A. Danaf et al., loc. cit.
14. *Older Americans 2000*, loc. cit.
15. *Socioeconomic Factors and the Incidence of Fire*, U.S. Fire Administration, Federal Emergency Management Agency, 1997.
16. Ibid.
17. “An Overview of Nursing Homes and Their Current Residents: Data From the 1995 National Nursing Home Survey,” National Center for Health Statistics, Centers for Disease Control and Prevention, (12) pp. 97–1250.
18. *Vital and Health Statistics Series 13, No. 147*, National Center for Health Statistics, Centers for Disease Control and Prevention, 2000.
19. Blye, P., Yess, J. P., “Fire Safety in Elderly Housing,” *NFPA Journal*, November/December 1987.
20. Ibid.

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