

U.S. Fire Administration/National Fire Data Center

# A Profile of Fire in the United States 2003-2007

Fifteenth Edition

January 2010



FEMA

## **U.S. Fire Administration** **Mission Statement**

*We provide National leadership to foster a solid foundation for our fire and emergency services stakeholders in prevention, preparedness, and response.*



**FEMA**



This brochure summarizes the Fifteenth Edition of *Fire in the United States, 2003-2007*, a larger statistical report of the overall fire problem in the United States as well as parts of the problem, such as residential and nonresidential structure fires. It presents trends of fires, deaths, injuries, and dollar loss over the 5-year period of 2003 to 2007, with emphasis on 2007 National Fire Incident Reporting System (NFIRS) data relating to causes of fires, property types, and civilian fire injuries. Civilian fire death data analyses are based on the National Center for Health Statistics mortality data with the 2006 data being the most current available at the time of publication.

Copies of the full report are available through the United States Fire Administration (USFA) Web site at [www.usfa.dhs.gov](http://www.usfa.dhs.gov) or by calling the USFA Publications Center at 800-561-3356.

## **A PROFILE OF FIRE IN THE UNITED STATES 2003-2007**

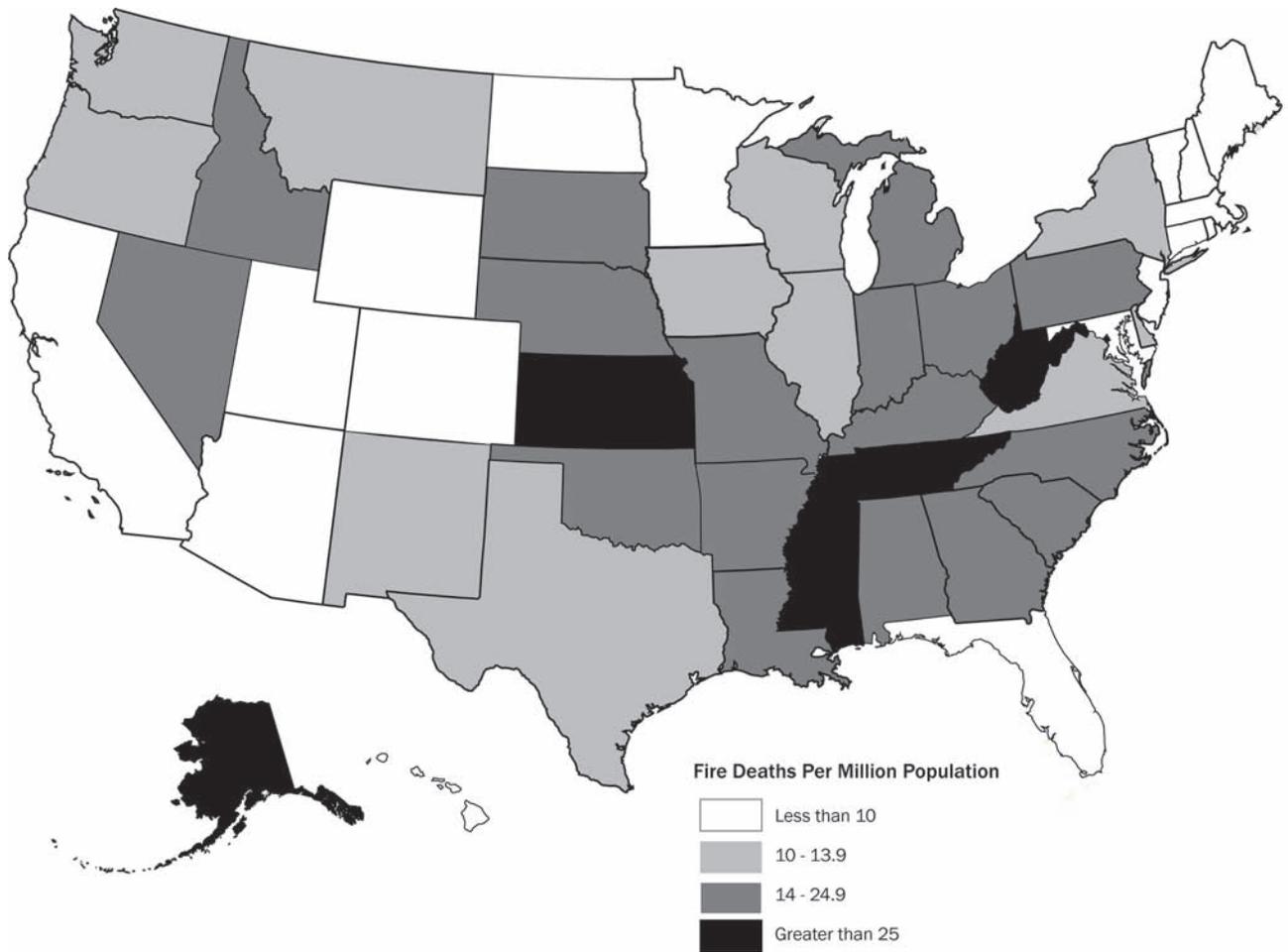
U.S. fire departments responded to nearly 1.6 million fire calls in 2007 that resulted in thousands of deaths, tens of thousands of injuries, and billions of dollars in property loss. In addition, there are enormous indirect costs associated with fires including temporary lodging, lost business, medical expenses, psychological damage, and others. These indirect costs from fire may be as high as 8- to 10-times that of direct costs from fire.

When compared to other industrialized Nations, the U.S. fire problem is severe. In fact, the United States is ranked as having the fifth highest fire death rate out of 25 industrialized Nations examined by the World Fire Statistics Centre. This general status has been unchanged for the past 27 years. However, the fire and fire loss rate trends for the 5-year period of 2003 to 2007 show, while dollar loss per capita increased by 4 percent, the fire rate per million population declined by 3 percent, the death rate declined by 20 percent, and the injury rate declined by 9 percent.

## **REGIONAL AND STATE PROFILES**

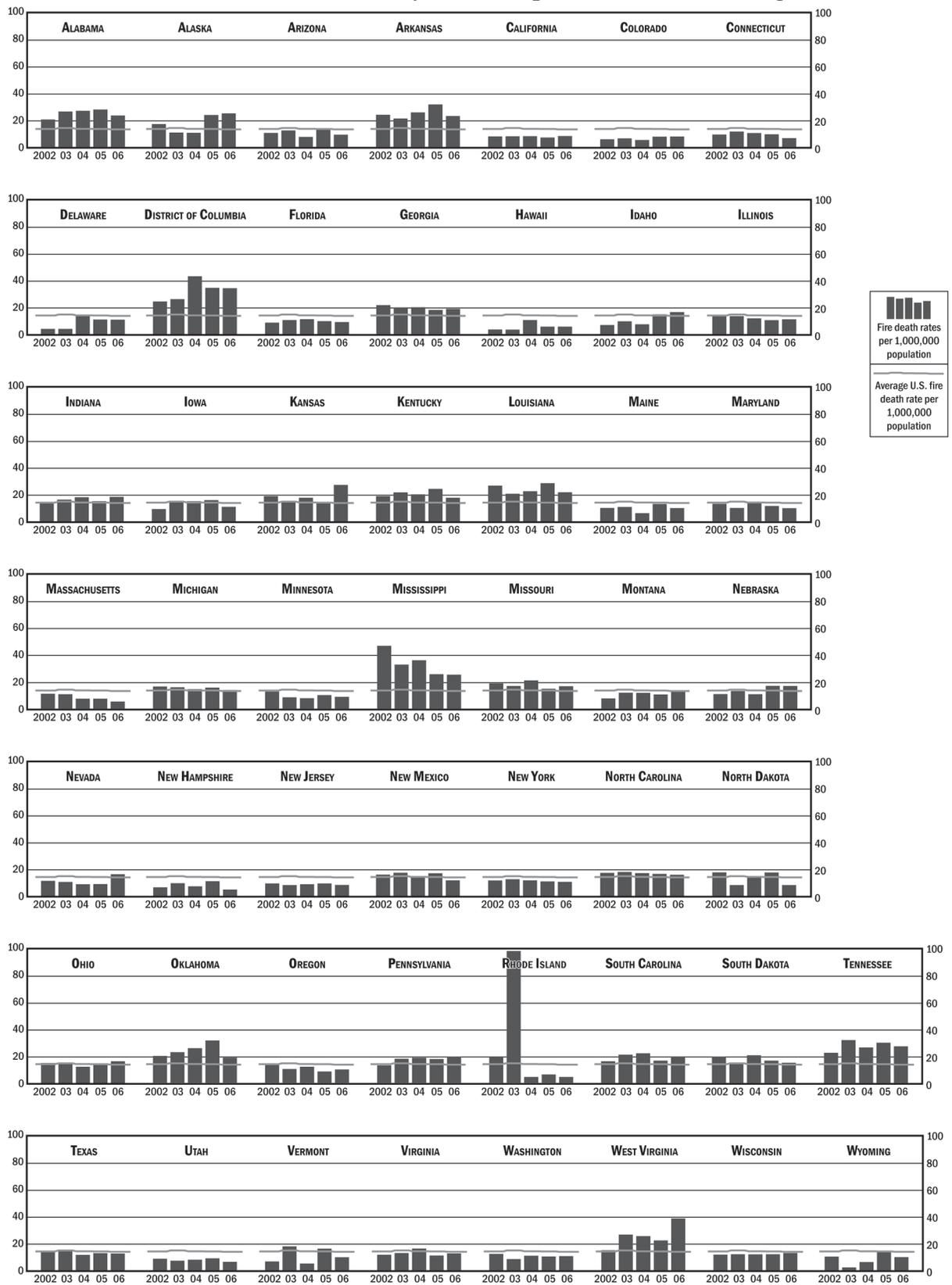
The fire problem varies from region to region and State to State due to differences in climate, socioeconomic status, education, demographics, and other factors. Alaska, Mississippi, Kansas, Tennessee, West Virginia and the District of Columbia have fire death rates that exceed 25 deaths per million population; this rate is one of the worst as compared to the industrialized Nations. Seventeen other States, mostly situated in the Southeast and Midwest, have death rates between 14 and 25 per million population. Twenty-eight additional States have fire death rates at or below the national fire death rate of 13.2 fire deaths per million population. While some State death rates are still high, overall, States have made progress in lowering the actual number of fire deaths as well as deaths per million population.

### Fire Death Rate by State (2006)



Sources: National Center for Health Statistics and U.S. Census Bureau.

### 5-Year Fire Death Rates by State Compared to National Average



Sources: National Center for Health Statistics and U.S. Census Bureau.

## RESIDENCES AND OTHER PROPERTIES

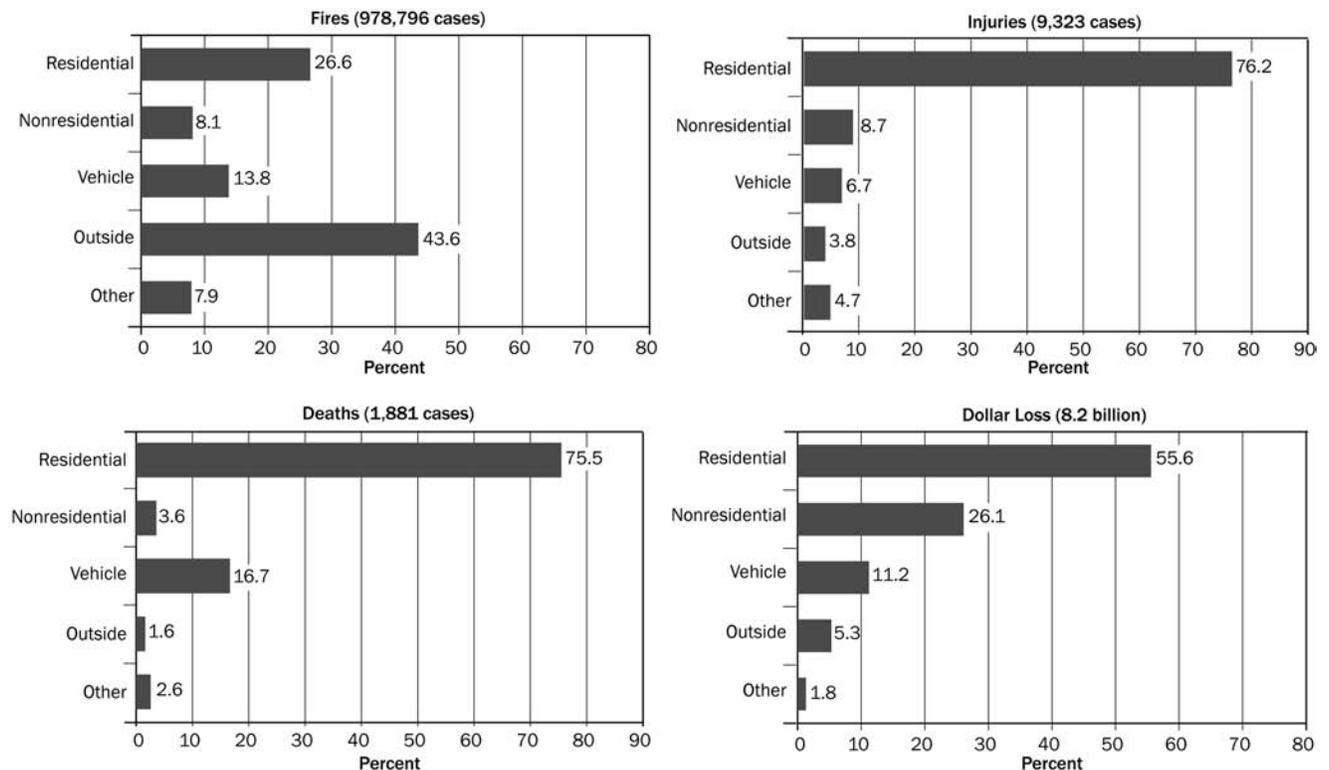
Over the years, there has been little change in the percentage of fires, deaths, injuries, and dollar loss related to the type of property involved. In terms of numbers of fires, in 2007, the largest property type category continues to be outside fires (44 percent)—in fields, vacant lots, trash, etc. Many of these fires are intentionally (deliberate actions) set, but do not cause much damage. Residential and nonresidential structure fires together account for another 35 percent of fires, but residential structure fires outnumber nonresidential structure fires by over three to one. Finally, 14 percent of fires involve a vehicle.

The largest percentage of deaths, 76 percent in 2007, occurs on residential properties, with the majority of these in one- and two-family homes. Vehicles account for the second largest percentage of fire deaths at 17 percent.

Seventy-six percent of all fire-related injuries occur on residential properties. The remaining fire injuries are distributed across nonresidential properties (9 percent), vehicles (7 percent), and outside and other fires (9 percent).

While residential properties are the leading property for dollar loss, nonresidential properties play a considerable role as well. Together, these two property types account for 82 percent of all dollar loss.

### Fire and Fire Losses by General Property Type (2007)



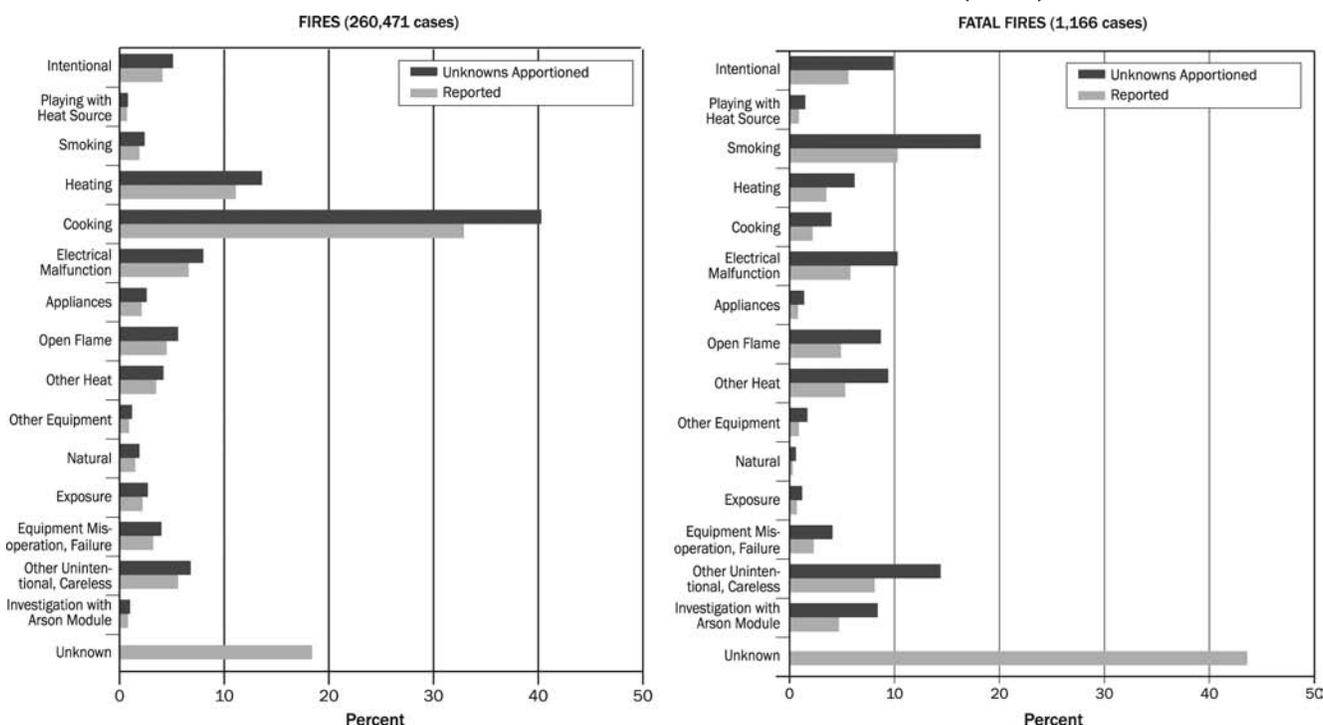
Source: NFIRS.

## CAUSES OF FIRES AND FIRE LOSSES

### Residential

Cooking is the leading cause of residential structure fires in 2007, causing 40 percent of all fires, followed by heating at 14 percent. The two leading causes of residential fires that result in fatalities are smoking (18 percent) and other unintentional (careless or accidental) actions (14 percent). The leading cause of residential fires that result in injuries is cooking (26 percent), followed by other unintentional actions (11 percent) and open flame (also 11 percent). Cooking is, by far, the leading cause of fires with property loss, at 20 percent.

**Causes of Residential Structure Fires and Fire Losses (2007)**



Source: NFIRS.

### Nonresidential

For nonresidential structure fires, cooking is the leading cause of fires (23 percent) followed by intentionally (deliberate actions) set fires (12 percent). The two leading causes of fires in nonresidential structures that result in fatalities are intentionally set fires (27 percent) and unintentionally (careless or accidental actions) set fires (19 percent). Cooking is the leading cause of fires that resulted in injuries (13 percent). Intentionally set fires and electrical malfunctions are the two leading causes of fires causing dollar loss, both at 13 percent. Notably, intentionally set fires are the second leading cause of nonresidential structure fires, and are the leading causes of both fatal fires and dollar loss in nonresidential structures.

## Vehicle

Unintentionally set fires are the leading cause of fires, fatal fires, fires causing injuries, and fires causing dollar loss in vehicles (32, 48, 51, and 30 percent, respectively). Failure of equipment or heat source is the second leading cause in all categories except fatal fires (fires—24 percent, fires causing injuries—19 percent, fires causing dollar loss—27 percent) where cause is under investigation in 28 percent of the incidents.

## Outside

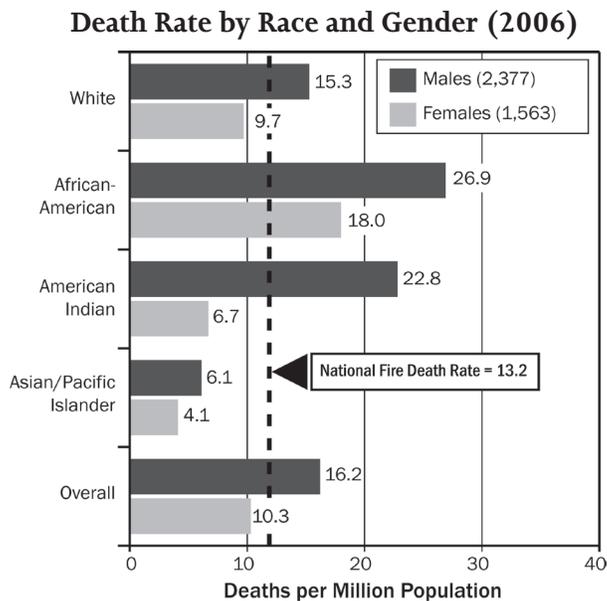
Intentionally set and unintentionally set fires are the leading causes of fatal outside fires, both at 37 percent. Unintentionally set fires are also the leading cause of fires, fires causing injuries, and fires causing dollar loss in outside fires (38, 53, and 38 percent, respectively). The cause is undetermined after investigation in 31 percent of outside fires and 24 percent of outside fires causing dollar loss. Intentionally set fires are the second leading cause of outside fires causing injuries (23 percent).

## Other

Just as with vehicle and outside fires, unintentionally set fires are the leading cause of other fires, fatal fires, fires causing injuries, and fires causing dollar loss (41, 40, 66, and 40 percent, respectively). Failure of equipment or heat source is the second leading cause of other fires (27 percent), other fires causing injuries (11 percent), and other fires causing dollar loss (31 percent). In 24 percent of fatal fires, the cause of the fire is under investigation at the time the fire incident report was submitted. The cause is undetermined after the investigation in an additional 24 percent of fatal fires.

## RACE, AGE, AND GENDER CHARACTERISTICS OF VICTIMS

While fire losses affect all groups and races, the problem is larger for some groups than for others. African-Americans (both males and females) and American Indian males have much higher fire death rates than the national average. In fact, African-Americans account for 22 percent of total fire deaths—nearly twice as high as their share of the overall population (13 percent).

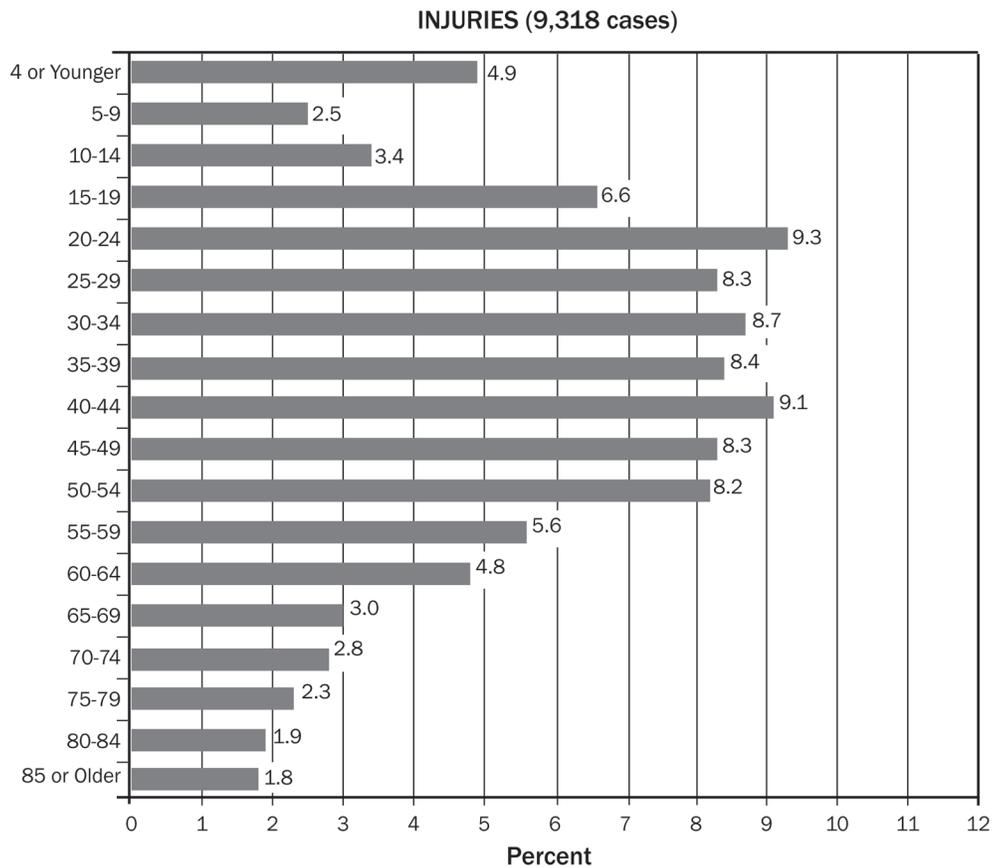


Sources: National Center for Health Statistics and U.S. Census Bureau.

Approximately 50 percent more men die in fires than women. Although exact reasons for this are not known, possibilities include the greater likelihood of men being intoxicated and the more dangerous occupations of men (most industrial fire fatalities are males). Female fire deaths in the 70 and older age group account for nearly one-third of female fire deaths (31 percent). Male fire deaths, by contrast, are higher in the late midlife years (ages 40 to 59). It is also known that men incur more injuries trying to extinguish the fire and rescue people than do women. Males aged 15 to 54 tend to have a slightly higher proportion of injuries, while young and older females have more injuries than males. Notably, older adult females have twice the proportion of fire injuries than older males.

The bulk of fire-related injuries occurs in those aged 20 to 54. This age group accounts for over half of the fire injuries in 2007.

### Fire Injuries by Age (2007)



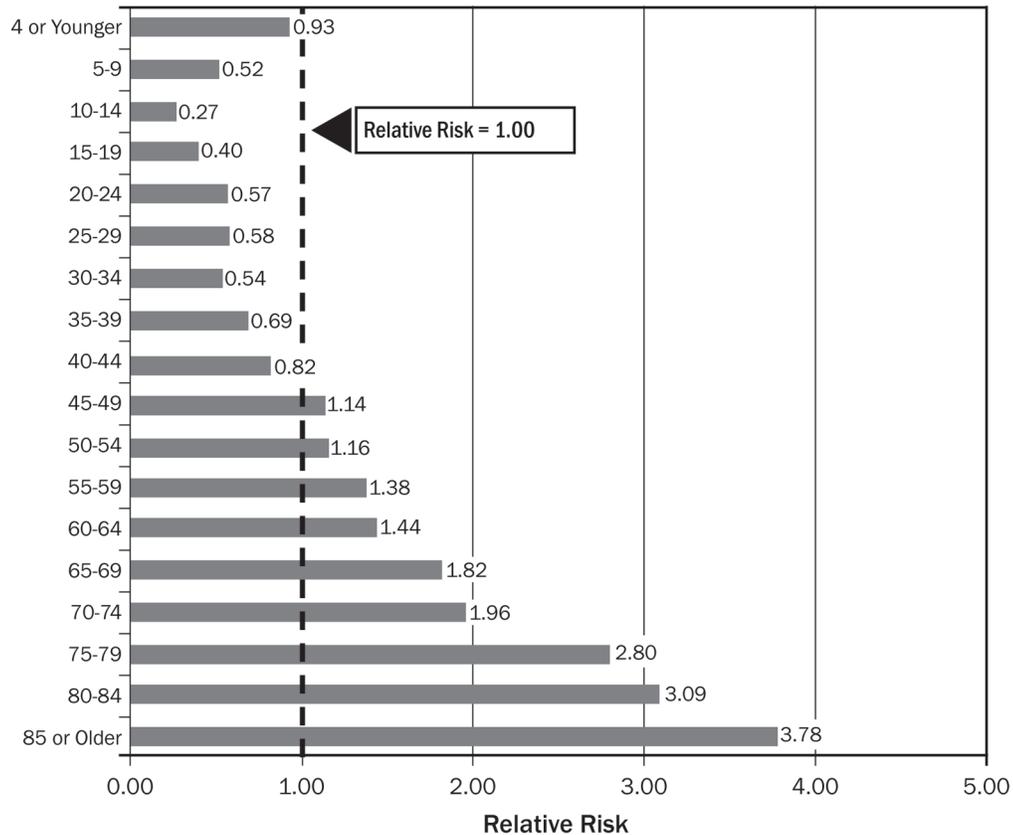
Source: NFIRS.

People with limited physical and mental abilities, especially older adults, are at a higher risk of death from fire than other groups. Older adults, those ages 65 and older, account for 32 percent of fire deaths and 12 percent of estimated fire injuries. As baby boomers enter retirement age, the demographic profile of the United States is expected to change dramatically. Over the coming decades, the older population will increase and a corresponding increase in fire deaths and injuries among older adults is likely.

In the past, children age 4 and younger were also considered to be at a high risk of death from fire. However, data indicate that the trend appears to be changing. The relative risk of children age 4 and younger dying in a fire is now slightly less than that of the general population.

### Relative Risk of Fire Deaths by Age (2006)

DEATHS (3,940 cases)



Sources: National Center for Health Statistics and U.S. Census Bureau.

## CONCLUSIONS

The Fifteenth Edition of *Fire in the United States* shows that, overall, the fire problem in the United States continues to improve. Five-year fire loss rates are down. It is likely that the following factors have contributed to these trends:

- Smoke alarms, whose usage has become nearly universal;
- Sprinklers, which quickly combat fires in their initial stage, especially in nonresidential and multifamily buildings;
- Fire codes, which have been strengthened;
- Construction techniques and materials, which have been targeted specifically to fire prevention;
- Public education at the community, county, State, and Federal levels; and
- Improved firefighter equipment and training.

Even considering these positive trends, however, the United States still has a major fire problem. The following areas continue to be of concern:

- The very old remain at high risk of death from fire;
- The bulk of fire-related injuries occurs in those aged 20 to 54;
- Certain ethnic groups remain at an enormous risk for fire deaths;
- Intentional fires are still a large problem, especially to outside and nonresidential properties;
- Contiguous States often have similar fire profiles; and
- Data challenges still exist. Many records submitted to NFIRS by participating fire departments provide either incomplete or contain no information in some of the fields. Additionally, in preparing this report, it is assumed that participating fire departments have reported 100 percent of their fire incidents. However, this is not always the case. The completeness of all the information in the NFIRS modules will contribute to the refinement and confidence level of future analyses.



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