Home Fire Victims by Age and Gender

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Key Findings

Home is a word most people associate with safety and comfort. However, the majority of fire deaths and injuries occur in the home. ¹ During 2015–2019, an estimated annual average of 2,620 civilians died and 11,070 were injured in reported US home fires, accounting for 75 percent of the total US civilian fire deaths and 72 percent of the civilian fire injuries.

The majority of the home fire victims were male (57 percent of the deaths and 55 percent of the injuries).

Most of the reported home fire injuries were minor (55 percent) or moderate (30 percent).

Higher-risk people do not necessarily account for the largest number of casualties. Although people 85 years of age and over had the highest rate of fire death and injury per million population, they account for only 2 percent of the total US population. Consequently, there are fewer victims of that age than victims in many lower-risk age groups.

The largest number of deaths in a single age group (20 percent) was among people 55 through 64 years old. That age group makes up 13 percent of the population.

Half (48 percent) of the fatal home fire victims were between 25 and 64, as were three of every five (62 percent) of the non-fatally injured. More than one-third (37 percent) of the fatalities were 65 or older, while only 17 percent of the non-fatally injured were in that age group.

Children under 15 accounted for 11 percent of the home fire fatalities and 9 percent of the injuries. Children under five accounted for 5 percent of the deaths and 4 percent of the injuries. Adults of all ages had higher rates of non-fatal fire injuries than children.

The risks associated with different fire causes vary by gender and age group. While smoking materials were the leading cause of home fire deaths overall, this was true only for people in the 55-84 age groups. Cooking was the leading cause of fire death for adults 85 and older.

Three-quarters (75 percent) of the people who died in home fires that began with clothing ignitions were at least 55 years of age. Only 6 percent of the casualties were under 15.

Male victims of fatal home fires were more likely to have been impaired by alcohol than female victims. Males also had twice the risk of dying in an intentionally set fire. Nearly half (46 percent) of all the victims of intentionally set home fires were reported to be acting irrationally when fatally injured.

Non-fatally injured males were more likely to have been trying to control the fire or rescue someone than were females. A larger percentage of females (20 percent) who died in fatal home fires had a physical disability compared to males (16 percent.).

Supporting tables are available here.

¹ Homes include one- or two-family homes, including manufactured homes and apartments or other multifamily housing.
Home Fire Deaths and Injuries by Age Group

During 2015–2019, an estimated average of 2,620 civilians died and 11,070 more were injured in reported home fires annually, accounting for 75 percent of total civilian fire deaths and 72 percent of civilian fire injuries. Understanding the patterns of age and gender among fire victims is critical for developing appropriate, targeted prevention strategies. Victim patterns by age group can be described in terms of actual estimates, percentages of all casualties, or death and injury rates per million population. Because of the different characteristics of young people at different ages, this study uses five-year spans up to age 24 and 10-year spans up to age 85.

Note that 55 percent of the non-fatal injuries were classified as minor, 30 percent were moderate, 9 percent were severe, and 6 percent were life-threatening.

Figure 1 shows that the largest number of deaths in a single age group was among people 55–64. Nearly half (48 percent) of the fatal home fire victims and almost two-thirds (62 percent) of the people injured in home fires were between 25 and 64.
Figure 2 shows the death and injury rates per million population for reported home fires. Children under the age of five faced a lower risk of fire death than people 45 and older. While the home fire death rate per million population for those 85 and older was 3.3 times that of the overall population, only 2 percent of the population is in that age group. Consequently, the number of deaths in that age group is not as high as in some other age groups.

Figure 3 shows that the decrease in the death toll among preschoolers has been particularly pronounced since the mid-1990s. In July 1994, the US Consumer Product Safety Commission’s (CPSC’s) requirements for child-resistant disposable lighters took effect. The decline in the death rate of children under five around this time indicates that this regulation was very successful.
Since 1996, the fire death rate for children under five has been consistently lower than that of those 65 and older. An increase in indoor smoking bans, particularly in homes with smokers and children, has likely also played a role. The reduction in adult smoking may have also made it harder for young children to obtain matches and lighters.

A CPSC study of unreported residential fires found that households in which at least one person was 65 or older had lower rates of fire (both reported and unreported) per 100 households than any other age group. While fire rates increased with the size of the household, the older adult household rate was less than half the rate seen in one-member households of any age. This suggests that older adults are actually much less likely than the general population to have a fire, but if they do, their risk of death may be even higher than their already high death rate per million population indicates.

Why are there breaks in the trend graphs?

NFIRS 5.0 was gradually introduced beginning in 1999. Due to limited participation in 1999–2001, estimates for these years are unstable and should be used with caution. They are shown in the supporting tables but not in the graphs.

**Figure 3. Home fire death trends for children under 5 and adults 65 and over**

**A. Percentage of home fire deaths**

**B. Home fire death rate trends**

CPSC’s child resistance requirements for disposable lighters introduced in 1994.
Home Fire Victims by Gender

According to US Census Bureau data, 51 percent of the population is female. Figure 4 shows that more than half of the people killed or injured in US home fires were male. Males were 1.3 times more likely than females to be fatally injured in a home fire and 1.2 times more likely to suffer non-fatal injuries.

Figure 5 shows the estimated number of home fire deaths and injuries by age and gender. More than half (53 percent) of the fatal home fire victims who were 85 or older were female. Fifty-five percent of those injured who were 75–84 years old were female, as were 62 percent of those who were 85 or older. However, Figure 6 shows that the death rate is higher for males than females of all ages.

Male victims of fatal home fires were more likely to have been possibly impaired by alcohol (12 percent) than female victims (6 percent). Note that these percentages were based on fire department reports.

Investigation reports often include information from autopsies. The Minnesota State Fire Marshal report for 2018 indicated that 49 percent of fatal fire victims (in all occupancies) were impaired by alcohol or drugs.3 A larger percentage of females (20 percent) who died in fatal home fires had a physical disability compared to males (16 percent.) Males who were non-fatally injured in home fires were more likely to have been hurt while engaged in fire control (37 percent) or rescue (9 percent) than females (29 percent and 4 percent, respectively).

The population most at risk of fire death and injury varies by the cause of fire. For example, more than half of the people injured or killed in candle fires were female. Middle-aged men were the most frequent victims of fatal intentional home fires. While males had slightly higher population-based death and injury rates in cooking fires, women 75 and older had higher cooking fire injury rates than men the same age. The next section on the leading causes of fire deaths and injuries by age group and gender provides more details.
Figure 5. Estimated home fire deaths and injuries by age group and gender, 2015–2019

Figure 6. Home fire death and injury rates by age group and gender, 2015–2019
Leading Causes of Fire Deaths and Injuries by Age Group and Gender

Fires can start in many different ways. Figure 7 shows that the leading cause varies for the number of fires, deaths, and injuries. Estimates of the causes of home fires were obtained from the 2021 NFPA report *Home Structure Fires.*

Estimates and rates of home fire deaths and injuries by cause of fire

Figures 8–11 show estimates of the number of home fire deaths and injuries, as well as the fire death and injury rates per million population by age group for the leading causes of these casualties. A brief overview is provided for each of the causes. More information can be found in the detailed supporting tables.

Causes are not mutually exclusive when they have been pulled from different data elements. The causes shown generally account for at least 5 percent of the injuries or deaths and have clear prevention strategies or have historically been of interest. See *NFPA’s Methodology and Definitions Used in “Leading Causes of Structure Fires” Tables* for more information about how these causes are defined and calculated. Although playing with a heat source did not reach 5 percent for the fire or casualty measures, children under five are at disproportionate risk from these fires compared to the rest of the population.

Figure 12 shows the percentage of fire victims who were in the area of origin in total as well as the percent who were both in the area of origin and involved in the ignition by the cause of the fire. People who are in the area of origin have less time to escape. In some cases, the victims knew about the fire before the alarm sounded. Some victims were unable to act. There is much more variation by fire cause among the deaths than the injuries.

Table 18 in the supporting tables shows trends for all (not just home) fire and flame deaths by cause of death. In 1999, half (50 percent) of the fire and flame deaths were attributed to smoke inhalation only. 26 percent were attributed to burns only, and 21 percent were attributed to both burns and smoke inhalation. In 2019, smoke inhalation alone caused only 38 percent of all the fire and flame deaths, while burns alone and burns with smoke inhalation each caused 30 percent of such deaths.
Figure 8. Estimated home fire deaths by age group and fire cause: 2015–2019 annual averages

- Smoking materials
- Cooking
- Heating
- Electrical distribution or lighting
- Intentional
- Candle
- Playing with heat source

Civilian deaths

Age groups

- Under 5
- 5–9
- 10–14
- 15–19
- 20–24
- 25–34
- 35–44
- 45–54
- 55–64
- 65–74
- 75–84
- 85+

Estimated home fire deaths by age group and fire cause: 2015–2019 annual averages

- Smoking materials
- Cooking
- Heating
- Electrical distribution or lighting
- Intentional
- Candle
- Playing with heat source
Figure 9. Estimated home fire injuries by age group and fire cause:
2015–2019 annual averages

- Smoking materials
- Cooking
- Heating
- Electrical distribution or lighting
- Intentional
- Candle
- Playing with heat source
Figure 10. Home fire deaths per million population by age group and fire cause:
2015–2019 annual averages
Figure 11. Estimated home fire injuries per million population by age group and fire cause: 2015–2019 annual averages

Age groups:
- Under 5
- 5–9
- 10–14
- 15–19
- 20–24
- 25–34
- 35–44
- 45–54
- 55–64
- 65–74
- 75–84
- 85+
- Total

Fire causes:
- Smoking materials
- Cooking
- Heating
- Electrical distribution or lighting
- Intentional
- Candle
- Playing with heat source

Injuries per million population by age group and fire cause.
During 2015–2019, an estimated average annual of 16,300 home structure fires (5 percent) started by smoking materials killed an average of 600 people (23 percent) and caused 1,200 reported non-fatal injuries (10 percent). Overall, smoking materials were the leading cause of home fire deaths, but this was true only for people in the 55–84 age groups. Thirty-five percent of the smoking fire fatalities were sleeping and 17 percent were unable to act.

Figure 12 shows that nearly three-quarters (73 percent) of the victims of fatal smoking material fires were in the area of origin when the fire occurred. Three of every five (61 percent) were in the area and involved in ignition. Two-thirds (68 percent) of those who were non-fatally injured were in the area of origin and nearly half (48 percent) were in the area and involved in ignition.

For example, a New York woman with a mobility disability who lived alone in a first-floor apartment lit a cigarette while using a nasal cannula for medical oxygen. Neighbors saw the resulting fire, called 911, and tried unsuccessfully to rescue her. Firefighters found the deceased woman in the living room where the fire had spread from her clothing to nearby furniture. For example, a New York woman with a mobility disability who lived alone in a first-floor apartment lit a cigarette while using a nasal cannula for medical oxygen. Neighbors saw the resulting fire, called 911, and tried unsuccessfully to rescue her. Firefighters found the deceased woman in the living room where the fire had spread from her clothing to nearby furniture. For example, a New York woman with a mobility disability who lived alone in a first-floor apartment lit a cigarette while using a nasal cannula for medical oxygen. Neighbors saw the resulting fire, called 911, and tried unsuccessfully to rescue her. Firefighters found the deceased woman in the living room where the fire had spread from her clothing to nearby furniture.

According to data from the Tobacco Use Supplements to the Current Population Survey, complete bans on smoking inside the home have become more common, with 90 percent of all households having smoking bans in 2018–2019. Fifty-nine percent of the respondents who were current smokers and 94 percent who were former smokers or never smoked said this was true for their households.
Cooking

Cooking is the leading cause of home fires and injuries and the second leading cause of home fire deaths. Cooking was the sole leading cause of fire death among children ages five through 14, adults ages 25 through 44, and people 85 and older. It was also the leading cause of fire injury in all age groups. While the cooking death rate per million population increases from ages 45–54 and up, the injury rate is highest in the 20–44 age groups.

During 2015–2019, an estimated annual average of 169,400 home cooking fires (49 percent) killed an average of 540 civilians (20 percent) and caused 4,670 reported non-fatal injuries (42 percent). Figure 10 shows that among older adults, the rate of death caused by cooking increases with age. Figure 12 shows that only one-third (32 percent) of the cooking fire fatalities were in the area of origin when the fire started. Unattended cooking is the leading cause of cooking fires.

Eight percent of the civilians who died and half (52 percent) of those who were non-fatally injured in home cooking fires were hurt while trying to control the fire themselves. This is consistent with the higher injury rates seen among young and middle-aged adults. While many people safely extinguish cooking fires on their own, some actions can make a fire worse.

For example, a Minnesota man was sleeping in an upstairs bedroom of a single-family home when other occupants went to downstairs bedrooms after cooking a meal. After smoke started to fill the house, the first-floor occupants discovered that a burner with a frying pan containing oil had been left on and the oil in the pan burst into flames. One occupant grabbed the pan but dropped it in the living room where it ignited the rug. The downstairs occupants used blankets in an unsuccessful attempt to fight the fire before it forced them to evacuate. Firefighters found the man who had been sleeping upstairs at the base of the stairs leading to the second floor, already deceased. No smoke alarms were present in the home.7

In addition, an elderly Oklahoma woman was fatally burned when the flame from a gas stove ignited her clothes as she was trying to make coffee. She called the fire department to report that her clothing was on fire and she could not escape on her own. She died at the hospital.8

New technologies that reduce the likelihood of cooking fires should be promoted, as should more education about the appropriate ways to control various types of cooking fires.

While clothing with shorter or tight-fitting sleeves is important for all cooks, this is especially critical for older adults and those with mobility disabilities.

The overall rates of cooking fire deaths and injuries per million population were similar for both genders. However, women 75 and older had higher cooking fire injury rates than men.

For more information, see NFPA’s report Home Cooking Fires.

Heating

During 2015–2019, an estimated average of 45,800 home fires involving heating equipment (13 percent) per year killed an average of 480 civilians (18 percent) and caused 1,350 reported non-fatal injuries (12 percent) annually. Space heaters, including woodstoves, were involved in the majority of the heating equipment fire deaths. The heating fire deaths spanned the age groups.

• In 2016, a poorly installed woodburning heater caused a Georgia manufactured home fire that killed two adults and four children under 4.9
• After a kerosene heater tipped over in an Ohio manufactured home and ignited the carpet and paneling, fire spread rapidly. The family was using the heater to save on heating bills. Three children died in the fire.10
• An elderly Pennsylvania couple died in a fire that began when a propane space heater ignited the plywood wall covering in the residence. No smoke alarms were present.11
Central heating equipment is much less likely to be involved in a fire than a space heater. When a central heating fire does occur, it is much less likely to result in death or injury than space heater fires. Reducing the use of space heaters reduces the risk of fatal fires. For more information, see NFPA’s report Home Heating Fires.

Electrical Distribution and Lighting Equipment

During 2015–2019, an estimated annual average of 32,000 home fires involving electrical distribution or lighting equipment (9 percent) killed an estimated average of 430 civilians (10 percent) and caused 1,060 reported non-fatal injuries (10 percent) per year. Wiring and outlets or receptacles were involved in 42 percent of these deaths. Cords, particularly extension cords and plugs, were involved in 41 percent of these fatalities.

Two out of every five (40 percent) people killed in these fires were at least 65 years old. People 85 and older had the highest death and injury rates per million population.

Older adults are slightly more likely to live in older homes, and older homes may have wiring that does not meet today’s codes. These homes may not have enough outlets or the capacity to safely power all of the appliances used by today’s consumers. In addition, outlets may be overloaded and extension cords may be used unsafely. Electrical systems may be showing signs of age. In 2019, 53 percent of all householders and 57 percent of householders 65 or older lived in homes built before 1980.12

- An elderly North Carolina couple was killed in an early-morning fire caused by an extension cord that overheated after a space heater was plugged into it. Investigators saw melting in the extension cord and found that the fire spread after an electrical arc ignited material on the sofa and bedding. It appeared the man tried to fight the fire. The woman had a mobility disability.13

- A rechargeable lithium-ion battery for a vape device went into thermal runaway in a Florida residential bedroom. This caused a catastrophic battery failure. The resulting fire spread to combustibles nearby. The monitored fire alarm system in the room alerted firefighters, who found a man on the floor as they extinguished the small fire. They brought him outside where medical crews determined that he was dead.14

For more information, see NFPA’s report Home Electrical Fires.

Intentionally Set Home Fires

The average of 28,400 intentional home fires per year (8 percent) from 2015 to 2019 caused an annual average of 380 deaths (15 percent) and 800 injuries (7 percent). There is some overlap between intentional fires and those in which playing with a heat source was a factor contributing to ignition.

Nearly three-quarters (71 percent) of the people killed in intentional home fires were between 20 and 64 years of age. The highest fire death rates for these fires overall were seen in people 35–64. Nearly two-thirds (65 percent) of the victims of fatal intentional home fires were male. Males were twice as likely to die in an intentionally set fire as females. Nearly half (46 percent) of all the victims (male and female) of intentionally set home fires were reported to be acting irrationally when they were fatally injured.

According to death certificate data, 64 percent of all the intentional fire or flame deaths in 2015–2019 (including non-home fires) were suicides.15 Conventional fire prevention and fire protection efforts alone cannot prevent these deaths. Traditional fire protection methods can prevent many, if not most, casualties from fires intentionally set by others.

For example, while firefighters were responding to a late afternoon fire alarm with smoke reported on the second floor of a four-story Oregon apartment building, they were informed that residents on the second and fourth floors had
mobility impairments and would need help to evacuate. After they arrived, they found that the sprinkler system had extinguished an incendiary fire in a second-floor laundry room.\textsuperscript{16}

**Candles**

During 2015–2019, candles started an average of 7,400 home fires (2 percent) annually, resulting in an average of 90 deaths (3 percent) and 670 injuries (6 percent) per year. Three of every five (59 percent) fatal candle fire victims were female, as were 55 percent of those non-fatally injured.

Almost three out of every five (57 percent) victims of fatal candle fires were at least 55 years old.

For example, an early evening fire started by candles used on a table in North Carolina during a hurricane-related power outage spread to a couch nearby. Strong winds intensified the fire, delaying firefighter entry. After the fire was under control, firefighters found an elderly couple inside who were already deceased.\textsuperscript{17}

**Playing with a heat source**

During 2015–2019, an estimated average of 4,700 home structure fires (1 percent) per year caused by someone playing with fire or another heat source killed an average of 40 people (2 percent) and injured 390 (3 percent) per year. Three of every five (60 percent) of the people killed by these fires were under 15 years old. Forty-three percent were under five years old.

In some cases, the person who died was not the person who started the fire.

In one incident, a child playing with a lighter in a rear bedroom closet of a Michigan home ignited a toy. After being alerted by a smoke alarm, an adult occupant called 911 around 7:30 p.m. Residents also reported that a younger child was still inside, likely in the same bedroom. When firefighters arrived, they found both stories of the home with heavy fire. The body of the younger child was found in the corner of the bedroom during an interior search as interior crews knocked down the fire.\textsuperscript{18}

In NFPA’s 2021 report *Playing with Fire: Structure Fires*, Richard Campbell wrote that 82 percent of home structure fires caused by playing with a heat source from 2014 through 2018 were started by males, 36 percent were started by children under six, and 43 percent were started by children from six to 10 years old.\textsuperscript{19}

**Clothing Ignition**

While clothing is classified as an item ignited, not a fire cause per se, clothing ignitions are a particular concern from a prevention standpoint. A fire that starts with clothing can immediately injure the wearer. From 2015 to 2019, 1 percent of the 150 home fire deaths per year from clothing ignitions were children under five and 6 percent of the victims were under 15. Three-quarters (75 percent) of such fatalities were at least 55 years old and more than half (56 percent) were at least 65 years of age.

**Methodology**

Unless otherwise specified, the statistics in this analysis are national estimates of fires reported to US local fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. The 2015–2019 estimates are projections based on the detailed information collected in Version 5.0 of the US Fire Administration’s National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association’s (NFPA’s) annual fire department experience survey. Fires with unknown or unreported data were typically allocated proportionally in calculations of national estimates.
Estimates may be skewed by the inclusion or exclusion of one unusually serious fire. Only civilian (non-firefighter) casualties are discussed in this analysis.

Estimates of zero may be true zeroes or may have rounded to zero. Percentages were calculated on unrounded estimates. For more information, see How NFPA’s National Estimates Are Calculated for Home Structure Fires.

The causes included in this report are those that are well defined, have clear prevention strategies, or have historically been of interest. The data comes from several NFIRS data elements. For more information, see NFPA’s Methodology and Definitions Used in “Leading Causes of Structure Fires” Tables.

See Home Fire Victims by Age and Gender: Supporting Tables for more detailed information on the material presented in this report.

Population data from the US Census American Community Survey was used to calculate fire death and injury rates by age group for different causes. Census data was used for annual rates by age group in the trend tables. Only deaths and injuries that were reported to local fire departments were included in the data.

Acknowledgments

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References


