

U.S. Fire Administration/National Fire Data Center

Residential Fires and Child Casualties

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Residential Fires and Child Casualties

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Findings

- In 2002, an estimated 2,490 children age 14 or younger were injured or killed in residential fires. Fifty-six percent of child fire casualty deaths were under the age of 5.
- Fires and burns were the third leading cause of unintentional fatal injuries to children age 14 or younger in 2002. They were the third leading cause of unintentional injuries to infants and the 12th overall cause of unintentional injuries to children age 14 or younger, accounting for 121,000 injuries in 2002.
- Arson, open flame, and heating were the leading causes of fires resulting in child fire deaths in 2002. Open flame, arson, and cooking were the leading causes of fires resulting in child fire injuries. Child playing fires were not a significant cause of either deaths or injuries among children in 2002.
- Upholstered furniture, cooking materials, bedding, and mattresses were the primary materials first ignited in fires that resulted in child casualties.

Unintentional injuries^{1,2} are a leading cause of death and injuries among children. The Centers for Disease Control (CDC) estimated that fires and burns were the third leading cause of unintentional fatal injuries to children age 14 or younger in 2002. Fire and burns were the third leading cause of unintentional injuries to infants and the 12th overall cause of unintentional injuries among children age 14 or younger, accounting for 121,000 injuries in 2002.³

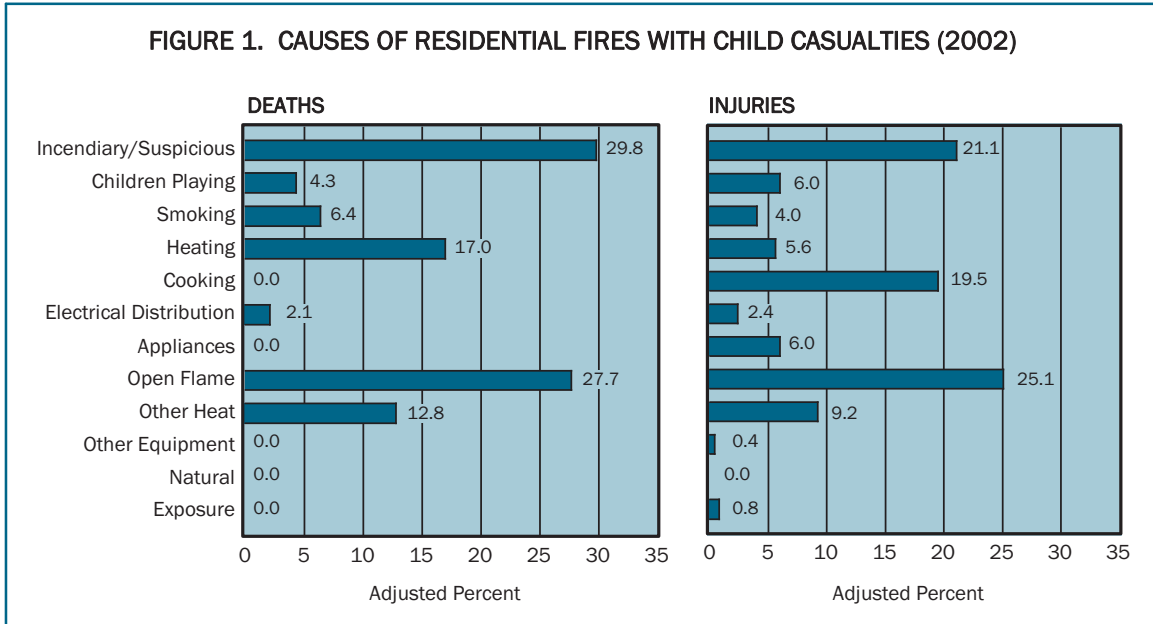
An estimated 1,930 children age 14 or younger were injured and 560 were killed in residential fires in 2002.⁴ Of these fire casualties, 48% were under the age of 5 and 70% were under the age of 10.

CAUSES OF RESIDENTIAL FIRES WITH CHILD CASUALTIES

As shown in Figure 1, arson was the leading cause of residential structure fires that resulted in one or more child fatalities (30%), followed by open flame fires (28%) and heating fires (17%).^{5,6,7} For all residential fatalities, the leading cause of fatal residential fires was arson (22%), followed by smoking (21%) and open flame (15%).

The leading cause of all fires that caused injuries in the home in 2002 was cooking (29%). For fires that resulted in injuries to one or more children, however, the leading fire cause was open flame (25%), followed by arson (21%) and cooking fires (20%) (Figure 1).

FIGURE 1. CAUSES OF RESIDENTIAL FIRES WITH CHILD CASUALTIES (2002)

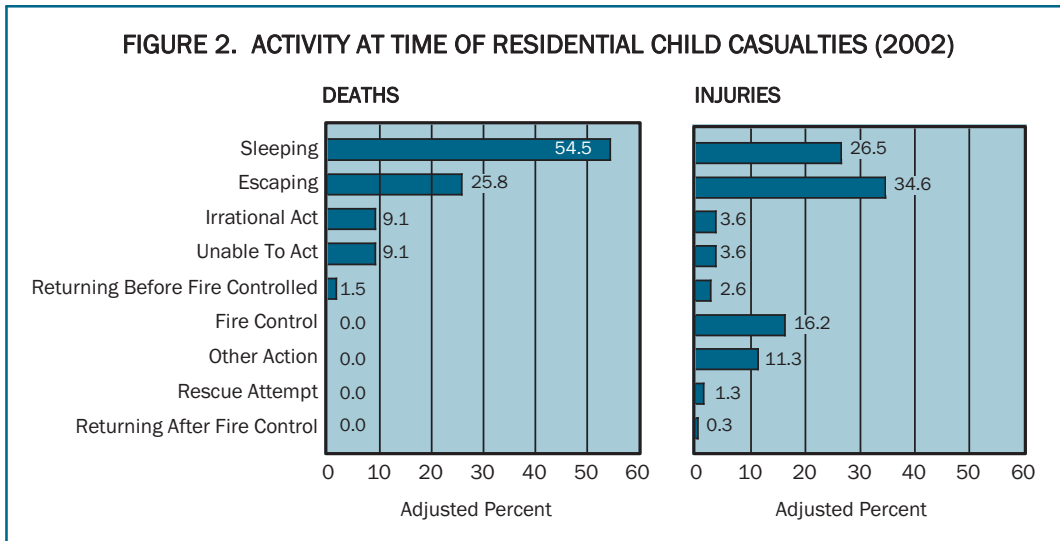


Source: NFIRS 5.0

WHAT ARE CHILDREN DOING WHEN THEY ARE INJURED?

Figure 2 illustrates the leading activities of children prior to their injuries in 2002. Approximately 55% of children who were killed by fire in residential structures were asleep at the time of the fire. Twenty-six percent were trying to escape when they died, 9% acted irrationally, and 9% were classified as unable or “too young to act,” which implies that the child did not understand what was happening around him or her and probably did not take meaningful action to escape the fire. For those children injured, 35% were trying to escape, 27% were asleep, and 16% were attempting to control the fire.

FIGURE 2. ACTIVITY AT TIME OF RESIDENTIAL CHILD CASUALTIES (2002)



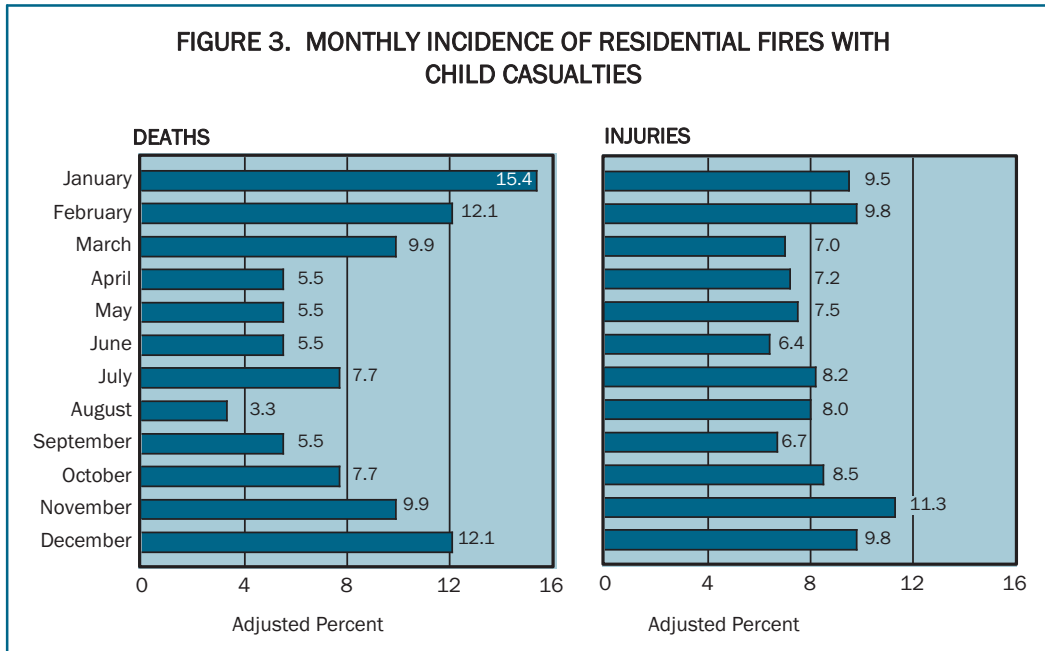
Source: NFIRS 5.0

WHAT GETS IGNITED?

Bedding and upholstered furniture were the materials first ignited in 38% of fatal child fires. Lighters and candles were the primary heat sources for these fires. In 28% of fires involving child injuries, the leading materials ignited were soft goods, such as mattresses, bedding, clothing, curtains, and other fabric. As with the bedding and upholstered furniture fires, lighters and candles were the primary heat sources for these fires. Cooking materials were ignited in 18% of fires that injure children. Heat from operating equipment was the primary cause of these cooking materials fires.

TIME OF YEAR

Similar to the trends seen in fires that cause adult fire casualties, peak months for fires that cause child casualties were the winter months, December through February, as shown in Figure 3. These increases are consistent with general trends, where winter sees an increase in structural fires, many of which are caused by heating. As expected, during the winter months there were an increased number of heating fires with child casualties. Also, for child injuries during the summer months, June through August, open flame and cooking were the leading causes of fires resulting in child injuries. This may be due to the increased use of outdoor barbecues and fireworks during this time.



Source: NFIRS 5.0

AGE

In most years, the younger the child, the higher the likelihood that he/she would die in a fire caused by children playing with fire-starting materials. In 2002, however, the data contradict this pattern. Several factors could be responsible for this change. For example, more lighters today are childproof and, because the per capita incidence of smoking has decreased, fewer fire-starting materials are available in the home. It is also possible that the leading causes of fire—open flame and incendiary fires—were miscategorized and were actually caused by children playing. Further, an increase in education programs targeted specifically to both young children and their caregivers have probably had a positive effect. Nevertheless, child playing fires were not reported as a significant cause of either deaths or injuries among children in 2002. Regardless of the cause of fire, the youngest children were most likely to account for child deaths. In 2002, 56% of all child fire deaths were under age 5 and 80% were under age 10 (Table 1). At younger ages, casualties tend to be fatalities rather than injuries as these children tend to be more vulnerable to the effects of fire.

TABLE 1. RESIDENTIAL CHILD FIRE CASUALTIES (percent)

Age Group	Deaths	Injuries	Combined Casualties
0-4	55.6	46.0	48.1
5-9	24.6	20.9	21.7
10-14	19.7	33.1	30.2
Total	100.0	100.0	100.0

Source: NFIRS 5.0

EXAMPLES

Newspaper headlines tell of tragic fires that kill or injure children. The following are a few recent examples:

- March 2005: Three unattended children, ages 2–6, died in a fire in Harris County, Texas. Fire was started by a burning candle in the apartment where the electricity had been turned off.⁸
- March 2005: One 10- and two 14-year old girls died in an early morning fire in Indianapolis that is believed to have been caused by work on the gas line near their home a week earlier. Temperate weather delayed use of the home's heating system until the evening before they died.⁹
- February 2005: Three small children in Milroy, Indiana, died in a blaze that occurred while they were sleeping. Three other children and an adult survived the fire, which was possibly started by electric space heaters.¹⁰
- January 2004: Four young children and a woman in Michigan perished in an early morning fire that started in the kitchen of a rental house where they were trapped behind security bars. The fire blocked the front door, the home's only means of egress.¹¹

CONCLUSION

Fires involving children are tragic and often preventable. Children are some of the nation's most vulnerable residents and merit special attention to reduce their risk of injury or death from fire. Gains have been made in reducing fire deaths and injuries among children, yet large numbers of young children continue to die from fire-related injuries each year.

Appropriate oversight of children of all ages is one of the most effective means of preventing injury or death from all sources. A number of resources are available to help address the fire problem for children. Because children account for 15% to 20% of fire deaths and 14% of fire injuries, the USFA has been working toward the goal of reducing fire deaths and injuries to children. A number of resources to help address the fire problem for children and adults are available. USFA's fire safety campaign for babies and toddlers at <http://www.usfaparents.gov/> provides parents with home strategies ranging from the control of matches and lighters to home escape planning.

To request additional information or comment on this report, visit
<http://www.usfa.fema.gov/applications/feedback>

Notes:

- ¹ From the National Safety Council, “unintentional injury” is the preferred term for accidental injury in the public health community. It refers to the result of an accident. Specifically, unintentional injuries are those considered to have occurred without the intent of doing harm. Intentional injuries are those that have been purposely inflicted whether by oneself or another. In general, the terms “accidents” and “safety” have been replaced by the currently more acceptable terms “unintentional injuries,” “injury prevention,” and “injury control.”
- ² Arson, with or without intent to injure a person, is considered a homicide and is not included in counts of unintentional injuries.
- ³ Unintentional injury estimates are from the National Center for Injury Prevention and Control’s Web-based Injury Statistics Query and Reporting System (WISQARS), <http://www.cdc.gov/ncipc/wisqars/>.
- ⁴ Loss estimates are based on 2002 National Fire Incident Reporting System (NFIRS) data and national residential structure fire loss estimates from the National Fire Protection Association’s (NFPA’s) *Fire Loss in the United States During 2002*.
- ⁵ Distribution statistics are based on data from the NFIRS 2002. At the time of this report, NFIRS continues to transition from version 4.1 to 5.0. Due to issues related to accurately converting version 4.1 data to version 5.0, this report is based on data reported only in version 5.0.
- ⁶ Percentages on each chart are rounded to one decimal point. Textual discussions cite these percentages as whole numbers. Thus, 13.4% is rounded to 13% and 13.5% is rounded to 14%.
- ⁷ The “open flame” category includes torches, candles, matches, lighters, open fire, ember, ash, rekindled fire, backfire from internal combustion engine as source of heat. For fires that resulted in one or more child fatalities and for fires that resulted in one or more child injuries in 2002, candles were the primary open flame source.
- ⁸ Paige Hewitt and S. K. Bardwell, “Pair charged in 3 girls’ fire deaths,” *Houston Chronicle*, March 16, 2005, <http://www.chron.com/cs/CDA/ssistory.mpl/metropolitan/3087415>.
- ⁹ Terry Horne and Stuart Hirsch, “Near-Northside fire kills 2 sisters, cousin,” *The Indianapolis Star*, March 14, 2005, <http://www.indystar.com/articles/7/229091-8527-009.html>.
- ¹⁰ Jon Murray and Tom Spaulding, “Tiny town mourns deaths of 3 small children in fire,” *The Indianapolis Star*, February 24, 2005, <http://www.indystar.com/articles/0/224723-5450-009.html>.
- ¹¹ “Woman, 4 children die in fire,” *The Detroit News*, January 26, 2004, <http://detnews.com/2004/metro/0401/27/c02-45346.htm>.