# 2011–2013 Residential Fire Loss Estimates*

## U.S. National Estimates of Fires, Deaths, Injuries, and Property Losses from Unintentional Fires

David Miller
Division of Hazard Analysis
Directorate for Epidemiology
U.S. Consumer Product Safety Commission
Bethesda, MD 20814
June 2016



* This analysis was prepared by the CPSC staff. It has not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

# Executive Summary

This report presents estimates of consumer product-related fire losses that occurred in U.S. residential structure fires attended by the fire service. The estimates were derived from data for 2011 through 2013, provided by the U.S. Fire Administration's (USFA) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA) Survey of Fire Departments for U.S. Fire Experience.

The fire and fire loss estimates presented in this report pertain to unintentional residential structure fires and civilian casualties. These estimates show that there were:

- 365,500 fires, 2,240 deaths, 13,400 injuries, and $6.46 billion in property loss in 2011;
- 351,400 fires, 1,960 deaths, 11,860 injuries, and $6.38 billion in property loss in 2012; and
- 359,400 fires, 2,290 deaths, 11,420 injuries, and $6.22 billion in property loss in 2013; and
- an estimated annual average of 358,800 fires, 2,160 deaths, 12,230 injuries, and $6.35 billion in property loss over the three-year period 2011–2013.

Consumer products involved in fires can be categorized as sources of ignition or as the materials first ignited. Sources of ignition can be small, such as candles, or large, such as ranges. The larger sources of ignition, which are operating equipment, are identified in NFIRS as equipment. Smaller sources of ignition that are not equipment, such as candles, matches, and lighters, are identified in NFIRS as heat sources. Because the fire losses are derived separately for sources of ignition and materials first ignited, estimates presented in this report can overlap in some cases. For example, a fire can count as both a candle fire and a mattress fire.

For 2011 through 2013, the relative ranking of the greatest contributors to fire losses remained largely unchanged from what was reported for 2010–2012. Tables 1a–1d show that:

- Cooking equipment accounted for the largest percentage of fires. An estimated annual average of 152,600 cooking equipment-related fires during 2011–2013 accounted for 42.5 percent of the average annual estimate of total residential fires for the same period. The corresponding death estimate is an annual average of 170 deaths, which is 7.8 percent of the average annual estimate of total residential fire deaths. The annual average number of cooking fire injuries for 2011–2013 was estimated to be 3,450, which represents 28.2 percent of the total estimated annual average number of injuries for the same time period. Much of these losses were associated with range and oven fires.

- Heating and cooling equipment fires constituted the second largest share of total residential fires. The estimated annual average of 44,100 fires for 2011–2013 was 12.3 percent of the annual average estimate of total residential fires during the same period. The corresponding death estimate is an annual average of 180 deaths, which is 8.4 percent of the average annual estimated number of total residential fire deaths. The corresponding injuries for the three years averaged to an annual estimate of 850. This accounts for 7.0 percent of the annual average estimate of total injuries during 2011–2013.

- During 2011–2013, an estimated annual average of 9,600 fires was attributable to electrical distribution equipment (*e.g.*, installed wiring, lighting). This is 2.7 percent of the estimated annual average number of residential fires for this period. The annual average death estimate is 130 (6.2 percent of average annual estimated residential fire deaths); the injury estimates averaged 450, which is 3.7 percent of the estimated annual average of residential fire injuries.

- For item first ignited, upholstered furniture was involved in the greatest number of fire deaths. From 2011 through 2013, an estimated annual average of 390 deaths was associated with these fires. This constitutes 18.0 percent of the estimated annual average of total deaths associated with residential structure fires for the same period. On average, during 2011 to 2013, mattress or bedding ignitions accounted for an annual average of 340 deaths, which is 15.7 percent of the average annual estimated number of total residential fire deaths.

- For heat source, smoking materials were the largest contributor to deaths, associated with an annual average of 440 deaths from 2011 to 2013. This is 20.3 percent of the estimated annual average of total residential fire deaths. Smoking materials, however, comprise only 3.0 percent of the total estimated residential fires.

- Among products that are heat sources, candles were involved the second highest number of deaths. The estimated annual average of deaths from candle fires is 70, which is 3.4 percent of the average estimated total number of residential fire deaths from 2011 to 2013. Candles account for an estimated 1.8 percent of the fires.

- There were an estimated 60 deaths from lighter fires (2.9 percent of the estimated annual average of total residential fire deaths), although lighters are only involved in an estimated 0.5 percent of the fires.

- On average, matches were responsible for 10 deaths, or 0.5 percent of total deaths annually. Matches were involved in only 0.1 percent of residential fires.

- The estimates for fire injuries fell during the 2011–2013 time period from 13,400 in 2011, to 11,860 in 2012, and 11,420 in 2013.

The USFA implemented a new coding rule for NFIRS cases beginning with 2012 data. The new rule states that if the Heat Source or the Factor Contributing to Ignition codes imply there was equipment involved, the Equipment Involved in Ignition must be coded and cannot be coded as 'NNN – No equipment'. For example, if the heat source was coded as '13 – Arcing', the coder must code the equipment involved. This coding rule appears to have impacted the data in two ways. First, it reduced the proportion of fires coded with Heat Source codes that imply there was equipment involved.[1] Second, this coding rule increased the coding of specific equipment codes, particularly electrical equipment, and reduced the proportion of missing equipment data.

Given the large proportion of missing data in NFIRS (see Tables 9a-9d on page 32) that must be imputed, the questionnaire change would substantially alter estimates based on heat source or equipment involved, unless an adjustment is made to account for the questionnaire change. Therefore, an adjustment was made to the raw counts for electrical equipment involved, electrical heat sources, and the proportion of missing values for the equipment and

[1] There are four of these heat source codes: '10 – Heat from powered equipment, other'; '11 – Spark, ember, or flame from operating equipment'; '12 – Radiated, conducted heat from operating equipment'; '13 – Arcing'.

heat source variables. This was done before imputation to match historically observed proportions to prevent estimates from being altered dramatically (and implausibly) by this design change. However, these adjustments alone cannot fully account for the impact of the change. Interpretations of changes (or lack thereof) in estimates between 2011 and 2012 to 2013 should be done with caution. There were evident changes in the proportion of certain incident types in 2012 to 2013; for example, an increase in the number of fires coded as confined cooking fires (Incident Type 113). However, it is unclear whether this was related to the questionnaire change. Therefore, no adjustment was made related to incident type.

# Introduction

The fire loss estimates presented in this report are based on the National Fire Protection Association's (NFPA) national fire loss estimates[2] and the U.S. Fire Administration's (USFA) National Fire Incident Reporting System (NFIRS) data. The NFPA makes national estimates of fires, deaths, injuries, and property loss based on a probability sample survey of U.S. fire departments. The NFIRS compiles fire incident reports submitted voluntarily to the USFA by U.S. fire departments. Not all the states reporting include data from all fire departments in the state. Among the multitude of information collected, product-specific information, such as the equipment involved in the ignition of the fire, or the item that was first ignited in the fire, is available in NFIRS data. The NFIRS product-specific frequency counts are weighted up to the NFPA estimates for total U.S. fire losses, to arrive at the estimates that are presented in this report.

The estimated number of fires and fire loss estimates pertain to fires in residential properties only. These include single-family and multifamily dwellings. Mobile and motor homes, while used as a structure and not in transit, are also included. Injury and death estimates pertain to civilian casualties only. The property losses include property and content losses, as estimated by fire departments. For convenience, property and content losses are referred to as "property losses" in this report.

CPSC staff has been producing estimates of residential fires and related deaths, injuries, and property losses since the early 1980s. However, over the years, NFIRS has undergone major changes. This, in turn, has necessitated changes in the way CPSC analysts produce the product-specific estimates. Beginning with 1999 data, a major revision was made to the NFIRS data coding system, version 5.0, was implemented. In 1999, 5 percent of the residential fire data were coded by fire departments in the new NFIRS version 5.0; in 2000, 20 percent were coded in version 5.0. The proportion increased to 50 percent in 2001; 70 percent in 2002; 80 percent in 2003; 89 percent in 2004; 94 percent in 2005; 95 percent in 2006; 97 percent in 2007, 99 percent in 2008; and 100 percent in 2009 through 2013. However, from 1999 forward, the NFIRS data received from the USFA are entirely in version 5.0 format. Data were converted from NFIRS 4.1 to NFIRS 5.0 by computer programs. Because version 5.0 has many more data fields than version 4.1, and some of the new data fields have many more choices than in 4.1, the converted data are not likely to be the same as data originally coded in version 5.0.

As mentioned, in 2011, 2012, and 2013, all of the residential fire data were originally coded in version 5.0. To arrive at the product-specific estimates presented in this report, the data were weighted up to the 2011, 2012, and 2013 NFPA estimates for total U.S. fire losses.

Beginning with version 5.0, NFIRS introduced newly created codes to identify confined fires (those that do not spread beyond the originating item). To encourage the reporting of these fires, NFIRS requires only limited information. From 1999 onward, as the use of version 5.0 increased, an increasingly large number of confined fires were reported. In 1999, about 2 percent of residential structure fires were reported as confined; by 2013, 48 percent of residential structure fires reported to NFIRS were confined.

[2] M.J. Karter, "Fire Loss in the U.S. During 2011," National Fire Protection Association (NFPA), September 2012; M.J. Karter, "Fire Loss in the U.S. During 2012," National Fire Protection Association (NFPA), September 2013; M.J. Karter, "Fire Loss in the U.S. During 2013," National Fire Protection Association (NFPA), September 2014.

In confined fire cases, frequently it is not possible to determine the type of equipment involved because the equipment is rarely coded. For example, when a fire is identified as a "confined cooking fire" in NFIRS, it is rarely possible to distinguish a fire started by a range versus other cooking equipment, such as a microwave oven or toaster. Consequently, confined cooking fire losses are only included as part of the "Total Cooking Equipment" fires, but they are not included in subcategories that define the equipment involved or the power source. Because ranges certainly are involved in some confined fires, their contribution should be considered in evaluating the cooking fire hazard. The same is true for microwave ovens and other cooking equipment.

The changes cited above, and the gradual implementation of these changes in the NFIRS data system, have affected considerably the estimates of residential fires and related deaths, injuries, and property losses since 1999. Therefore, CPSC staff strongly discourages comparison of pre-1999 estimates with estimates from subsequent years.

# Results

Consistent with previous years' reports, CPSC staff has presented data here using five main tables. Each numbered table (1–5) has four associated sub-tables: Table "a" presents the fire estimates; "b" presents the death estimates; "c" presents the injury estimates; and "d" presents the property loss estimates. As in previous years, only selected product-specific estimates are included in these tables. Therefore, the detail may not add up to the totals that appear in the headings. All of the product categories in the tables, with the exception of smoking materials, contain products within the jurisdiction of the CPSC. Intentionally set fires and their associated losses, which include the deliberate misuse of heat sources, or fires of an incendiary nature, are excluded from the estimates.

In Tables 1, 3, 4, and 5, equipment codes were used to identify the products involved; meanwhile, in Table 2, either the heat source or the item first ignited was the primary means of identifying the product. Thus, some estimates provided in the different sections of the tables overlap. For example, in Table 2, estimates of fires involving cigarette ignition of upholstered furniture are included in the estimates for cigarettes (by heat source), as well as in the estimates for upholstered furniture-smoking material ignition (by item first ignited). Additional details about the estimates and the data system are included in the Methodology section of this report.

## TABLE 1a
## ESTIMATED RESIDENTIAL STRUCTURE FIRES
## SELECTED EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential[3]** | **365,500** | **351,400** | **359,400** | **358,800** |
| **Total Heating and Cooling Equipment[2]** | **45,400** | **41,800** | **44,900** | **44,100** |
| Local Fixed Heater | 3,900 | 3,700 | 4,200 | 4,000 |
| Portable Heater | 1,400 | 1,100 | 1,400 | 1,300 |
| Central Heating | 900 | 600 | 800 | 800 |
| Fireplace, Chimney, Chimney Connector[2] | 22,500 | 21,200 | 23,100 | 22,300 |
| Water Heater | 1,900 | 1,500 | 1,500 | 1,600 |
| Air Conditioning | 1,100 | 1,200 | 1,000 | 1,100 |
| Other[2] | 14,500 | 13,300 | 13,600 | 13,800 |
| **Total Cooking Equipment[2]** | **146,900** | **153,000** | **157,800** | **152,600** |
| Range/Oven | 13,500 | 13,200 | 13,300 | 13,300 |
| *Gas* | *1,900* | *1,800* | *2,000* | *1,900* |
| *Electric* | *11,600* | *11,300* | *11,300* | *11,400* |
| *Other* | * | * | * | * |
| Microwave Oven | 600 | 600 | 600 | 600 |
| All Other Cooking | 3,300 | 4,100 | 3,300 | 3,600 |
| *Gas* | *1,000* | *900* | *800* | *900* |
| *Electric* | *2,100* | *2,900* | *2,200* | *2,400* |
| *Other* | *200* | *400* | *200* | *300* |
| **Total Electrical Distribution** | **9,800** | **9,500** | **9,500** | **9,600** |
| Installed Wiring | 3,900 | 4,400 | 4,600 | 4,300 |
| Cord, Plug | 1,100 | 900 | 900 | 900 |
| Receptacle, Switch | 1,200 | 1,200 | 1,300 | 1,200 |
| Lighting | 1,900 | 1,400 | 1,300 | 1,500 |
| Other | 1,700 | 1,500 | 1,400 | 1,500 |
| **Other Selected Equipment** | **9,400** | **7,700** | **7,800** | **8,300** |
| Audio/Visual Equipment | 400 | 300 | 300 | 300 |
| Clothes Dryer | 6,600 | 5,100 | 5,200 | 5,600 |
| Dishwasher | 400 | 400 | 300 | 400 |
| Washing Machine | 200 | 200 | 200 | 200 |
| Torch | 400 | 400 | 500 | 400 |
| Refrigerator/Freezer | 700 | 600 | 600 | 600 |
| Shop/Garden Tool | 700 | 600 | 600 | 700 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Fire estimates are rounded to the nearest 100. Rounded estimates of fewer than 100 fires are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude intentionally set fires.

[3] There are confined fire estimates included in *Total Residential*, *Total Heating and Cooling Equipment*, *Fireplace, Chimney, Chimney Connector*, *Other*, and *Total Cooking Equipment* categories. These confined fire estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment and power source. See Table 8a on p. 31 for details.

## TABLE 1b
## ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
## SELECTED EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential[4]** | **2,240** | **1,960** | **2,290** | **2,160** |
| **Total Heating and Cooling Equipment** | **160** | **210** | **180** | **180** |
| Local Fixed Heater | 60 | 80 | 70 | 70 |
| Portable Heater | 40 | 70 | 80 | 60 |
| Central Heating | 10 | 20 | * | 10 |
| Fireplace, Chimney, Chimney Connector[3] | 30 | 20 | 10 | 20 |
| Water Heater | * | * | * | * |
| Air Conditioning | * | 10 | 10 | 10 |
| Other[3] | 10 | 20 | 20 | 20 |
| **Total Cooking Equipment[3]** | **190** | **130** | **190** | **170** |
| Range/Oven | 150 | 100 | 180 | 150 |
| *Gas* | *40* | *10* | *60* | *40* |
| *Electric* | *110* | *90* | *120* | *100* |
| *Other* | * | * | * | * |
| Microwave Oven | * | * | * | * |
| All Other Cooking | 40 | 20 | * | 20 |
| *Gas* | *10* | *10* | * | * |
| *Electric* | *30* | *20* | * | *20* |
| *Other* | * | * | * | * |
| **Total Electrical Distribution** | **120** | **130** | **150** | **130** |
| Installed Wiring | 50 | 80 | 50 | 60 |
| Cord, Plug | 40 | 30 | 50 | 40 |
| Receptacle, Switch | * | * | 20 | 10 |
| Lighting | 20 | 10 | 10 | 20 |
| Other | 10 | 10 | 10 | 10 |
| **Other Selected Equipment** | **10** | **20** | **20** | **20** |
| Audio/Visual Equipment | * | * | * | * |
| Clothes Dryer | * | 10 | 10 | * |
| Dishwasher | * | * | * | * |
| Washing Machine | * | * | * | * |
| Torch | * | * | * | * |
| Refrigerator/Freezer | 10 | 10 | 10 | 10 |
| Shop/Garden Tool | * | * | * | * |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Death estimates are rounded to the nearest 10. Rounded estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude deaths from intentionally set fires.

[4] There were no NFIRS confined cooking fire deaths in 2012 or 2013 and a rounded estimate of fewer than 10 in 2011. There were no confined fire deaths in the Heating and Cooling Other Equipment category in 2011, 2012, or 2013.

## TABLE 1c
## ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
## SELECTED EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential[5]** | **13,400** | **11,860** | **11,420** | **12,230** |
| **Total Heating and Cooling Equipment[4]** | **980** | **790** | **790** | **850** |
| Local Fixed Heater | 390 | 340 | 340 | 350 |
| Portable Heater | 160 | 90 | 130 | 130 |
| Central Heating | 20 | 40 | 30 | 30 |
| Fireplace, Chimney, Chimney Connector[4] | 90 | 60 | 50 | 70 |
| Water Heater | 90 | 50 | 60 | 60 |
| Air Conditioning | 70 | 80 | 50 | 70 |
| Other[4] | 200 | 180 | 160 | 180 |
| **Total Cooking Equipment[4]** | **3,580** | **3,470** | **3,300** | **3,450** |
| Range/Oven | 1,650 | 1,390 | 1,400 | 1,480 |
| *Gas* | *170* | *180* | *220* | *190* |
| *Electric* | *1,480* | *1,200* | *1,180* | *1,290* |
| *Other* | * | *10* | *10* | *10* |
| Microwave Oven | 50 | 30 | 40 | 40 |
| All Other Cooking | 240 | 360 | 300 | 300 |
| *Gas* | *60* | *80* | *70* | *70* |
| *Electric* | *160* | *260* | *210* | *210* |
| *Other* | *20* | *20* | *10* | *20* |
| **Total Electrical Distribution** | **440** | **460** | **440** | **450** |
| Installed Wiring | 130 | 170 | 150 | 150 |
| Cord, Plug | 70 | 80 | 90 | 80 |
| Receptacle, Switch | 70 | 60 | 80 | 70 |
| Lighting | 100 | 90 | 60 | 80 |
| Other | 70 | 70 | 70 | 70 |
| **Other Selected Equipment** | **430** | **320** | **260** | **340** |
| Audio/Visual Equipment | 30 | 40 | 20 | 30 |
| Clothes Dryer | 260 | 180 | 150 | 200 |
| Dishwasher | 10 | 20 | 10 | 10 |
| Washing Machine | * | 10 | * | * |
| Torch | 40 | 20 | 20 | 30 |
| Refrigerator/Freezer | 60 | 40 | 40 | 40 |
| Shop/Garden Tool | 40 | 20 | 30 | 30 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Injury estimates are rounded to the nearest 10. Rounded estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude injuries from intentionally set fires.

[5] There are confined fire injury estimates included in *Total Residential*, *Total Heating and Cooling Equipment*, *Fireplace*, *Chimney*, *Chimney Connector*, *Other*, and *Total Cooking Equipment* categories. These confined fire injury estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment. See Table 8b on p. 32 for details.

## TABLE 1d
## ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
## SELECTED EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential[6]** | **$6,457.1** | **$6,380.7** | **$6,218.3** | **$6,352.0** |
| **Total Heating and Cooling Equipment[5]** | **$466.5** | **$425.2** | **$496.6** | **$462.8** |
| Local Fixed Heater | $106.8 | $100.4 | $128.0 | $111.7 |
| Portable Heater | $44.7 | $52.1 | $65.8 | $54.2 |
| Central Heating | $35.0 | $19.2 | $32.4 | $28.8 |
| Fireplace, Chimney, Chimney Connector[5] | $87.9 | $93.6 | $109.1 | $96.9 |
| Water Heater | $53.1 | $31.4 | $35.3 | $39.9 |
| Air Conditioning | $27.7 | $32.9 | $26.2 | $28.9 |
| Other[5] | $126.9 | $116.2 | $116.4 | $119.8 |
| **Total Cooking Equipment[5]** | **$409.9** | **$474.1** | **$433.1** | **$439.0** |
| Range/Oven | $253.4 | $304.6 | $285.3 | $281.1 |
| *Gas* | *$32.6* | *$38.6* | *$43.3* | *$38.1* |
| *Electric* | *$220.8* | *$265.4* | *$241.4* | *$242.5* |
| *Other* | * | *$0.7* | *$0.7* | *$0.4* |
| Microwave Oven | $8.8 | $11.3 | $9.2 | $9.8 |
| All Other Cooking | $120.9 | $131.2 | $103.8 | $118.6 |
| *Gas* | *$44.2* | *$47.1* | *$30.6* | *$40.7* |
| *Electric* | *$54.1* | *$73.3* | *$65.1* | *$64.2* |
| *Other* | *$22.6* | *$10.8* | *$8.1* | *$13.8* |
| **Total Electrical Distribution** | **$340.2** | **$334.1** | **$313.6** | **$329.3** |
| Installed Wiring | $143.6 | $170.2 | $149.9 | $154.5 |
| Cord, Plug | $39.8 | $35.9 | $33.3 | $36.3 |
| Receptacle, Switch | $33.1 | $34.5 | $36.5 | $34.7 |
| Lighting | $50.0 | $40.1 | $42.9 | $44.3 |
| Other | $73.8 | $53.4 | $51.0 | $59.4 |
| **Other Selected Equipment** | **$169.0** | **$164.1** | **$177.9** | **$170.3** |
| Audio/Visual Equipment | $8.4 | $14.7 | $10.9 | $11.3 |
| Clothes Dryer | $81.4 | $80.1 | $78.9 | $80.1 |
| Dishwasher | $11.0 | $11.1 | $11.3 | $11.2 |
| Washing Machine | $2.1 | $2.5 | $1.8 | $2.1 |
| Torch | $12.4 | $12.8 | $15.3 | $13.5 |
| Refrigerator/Freezer | $17.8 | $20.6 | $24.2 | $20.9 |
| Shop/Garden Tool | $36.9 | $22.9 | $35.6 | $31.8 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Property loss estimates are rounded to the nearest tenth of a million dollars. Subtotals do not necessarily add to heading totals. Estimates exclude property loss from intentionally set fires.

[6] There are confined fire property loss estimates included in *Total Residential, Total Heating and Cooling Equipment, Fireplace, Chimney, Chimney Connector, Other,* and *Total Cooking Equipment* categories. These confined fire property loss estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment. See Table 8c on p. 32 for details.

## TABLE 2a
## ESTIMATED RESIDENTIAL STRUCTURE FIRES
## SELECTED PRODUCTS, 2011–2013

| Product | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[7] | **365,500** | **351,400** | **359,400** | **358,800** |
| **By Heat Source** | | | | |
| **Cigarette, Other Tobacco Products** | **10,700** | **11,600** | **10,100** | **10,800** |
| **Match** | **600** | **500** | **500** | **500** |
| **Lighter** | **1,700** | **1,700** | **1,700** | **1,700** |
| **Candle** | **6,600** | **6,100** | **6,200** | **6,300** |
| **By Item First Ignited** | | | | |
| **Upholstered Furniture** | **5,100** | **4,500** | **4,600** | **4,700** |
| Smoking Material Ignition | 1,200 | 1,200 | 1,100 | 1,100 |
| Open-Flame Ignition | 700 | 600 | 500 | 600 |
| Other | 3,300 | 2,700 | 3,000 | 3,000 |
| **Mattress, Bedding** | **7,800** | **7,300** | **7,700** | **7,600** |
| Smoking Material Ignition | 1,500 | 1,500 | 1,500 | 1,500 |
| Open-Flame Ignition | 1,500 | 1,400 | 1,500 | 1,500 |
| Other | 4,900 | 4,300 | 4,800 | 4,600 |
| **Other Materials** | | | | |
| Cooking Materials[6] | 152,400 | 158,500 | 163,100 | 158,000 |
| Electric Cable Insulation | 17,200 | 16,300 | 16,700 | 16,700 |
| Interior Wall Covering | 6,900 | 6,400 | 6,400 | 6,600 |
| Wearing Apparel-Worn | 300 | 300 | 300 | 300 |
| Wearing Apparel-Not Worn | 5,600 | 5,400 | 5,500 | 5,500 |
| Floor Covering | 3,800 | 3,500 | 3,500 | 3,600 |
| Curtains, Drapes | 1,400 | 1,400 | 1,500 | 1,400 |
| Magazines, Newspaper | 1,900 | 1,600 | 1,600 | 1,700 |
| Thermal Insulation | 6,100 | 5,200 | 5,700 | 5,700 |
| Cabinet, Desk | 4,500 | 4,500 | 4,600 | 4,500 |
| Trash, Rubbish[6] | 20,900 | 22,300 | 22,000 | 21,700 |
| Toy, Game | 200 | 200 | 200 | 200 |
| Box, Carton, Bag, Basket, Barrel | 2,600 | 2,600 | 2,800 | 2,700 |

Source: U. S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Fire estimates are rounded to the nearest 100. Subtotals do not necessarily add up to heading totals.
Estimates exclude intentionally set fires.

[7] There are confined fire estimates included in *Total Residential, Cooking Materials,* and *Trash, Rubbish* categories. Estimates for confined cooking fires are included in the *Cooking Materials* fire losses because cooking materials are most likely the item first ignited. See Table 8a on p. 31 for details.

## TABLE 2b
## ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
## SELECTED PRODUCTS, 2011–2013

| Product | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[8] | **2,240** | **1,960** | **2,290** | **2,160** |
| **By Heat Source** | | | | |
| **Cigarette, Other Tobacco Products** | **410** | **420** | **480** | **440** |
| **Match** | ***** | **10** | **20** | **10** |
| **Lighter** | **90** | **40** | **50** | **60** |
| **Candle** | **90** | **80** | **40** | **70** |
| **By Item First Ignited** | | | | |
| **Upholstered Furniture** | **390** | **370** | **410** | **390** |
| Smoking Material Ignition | 160 | 140 | 210 | 170 |
| Open-Flame Ignition | 40 | 20 | * | 20 |
| Other | 190 | 210 | 200 | 200 |
| **Mattress, Bedding** | **360** | **350** | **310** | **340** |
| Smoking Material Ignition | 150 | 150 | 90 | 130 |
| Open-Flame Ignition | 50 | 30 | 60 | 50 |
| Other | 170 | 170 | 150 | 160 |
| **Other Materials** | | | | |
| Cooking Materials[7] | 170 | 100 | 180 | 150 |
| Electric Cable Insulation | 110 | 100 | 140 | 120 |
| Interior Wall Covering | 80 | 90 | 70 | 80 |
| Wearing Apparel-Worn | 100 | 70 | 140 | 100 |
| Wearing Apparel-Not Worn | 30 | 20 | 40 | 30 |
| Floor Covering | 40 | 80 | 30 | 50 |
| Curtains, Drapes | 10 | 10 | 20 | 10 |
| Magazines, Newspaper | 50 | 30 | 60 | 50 |
| Thermal Insulation | * | * | * | * |
| Cabinet, Desk | 50 | 30 | 20 | 30 |
| Trash, Rubbish | 30 | 20 | 50 | 30 |
| Toy, Game | * | * | * | * |
| Box, Carton, Bag, Basket, Barrel | 20 | 30 | 10 | 20 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Death estimates are rounded to the nearest 10. Rounded estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude deaths from intentionally set fires.

[8] There were no NFIRS confined cooking fire deaths in 2012 or 2013 and a rounded estimate of fewer than 10 in 2011.

## TABLE 2c
## ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
## SELECTED PRODUCTS, 2011–2013

| Product | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[9] | **13,400** | **11,860** | **11,420** | **12,230** |
| **By Heat Source** | | | | |
| **Cigarette, Other Tobacco Products** | **1,180** | **930** | **1,010** | **1,040** |
| **Match** | **70** | **110** | **70** | **80** |
| **Lighter** | **410** | **320** | **280** | **330** |
| **Candle** | **740** | **590** | **700** | **680** |
| **By Item First Ignited** | | | | |
| **Upholstered Furniture** | **710** | **610** | **670** | **660** |
| Smoking Material Ignition | 220 | 210 | 190 | 210 |
| Open-Flame Ignition | 140 | 90 | 70 | 100 |
| Other | 350 | 310 | 410 | 360 |
| **Mattress, Bedding** | **1,250** | **1,090** | **1,110** | **1,150** |
| Smoking Material Ignition | 350 | 270 | 360 | 330 |
| Open-Flame Ignition | 320 | 310 | 280 | 300 |
| Other | 580 | 510 | 470 | 520 |
| **Other Materials** | | | | |
| Cooking Materials[8] | 4,290 | 4,110 | 3,730 | 4,040 |
| Electric Cable Insulation | 430 | 450 | 400 | 430 |
| Interior Wall Covering | 320 | 270 | 160 | 250 |
| Wearing Apparel-Worn | 110 | 70 | 120 | 100 |
| Wearing Apparel-Not Worn | 360 | 320 | 210 | 300 |
| Floor Covering | 300 | 250 | 190 | 250 |
| Curtains, Drapes | 160 | 130 | 140 | 140 |
| Magazines, Newspaper | 190 | 120 | 80 | 130 |
| Thermal Insulation | 90 | 120 | 70 | 90 |
| Cabinet, Desk | 330 | 270 | 240 | 280 |
| Trash, Rubbish[8] | 300 | 260 | 280 | 280 |
| Toy, Game | 30 | 10 | 30 | 20 |
| Box, Carton, Bag, Basket, Barrel | 90 | 100 | 100 | 100 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Injury estimates are rounded to the nearest 10. Rounded estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude injuries from intentionally set fires.

[9]There are confined fire injury estimates included in *Total Residential*, *Cooking Materials*, and *Trash, Rubbish* categories. Estimates for confined cooking fire injuries are included in the *Cooking Materials* fire losses because cooking materials are most likely the item first ignited. See Table 8b on p. 32 for details.

## TABLE 2d
## ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
## SELECTED PRODUCTS, 2011–2013

| Product | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential[10]** | **$6,457.1** | **$6,380.7** | **$6,218.3** | **$6,352.0** |
| **By Heat Source** | | | | |
| **Cigarette, Other Tobacco Products** | **$392.6** | **$431.9** | **$391.4** | **$405.3** |
| **Match** | **$12.5** | **$16.8** | **$21.5** | **$16.9** |
| **Lighter** | **$52.0** | **$69.1** | **$215.8** | **$112.3** |
| **Candle** | **$236.0** | **$216.5** | **$212.6** | **$221.7** |
| **By Item First Ignited** | | | | |
| **Upholstered Furniture** | **$265.2** | **$222.4** | **$225.9** | **$237.8** |
| Smoking Material Ignition | $72.3 | $59.9 | $53.0 | $61.7 |
| Open-Flame Ignition | $32.2 | $29.5 | $26.6 | $29.4 |
| Other | $160.7 | $133.0 | $146.3 | $146.7 |
| **Mattress, Bedding** | **$296.8** | **$259.3** | **$263.2** | **$273.1** |
| Smoking Material Ignition | $53.4 | $47.2 | $48.6 | $49.7 |
| Open-Flame Ignition | $70.6 | $53.2 | $51.4 | $58.4 |
| Other | $172.8 | $158.9 | $163.2 | $165.0 |
| **Other Materials** | | | | |
| Cooking Materials[9] | $521.8 | $522.8 | $534.8 | $526.5 |
| Electric Cable Insulation | $478.1 | $447.7 | $463.5 | $463.1 |
| Interior Wall Covering | $290.5 | $296.7 | $277.4 | $288.2 |
| Wearing Apparel-Worn | $7.5 | $15.6 | $7.7 | $10.2 |
| Wearing Apparel-Not Worn | $118.0 | $127.0 | $282.1 | $175.7 |
| Floor Covering | $117.5 | $130.7 | $101.0 | $116.4 |
| Curtains, Drapes | $91.0 | $37.6 | $53.3 | $60.6 |
| Magazines, Newspaper | $60.2 | $82.4 | $44.9 | $62.5 |
| Thermal Insulation | $172.2 | $149.9 | $183.6 | $168.5 |
| Cabinet, Desk | $167.3 | $179.5 | $178.3 | $175.0 |
| Trash, Rubbish[9] | $150.7 | $158.8 | $157.2 | $155.6 |
| Toy, Game | $2.7 | $3.9 | $3.3 | $3.3 |
| Box, Carton, Bag, Basket, Barrel | $82.8 | $108.6 | $101.1 | $97.5 |

Source: U. S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Property loss estimates are rounded to the nearest tenth of a million dollars. Subtotals do not necessarily add to heading totals. Estimates exclude property loss from intentionally set fires.

[10] There are confined fire property loss estimates included in *Total Residential, Cooking Materials,* and *Trash, Rubbish* categories. Estimates for confined cooking fire property losses are included in the *Cooking Materials* fire losses because cooking materials are most likely the item first ignited. See Table 8c on p. 32 for details.

## TABLE 3a
## ESTIMATED RESIDENTIAL STRUCTURE FIRES
## HEATING AND COOLING EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential[11]** | **365,500** | **351,400** | **359,400** | **358,800** |
| **Total Heating and Cooling Equipment[10]** | **45,400** | **41,800** | **44,900** | **44,100** |
| **Solid Fuel** | **2,100** | **1,900** | **2,100** | **2,000** |
| Fixed Heater | 500 | 500 | 500 | 500 |
| Portable Heater | * | * | * | * |
| Fireplace, Chimney, Chimney Connector | 1,600 | 1,300 | 1,500 | 1,500 |
| Central Heating | * | * | * | * |
| Water Heater | * | * | * | * |
| Other | * | * | * | * |
| **Gas-Fired** | **2,700** | **2,100** | **2,400** | **2,400** |
| Fixed Heater | 800 | 700 | 800 | 800 |
| Portable Heater | 100 | 100 | 100 | 100 |
| Fireplace, Chimney, Chimney Connector | 100 | 100 | 200 | 100 |
| Central Heating | 400 | 300 | 300 | 300 |
| Water Heater | 1,000 | 700 | 800 | 800 |
| Fixed, Central Air Conditioning | * | * | * | * |
| Other | 200 | 200 | 200 | 200 |
| **Electric** | **8,900** | **8,300** | **9,400** | **8,900** |
| Fixed Heater | 2,500 | 2,500 | 2,900 | 2,600 |
| Portable Heater | 1,100 | 1,000 | 1,200 | 1,100 |
| Central Heating | 400 | 300 | 400 | 400 |
| Water Heater | 900 | 700 | 700 | 800 |
| Fixed, Central Air Conditioning | 700 | 800 | 700 | 700 |
| Portable Air Conditioner | 400 | 400 | 300 | 400 |
| Other | 3,700 | 3,400 | 4,000 | 3,700 |
| **Liquid Fuel** | **300** | **200** | **300** | **300** |
| Fixed Heater | 100 | * | 100 | 100 |
| Portable Heater | 200 | 100 | 100 | 100 |
| Fireplace, Chimney, Chimney Connector | * | * | * | * |
| Central Heating | 100 | * | 100 | 100 |
| Water Heater | * | * | * | * |
| Other | * | * | * | * |
| **All Other Fuel** | **100** | **100** | **100** | **100** |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Fire estimates are rounded to the nearest 100. Rounded estimates less than 100 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude intentionally set fires.

[11] There are confined fire estimates included in *Total Residential,* and *Total Heating and Cooling Equipment* categories. These confined fire estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment or the power source of the equipment. See Table 8a on p. 31 for details.

## TABLE 3b
## ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
## HEATING AND COOLING EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[12] | **2,240** | **1,960** | **2,290** | **2,160** |
| **Total Heating and Cooling Equipment** | **160** | **210** | **180** | **180** |
| **Solid Fuel** | **40** | **50** | **40** | **40** |
| Fixed Heater | 20 | 40 | 30 | 30 |
| Portable Heater | * | * | * | * |
| Fireplace, Chimney, Chimney Connector | 20 | 20 | 10 | 20 |
| Central Heating | * | * | * | * |
| Water Heater | * | * | * | * |
| Other | * | * | * | * |
| **Gas-Fired** | **30** | **40** | **10** | **30** |
| Fixed Heater | 20 | 20 | 10 | 20 |
| Portable Heater | * | * | * | * |
| Fireplace, Chimney, Chimney Connector | * | * | * | * |
| Central Heating | * | 20 | * | 10 |
| Water Heater | * | * | * | * |
| Fixed, Central Air Conditioning | * | * | * | * |
| Other | 10 | * | * | * |
| **Electric** | **70** | **110** | **110** | **100** |
| Fixed Heater | 30 | 30 | 30 | 30 |
| Portable Heater | 30 | 60 | 60 | 50 |
| Central Heating | * | * | * | * |
| Water Heater | * | * | * | * |
| Fixed, Central Air Conditioning | * | * | 10 | * |
| Portable Air Conditioner | * | 10 | * | * |
| Other | 10 | 10 | 10 | 10 |
| **Liquid Fuel** | **10** | ***** | **10** | **10** |
| Fixed Heater | * | * | * | * |
| Portable Heater | * | * | 10 | 10 |
| Fireplace, Chimney, Chimney Connector | * | * | * | * |
| Central Heating | 10 | * | * | * |
| Water Heater | * | * | * | * |
| Other | * | * | * | * |
| **All Other Fuel** | * | * | * | * |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Death estimates are rounded to the nearest 10. Rounded estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude deaths from intentionally set fires.

[12] There were no NFIRS confined cooking fire deaths in 2012 or 2013 and a rounded estimate of fewer than 10 in 2011.

## TABLE 3c
## ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
## HEATING AND COOLING EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[13] | **13,400** | **11,860** | **11,420** | **12,230** |
| **Total Heating and Cooling Equipment**[12] | **980** | **790** | **790** | **850** |
| **Solid Fuel** | **80** | **70** | **40** | **60** |
| Fixed Heater | 30 | 30 | 30 | 30 |
| Portable Heater | * | * | * | * |
| Fireplace, Chimney, Chimney Connector | 50 | 40 | 20 | 40 |
| Central Heating | * | * | * | * |
| Water Heater | * | * | * | * |
| Other | * | * | * | * |
| **Gas-Fired** | **220** | **130** | **180** | **180** |
| Fixed Heater | 90 | 40 | 80 | 70 |
| Portable Heater | 20 | 10 | 10 | 10 |
| Fireplace, Chimney, Chimney Connector | * | * | 10 | * |
| Central Heating | 10 | 20 | 20 | 20 |
| Water Heater | 80 | 40 | 40 | 50 |
| Fixed, Central Air Conditioning | * | * | * | * |
| Other | 20 | 10 | 20 | 20 |
| **Electric** | **560** | **510** | **490** | **520** |
| Fixed Heater | 260 | 260 | 230 | 250 |
| Portable Heater | 110 | 60 | 100 | 90 |
| Central Heating | 10 | 10 | 10 | 10 |
| Water Heater | 10 | 10 | 10 | 10 |
| Fixed, Central Air Conditioning | 40 | 30 | 30 | 30 |
| Portable Air Conditioner | 30 | 40 | 30 | 40 |
| Other | 150 | 130 | 100 | 130 |
| **Liquid Fuel** | **50** | **30** | **20** | **30** |
| Fixed Heater | * | * | * | * |
| Portable Heater | 30 | 20 | 20 | 20 |
| Fireplace, Chimney, Chimney Connector | 10 | * | * | * |
| Central Heating | 10 | 10 | * | * |
| Water Heater | * | * | * | * |
| Other | * | * | * | * |
| **All Other Fuel** | ***** | ***** | ***** | ***** |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Injury estimates are rounded to the nearest 10. Rounded estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude injuries from intentionally set fires.

[13] There are confined fire injury estimates included in *Total Residential*, and *Total Heating and Cooling Equipment* categories. These confined fire injury estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment or the power source of the equipment. See Table 8b on p. 32 for details.

## TABLE 3d
## ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
## HEATING AND COOLING EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[14] | **$6,457.1** | **$6,380.7** | **$6,218.3** | **$6,352.0** |
| **Total Heating and Cooling Equipment**[13] | **$466.5** | **$425.2** | **$496.6** | **$462.8** |
| **Solid Fuel** | **$99.0** | **$102.5** | **$126.9** | **$109.4** |
| Fixed Heater | $24.4 | $21.7 | $29.0 | $25.0 |
| Portable Heater | * | * | * | * |
| Fireplace, Chimney, Chimney Connector | $71.5 | $78.9 | $94.9 | $81.8 |
| Central Heating | $1.2 | $1.0 | $2.3 | $1.5 |
| Water Heater | $0.2 | * | * | $0.1 |
| Other | $1.7 | $0.9 | $0.7 | $1.1 |
| **Gas-Fired** | **$103.6** | **$72.1** | **$77.2** | **$84.3** |
| Fixed Heater | $21.8 | $19.2 | $24.7 | $21.9 |
| Portable Heater | $2.4 | $5.2 | $5.9 | $4.5 |
| Fireplace, Chimney, Chimney Connector | $9.1 | $7.6 | $7.7 | $8.1 |
| Central Heating | $19.8 | $9.7 | $11.4 | $13.6 |
| Water Heater | $42.8 | $20.0 | $20.1 | $27.6 |
| Fixed, Central Air Conditioning | $0.5 | $0.1 | * | $0.2 |
| Other | $7.2 | $10.3 | $7.3 | $8.3 |
| **Electric** | **$242.8** | **$234.0** | **$272.0** | **$249.6** |
| Fixed Heater | $57.0 | $57.5 | $71.6 | $62.1 |
| Portable Heater | $37.6 | $43.6 | $53.2 | $44.8 |
| Central Heating | $11.8 | $7.3 | $16.9 | $12.0 |
| Water Heater | $10.1 | $10.6 | $15.2 | $12.0 |
| Fixed, Central Air Conditioning | $15.5 | $20.6 | $16.6 | $17.6 |
| Portable Air Conditioner | $11.7 | $12.1 | $9.6 | $11.2 |
| Other | $114.6 | $102.8 | $105.5 | $107.6 |
| **Liquid Fuel** | **$9.4** | **$6.7** | **$11.4** | **$9.2** |
| Fixed Heater | $1.2 | $1.4 | $2.6 | $1.8 |
| Portable Heater | $4.7 | $3.2 | $6.6 | $4.8 |
| Fireplace, Chimney, Chimney Connector | * | $0.1 | $0.1 | * |
| Central Heating | $2.2 | $1.3 | $1.8 | $1.8 |
| Water Heater | * | $0.4 | * | $0.1 |
| Other | $1.2 | $0.3 | $0.2 | $0.6 |
| **All Other Fuel** | **$3.7** | **$1.4** | **$0.6** | **$1.9** |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Property loss estimates are rounded to the nearest tenth of a million dollars. Rounded estimates less than $0.1m are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude property loss from intentionally set fires.

[14] There are confined fire property loss estimates included in *Total Residential*, and *Total Heating and Cooling Equipment* categories. These confined fire property loss estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment or the power source of the equipment. See Table 8c on p. 32 for details.

# TABLE 4a
# ESTIMATED RESIDENTIAL STRUCTURE FIRES
# SELECTED ELECTRICAL EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[15] | **365,500** | **351,400** | **359,400** | **358,800** |
| **Total Electrical** | **44,500** | **42,600** | **43,100** | **43,400** |
| **Electric Heating and Cooling** | **8,900** | **8,300** | **9,400** | **8,900** |
| Central Heating | 400 | 300 | 400 | 400 |
| Local Fixed Heater | 2,500 | 2,500 | 2,900 | 2,600 |
| Portable Heater | 1,100 | 1,000 | 1,200 | 1,100 |
| Water Heater | 900 | 700 | 700 | 800 |
| Fixed, Central Air Conditioning | 700 | 800 | 700 | 700 |
| Portable Air Conditioner | 400 | 400 | 300 | 400 |
| Other | 3,700 | 3,400 | 4,000 | 3,700 |
| **Electric Cooking Equipment** | **13,700** | **14,100** | **13,600** | **13,800** |
| Range/Oven | 11,600 | 11,300 | 11,300 | 11,400 |
| Range/Oven Hood | 200 | 200 | 200 | 200 |
| Deep Fat Fryer | 100 | 100 | 100 | 100 |
| Grill | * | * | * | * |
| Microwave Oven | 600 | 600 | 600 | 600 |
| Small Heat-Producing Appliance | 500 | 500 | 500 | 500 |
| Other | 1,900 | 2,600 | 2,000 | 2,100 |
| **Electrical Distribution** | **9,800** | **9,500** | **9,500** | **9,600** |
| Installed Wiring | 3,900 | 4,400 | 4,600 | 4,300 |
| Light Fixture | 1,200 | 1,000 | 900 | 1,000 |
| Receptacle, Switch | 1,200 | 1,200 | 1,300 | 1,200 |
| Cord, Plug | 1,100 | 900 | 900 | 900 |
| Lamp, Light Bulb | 700 | 500 | 400 | 500 |
| Panel Board | 500 | 500 | 400 | 500 |
| Meter | 300 | 300 | 300 | 300 |
| Transformer | 100 | * | 100 | 100 |
| Other | 900 | 700 | 700 | 700 |
| **Other Selected Electrical Appliances** | **7,200** | **6,000** | **5,800** | **6,400** |
| Clothes Dryer | 5,100 | 4,100 | 4,100 | 4,400 |
| Dishwasher | 400 | 400 | 300 | 400 |
| Audio/Visual Equipment | 400 | 300 | 300 | 300 |
| Washing Machine | 200 | 200 | 200 | 200 |
| Refrigerator/Freezer | 700 | 500 | 600 | 600 |
| Shop/Garden Tools | 300 | 300 | 200 | 300 |
| Torch | 100 | 100 | 100 | 100 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Fire estimates are rounded to the nearest 100. Rounded estimates less than 100 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude intentionally set fires.

[15] There are confined fire estimates included in *Total Residential* category. These confined fire estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment or the power source of the equipment. See Table 8a on p. 31 for details.

## TABLE 4b
## ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
## SELECTED ELECTRICAL EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[16] | **2,240** | **1,960** | **2,290** | **2,160** |
| **Total Electrical** | **400** | **420** | **440** | **420** |
| **Electric Heating and Cooling** | **70** | **110** | **110** | **100** |
| Central Heating | * | * | * | * |
| Local Fixed Heater | 20 | 30 | 30 | 30 |
| Portable Heater | 40 | 60 | 60 | 60 |
| Water Heater | * | * | * | * |
| Fixed, Central Air Conditioning | * | * | 10 | * |
| Portable Air Conditioner | * | 10 | * | * |
| Other | 10 | 10 | 10 | 10 |
| **Electric Cooking Equipment** | **140** | **110** | **120** | **120** |
| Range/Oven | 110 | 90 | 120 | 100 |
| Range/Oven Hood | * | * | * | * |
| Deep Fat Fryer | * | * | * | * |
| Grill | * | * | * | * |
| Microwave Oven | * | * | * | * |
| Small Heat-Producing Appliance | 10 | 20 | 10 | 10 |
| Other | 30 | 20 | * | 10 |
| **Electrical Distribution** | **120** | **130** | **150** | **130** |
| Installed Wiring | 50 | 80 | 50 | 60 |
| Light Fixture | 10 | 10 | 10 | 10 |
| Receptacle, Switch | * | * | 20 | 10 |
| Cord, Plug | 40 | 30 | 50 | 40 |
| Lamp, Light Bulb | 10 | 10 | 10 | 10 |
| Panel Board | * | * | * | * |
| Meter | * | * | * | * |
| Transformer | * | * | * | * |
| Other | 10 | 10 | 10 | 10 |
| **Other Selected Electrical Appliances** | **10** | **10** | **10** | **10** |
| Clothes Dryer | * | * | * | * |
| Dishwasher | * | * | * | * |
| Audio/Visual Equipment | * | * | * | * |
| Washing Machine | * | * | * | * |
| Refrigerator/Freezer | 10 | 10 | 10 | 10 |
| Shop/Garden Tool | * | * | * | * |
| Torch | * | * | * | * |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.Note: Death estimates are rounded to the nearest 10. Rounded estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude deaths from intentionally set fires.

[16] There were no NFIRS confined fire deaths in 2012 or 2013 and a rounded estimate of fewer than 10 confined cooking fire deaths in 2011.

## TABLE 4c
## ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
## SELECTED ELECTRICAL EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[17] | **13,400** | **11,860** | **11,420** | **12,230** |
| **Total Electrical** | **3,250** | **2,970** | **2,790** | **3,000** |
| **Electric Heating and Cooling** | **560** | **510** | **490** | **520** |
| Central Heating | 10 | 10 | 10 | 10 |
| Local Fixed Heater | 260 | 260 | 230 | 250 |
| Portable Heater | 110 | 60 | 100 | 90 |
| Water Heater | 10 | 10 | 10 | 10 |
| Fixed, Central Air Conditioning | 40 | 30 | 30 | 30 |
| Portable Air Conditioner | 30 | 40 | 30 | 40 |
| Other | 140 | 130 | 100 | 130 |
| **Electric Cooking Equipment** | **1,640** | **1,460** | **1,390** | **1,490** |
| Range/Oven | 1,480 | 1,200 | 1,180 | 1,290 |
| Range/Oven Hood | 10 | 10 | * | 10 |
| Deep Fat Fryer | 10 | 20 | 10 | 10 |
| Grill | * | * | * | * |
| Microwave Oven | 50 | 30 | 40 | 40 |
| Small Heat-Producing Appliance | 50 | 50 | 40 | 50 |
| Other | 140 | 230 | 200 | 190 |
| **Electrical Distribution** | **440** | **460** | **440** | **450** |
| Installed Wiring | 130 | 170 | 150 | 150 |
| Light Fixture | 30 | 40 | 30 | 30 |
| Receptacle, Switch | 70 | 60 | 80 | 70 |
| Cord, Plug | 70 | 80 | 90 | 80 |
| Lamp, Light Bulb | 60 | 50 | 40 | 50 |
| Panel Board | 20 | 20 | 10 | 20 |
| Meter | 20 | 10 | 10 | 10 |
| Transformer | * | * | * | * |
| Other | 30 | 40 | 50 | 40 |
| **Other Selected Electrical Appliances** | **300** | **240** | **190** | **250** |
| Clothes Dryer | 180 | 130 | 110 | 140 |
| Dishwasher | 10 | 20 | 10 | 10 |
| Audio/Visual Equipment | 30 | 40 | 20 | 30 |
| Washing Machine | * | 10 | * | * |
| Refrigerator/Freezer | 60 | 40 | 40 | 40 |
| Shop/Garden Tool | 20 | 10 | 20 | 10 |
| Torch | 10 | * | * | 10 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Injury estimates are rounded to the nearest 10. Rounded estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude injuries from intentionally set fires.

[17] There are confined fire injury estimates included in *Total Residential* category. These confined fire injury estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment or the power source of the equipment. See Table 8b on p. 32 for details.

## TABLE 4d
## ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
## SELECTED ELECTRICAL EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential[18]** | **$6,457.1** | **$6,380.7** | **$6,218.3** | **$6, 352.0** |
| **Total Electrical** | **$1,137.8** | **$1, 207.6** | **$1, 176.6** | **$1,174.0** |
| **Electric Heating and Cooling** | **$245.2** | **$234.0** | **$272.0** | **$250.4** |
| Central Heating | $11.9 | $7.3 | $16.9 | $12.0 |
| Local Fixed Heater | $57.6 | $57.5 | $71.6 | $62.2 |
| Portable Heater | $38.0 | $43.6 | $53.2 | $45.0 |
| Water Heater | $10.2 | $10.6 | $15.2 | $12.0 |
| Fixed, Central Air Conditioning | $15.6 | $20.6 | $16.6 | $17.6 |
| Portable Air Conditioner | $11.8 | $12.1 | $9.6 | $11.2 |
| Other | $115.7 | $102.8 | $105.5 | $108.0 |
| **Electric Cooking Equipment** | **$274.9** | **$338.7** | **$306.5** | **$306.7** |
| Range/Oven | $220.8 | $265.4 | $241.4 | $242.5 |
| Range/Oven Hood | $1.2 | $3.9 | $2.4 | $2.5 |
| Deep Fat Fryer | $6.7 | $2.6 | $4.2 | $4.5 |
| Grill | $2.9 | $0.9 | $0.3 | $1.4 |
| Microwave Oven | $8.8 | $11.3 | $9.2 | $9.8 |
| Small Heat-Producing Appliance | $26.7 | $18.2 | $14.0 | $19.6 |
| Other | $43.3 | $65.9 | $58.2 | $55.8 |
| **Electrical Distribution** | **$340.2** | **$334.1** | **$313.6** | **$329.3** |
| Installed Wiring | $143.6 | $170.2 | $149.9 | $154.5 |
| Light Fixture | $29.3 | $25.0 | $27.4 | $27.2 |
| Receptacle, Switch | $33.1 | $34.5 | $36.5 | $34.7 |
| Cord, Plug | $39.8 | $35.9 | $33.3 | $36.3 |
| Lamp, Light Bulb | $20.7 | $15.0 | $15.5 | $17.1 |
| Panel Board | $7.6 | $12.2 | $9.3 | $9.7 |
| Meter | $8.0 | $7.9 | $8.1 | $8.0 |
| Transformer | $1.7 | $1.9 | $1.9 | $1.8 |
| Other | $56.5 | $31.4 | $31.7 | $39.9 |
| **Other Selected Electrical Appliances** | **$113.9** | **$126.0** | **$123.6** | **$121.2** |
| Clothes Dryer | $68.0 | $63.4 | $62.5 | $64.6 |
| Dishwasher | $11.0 | $11.1 | $11.3 | $11.2 |
| Audio/Visual Equipment | $8.4 | $14.7 | $10.9 | $11.3 |
| Washing Machine | $2.1 | $2.5 | $1.8 | $2.1 |
| Refrigerator/Freezer | $16.8 | $20.0 | $24.0 | $20.3 |
| Shop/Garden Tool | $6.2 | $8.3 | $9.1 | $7.9 |
| Torch | $1.3 | $5.9 | $4.0 | $3.7 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Estimates are rounded to the $0.1m. Rounded estimates less than $0.1m are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude property loss from intentionally set fires.

[18] There are confined fire property loss estimates included in *Total Residential* category. These confined fire property loss estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment or the power source of the equipment. See Table 8c on p. 32 for details.

## TABLE 5a
## ESTIMATED RESIDENTIAL STRUCTURE FIRES
## SELECTED GAS-FIRED EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[19] | **365,500** | **351,400** | **359,400** | **358,800** |
| **Total Gas-Fired Equipment** | **8,000** | **6,700** | **7,200** | **7,300** |
| **Gas Heating Equipment** | **2,700** | **2,100** | **2,400** | **2,400** |
| Fixed Heater | 800 | 700 | 800 | 800 |
| Portable Heater | 100 | 100 | 100 | 100 |
| Central Heating | 400 | 300 | 300 | 300 |
| Fireplace, Chimney, Connector | 100 | 100 | 200 | 100 |
| Water Heater | 1,000 | 700 | 800 | 800 |
| Fixed, Central Air Conditioning | * | * | * | * |
| Other | 200 | 200 | 200 | 200 |
| **Gas Cooking Equipment** | **2,900** | **2,700** | **2,800** | **2,800** |
| Range/Oven | 1,900 | 1,800 | 2,000 | 1,900 |
| Open Gas Grill | 500 | 500 | 400 | 500 |
| Other | 400 | 400 | 400 | 400 |
| **Other Selected Gas Equipment** | **2,100** | **1,500** | **1,700** | **1,800** |
| Clothes Dryer | 1,500 | 1,000 | 1,100 | 1,200 |
| Torch | 300 | 300 | 400 | 300 |
| Shop/Garden Tool | 300 | 300 | 300 | 300 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Fire estimates are rounded to the nearest 100. Rounded estimates less than 100 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude losses from intentionally set fires.

[19] There are confined fire estimates included in *Total Residential* category. These confined fire estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment or the power source of the equipment. See Table 8a on p. 31 for details.

## TABLE 5b
## ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
## SELECTED GAS-FIRED EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential[20]** | **2,240** | **1,960** | **2,290** | **2,160** |
| **Total Gas-Fired Equipment** | **90** | **70** | **80** | **80** |
| **Gas Heating Equipment** | **30** | **40** | **10** | **30** |
| Fixed Heater | 20 | 20 | 10 | 20 |
| Portable Heater | * | * | * | * |
| Central Heating | * | 20 | * | 10 |
| Fireplace, Chimney, Connector | * | * | * | * |
| Water Heater | * | * | * | * |
| Fixed, Central Air Conditioning | * | * | * | * |
| Other | 10 | * | * | * |
| **Gas Cooking Equipment** | **50** | **20** | **60** | **40** |
| Range/Oven | 40 | 10 | 60 | 40 |
| Open Gas Grill | 10 | * | * | * |
| Other | * | 10 | * | * |
| **Other Selected Gas Equipment** | ***** | **10** | * | ***** |
| Clothes Dryer | * | * | * | * |
| Torch | * | * | * | * |
| Shop/Garden Tool | * | * | * | * |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Death estimates are rounded to the nearest 10. Rounded estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude deaths from intentionally set fires.

[20]There were no NFIRS confined fire deaths in 2012 or 2013 and a rounded estimate of fewer than 10 confined cooking fire deaths in 2011.

## TABLE 5c
## ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
## SELECTED GAS-FIRED EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[21] | **13,400** | **11,860** | **11,420** | **12,230** |
| **Total Gas-Fired Equipment** | **650** | **480** | **550** | **560** |
| **Gas Heating Equipment** | **220** | **130** | **180** | **180** |
| Fixed Heater | 90 | 40 | 80 | 70 |
| Portable Heater | 20 | 10 | 10 | 10 |
| Central Heating | 10 | 20 | 20 | 20 |
| Fireplace, Chimney, Connector | * | * | 10 | * |
| Water Heater | 80 | 40 | 40 | 50 |
| Fixed, Central Air Conditioning | * | * | * | * |
| Other | 20 | 10 | 20 | 20 |
| **Gas Cooking Equipment** | **240** | **260** | **290** | **260** |
| Range/Oven | 170 | 180 | 220 | 190 |
| Open Gas Grill | 20 | 20 | 30 | 20 |
| Other | 40 | 60 | 40 | 50 |
| **Other Selected Gas Equipment** | **130** | **70** | **60** | **80** |
| Clothes Dryer | 80 | 40 | 40 | 50 |
| Torch | 30 | 20 | 10 | 20 |
| Shop/Garden Tool | 20 | 10 | 10 | 10 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Injury estimates are rounded to the nearest 10. Rounded estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude injuries from intentionally set fires.

[21] There are confined fire injury estimates included in *Total Residential* category. These confined fire injury estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment or the power source of the equipment. See Table 8b on p. 32 for details.

## TABLE 5d
## ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
## SELECTED GAS-FIRED EQUIPMENT, 2011–2013

| Equipment | 2011 | 2012 | 2013 | 2011–2013 Average |
|---|---|---|---|---|
| **Total Residential**[22] | **$6,434.9** | **$6,380.7** | **$6,218.3** | **$6,344.6** |
| **Total Gas-Fired Equipment** | **$241.9** | **$205.0** | **$208.6** | **$218.5** |
| **Gas Heating Equipment** | **$103.6** | **$72.1** | **$77.2** | **$84.3** |
| Fixed Heater | $21.8 | $19.2 | $24.7 | $21.9 |
| Portable Heater | $2.4 | $5.2 | $5.9 | $4.5 |
| Central Heating | $19.8 | $9.7 | $11.4 | $13.6 |
| Fireplace, Chimney, Connector | $9.1 | $7.6 | $7.7 | $8.1 |
| Water Heater | $42.8 | $20.0 | $20.1 | $27.6 |
| Fixed, Central Air Conditioning | $0.5 | $0.1 | * | $0.2 |
| Other | $7.2 | $10.3 | $7.3 | $8.3 |
| **Gas Cooking Equipment** | **$76.8** | **$85.7** | **$73.9** | **$78.8** |
| Range/Oven | $32.6 | $38.6 | $43.3 | $38.1 |
| Open Gas Grill | $33.1 | $34.8 | $17.9 | $28.6 |
| Other | $11.1 | $12.3 | $12.7 | $12.1 |
| **Other Selected Gas Equipment** | **$49.9** | **$34.5** | **$48.8** | **$44.4** |
| Clothes Dryer | $13.4 | $16.6 | $16.2 | $15.4 |
| Torch | $10.9 | $6.7 | $10.1 | $9.3 |
| Shop/Garden Tool | $25.5 | $11.2 | $22.6 | $19.8 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Property loss estimates are rounded to the nearest tenth of a million dollars. Rounded estimates less than $0.1m are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. Estimates exclude property loss from intentionally set fires.

[22] There are confined fire property loss estimates included in *Total Residential* category. These confined fire property loss estimates could not be included in the detail lines because NFIRS does not provide information to determine the type of equipment or the power source of the equipment. See Table 8c on p. 32 for details.

# Methodology

The Methodology section is divided into five major sections. Section 1 describes the data from which fire loss estimates were made. Section 2 describes the procedures for preparing the data and dealing with missing data. Section 3 describes the quality-control checking and correction of the data. Section 4 describes how the fire loss estimates were made. Section 5 describes other issues that relate to the data and the estimates.

## Data

### *Sources of Data for Fire Loss Estimates*

The estimates in this report are based on the National Fire Protection Association's (NFPA) Survey of Fire Departments and the U.S. Fire Administration's (USFA) National Fire Incident Reporting System (NFIRS) data.

The NFPA survey is a stratified random sample of fire departments in the United States.[23] The sample is stratified by the size of the community protected. The NFPA makes national estimates of aggregated fires, deaths, injuries, and property loss, by weighting sample results according to the proportion of the total U.S. population accounted for, by communities of each size. The table below shows the NFPA estimates of residential structure fires and the associated losses for 2011 through 2013.

**Table 6. NFPA Estimates of Residential Structure Fires and Associated Losses 2011–2013**

| | 2011 | 2012 | 2013 |
|---|---|---|---|
| **Structure Fires** | 386,000 | 381,000 | 387,000 |
| **Civilian Deaths** | 2,550 | 2,405 | 2,785 |
| **Civilian Injuries** | 14,360 | 13,175 | 12,575 |
| **Property Loss** | $7.05 billion | $7.20 billion | $6.97 billion |

Source: See footnote 1 below.

The table above contains the only data from the NFPA survey that CPSC staff uses to make fire loss estimates.

NFIRS compiles incident reports submitted voluntarily to the U.S. Fire Administration (USFA) by U.S. fire departments. Thus, NFIRS is not a probability sample and is insufficient to support precision estimation. The reports come from all 50 states, the District of Columbia, and U.S. territories in 2011 and 2012. There were no reports from Wyoming in 2013. Not all the states reporting included data from every fire department in the state. The number of fire departments participating in NFIRS increased from 21,915 in 2011, to 21,960 in 2012, and then decreased to 21,585 in 2013. Table 7 shows the number of residential structure fires and the corresponding losses reported to USFA from 2011 through 2013.

[23] M.J. Karter, "Fire Loss in the U.S. During 2011," National Fire Protection Association (NFPA), September 2012; M.J. Karter, "Fire Loss in the U.S. During 2012," National Fire Protection Association (NFPA), September 2013: M.J. Karter, "Fire Loss in the U.S. During 2013," National Fire Protection Association (NFPA), September 2014.

**Table 7. Residential Structure Fires and Associated Losses Reported to NFIRS 2011–2013**

| | 2011 | 2012 | 2013 |
|---|---|---|---|
| **Structure Fires** | 286,136 | 253,379 | 263,903 |
| **Civilian Deaths** | 1,512 | 1,393 | 1,404 |
| **Civilian Injuries** | 8,273 | 7,266 | 6,916 |
| **Property Loss** | $4.21 billion | $3.85 billion | $4.28 billion |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA.

According to NFPA, there was an estimated annual average of 384,700 residential structure fires in the United States during 2011 to 2013, and an annual average of 2,580 deaths, 13,370 injuries, and $7.1 billion in property losses during the same period (Table 6). NFIRS captured about 70 percent of these fires, 56 percent of the deaths, 56 percent of the injuries, and 58 percent of the property losses (Table 7).

*NFIRS Variables*

The NFIRS version 5.0 coding system includes many variables, but CPSC staff used only a few for this report. The list of variables CPSC staff used in this report is shown below.

| Variable | Description |
|---|---|
| *Civilian Deaths* | Number of people who died in connection with the fire Incident other than fire service personnel. |
| *Civilian Injuries* | Number of people who were injured (but did not die) in connection with the fire incident other than fire service personnel. |
| *Property Loss* | Estimate of loss, in whole dollars, if structure sustained damage from flame, smoke, or suppression efforts. Property loss is not adjusted for inflation. |
| *Contents Loss* | Estimate of loss in whole dollars for contents (which had value) that sustained damage from flame, smoke, suppression efforts, or otherwise. Contents loss is not adjusted for inflation. |
| *Property Use* | Refers to the specific use of the property where the incident occurred. For residential structure fires, the properties that were deemed appropriate were single/ multifamily dwellings, any type of boarding houses, dormitories, sorority/fraternity houses, hotels/motels, and mobile property not in transit. |

| | |
|---|---|
| *Incident Type* | Identifies the various types of incidents to which fire departments respond. It may include fires, rescue and emergency medical services, false alarms. For this report, the incident codes of interest included structure fires (which include confined fires) and fires in mobile and portable structures used as fixed residences. |
| *Equipment Involved* | Device that provided the heat which started the fire (*e.g.*, heater, clothes dryer). |
| *Power Source* | The type of power for the equipment involved in the fire's ignition. These are grouped into electrical, gas-fueled, liquid-fueled, solid-fueled, and other. |
| *Equipment Portability* | Identifies the equipment involved as stationary or portable. |
| *Heat Source* | Source of heat that ignited the fire (*e.g.*, candle, lighter, cigarette, heat from operating equipment, hot object). |
| *Item First Ignited* | The functional description or use of that item which was first ignited by the heat source (*e.g.*, upholstered furniture, mattress, bedding, electric cable insulation, curtains or drapes). |
| *Cause of Ignition* | The general causal factor that resulted in a heat source igniting a combustible material. The cause code values are:<br>1: intentional<br>2: unintentional<br>3: failure of equipment or heat source<br>4: act of nature<br>5: cause under investigation<br>0: cause, other<br>U: cause undetermined after investigation.<br>CPSC staff regrouped the codes as:<br>1: intentional<br>0, 2, 3, 4 or fire involving child play[*]: unintentional<br>5, U, missing information: unknown. |
| *Factors Contributing to Ignition* | The event that allowed the heat source and the item first ignited to combine to start the fire. These add specificity to the cause of ignition, such as playing with heat source, heat source too close to combustibles, equipment malfunction. |

[*] See discussion on child play later in this section.

| | |
|---|---|
| *Human Factors Contributing to Ignition* | Factors relating to the person or persons involved with the start of the fire. Examples are asleep, possibly impaired by alcohol or drugs, age, unattended or unsupervised person. |
| *Age* | Age of the person, if age was considered a factor in contributing to the ignition of the fire. |

The NFIRS coding manual defines some variables as "required fields". A required field means that, if known, a value must be supplied for that variable. Other variables may or may not be supplied at the discretion of the reporting department. In the list above, the categories Equipment Involved, Power Source, Equipment Portability, Factors Contributing to Ignition, Human Factors Contributing to Ignition, and Age are not required fields. In the change that was incorporated beginning with 2012 data, Equipment Involved became required if certain Heat Source or Factor Contributing to Ignition codes were entered. Variables that are not required are more likely to be missing from a given fire incident report in NFIRS than those that are required.[24]

In the change that was incorporated beginning with 2012 data, Equipment Involved became required if certain Heat Source or Factor Contributing to Ignition codes were entered. This, not surprisingly, has led to a smaller proportion of missing data for Equipment Involved in 2012 and 2013. Because the code 'NNN – No equipment involved in ignition' was also not permitted for fires with these particular Heat Source and Factor Contributing to Ignition codes, the proportion of fires coded as 'NNN – No equipment involved in ignition' is much lower in 2012 and 2013 than in previous years. Requiring an Equipment Involved to be coded if certain Heat Source[25] codes are entered also appears to have led to entering fewer fires with Heat Source codes in 2012 and 2013.

## Data Preparation—Addressing Different Types of Missing Data

There are four general types of missing data in NFIRS: (1) data where the value of the missing variable can be inferred logically; (2) missing data from exposure fires; (3) missing data from confined fires; and (4) other missing data. Standard practice in analysis of fire data over the last 20 years has been to fill in the missing values whenever possible.

### *Missing data that can be logically inferred*

As mentioned above, only a few of the available fire incident characteristics were used to generate estimates in this report. Of these, only the variables Incident Type, Property Use, Cause of Ignition, Item First Ignited, Heat Source, and the Loss variables are required to be filled out by the fire departments. Even fewer are required for confined fires, which will be discussed below. Tables 1, 3, 4, and 5 in this report rely heavily on the variables Equipment Involved and Equipment Power Source. To reduce the extent of missing data, CPSC staff has implemented some conventions, as necessary, after consulting with USFA technical staff. For example, if the heat source is known to be matches, lighters, or candles, and no equipment is reported, then it is likely that equipment was not involved, rather than equipment being unknown. Similarly, if the factor contributing to the ignition of a fire is reported to be an act of nature—such as an earthquake or a storm—and no equipment is reported, then it is likely that no equipment was involved.

[24] NFIRS Complete Reference Guide, January 2013.

[25] There are four of these heat source codes: '10 – Heat from powered equipment, other'; '11 – Spark, ember, or flame from operating equipment'; '12 – Radiated, conducted heat from operating equipment'; '13 – Arcing'.

In another scenario, the reported equipment code is electrical but the equipment power source is missing. It is evident that the power source should have been reported as electrical. Similarly, when it is known that no electrical equipment is involved, the power source should be reported as "none," instead of "unknown."

These changes are made before any other steps in data preparation.

### *Exposure fires*

Some fires involved more than one residential structure. The initial structure is identified as "exposure zero" in the data file. Structure fires that spread from the initial fire are identified as "exposure fires" and are numbered from "zero," up to as many structures as necessary. Typically, in exposure fires, most of the information on the variables listed above is not filled out for exposures beyond the initial home.

If the initial fire was a residential structure fire, CPSC staff transferred the fire cause values, such as Cause of Ignition, Equipment Involved, or Heat Source, from the initial fire to the exposure fire. Thus, if a portable heater caused the initial fire, all exposures would be considered portable heater fires. All associated deaths, injuries, and property losses in these exposures also would be attributed to portable heaters. Any residential structure exposure fire that originated from a non-residential structure fire is also considered in-scope for this report. If the initial fire is not a residential structure fire, but the exposure fire is a residential structure fire, then the cause information is not passed down from the initial fire. For example, if a wildfire is started by a cigarette and then the fire spreads to homes, the wildfire would not count as a residential structure fire, but the exposure home fires would. The cigarette as the heat source would not be passed on to the home fires in this case. The cause information for the exposure home fires would be left as is.

### *Confined fires*

By far the biggest proportion of missing data was encountered among the confined fires. By NFIRS definition, a fire that is confined to a noncombustible container causing no flame damage beyond the container is considered to be confined.

In NFIRS version 5.0, the following Incident Type codes are used to identify the different types of confined fires.

| *Incident Type Code* | *Definition* |
|---|---|
| 113 | Fire involving the contents of a cooking vessel without fire extension beyond the vessel. |
| 114 | Fire originating in and confined to a chimney or flue. |
| 115 | Fire caused by overload or malfunction of an incinerator, with no flame damage outside the incinerator. |
| 116 | Fire caused by delayed ignition or malfunction of a fuel or oil burner/boiler, with no flame damage outside the fire box. |

| | |
|---|---|
| 117 | Fire originating in and confined to contents of a trash compactor. Home trash compactors are excluded. |
| 118 | Fire involving a trash or rubbish fire in a structure with no flame damage to structure or its contents. |

These Incident Type codes are unavailable in version 4.1 of NFIRS. It was believed that many of these cases were not being reported. Accordingly, these codes were created in version 5.0 to simplify the coding of these fires. When reporting confined fires, the Cause of Ignition, Equipment Involved, Item First Ignited, and Power Source are not required, and this information is rarely supplied.

With the proportion of reported confined fires increasing, the proportion of missing data also increases. However, imputation of unknowns based on the information from confined fires is not a viable option. From the definition of the Incident Type of confined fires, it is unclear whether they are at all similar to the rest of the fires by equipment involved, the equipment power source, the heat source, or the item first ignited. As such, CPSC staff separates all confined fires from the data before the product-specific estimates are derived. The confined fire and fire loss counts were weighted up to the NFPA estimates, using the same weights as the rest of the data and presented at the aggregate levels (and sometimes at more specific levels as allowed by the Incident Type definitions). See the section on Estimation Procedure below for a discussion of the weights used. Tables 8a through 8c present all estimates related to confined fires. These estimates are also included in Tables 1a through 5d, as appropriate. Note that they do not appear in Tables 4a through 5d at any of the specific levels because there is no information available on equipment power source.

**Table 8a. Estimated Residential Confined Fires: 2011–2013**

| Included in Table Categories: | Appear in Tables: | 2011 | 2012 | 2013 |
|---|---|---|---|---|
| **Total Residential** | 1a, 2a, 3a, 4a, 5a | 178,900 | 183,600 | 190,300 |
| **Total Heating and Cooling Equipment** | 1a, 3a | 31,300 | 29,300 | 30,600 |
| *Fireplace, Chimney, Connector* | *1a, 3a* | *20,800* | *19,800* | *21,300* |
| *Other (Burner/Boiler)* | *1a, 3a* | *10,500* | *9,600* | *9,300* |
| **Cooking** | 1a, 2a | 129,500 | 135,200 | 140,700 |
| **Trash, Rubbish** | 2a | 16,600 | 17,600 | 17,500 |
| **Incinerator** | - | 600 | 600 | 600 |
| **Trash Compactor** | - | 900 | 900 | 900 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Fire estimates are rounded to nearest 100. Rounded estimates less than 100 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. No information was available on the intentionality of these fires.

In 2012 and 2013, there were no reported confined fire deaths. In 2011, there was one reported confined fire cooking death, which led to an estimate of fewer than 10 confined cooking fire deaths.

**Table 8b. Estimated Residential Confined Fire Injuries: 2011–2013**

| Included in Table Categories: | Appear in Tables: | 2011 | 2012 | 2013 |
|---|---|---|---|---|
| **Total Residential** | 1c, 2c, 3c, 4c, 5c | 1,770 | 1,820 | 1,690 |
| **Total Heating and Cooling Equipment** | 1c, 3c | 60 | 50 | 50 |
| *Fireplace, Chimney, Connector* | *1c, 3c* | *30* | *20* | *20* |
| *Other (Burner/Boiler)* | *1c, 3c* | *30* | *30* | *30* |
| **Cooking** | 1c, 2c | 1,640 | 1,700 | 1,560 |
| **Trash, Rubbish** | 2c | 70 | 60 | 70 |
| **Incinerator** | - | * | 10 | 10 |
| **Trash Compactor** | - | * | * | 10 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Injury estimates rounded to nearest 10. Rounded estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. No information was available on the intentionality of these fires.

**Table 8c. Estimated Residential Confined Fire Property Loss (In Millions): 2011–2013**

| Included in Table Categories: | Appear in Tables: | 2011 | 2012 | 2013 |
|---|---|---|---|---|
| **Total Residential** | 1d, 2d, 3d, 4d, 5d | $37.2 | $38.5 | $45.9 |
| **Total Heating and Cooling Equipment** | 1d, 3d | $8.1 | $8.7 | $8.5 |
| *Fireplace, Chimney, Connector* | *1d, 3d* | *$5.9* | *$6.7* | *$6.0* |
| *Other (Burner/Boiler)* | *1d, 3d* | *$2.2* | *$2.0* | *$2.5* |
| **Cooking** | 1d, 2d | $26.7 | $27.0 | $34.8 |
| **Trash, Rubbish** | 2d | $1.9 | $2.3 | $2.2 |
| **Incinerator** | - | $0.4 | $0.4 | $0.3 |
| **Trash Compactor** | - | * | $0.1 | $0.1 |

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the USFA and NFPA.
Note: Property loss estimates are rounded to the nearest tenth of a million dollars. Rounded estimates less than $0.1m are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. No information was available on the intentionality of these fires.

*Other missing data*

Tables 9a–9c show the proportion of data missing after inferring missing data when appropriate. Because most of the data fields for confined fires were not reported, those data fields were excluded from the tabulations. Note the large reduction in missing Equipment data that has resulted from the questionnaire change in 2012. This change also likely causes an increase in the proportion of missing heat source data.

**Table 9a. Missing Data on Residential Structure Fires: 2011–2013**

| | 2011 | 2012 | 2013 |
|---|---|---|---|
| **Cause of Ignition** | 33% | 36% | 35% |
| **Heat Source** | 37% | 41% | 39% |
| **Item First Ignited** | 37% | 39% | 38% |
| **Equipment Involved** | 49% | 36% | 36% |
| **Equipment Power** | 49% | 36% | 35% |

Source: U.S. Consumer Product Safety Commission/EPHA, from NFIRS data obtained from the USFA. Table excludes confined fires.

**Table 9b. Missing Data on Residential Structure Fire Deaths: 2011–2013**

| | 2011 | 2012 | 2013 |
|---|---|---|---|
| **Cause of Ignition** | 60% | 59% | 59% |
| **Heat Source** | 58% | 62% | 62% |
| **Item First Ignited** | 56% | 62% | 62% |
| **Equipment Involved** | 56% | 49% | 37% |
| **Equipment Power** | 57% | 49% | 50% |

Source: U.S. Consumer Product Safety Commission/EPHA, from NFIRS data obtained from the USFA. Table excludes deaths from confined fires.

**Table 9c. Missing Data on Residential Structure Fire Injuries: 2011–2013**

| | 2011 | 2012 | 2013 |
|---|---|---|---|
| **Cause of Ignition** | 34% | 37% | 36% |
| **Heat Source** | 32% | 35% | 35% |
| **Item First Ignited** | 32% | 34% | 33% |
| **Equipment Involved** | 40% | 29% | 28% |
| **Equipment Power** | 40% | 30% | 28% |

Source: U.S. Consumer Product Safety Commission/EPHA, from NFIRS data obtained from the USFA. Table excludes injuries from confined fires.

For these data, an assumption was made that the unknown values for a characteristic had the same distribution as the known values for that characteristic. To allocate these unknowns for the various characteristics, "raking" was performed using a SAS® macro.[26] The raking procedure maintains the marginal distributions for the known data, while allocating the unknown data for all characteristics involved.[27] For each year, the raking procedure was applied separately for fires, deaths, injuries, and property loss.

### Adjustments for 2012 and 2013 Data

The questionnaire design changes in 2012 made it difficult to assume that unknown values would share the distribution of known values. That is because a reduction in unknowns for electrical equipment was introduced without similar reductions for other kinds of equipment. Likewise, the reduction in heat source for electrical equipment was not observed elsewhere. To address this change, an adjustment factor was applied before raking to restore the proportion of missing equipment and electrical equipment (Tables 1, 3, 4, and 5) and missing heat source and electrical heat source (Table 2) to the proportions observed over the 2009 to 2011 period. Although these adjustments made estimates appear more in line with what had been observed before 2012, it is possible that these adjustments could mute or magnify changes that actually occurred between 2011 and 2012 to 2013. Estimates produced without these adjustments appeared too different from prior estimates to be credible, given how they were concentrated only in one kind of equipment and heat source.

An additional adjustment was made to 2013 estimates to account for volatility in the estimates. This information appears in Table 2b and reflects missing data interactions between the heat source and item

[26] M. Battaglia, D. Hoaglin and D. Izrael, "To Rake or Not To Rake Is Not the Question Anymore with the Enhanced Raking Macro," SAS® Users Group International (SUGI) 29th Annual Conference, May 9–12, 2004, Paper #207-29.

[27] M.A. Greene, L.E. Smith, M.S. Levenson, S. Hiser, and J.H. Mah, "Raking Fire Data," Presented at the Federal Conference on Statistical Methodology, Arlington, VA, 2001.

first ignited variables. This caused the raking programs to assign a substantially larger amount of fires to upholstered furniture, for example, despite the lack of an increase in the unweighted data. All 3 years of data were pooled before raking the data in table(s) 2b and the year was added as a parameter to allow the raking to be smoothed with prior years.

## Quality Control Checks of NFIRS Data

In 2006, a California home fire with a $100 million property loss was reported to NFIRS. Because this loss was unusually high, CPSC staff decided to assign the fire to CPSC field staff to investigate and confirm the amount of this large property loss. The actual fire department estimate of property loss for the fire was $100,000. The property loss was corrected, and the weight used for property loss estimates was changed accordingly.

Accordingly, CPSC staff initiated more quality-control checking of the NFIRS data, beginning with the 2007 data. In 2011, 2012, and 2013, residential structure fires with reported property losses of $5 million or higher were assigned to CPSC field staff to confirm with the fire department the high property loss estimate. There were 13 high property loss fires assigned for investigation. In seven of the fires, the property loss estimate was confirmed. In three of the fires, a different property loss estimate was obtained, and the data were corrected. In the three other fires, no follow-up information was found.

In addition to the quality-control checking of high property loss fire reports, some quality control was carried out on multiple-death fire incidents for the 2011, 2012, and 2013 data. In cases with three or more civilian deaths reported, a search of the Internet was conducted to look for news articles and fire marshal reports to confirm (or add to) the fire cause information given in the NFIRS report. There were 27 cases (out of the 41 total cases with three or more fatalities) where it appeared that there might be information to conflict with or add to the information from the NFIRS report. These cases were assigned to field staff to contact the fire department and reconcile the information. From these investigations, 14 cases had fire cause information edited. A common scenario was a report that had the “Cause of Ignition” variable “missing” or “unknown” and then changed to “unintentional,” after a CPSC field staff investigation. In some instances, the investigation concluded that the deaths involved were not from a fire, and therefore, the data were edited accordingly.

## Estimation Procedure

After applying the conventions and the raking procedure previously discussed, CPSC staff completed the estimation process. For each year, CPSC staff computed weights for residential fires, civilian deaths, civilian injuries, and property and content losses, respectively, by dividing the NFPA estimated totals for these losses, by the corresponding NFIRS totals. These weights were multiplied by the NFIRS product-specific frequency counts, which then were used to produce the estimates in the tables. The confined fires were separated, and the estimates were computed separately.

The estimates presented in this report pertain to unintentional fires and fire losses only. Accordingly, CPSC analysts excluded all incidents where the “Cause of Ignition” could be identified as intentional. Although fires involving children playing with the source of heat have become more difficult to identify in the new NFIRS system (see discussion in the next section), whenever such a fire could be identified, the CPSC analysts designated it as “unintentional,” even if the “Cause of Ignition” was coded as “intentional.”

Estimated annual averages recorded in this report are arithmetic averages of the unrounded estimates from each of the 3 years. The reported annual averages are rounded to the nearest 100 for fires, nearest 10 for deaths and injuries, and nearest $0.1 million for property losses.

## Other Issues

### *Child Play*

When a fire is caused by the act of a child (under 10 years of age) playing with a source of heat, the cause of fire is considered child play.

In version 4.1 of NFIRS data, the variable Ignition Factor had specific codes to indicate the cause of the fire. The codes allowed for the identification of child play fire losses, which were associated with matches and lighters. In version 5.0, there is no one variable reserved to identify child play cases. A combination of variables, such as Factors Contributing to Ignition, Human Factors Contributing to Ignition, and Age (of fire starter when age was considered a factor contributing to ignition of fire) provides the means to identify these scenarios. However, for data that are reported in version 5.0, fire departments are not required to fill in these three variable fields. Consequently, much of the data are missing, and because these extra variables used to identify child play are not included in the raking procedure, estimates of child play fires (which were presented in pre-1999 years) have become unreliable for post-1998 years. However, for cases where these variables are not missing and are coded in a way that indicates child play, the Cause of Ignition variable is classified as unintentional. This ensures that the fire and any associated losses will be counted and not excluded as an intentional fire.

### *Trend in Estimates*

From 1999 to 2004, the proportion of the NFIRS residential structure fire records that were originally coded in 5.0 increased rapidly (from 5 percent in 1999, to 89 percent in 2004). Because fires only can be coded as confined fires in 5.0, this rapid increase also meant a rapid increase in the proportion of fires that were confined fires (from 2 percent in 1999, to 41 percent in 2004). If the proportion of confined fires reported to NFPA did not increase likewise during this period, then this would have a downward effect on the fire estimates for nonconfined fire products. Without knowing whether fires reported to NFPA were confined or nonconfined, a review of the specific product fire estimates from 1999 to 2004 suggested that this downward effect was occurring. Because we do not know the change in the proportion of confined fires in the NFPA survey, we cannot be sure that this is indeed what was causing this decrease in fire estimates for specific products.

By 2005, 94 percent of the NFIRS residential structure fire records were originally coded in 5.0. Consequently, the proportion of NFIRS structure fires that are confined fires did not increase much from 2005 to 2013 (42 percent to 49 percent). This small increase probably has little effect on the fire estimates for specific products.