



2008–2010 Residential Fire Loss Estimates*

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

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* 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 2008 through 2010, 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:

- 378,800 fires, 2,390 deaths, 12,610 injuries, and \$7.69 billion in property loss in 2008;
- 357,000 fires, 2,210 deaths, 12,140 injuries, and \$6.96 billion in property loss in 2009;
- 364,300 fires, 2,330 deaths, 12,910 injuries, and \$6.63 billion in property loss in 2010; and
- an estimated annual average of 366,700 fires, 2,310 deaths, 12,550 injuries, and \$7.09 billion in property loss over the three-year period 2008–2010.

Consumer products involved in fires can be categorized as sources of ignition or as the materials first ignited. As sources of ignition, they can be small sources, such as candles or large sources like ranges, which are usually categorized as the equipment involved in ignition. Because the fire losses are derived separately for sources of ignition and materials first ignited, estimates presented in this report overlap in some cases.

For 2008 through 2010, the relative ranking of the greatest contributors remained largely unchanged from that reported for 2006–2008. The annual average electrical distribution fire death estimate (170) has eclipsed the cooking equipment fire death estimate (140) for 2008–2010. In previous years the estimated annual average of cooking equipment deaths had been equal to or higher than that for electrical distribution equipment. Tables 1a–1d show that:

- Cooking equipment accounted for the largest percentage of fires. An estimated annual average of 147,400 cooking equipment-related fires during 2008–2010 accounted for 40.2 percent of the average annual estimate of total residential fires for the same period. The corresponding death estimate is an annual average of 140 deaths, which is 6.3 percent of the average annual estimate of total residential fire deaths. The annual average number of cooking fire injuries for 2008–2010 was estimated to be 3,450, which represents 27.4 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 51,800 fires for 2008–2010 was 14.1 percent of the annual average estimate of total residential fires during the same period. The corresponding death estimate is an annual average of 210 deaths, which is 8.9 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 960. This accounts for 7.6 percent of the annual average estimate of total injuries during 2008–2010.

- During 2008–2010, an estimated annual average of 10,500 fires was attributable to electrical distribution system components (*e.g.*, installed wiring, lighting). This corresponds to 2.9 percent of the estimated annual average number of total residential fires for the same time period. The annual average death estimate is 170 (7.2 percent of average annual estimated number of total residential fire deaths); the injury estimates averaged 480, which is 3.8 percent of the estimated annual average of total residential fire injuries.
- With respect to item first ignited, upholstered furniture was involved in the greatest number of fire deaths. From 2008 through 2010, an estimated annual average of 450 deaths was associated with these fires. This constitutes 19.3 percent of the estimated annual average of total deaths associated with residential structure fires for the same period. On average, during 2008 to 2010, mattress or bedding ignitions accounted for an annual average of 320 deaths, which is 14.0 percent of the average annual estimated number of total residential fire deaths.
- With respect to heat source, smoking materials were the largest contributor to deaths, associated with an annual average of 500 deaths from 2008 to 2010. This accounts for 21.5 percent of the estimated annual average of total residential fire deaths. The estimated annual average number of deaths from candle fires is 70, which represents 3.2 percent of the average annual estimated total number of residential fire deaths during 2008 to 2010. There were an estimated 50 deaths from lighter fires (2.1 percent of the estimated annual average of the total number of residential fire deaths) while, on average, matches were responsible for 20 deaths, or 1.0 percent of total deaths annually.
- The estimates for fires in 2009 were lower than in 2008. This is true for the total residential structure fire estimate (6% lower) and the percent decreases are larger for many individual products. The 2010 estimates are slightly higher than 2009 but lower than 2008.

Beginning with 1999, the NFIRS system underwent some major changes. Thus, fire loss estimates from before 1999 are not readily comparable with those from after 1999. The post-1999 estimates in this report are best viewed as reflecting estimates from a substantially different reporting system because of the inherent system design differences.

Introduction

The fire loss estimates presented in this report are based on the National Fire Protection Association's (NFPA) national fire loss estimates¹ 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 is a compilation of voluntarily submitted fire incident reports by U.S. fire departments that are sent to the USFA. Not all the states reporting data 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 only to fires in residential properties. 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, they are referred to as "property losses" in this report.

The estimates for 2006 through 2008 were published in the July 2011 Residential Fire Loss Estimates report.² The estimates for 2008 that are presented here remain unchanged from that earlier report with a couple of exceptions.³ Annual average estimates generated from the most recent three years of data are presented 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 to the NFIRS data coding system, designated version 5.0, was implemented. In 1999, 5 percent of the residential fire data was coded by fire departments in the new NFIRS version 5.0; in 2000, 20 percent was 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 and 2010. However, from 1999 onwards, the NFIRS data received from the USFA is entirely in version 5.0 format. Data were converted from NFIRS 4.1 to NFIRS 5.0 by computer programs. Since 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 above, in 2008, 2009, and 2010, 99 percent, 100 percent, and 100 percent of the residential fire data, respectively, were originally coded in version 5.0. Given this large proportion of version 5.0 data, CPSC analysts excluded reports originally coded in version 4.1 and produced these estimates using the version 5.0 data only. The NFIRS product-specific

¹ M.J. Karter, "Fire Loss in the U.S. During 2008," National Fire Protection Association (NFPA), August 2009; M.J. Karter, "Fire Loss in the U.S. During 2009," National Fire Protection Association (NFPA), August 2010; M.J. Karter, "Fire Loss in the U.S. During 2010," National Fire Protection Association (NFPA), September 2011.

² D. Miller, R. Chowdhury, M. Greene, "2006–2008 Residential Fire Loss Estimates," CPSC, August 2011.

³ CPSC staff included estimates for dishwashers and microwave ovens for the first time in this report. Estimates were done for 2008 as well and this caused changes to the estimates for All Other Cooking in Table 1 and Small Heat-Producing Appliance in Table 4 since microwaves used to comprise part of those estimates.

frequency counts based only on this component of the data were weighted up to the 2008, 2009, and 2010 NFPA estimates for total U.S. fire losses, to arrive at the product-specific estimates presented in this report.

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 fires were reported as confined; by 2010, 47 percent of fires reported to NFIRS were confined.

In confined fire cases it is frequently not possible to determine the type of equipment involved because this is not required information. For example, when a fire is identified as a “confined cooking fire” in NFIRS, it is not possible to distinguish a fire started by a range versus other cooking equipment, like a microwave oven or toaster. As a result, confined cooking fire losses are only included as part of the “Total Cooking Equipment” fires, but 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 taken into account in the evaluation of 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 the estimates of residential fires and related deaths, injuries, and property losses since 1999 considerably. Therefore, CPSC staff strongly discourages comparison of pre-1999 estimates with estimates from later years.

Results

Consistent with previous years' reports, CPSC staff has presented data here using five main tables. Each numbered table (1–5) has four sub-tables associated with it: 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, while in Table 2, either the heat source or the item first ignited was the primary means of identifying the product. As such, 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, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential⁴	378,800	357,000	364,300	366,700
Total Heating and Cooling Equipment⁴	56,300	50,600	48,600	51,800
Local Fixed Heater	4,900	3,900	4,000	4,300
Portable Heater	1,900	1,500	1,600	1,700
Central Heating	1,200	900	1,000	1,000
Fireplace, Chimney, Chimney Connector ⁴	27,200	26,000	24,400	25,900
Water Heater	2,300	1,700	1,800	1,900
Air Conditioning	1,000	900	1,100	1,000
Other ⁴	17,800	16,200	15,600	16,500
Total Cooking Equipment⁴	149,100	146,000	147,000	147,400
Range/Oven	14,600	12,600	13,600	13,600
<i>Gas</i>	2,300	1,800	1,900	2,000
<i>Electric</i>	12,300	10,700	11,600	11,600
<i>Other</i>	*	*	*	*
Microwave Oven	700	600	500	600
All Other Cooking	3,700	3,100	3,000	3,300
<i>Gas</i>	900	900	800	900
<i>Electric</i>	2,400	2,000	2,000	2,200
<i>Other</i>	300	200	200	300
Total Electrical Distribution	12,100	9,900	9,400	10,500
Installed Wiring	5,100	4,200	3,700	4,300
Cord, Plug	1,300	1,100	900	1,100
Receptacle, Switch	1,400	1,000	1,100	1,200
Lighting	2,200	1,900	1,900	2,000
Other	2,100	1,700	1,700	1,800
Other Selected Equipment	9,800	8,000	9,100	9,000
Audio/Visual Equipment	600	400	300	500
Clothes Dryer	6,800	5,200	6,200	6,100
Dishwasher	500	400	500	500
Washing Machine	300	200	300	300
Torch	500	400	400	400
Refrigerator/Freezer	900	700	700	800
Shop/Garden Tool	800	600	700	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.

⁴ 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, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential⁵	2,390	2,210	2,330	2,310
Total Heating and Cooling Equipment	220	210	200	210
Local Fixed Heater	60	50	40	50
Portable Heater	100	90	100	100
Central Heating	*	10	10	10
Fireplace, Chimney, Chimney Connector ⁵	10	30	10	20
Water Heater	10	*	30	10
Air Conditioning	*	*	10	*
Other ⁵	30	20	*	20
Total Cooking Equipment⁵	140	110	180	140
Range/Oven	130	90	170	130
<i>Gas</i>	40	10	50	30
<i>Electric</i>	90	80	120	100
<i>Other</i>	*	*	*	*
Microwave Oven	*	*	*	*
All Other Cooking	10	20	10	10
<i>Gas</i>	*	*	10	*
<i>Electric</i>	10	10	*	10
<i>Other</i>	*	*	*	*
Total Electrical Distribution	210	150	140	170
Installed Wiring	120	50	30	70
Cord, Plug	30	50	60	50
Receptacle, Switch	10	*	10	10
Lighting	10	20	30	20
Other	40	20	10	20
Other Selected Equipment	40	10	20	20
Audio/Visual Equipment	*	*	*	*
Clothes Dryer	40	*	10	20
Dishwasher	*	*	*	*
Washing Machine	*	*	10	*
Torch	*	*	*	*
Refrigerator / Freezer	*	*	*	*
Shop/Garden Tool	*	*	10	*

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.

⁵ There were no NFIRS confined cooking fire deaths in 2008, 2009, or 2010.

TABLE 1c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED EQUIPMENT, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential⁶	12,610	12,140	12,910	12,550
Total Heating and Cooling Equipment⁶	1,050	880	940	960
Local Fixed Heater	360	320	260	310
Portable Heater	210	180	190	190
Central Heating	50	30	50	40
Fireplace, Chimney, Chimney Connector ⁶	80	70	120	90
Water Heater	130	80	90	100
Air Conditioning	20	60	40	40
Other ⁶	200	170	210	190
Total Cooking Equipment⁶	3,560	3,210	3,560	3,450
Range/Oven	1,410	1,280	1,510	1,400
<i>Gas</i>	150	180	210	180
<i>Electric</i>	1,270	1,100	1,290	1,220
<i>Other</i>	*	*	*	*
Microwave Oven	60	50	30	50
All Other Cooking	270	230	210	240
<i>Gas</i>	70	70	70	70
<i>Electric</i>	180	130	120	150
<i>Other</i>	20	20	20	20
Total Electrical Distribution	420	510	500	480
Installed Wiring	100	180	140	140
Cord, Plug	100	100	110	100
Receptacle, Switch	20	30	20	20
Lighting	130	120	130	130
Other	70	90	90	80
Other Selected Equipment	330	290	280	300
Audio/Visual Equipment	40	40	20	30
Clothes Dryer	230	150	190	190
Dishwasher	10	10	*	10
Washing Machine	*	*	10	*
Torch	10	10	30	20
Refrigerator/Freezer	10	40	10	20
Shop/Garden Tool	40	40	20	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.

⁶ 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. 31 for details.

TABLE 1d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
SELECTED EQUIPMENT, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential⁷	\$7,692.0	\$6,958.7	\$6,627.6	\$7,092.7
Total Heating and Cooling Equipment⁷	\$649.0	\$505.5	\$579.7	\$578.1
Local Fixed Heater	\$148.3	\$149.2	\$109.3	\$135.6
Portable Heater	\$87.4	\$62.7	\$85.6	\$78.6
Central Heating	\$37.9	\$29.1	\$28.3	\$31.8
Fireplace, Chimney, Chimney Connector ⁷	\$147.6	\$106.3	\$153.6	\$135.8
Water Heater	\$62.3	\$43.2	\$37.8	\$47.8
Air Conditioning	\$24.4	\$14.9	\$30.2	\$23.2
Other ⁷	\$141.3	\$109.1	\$158.6	\$136.3
Total Cooking Equipment⁷	\$483.9	\$372.8	\$404.6	\$420.4
Range/Oven	\$300.8	\$228.1	\$254.2	\$261.0
<i>Gas</i>	\$45.2	\$29.8	\$39.6	\$38.2
<i>Electric</i>	\$255.2	\$197.8	\$213.9	\$222.3
<i>Other</i>	\$0.5	\$0.6	\$0.6	\$0.6
Microwave Oven	\$12.7	\$16.7	\$9.6	\$13.0
All Other Cooking	\$118.7	\$90.3	\$113.8	\$107.6
<i>Gas</i>	\$41.1	\$22.6	\$49.7	\$37.8
<i>Electric</i>	\$65.1	\$48.5	\$55.0	\$56.2
<i>Other</i>	\$12.6	\$19.2	\$9.2	\$13.7
Total Electrical Distribution	\$476.5	\$382.6	\$311.1	\$390.1
Installed Wiring	\$210.5	\$169.8	\$137.8	\$172.7
Cord, Plug	\$50.2	\$51.1	\$35.8	\$45.7
Receptacle, Switch	\$41.2	\$39.8	\$26.4	\$35.8
Lighting	\$85.0	\$73.7	\$51.6	\$70.1
Other	\$89.5	\$48.1	\$59.5	\$65.7
Other Selected Equipment	\$201.8	\$188.3	\$177.5	\$189.2
Audio/Visual Equipment	\$19.5	\$17.0	\$6.6	\$14.4
Clothes Dryer	\$91.5	\$68.1	\$76.4	\$78.7
Dishwasher	\$10.4	\$8.9	\$11.4	\$10.2
Washing Machine	\$2.9	\$3.8	\$2.7	\$3.2
Torch	\$30.8	\$50.4	\$13.2	\$31.5
Refrigerator/Freezer	\$24.6	\$20.4	\$34.0	\$26.3
Shop/Garden Tool	\$32.4	\$19.8	\$34.5	\$28.9

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. Subtotals do not necessarily add to heading totals. Estimates exclude property loss from intentionally set fires.

⁷ 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, 2008–2010

Product	2008	2009	2010	2008–2010 Average
Total Residential⁸	378,800	357,000	364,300	366,700
By Heat Source				
Cigarette, Other Tobacco Products	11,100	9,600	10,400	10,300
Match	700	600	600	600
Lighter	1,800	1,500	1,600	1,700
Candle	8,800	6,900	6,700	7,500
By Item First Ignited				
Upholstered Furniture	6,000	4,900	4,900	5,300
Smoking Material Ignition	1,600	1,300	1,300	1,400
Open-Flame Ignition	800	600	600	700
Other	3,600	3,100	3,100	3,200
Mattress, Bedding	8,900	7,800	7,800	8,200
Smoking Material Ignition	1,900	1,600	1,400	1,600
Open-Flame Ignition	1,900	1,600	1,500	1,700
Other	5,100	4,700	4,900	4,900
Other Materials				
Cooking Materials ⁸	150,800	151,300	152,800	151,600
Electric Cable Insulation	17,200	15,300	16,500	16,300
Interior Wall Covering	7,800	7,100	7,300	7,400
Wearing Apparel-Worn	300	300	300	300
Wearing Apparel-Not Worn	5,900	5,200	5,600	5,600
Floor Covering	4,700	4,100	3,900	4,300
Curtains, Drapes	1,800	1,400	1,500	1,600
Magazines, Newspaper	2,000	1,600	1,700	1,800
Thermal Insulation	6,500	5,400	5,900	5,900
Cabinet, Desk	4,900	4,600	4,900	4,800
Trash, Rubbish ¹	19,600	19,500	20,000	19,700
Toy, Game	200	200	100	200
Box, Carton, Bag, Basket, Barrel	2,700	2,400	2,600	2,600

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.

⁸ 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, 2008–2010

Product	2008	2009	2010	2008–2010 Average
Total Residential⁹	2,390	2,210	2,330	2,310
By Heat Source				
Cigarette, Other Tobacco Products	550	490	460	500
Match	30	20	20	20
Lighter	30	30	90	50
Candle	100	50	80	70
By Item First Ignited				
Upholstered Furniture	510	420	410	450
Smoking Material Ignition	210	200	220	210
Open-Flame Ignition	50	30	80	50
Other	250	190	120	190
Mattress, Bedding	310	360	300	320
Smoking Material Ignition	160	150	80	130
Open-Flame Ignition	20	40	30	30
Other	130	170	190	160
Other Materials				
Cooking Materials ¹	90	120	150	120
Electric Cable Insulation	70	150	80	100
Interior Wall Covering	90	80	160	110
Wearing Apparel-Worn	90	80	90	90
Wearing Apparel-Not Worn	30	20	50	30
Floor Covering	160	110	100	120
Curtains, Drapes	20	*	10	10
Magazines, Newspaper	30	20	30	30
Thermal Insulation	20	10	10	10
Cabinet, Desk	70	50	50	60
Trash, Rubbish	50	60	40	50
Toy, Game	*	*	*	*
Box, Carton, Bag, Basket, Barrel	*	10	20	10

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.

⁹ There were no NFIRS confined cooking fire deaths in 2008, 2009, or 2010.

TABLE 2c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED PRODUCTS, 2008–2010

Product	2008	2009	2010	2008–2010 Average
Total Residential¹⁰	12,610	12,140	12,910	12,550
By Heat Source				
Cigarette, Other Tobacco Products	1,120	1,050	1,070	1,080
Match	100	100	70	90
Lighter	380	300	380	350
Candle	790	670	620	700
By Item First Ignited				
Upholstered Furniture	940	780	710	810
Smoking Material Ignition	320	270	240	270
Open-Flame Ignition	220	140	120	160
Other	400	380	350	370
Mattress, Bedding	1,140	1,220	1,190	1,180
Smoking Material Ignition	280	340	330	320
Open-Flame Ignition	310	350	270	310
Other	550	530	590	560
Other Materials				
Cooking Materials ¹⁰	4,000	3,930	4,250	4,060
Electric Cable Insulation	480	440	460	460
Interior Wall Covering	340	260	330	310
Wearing Apparel-Worn	120	80	110	100
Wearing Apparel-Not Worn	360	260	310	310
Floor Covering	260	200	230	230
Curtains, Drapes	140	150	190	160
Magazines, Newspaper	190	110	120	140
Thermal Insulation	70	80	90	80
Cabinet, Desk	330	280	310	310
Trash, Rubbish ¹	310	270	320	300
Toy, Game	20	*	*	10
Box, Carton, Bag, Basket, Barrel	150	120	120	130

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. Subtotals do not necessarily add to heading totals. Estimates exclude injuries from intentionally set fires.

¹⁰There 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. 31 for details.

TABLE 2d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
SELECTED PRODUCTS, 2008–2010

Product	2008	2009	2010	2008–2010 Average
Total Residential¹¹	\$7,692.0	\$6,958.7	\$6,627.6	\$7,092.7
By Heat Source				
Cigarette, Other Tobacco Products	\$435.3	\$460.0	\$384.2	\$426.5
Match	\$30.4	\$27.0	\$23.9	\$27.1
Lighter	\$82.3	\$67.8	\$56.9	\$69.0
Candle	\$352.6	\$431.0	\$257.3	\$347.0
By Item First Ignited				
Upholstered Furniture	\$352.0	\$325.2	\$249.0	\$308.7
Smoking Material Ignition	\$87.2	\$82.1	\$61.0	\$76.7
Open-Flame Ignition	\$61.3	\$55.8	\$34.9	\$50.6
Other	\$203.5	\$187.4	\$153.1	\$181.4
Mattress, Bedding	\$324.5	\$317.1	\$297.8	\$313.2
Smoking Material Ignition	\$48.4	\$52.7	\$43.8	\$48.3
Open-Flame Ignition	\$96.2	\$90.4	\$70.2	\$85.6
Other	\$179.9	\$174.0	\$183.9	\$179.3
Other Materials				
Cooking Materials ¹¹	\$511.6	\$556.3	\$508.9	\$525.6
Electric Cable Insulation	\$522.3	\$488.9	\$449.2	\$486.8
Interior Wall Covering	\$333.8	\$345.7	\$329.9	\$336.5
Wearing Apparel-Worn	\$5.7	\$9.7	\$4.6	\$6.7
Wearing Apparel-Not Worn	\$169.5	\$154.1	\$127.5	\$150.4
Floor Covering	\$167.9	\$166.0	\$129.7	\$154.6
Curtains, Drapes	\$45.9	\$44.8	\$52.7	\$47.8
Magazines, Newspaper	\$75.4	\$63.1	\$64.9	\$67.8
Thermal Insulation	\$178.8	\$157.8	\$153.0	\$163.2
Cabinet, Desk	\$190.4	\$161.3	\$167.0	\$172.9
Trash, Rubbish ¹	\$136.4	\$180.7	\$206.7	\$174.6
Toy, Game	\$8.2	\$2.1	\$2.7	\$4.3
Box, Carton, Bag, Basket, Barrel	\$157.9	\$105.2	\$82.1	\$115.1

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. Subtotals do not necessarily add to heading totals. Estimates exclude property loss from intentionally set fires.

¹¹ 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, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential¹²	378,800	357,000	364,300	366,700
Total Heating and Cooling Equipment¹	56,300	50,600	48,600	51,800
Solid Fuel	3,000	2,400	2,400	2,600
Fixed Heater	800	700	600	700
Portable Heater	*	*	*	*
Fireplace, Chimney, Chimney Connector	2,100	1,700	1,800	1,800
Central Heating	*	*	*	*
Water Heater	*	*	*	*
Other	*	*	*	*
Gas-Fired	3,600	2,800	3,000	3,100
Fixed Heater	1,100	800	900	900
Portable Heater	100	100	200	100
Fireplace, Chimney, Chimney Connector	200	100	200	200
Central Heating	500	400	500	500
Water Heater	1,300	1,000	1,000	1,100
Fixed, Central Air Conditioning	*	*	*	*
Other	300	300	300	300
Electric	10,500	7,800	8,900	9,100
Fixed Heater	2,900	2,200	2,400	2,500
Portable Heater	1,500	1,100	1,100	1,200
Central Heating	500	400	400	400
Water Heater	900	700	800	800
Fixed, Central Air Conditioning	700	600	700	700
Portable Air Conditioner	300	300	300	300
Other	3,700	3,100	3,800	3,600
Liquid Fuel	600	500	400	500
Fixed Heater	100	100	100	100
Portable Heater	300	300	200	300
Fireplace, Chimney, Chimney Connector	*	*	*	*
Central Heating	200	100	100	100
Water Heater	*	*	*	*
Other	*	*	*	*
All Other Fuel	100	200	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.

¹² 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, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential¹³	2,390	2,210	2,330	2,310
Total Heating and Cooling Equipment	220	210	200	210
Solid Fuel	50	60	30	50
Fixed Heater	40	30	20	30
Portable Heater	*	*	*	*
Fireplace, Chimney, Chimney Connector	10	30	10	20
Central Heating	*	*	*	*
Water Heater	*	*	*	*
Other	*	*	*	*
Gas-Fired	30	30	50	40
Fixed Heater	20	20	*	10
Portable Heater	*	10	10	10
Fireplace, Chimney, Chimney Connector	*	*	*	*
Central Heating	*	*	10	*
Water Heater	10	*	30	10
Fixed, Central Air Conditioning	*	*	*	*
Other	*	*	*	*
Electric	110	80	80	90
Fixed Heater	10	*	10	10
Portable Heater	80	60	60	70
Central Heating	*	*	*	*
Water Heater	*	*	*	*
Fixed, Central Air Conditioning	*	*	*	*
Portable Air Conditioner	*	*	10	*
Other	30	20	*	10
Liquid Fuel	30	30	30	30
Fixed Heater	*	*	*	*
Portable Heater	20	20	30	20
Fireplace, Chimney, Chimney Connector	*	*	*	*
Central Heating	*	10	*	*
Water Heater	*	*	*	*
Other	10	*	*	*
All Other Fuel	10	*	*	*

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.

¹³ There were no NFIRS confined cooking fire deaths in 2008, 2009, or 2010.

TABLE 3c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
HEATING AND COOLING EQUIPMENT, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential¹⁴	12,610	12,140	12,910	12,550
Total Heating and Cooling Equipment¹	1,050	880	940	960
Solid Fuel	60	90	110	90
Fixed Heater	20	30	30	30
Portable Heater	*	*	*	*
Fireplace, Chimney, Chimney Connector	40	60	70	60
Central Heating	*	*	*	*
Water Heater	*	*	*	*
Other	*	*	*	*
Gas-Fired	280	180	230	230
Fixed Heater	100	60	60	70
Portable Heater	30	20	10	20
Fireplace, Chimney, Chimney Connector	*	*	10	10
Central Heating	40	20	40	30
Water Heater	120	70	80	90
Fixed, Central Air Conditioning	*	*	*	*
Other	*	*	*	*
Electric	590	480	490	520
Fixed Heater	230	200	160	200
Portable Heater	170	140	140	150
Central Heating	10	*	10	10
Water Heater	10	10	20	10
Fixed, Central Air Conditioning	10	30	10	20
Portable Air Conditioner	10	30	30	20
Other	150	100	150	130
Liquid Fuel	30	50	40	40
Fixed Heater	10	*	*	10
Portable Heater	20	30	30	30
Fireplace, Chimney, Chimney Connector	*	*	*	*
Central Heating	*	10	*	*
Water Heater	*	*	*	*
Other	*	20	*	10
All Other Fuel	*	20	*	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.

¹⁴ 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. 31 for details.

TABLE 3d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
HEATING AND COOLING EQUIPMENT, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential¹⁵	\$7,692.0	\$6,958.7	\$6,627.6	\$7,092.7
Total Heating and Cooling Equipment¹	\$649.0	\$505.5	\$579.7	\$578.1
Solid Fuel	\$165.0	\$132.6	\$128.3	\$142.0
Fixed Heater	\$34.8	\$36.6	\$22.8	\$31.4
Portable Heater	\$0.3	*	*	\$0.1
Fireplace, Chimney, Chimney Connector	\$125.5	\$93.9	\$101.7	\$107.0
Central Heating	\$2.4	\$1.5	\$3.4	\$2.4
Water Heater	*	*	*	*
Other	\$2.1	\$0.7	\$0.3	\$1.0
Gas-Fired	\$126.4	\$86.7	\$103.9	\$105.7
Fixed Heater	\$30.0	\$27.8	\$21.5	\$26.5
Portable Heater	\$7.3	\$3.3	\$12.7	\$7.8
Fireplace, Chimney, Chimney Connector	\$14.3	\$4.9	\$15.4	\$11.5
Central Heating	\$18.5	\$13.9	\$16.7	\$16.4
Water Heater	\$49.5	\$29.6	\$27.7	\$35.6
Fixed, Central Air Conditioning	*	*	\$0.2	\$0.1
Other	\$6.8	\$7.1	\$9.8	\$7.9
Electric	\$321.6	\$253.9	\$259.2	\$278.2
Fixed Heater	\$75.5	\$79.3	\$63.6	\$72.8
Portable Heater	\$70.6	\$48.9	\$64.3	\$61.3
Central Heating	\$12.2	\$10.1	\$6.6	\$9.6
Water Heater	\$12.7	\$13.4	\$9.0	\$11.7
Fixed, Central Air Conditioning	\$16.4	\$9.0	\$23.6	\$16.3
Portable Air Conditioner	\$7.9	\$5.9	\$6.5	\$6.8
Other	\$126.2	\$96.4	\$109.3	\$110.6
Liquid Fuel	\$20.3	\$19.9	\$15.6	\$18.6
Fixed Heater	\$5.2	\$4.6	\$1.2	\$3.7
Portable Heater	\$8.3	\$10.5	\$8.2	\$9.0
Fireplace, Chimney, Chimney Connector	\$0.5	*	*	\$0.2
Central Heating	\$4.8	\$3.6	\$1.6	\$3.4
Water Heater	\$0.1	\$0.2	\$1.0	\$0.5
Other	\$1.4	\$0.9	\$3.5	\$1.9
All Other Fuel	\$6.5	\$2.0	\$4.5	\$4.3

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.

¹⁵ 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, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential¹⁶	378,800	357,000	364,300	366,700
Total Electrical	50,100	41,300	43,700	45,000
Electric Heating and Cooling	10,500	7,800	8,900	9,100
Central Heating	500	400	400	400
Local Fixed Heater	2,900	2,200	2,400	2,500
Portable Heater	1,500	1,100	1,100	1,200
Water Heater	900	700	800	800
Fixed, Central Air Conditioning	700	600	700	700
Portable Air Conditioner	300	300	300	300
Other	3,700	3,100	3,800	3,600
Electric Cooking Equipment	16,600	12,800	13,700	14,300
Range/Oven	12,300	10,700	11,600	11,600
Range/Oven Hood	200	200	100	200
Deep Fat Fryer	100	100	100	100
Grill	*	*	*	*
Microwave Oven	700	600	500	600
Small Heat-Producing Appliance	700	500	500	500
Other	2,100	1,700	1,800	1,900
Electrical Distribution	12,100	9,900	9,400	10,500
Installed Wiring	5,100	4,200	3,700	4,300
Light Fixture	1,400	1,300	1,200	1,300
Receptacle, Switch	1,400	1,000	1,100	1,200
Cord, Plug	1,300	1,100	900	1,100
Lamp, Light Bulb	800	700	700	700
Panel Board	700	500	600	600
Meter	300	200	300	300
Transformer	100	100	100	100
Other	1,000	900	800	900
Other Selected Electrical Appliances	7,200	6,000	6,900	6,700
Clothes Dryer	5,100	4,000	4,800	4,600
Dishwasher	500	400	500	500
Audio/Visual Equipment	600	400	300	500
Washing Machine	300	200	300	300
Refrigerator/Freezer	800	700	700	800
Shop/Garden Tools	300	200	200	200
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.

¹⁶ 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, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential¹⁷	2,390	2,210	2,330	2,310
Total Electrical	510	380	450	450
Electric Heating and Cooling	110	80	80	90
Central Heating	*	*	*	*
Local Fixed Heater	10	*	10	10
Portable Heater	80	60	60	70
Water Heater	*	*	*	*
Fixed, Central Air Conditioning	*	*	*	*
Portable Air Conditioner	*	*	10	*
Other	30	20	*	10
Electric Cooking Equipment	110	90	120	110
Range/Oven	90	80	120	100
Range/Oven Hood	*	*	*	*
Deep Fat Fryer	*	*	*	*
Grill	*	*	*	*
Microwave Oven	*	*	*	*
Small Heat-Producing Appliance	*	10	*	*
Other	10	10	*	*
Electrical Distribution	210	150	140	170
Installed Wiring	120	50	30	70
Light Fixture	*	10	*	10
Receptacle, Switch	10	*	10	*
Cord, Plug	30	50	60	50
Lamp, Light Bulb	*	10	30	10
Panel Board	10	10	*	10
Meter	*	*	*	*
Transformer	*	*	*	*
Other	30	10	10	20
Other Selected Electrical Appliances	30	10	20	20
Clothes Dryer	30	*	*	10
Dishwasher	*	*	*	*
Audio/Visual Equipment	*	*	*	*
Washing Machine	*	*	10	*
Refrigerator/Freezer	*	*	*	*
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.

¹⁷ There were no NFIRS confined cooking fire deaths in 2008, 2009, or 2010.

TABLE 4c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED ELECTRICAL EQUIPMENT, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential¹⁸	12,610	12,140	12,910	12,550
Total Electrical	3,030	2,830	2,940	2,940
Electric Heating and Cooling	590	480	490	520
Central Heating	10	*	10	10
Local Fixed Heater	230	200	160	200
Portable Heater	170	140	140	150
Water Heater	10	10	20	10
Fixed, Central Air Conditioning	10	30	10	20
Portable Air Conditioner	10	30	30	20
Other	150	100	150	130
Electric Cooking Equipment	1,580	1,230	1,410	1,410
Range/Oven	1,270	1,100	1,290	1,220
Range/Oven Hood	*	*	*	*
Deep Fat Fryer	10	*	10	10
Grill	*	*	*	*
Microwave Oven	60	50	30	50
Small Heat-Producing Appliance	60	30	60	50
Other	170	130	110	140
Electrical Distribution	420	510	500	480
Installed Wiring	100	180	140	140
Light Fixture	70	50	80	70
Receptacle, Switch	20	30	20	20
Cord, Plug	100	100	110	100
Lamp, Light Bulb	60	70	50	60
Panel Board	20	10	20	20
Meter	*	*	30	10
Transformer	*	*	*	*
Other	50	70	50	60
Other Selected Electrical Appliances	250	220	190	220
Clothes Dryer	170	120	140	140
Dishwasher	10	10	*	10
Audio/Visual Equipment	40	40	20	30
Washing Machine	*	*	10	*
Refrigerator/Freezer	10	40	10	20
Shop/Garden Tool	20	20	*	10
Torch	*	*	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.

¹⁸ 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. 31 for details.

TABLE 4d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
SELECTED ELECTRICAL EQUIPMENT, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential¹⁹	\$7,692.0	\$6,958.7	\$6,627.6	\$7,092.7
Total Electrical	\$1,463.1	\$1,149.4	\$1,134.5	\$1,249.0
Electric Heating and Cooling	\$321.6	\$253.9	\$259.2	\$278.2
Central Heating	\$12.2	\$10.1	\$6.6	\$9.6
Local Fixed Heater	\$75.5	\$79.3	\$63.6	\$72.8
Portable Heater	\$70.6	\$48.9	\$64.3	\$61.3
Water Heater	\$12.7	\$13.4	\$9.0	\$11.7
Fixed, Central Air Conditioning	\$16.4	\$9.0	\$23.6	\$16.3
Portable Air Conditioner	\$7.9	\$5.9	\$6.5	\$6.8
Other	\$126.2	\$96.4	\$109.3	\$110.6
Electric Cooking Equipment	\$359.2	\$246.3	\$268.9	\$291.5
Range/Oven	\$255.2	\$197.8	\$213.9	\$222.3
Range/Oven Hood	\$3.0	\$5.0	\$0.9	\$3.0
Deep Fat Fryer	\$3.5	\$2.2	\$4.7	\$3.5
Grill	*	\$0.5	\$0.9	\$0.5
Microwave Oven	\$12.7	\$16.7	\$9.6	\$13.0
Small Heat-Producing Appliance	\$15.6	\$14.1	\$14.6	\$14.8
Other	\$58.5	\$40.7	\$48.5	\$49.2
Electrical Distribution	\$476.5	\$382.6	\$311.1	\$390.1
Installed Wiring	\$210.5	\$169.8	\$137.8	\$172.7
Light Fixture	\$61.6	\$54.3	\$31.5	\$49.2
Receptacle, Switch	\$41.2	\$39.8	\$26.4	\$35.8
Cord, Plug	\$50.2	\$51.1	\$35.8	\$45.7
Lamp, Light Bulb	\$23.4	\$19.4	\$20.1	\$21.0
Panel Board	\$30.3	\$12.6	\$18.3	\$20.4
Meter	\$5.7	\$5.3	\$3.0	\$4.7
Transformer	\$4.4	\$5.2	\$1.3	\$3.6
Other	\$49.1	\$25.0	\$36.9	\$37.0
Other Selected Electrical Appliances	\$132.3	\$125.5	\$128.8	\$128.9
Clothes Dryer	\$72.2	\$57.8	\$60.5	\$63.5
Dishwasher	\$10.4	\$8.9	\$11.4	\$10.2
Audio/Visual Equipment	\$19.5	\$17.0	\$6.6	\$14.4
Washing Machine	\$2.9	\$3.8	\$2.1	\$3.0
Refrigerator/Freezer	\$24.5	\$20.3	\$32.7	\$25.8
Shop/Garden Tool	\$6.9	\$8.5	\$13.0	\$9.4
Torch	\$6.2	\$9.3	\$2.5	\$6.0

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.

¹⁹ 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, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential²⁰	378,800	357,000	364,300	366,700
Total Gas-Fired Equipment	9,700	7,700	8,100	8,500
Gas Heating Equipment	3,600	2,800	3,000	3,100
Fixed Heater	1,100	800	900	900
Portable Heater	100	100	200	100
Central Heating	500	400	500	500
Fireplace, Chimney, Connector	200	100	200	200
Water Heater	1,300	1,000	1,000	1,100
Fixed, Central Air Conditioning	*	*	*	*
Other	300	300	300	300
Gas Cooking Equipment	3,200	2,700	2,700	2,900
Range/Oven	2,300	1,800	1,900	2,000
Open Gas Grill	500	400	400	400
Other	500	500	400	500
Other Selected Gas Equipment	2,500	1,900	2,000	2,100
Clothes Dryer	1,700	1,200	1,400	1,400
Torch	400	300	300	300
Shop/Garden Tool	400	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.

²⁰ 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, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential²¹	2,390	2,210	2,330	2,310
Total Gas-Fired Equipment	70	60	110	80
Gas Heating Equipment	30	30	50	40
Fixed Heater	20	20	*	10
Portable Heater	*	10	10	10
Central Heating	*	*	10	*
Fireplace, Chimney, Connector	*	*	*	*
Water Heater	10	*	30	10
Fixed, Central Air Conditioning	*	*	*	*
Other	*	*	*	*
Gas Cooking Equipment	40	20	60	40
Range/Oven	40	10	50	30
Open Gas Grill	*	*	*	*
Other	*	*	10	*
Other Selected Gas Equipment	*	*	10	*
Clothes Dryer	*	*	10	*
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.

²¹There were no NFIRS confined cooking fire deaths in 2008, 2009, or 2010.

TABLE 5c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED GAS-FIRED EQUIPMENT, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential²²	12,610	12,140	12,910	12,550
Total Gas-Fired Equipment	620	540	660	610
Gas Heating Equipment	280	180	230	230
Fixed Heater	100	60	60	70
Portable Heater	30	20	10	20
Central Heating	40	20	40	30
Fireplace, Chimney, Connector	*	*	10	10
Water Heater	120	70	80	90
Fixed, Central Air Conditioning	*	*	*	*
Other	*	10	20	10
Gas Cooking Equipment	210	250	280	250
Range/Oven	150	180	210	180
Open Gas Grill	20	20	40	30
Other	40	50	30	40
Other Selected Gas Equipment	80	60	90	80
Clothes Dryer	60	40	50	50
Torch	10	10	20	10
Shop/Garden Tool	10	10	20	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.

²² 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. 31 for details.

TABLE 5d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
SELECTED GAS-FIRED EQUIPMENT, 2008–2010

Equipment	2008	2009	2010	2008–2010 Average
Total Residential²³	\$7,692.0	\$6,958.7	\$6,627.6	\$7,092.7
Total Gas-Fired Equipment	\$289.1	\$219.2	\$250.0	\$252.8
Gas Heating Equipment	\$126.4	\$86.7	\$103.9	\$105.7
Fixed Heater	\$30.0	\$27.8	\$21.5	\$26.5
Portable Heater	\$7.3	\$3.3	\$12.7	\$7.8
Central Heating	\$18.5	\$13.9	\$16.7	\$16.4
Fireplace, Chimney, Connector	\$14.3	\$4.9	\$15.4	\$11.5
Water Heater	\$49.5	\$29.6	\$27.7	\$35.6
Fixed, Central Air Conditioning	*	*	\$0.2	\$0.1
Other	\$6.8	\$7.1	\$9.8	\$7.9
Gas Cooking Equipment	\$86.3	\$52.3	\$89.3	\$76.0
Range/Oven	\$45.2	\$29.8	\$39.6	\$38.2
Open Gas Grill	\$24.2	\$11.6	\$32.2	\$22.7
Other	\$16.9	\$11.0	\$17.5	\$15.1
Other Selected Gas Equipment	\$61.6	\$59.0	\$43.4	\$54.7
Clothes Dryer	\$19.3	\$10.4	\$15.8	\$15.2
Torch	\$24.5	\$40.9	\$10.5	\$25.3
Shop/Garden Tool	\$17.8	\$7.7	\$17.1	\$14.2

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.

²³ 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; and 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.²⁴ 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 2008 through 2010.

Table 6. NFPA Estimates of Residential Structure Fires and Associated Losses 2008–2010

	2008	2009	2010
Structure Fires	403,000	377,000	384,000
Civilian Deaths	2,780	2,590	2,665
Civilian Injuries	13,560	13,050	13,800
Property Loss	\$8.55 billion	\$7.80 billion	\$7.08 billion

Source: See footnote 1 below.

The table above contains the only data from the NFPA survey that is used by CPSC staff for making fire loss estimates.

The NFIRS is a compilation of voluntarily submitted incident reports completed by U.S. fire departments to the U.S. Fire Administration (USFA). As such, the NFIRS is not a probability sample and is insufficient to support precision estimation. The reports come from all 50 states (in each of 2008, 2009, and 2010), the District of Columbia (in 2009 and 2010), and U.S. territories. Not all the states reporting data included data from all fire departments in the state. The number of fire departments participating in NFIRS increased from 21,263 in 2008 to 21,457 in 2009, to 21,502 in 2010. The next table shows the number of residential structure fires and the corresponding losses reported to USFA during the years 2008 through 2010.

²⁴ M.J. Karter, "Fire Loss in the U.S. During 2008," National Fire Protection Association (NFPA), August 2009; M.J. Karter, "Fire Loss in the U.S. During 2009," National Fire Protection Association (NFPA), August 2010; M.J. Karter, "Fire Loss in the U.S. During 2010," National Fire Protection Association (NFPA), September 2011.

Table 7. Residential Structure Fires and Associated Losses Reported to NFIRS 2008–2010

	2008		2009	2010
	All	Version 5.0 Only	Version 5.0 Only	Version 5.0 Only
Structure Fires	272,665	269,079	264,076	287,475
Civilian Deaths	1,453	1,437	1,442	1,530
Civilian Injuries	7,563	7,388	7,514	8,207
Property Loss	\$4.58 billion	\$4.51 billion	\$4.20 billion	\$4.21 billion

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

According to the NFPA, there was an estimated annual average of 388,000 residential structure fires in the U.S. during 2008 to 2010 and an annual average of 2,678 deaths, 13,470 injuries, and \$7.8 billion in property losses during that time period (Table 6). NFIRS captured about 71 percent of these fires, 55 percent of the deaths, 57 percent of the injuries, and 55 percent of the property loss (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 used by CPSC staff is shown below.

<u>Variable</u>	<u>Description</u>
<i>Civilian Deaths</i>	Number of people who died in connection with the fire incident other than fire service personnel.
<i>Civilian Injuries</i>	Number of people who were injured (but did not die) in connection with the fire incident other than fire service personnel.
<i>Property Loss</i>	Estimate of loss, in whole dollars, if structure sustained damage from flame, smoke, or suppression efforts. Property loss is not adjusted for inflation.
<i>Contents Loss</i>	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.
<i>Property Use</i>	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.

<i>Incident Type</i>	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.
<i>Equipment Involved</i>	Device that provided the heat which started the fire (<i>e.g.</i> , heater, clothes dryer).
<i>Power Source</i>	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.
<i>Equipment Portability</i>	Identifies the equipment involved as stationary or portable.
<i>Heat Source</i>	Source of heat that ignited the fire (<i>e.g.</i> , candle, lighter, cigarette, heat from operating equipment, hot object).
<i>Item First Ignited</i>	The functional description or use of that item which was first ignited by the heat source (<i>e.g.</i> , upholstered furniture, mattress, bedding, electric cable insulation, curtains or drapes).
<i>Cause of Ignition</i>	The general causal factor that resulted in a heat source igniting a combustible material. The cause code values are: 1: intentional 2: unintentional 3: failure of equipment or heat source 4: act of nature 5: cause under investigation 0: cause, other - U: cause undetermined after investigation. CPSC staff regrouped the codes as: 1: intentional 0, 2, 3, 4 or fire involving child play*: unintentional 5, U, missing information: unknown.
<i>Factors Contributing to Ignition</i>	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,” that is, if known, values must be supplied for those variables. 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. Variables that are not required are more likely to be missing from a given fire incident report in NFIRS than those that are required.²⁵

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, following consultation 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.

Another scenario is when the reported equipment code is electrical but the equipment power source is missing. In this case, it is evident that the power source should have been reported as electrical. Similarly, when it is known that there is no electrical equipment involved, the power source should be reported as “none” instead of “unknown.”

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

²⁵ NFIRS Complete Reference Guide, January 2004.

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” numbered from “zero” up to as many as are 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 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.

<i>Incident Type Code</i>	<i>Definition</i>
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. So 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.

Since 1999, more and more of the NFIRS data have been reported in version 5.0. With the opportunity to identify confined fires using the specific codes, more and more “confined” fires are also being reported to NFIRS. However, very little other useful information about them is available. 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 that they are at all similar to the rest of the fires in terms of the 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 6a through 6c 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: 2008–2010

Included in Table Categories:	Appear in Tables:	2008	2009	2010
Total Residential	1a, 2a, 3a, 4a, 5a	184,500	183,600	180,600
Total Heating and Cooling Equipment	1a, 3a	38,500	36,900	33,800
<i>Fireplace, Chimney, Connector</i>	<i>1a, 3a</i>	<i>24,800</i>	<i>24,200</i>	<i>22,400</i>
<i>Other (Burner/Boiler)</i>	<i>1a, 3a</i>	<i>13,700</i>	<i>12,700</i>	<i>11,400</i>
Cooking	1a, 2a	129,000	129,700	129,900
Trash, Rubbish	2a	15,100	15,300	15,400
Incinerator	-	600	600	700
Trash Compactor	-	1,300	1,200	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.

From 2008 – 2010 there were no reported confined fire deaths.

Table 8b. Estimated Residential Confined Fire Injuries: 2008–2010

Included in Table Categories:	Appear in Tables:	2008	2009	2010
Total Residential	1c, 2c, 3c, 4c, 5c	1,900	1,780	1,960
Total Heating and Cooling Equipment	1c, 3c	90	50	70
<i>Fireplace, Chimney, Connector</i>	<i>1c, 3c</i>	<i>40</i>	<i>10</i>	<i>30</i>
<i>Other (Burner/Boiler)</i>	<i>1c, 3c</i>	<i>50</i>	<i>50</i>	<i>40</i>
Cooking	1c, 2c	1,750	1,650	1,810
Trash, Rubbish	2c	60	70	70
Incinerator	-	10	*	*
Trash Compactor	-	*	*	*

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): 2008–2010

Included in Table Categories:	Appear in Tables:	2008	2009	2010
Total Residential	1d, 2d, 3d, 4d, 5d	\$39.1	\$51.1	\$37.7
Total Heating and Cooling Equipment	1d, 3d	\$9.1	\$10.4	\$7.7
Fireplace, Chimney, Connector	1d, 3d	\$6.5	\$6.4	\$5.8
Other (Burner/Boiler)	1d, 3d	\$2.6	\$4.0	\$1.9
Cooking	1d, 2d	\$25.6	\$37.7	\$27.1
Trash, Rubbish	2d	\$4.1	\$2.3	\$2.3
Incinerator	-	\$0.4	\$0.8	\$0.6
Trash Compactor	-	*	*	*

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 extent of data still missing after logically inferring missing data when appropriate and information transfer was completed for exposure fires. Since most of the data fields for confined fires (those that do not spread beyond the originating item) were not reported per NFIRS’s version 5.0 reporting instructions, they have been excluded from the tabulations below.

Table 9a. Missing Data on Residential Structure Fires: 2008–2010

	2008	2009	2010
Cause of Ignition	32%	33%	33%
Heat Source	35%	37%	36%
Item First Ignited	34%	36%	36%
Equipment Involved	51%	48%	49%
Equipment Power	51%	48%	49%

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: 2008–2010

	2008	2009	2010
Cause of Ignition	56%	59%	57%
Heat Source	61%	58%	57%
Item First Ignited	59%	56%	59%
Equipment Involved	56%	53%	54%
Equipment Power	56%	53%	53%

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

Table 9c. Missing Data on Residential Structure Fire Injuries: 2008–2010

	2008	2009	2010
Cause of Ignition	32%	35%	35%
Heat Source	32%	32%	32%
Item First Ignited	30%	31%	32%
Equipment Involved	44%	41%	42%
Equipment Power	43%	41%	42%

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[®] macro²⁶. 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.

Quality Control Checks of NFIRS Data

In 2006, a California home fire was reported to NFIRS with a \$100 million property loss. Since this was unusually high, CPSC staff decided to assign the fire to CPSC field staff to investigate and confirm this large property loss value. 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.

In light of this, CPSC staff did more quality control checking of the NFIRS data, beginning with the 2007 data. In 2008, 2009, and 2010, residential structure fires with reported property losses of \$5 million or higher were assigned to CPSC field staff to confirm the high property loss estimate with the fire department. There were 42 such high property loss fires assigned for investigation. In 23 of them, the property loss estimate was confirmed. In the remaining 19, a different property loss estimate was obtained, and the data were corrected.

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 2008, 2009, and 2010 data. In cases with 3 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 79 cases 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. As a result of these investigations, 39 of these 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,” as a result of a CPSC field staff investigation. In some instances the investigation concludes that the deaths involved were not the result of a fire and the data are edited accordingly.

Estimation Procedure

After applying the conventions and the raking procedure previously discussed, the estimation process was carried out. 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. As already mentioned, 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. To this end, CPSC analysts excluded all incidents where the “Cause of Ignition” could be identified as intentional.

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.

While 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 three 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 “unintentional.” This ensures that the fire and any associated losses will be counted and not excluded as an intentional fire.

Microwave Ovens and Dishwashers

There were no “Equipment Involved in Ignition” codes in NFIRS 4.1 for microwave ovens or dishwashers. There are codes for both of these products in NFIRS 5.0. CPSC staff decided to begin including these products in the estimates. They appear in Tables 1 (a-d) and 4 (a-d). In order to include 2008 estimates for these two products for this report, the programs to produce the 2008 estimates were adjusted to include formatting to produce estimates for dishwashers and microwaves. There were no such estimates for 2008 in the “2006 – 2008 Residential Fire Loss Estimates”. Including “Microwave Oven” in the 2008 estimates led to different estimates for “All Other Cooking” in Table 1 (a-d) because that is where the microwave oven fires and losses went in the past. It also affected the estimates for “Gas”, “Electric”, and “Other” within “All Other Cooking”. There was a direct effect on “Electric” with fires and losses being shifted to “Microwave Oven”. There is also an indirect effect due to the allocation of unknowns. In Table 4 (a-d) the addition of estimates for “Microwave Oven” affected the estimates for “Small Heat-Producing Appliance” and “Electric Cooking – Other”.

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. As a result, the proportion of NFIRS structure fires that are confined fires did not increase much from 2005 to 2010 (42 percent to 47 percent). This small increase probably has little effect on the fire estimates for specific products.

The estimates for fires decreased from 2008 to 2009. There is a six percent decrease in the total estimate (378,000 to 357,000) and a larger than six percent decrease for many individual products. The 2010 fire estimates are slightly higher than 2009 but still below 2008. This cannot be attributed to a large increase of the proportion of NFIRS reports that are confined fires as perhaps it could be for the decreases seen between 1999 and 2004. These lower fire estimates for totals and across products are similar to trends seen in NFPA²⁸ estimates for totals as well as individual products for the same years. CPSC staff is not aware of anything about the estimation methodology that could be causing these estimates to decrease.

²⁸ J Hall, "Home Electrical Fires", National Fire Protection Association (NFPA), January 2012; J Hall, "Home Fires Involving Heating Equipment," National Fire Protection Association (NFPA), November 2011; M Ahrens, "Home Candle Fires," National Fire Protection Association (NFPA), December 2011; M Ahrens, "Home Fires that Began with Upholstered Furniture," National Fire Protection Association (NFPA), August 2011.