



2005 – 2007 Residential Fire Loss Estimates*

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

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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 2005 through 2007 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:

- 375,100 fires, 2,630 deaths, 12,820 injuries, and \$6.22 billion in property loss in 2005
- 390,900 fires, 2,280 deaths, 12,070 injuries, and \$6.30 billion in property loss in 2006
- 389,200 fires, 2,490 deaths, 12,910 injuries, and \$6.77 billion in property loss in 2007
- An estimated annual average of 385,100 fires, 2,470 deaths, 12,600 injuries, and \$6.43 billion in property loss over the three year period 2005-2007.

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 like candles or large sources like ranges, which are usually categorized as the equipment involved in ignition. Since the fire losses are derived separately for sources of ignition and materials first ignited, estimates presented in this report overlap in some cases.

For 2005 through 2007, the relative ranking of the greatest contributors to fire loss has remained unchanged from that reported for 2004-2006. For example, Tables 1a-1d show that:

- Cooking equipment accounted for the largest percentage of fires. An estimated annual average of 145,600 cooking equipment-related fires during 2005-2007 accounted for 37.8% 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 6.9% of the average annual estimate of total residential fire deaths. The annual average number of cooking fire injuries for 2005-2007 was estimated to be 3,300, which is 26.2% of the total estimated annual average number of injuries for the same time period. Most 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 56,400 fires for 2005-2007 was 14.6% of the annual average estimate of total residential fires during the same period. The corresponding death estimate is an annual average of 240 deaths, which is 9.7% of the average annual estimated number of total residential fire deaths. The corresponding injuries for the three years averaged to an annual estimate of 1,080. This accounts for 8.6% of the annual average estimate of total injuries during 2005-2007.
- During 2005-2007, an estimated annual average of 11,500 fires was attributable to electrical distribution system components (e.g., installed wiring, lighting, etc.). This corresponds to 3.0% of the estimated annual average number of total residential fires for the same time period. The annual average death estimate is 140 (5.7% of average annual estimated number of total residential fire deaths) while the injury estimates averaged 500 which is 4.0% of the estimated annual average of total residential fire injuries.

- By item first ignited, upholstered furniture ignition was involved in the greatest number of deaths. From 2005 through 2007, an estimated annual average of 510 deaths was associated with these fires. This constitutes 20.6% of the estimated annual average of total deaths associated with residential structure fires for the same period. On average, during 2005-2007, mattress or bedding ignitions accounted for an annual average of 370 deaths, which is 15.0% of the average annual estimated number of total residential fire deaths.
- By heat source, smoking materials were the largest contributor to deaths, associated with an annual average of 640 deaths from 2005-2007. This accounts for 25.9% of the estimated annual average of total residential fire deaths. The estimated annual average number of deaths from candle fires is 150, which is 6.1% of the average annual estimated total number of residential fire deaths during 2005-2007. Death estimates from lighter fires averaged 70 deaths (2.8% of the estimated annual average of the total number of residential fire deaths), while, on average, matches were responsible for 30 deaths or 1.2% of total deaths annually.

Beginning with 1999 the NFIRS system underwent some major changes. As such, the staff at the U.S. Consumer Product Safety Commission (CPSC) recommends against comparing fire loss estimates from before 1999 with those after 1999. Rather, the 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 loss" in this report.

In keeping with reports from previous years, there are five main tables in this report. Each numbered table (1-5) has four 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 to the totals that appear in the headings. All 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 misuses 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, 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 estimates for cigarettes (by heat source) and 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.

The estimates for 2004 through 2006 were published in the October 2009 Residential Fire Loss Estimates report². The estimates for 2005 and 2006 that are presented here remain unchanged from that earlier report. Annual average estimates generated from the most recent three years of data are presented in this report.

¹ M.J. Karter, "Fire Loss in the U.S. During 2005", National Fire Protection Association (NFPA), September 2006; M.J. Karter, "Fire Loss in the U.S. During 2006", National Fire Protection Association (NFPA), September 2007; M.J. Karter, "Fire Loss in the U.S. During 2007", National Fire Protection Association (NFPA), August 2008.

² D. Miller, R. Chowdhury, M. Greene, "2004 – 2006 Residential Fire Loss Estimates", CPSC, October 2009.

The 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 the CPSC analysts produce the product specific estimates. A discussion of some of these changes follows.

Beginning with 1999 data, a major revision to the NFIRS data coding system, designated version 5.0, was implemented. In 1999, 5% of the residential fire data was coded by fire departments in the new NFIRS version 5.0; in 2000, 20% was coded in version 5.0. The proportion increased to 50% in 2001, 70% in 2002, 80% in 2003, 89% in 2004, 94% in 2005, 95% in 2006, and 97% in 2007. 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 2005, 2006, and 2007, 94%, 95%, and 97% 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 frequency counts based only on this component of the data were weighted up to the 2005, 2006, and 2007 NFPA estimates for total U.S. fire losses to arrive at the product-specific estimates presented in this report. This year's report is the first residential fire loss report from CPSC staff that only uses data originally coded in version 5.0.

Beginning with version 5.0, NFIRS has 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 on these fires. From 1999 onwards, as the use of version 5.0 increased, an increasingly larger number of confined fires were reported. In 1999, about 2% of residential fires were reported as confined; by 2007, about 44% of fires reported to NFIRS were confined fires.

Because it is not required information, in most confined fire cases it is not possible to determine the type of equipment involved. For example, when a fire is identified as a confined cooking fire in NFIRS, it is not possible to separate ranges from other cooking equipment. As a result, confined cooking fire losses are only included as part of the "cooking equipment" totals and cannot be broken down further into ranges or other cooking equipment (e.g., toasters, microwaves, etc.) or by the power source. However, since ranges undoubtedly are involved in confined fires, evaluation of the range-related hazard needs to take into account that some cooking fires that are included only in the totals are likely to have been range fires.

The changes cited above and the gradual implementation of these changes in the NFIRS data system have affected the estimates since 1999 considerably. The CPSC staff strongly discourages comparison of pre-1999 estimates with estimates from later years.

TABLE 1a
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	375,100	390,900	389,200	385,100
Total Heating and Cooling Equipment¹	56,100	55,500	57,700	56,400
Local Fixed Heater	5,000	4,400	4,500	4,600
Portable Heater	1,500	1,400	1,900	1,600
Central Heating	1,200	1,000	1,100	1,100
Fireplace, Chimney, Chimney Connector ¹	24,500	26,400	27,000	26,000
Water Heater	2,600	2,500	2,700	2,600
Air Conditioning	1,100	1,200	1,300	1,200
Other ¹	20,300	18,700	19,100	19,300
Total Cooking Equipment¹	137,500	150,600	148,700	145,600
Range / Oven	13,400	14,300	15,000	14,200
<i>Gas</i>	2,400	2,700	2,600	2,600
<i>Electric</i>	10,900	11,500	12,400	11,600
<i>Other</i>	*	*	*	*
All Other Cooking	4,800	5,500	5,800	5,400
<i>Gas</i>	900	800	900	900
<i>Electric</i>	3,800	4,200	4,500	4,200
<i>Other</i>	200	500	400	300
Total Electrical Distribution	9,700	12,000	12,700	11,500
Installed Wiring	3,500	4,600	5,200	4,400
Cord, Plug	1,100	1,400	1,400	1,300
Receptacle, Switch	1,000	1,400	1,500	1,300
Lighting	2,300	2,600	2,500	2,500
Other	1,800	2,000	2,000	1,900
Other Selected Equipment	9,200	9,700	10,600	9,900
Audio / Visual Equipment	600	700	500	600
Clothes Dryer	6,300	6,800	7,500	6,900
Washing Machine	300	300	400	300
Torch	700	600	600	600
Refrigerator / Freezer	700	700	900	700
Shop / Garden Tool	700	700	900	800

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.

¹ 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 6a on p. 30 for details.

TABLE 1b
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED EQUIPMENT, 2005 - 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	2,630	2,280	2,490	2,470
Total Heating and Cooling Equipment	280	200	230	240
Local Fixed Heater	130	80	100	100
Portable Heater	30	50	70	50
Central Heating	30	20	*	20
Fireplace, Chimney, Chimney Connector	20	*	20	10
Water Heater	30	20	10	20
Air Conditioning	*	*	*	*
Other ¹	50	30	20	30
Total Cooking Equipment¹	210	130	160	170
Range / Oven	160	130	110	130
<i>Gas</i>	30	50	40	40
<i>Electric</i>	130	80	70	90
<i>Other</i>	*	*	*	*
All Other Cooking	30	10	50	30
<i>Gas</i>	*	*	*	*
<i>Electric</i>	30	*	20	20
<i>Other</i>	*	*	30	10
Total Electrical Distribution	200	140	100	140
Installed Wiring	50	50	50	50
Cord, Plug	90	50	30	60
Receptacle, Switch	10	*	*	*
Lighting	20	20	10	20
Other	30	10	*	10
Other Selected Equipment	10	*	*	*
Audio / Visual Equipment	*	*	*	*
Clothes Dryer	*	*	*	*
Washing Machine	*	*	*	*
Torch	*	*	*	*
Refrigerator / Freezer	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.

¹ Includes an estimated 20 deaths in 2005 from confined cooking fires. There were no NFIRS confined cooking fire deaths in 2006 and a rounded estimate of fewer than 10 confined cooking fire deaths in 2007.

TABLE 1c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	12,820	12,070	12,910	12,600
Total Heating and Cooling Equipment¹	1,100	890	1,260	1,080
Local Fixed Heater	330	230	320	290
Portable Heater	140	130	200	160
Central Heating	60	50	40	50
Fireplace, Chimney, Chimney Connector ¹	110	90	150	120
Water Heater	160	130	170	160
Air Conditioning	60	60	50	60
Other ¹	240	200	330	250
Total Cooking Equipment¹	3,250	3,120	3,520	3,300
Range / Oven	1,410	1,260	1,480	1,380
<i>Gas</i>	130	220	220	190
<i>Electric</i>	1,270	1,040	1,260	1,190
<i>Other</i>	20	10	*	10
All Other Cooking	340	350	350	350
<i>Gas</i>	90	60	30	60
<i>Electric</i>	220	270	290	260
<i>Other</i>	30	30	20	30
Total Electrical Distribution	500	430	570	500
Installed Wiring	110	120	150	120
Cord, Plug	150	100	130	130
Receptacle, Switch	50	60	70	60
Lighting	120	90	180	130
Other	70	60	40	60
Other Selected Equipment	360	310	530	400
Audio / Visual Equipment	60	40	60	50
Clothes Dryer	200	170	300	220
Washing Machine	*	20	10	10
Torch	20	40	40	30
Refrigerator / Freezer	40	20	50	40
Shop / Garden Tool	40	20	60	40

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.

¹ 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 6b on p. 31 for details.

TABLE 1d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS
(In Millions)
SELECTED EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	\$6,215.6	\$6,303.3	\$6,771.5	\$6,430.1
Total Heating and Cooling Equipment¹	\$558.3	\$586.5	\$548.9	\$564.6
Local Fixed Heater	\$131.0	\$147.6	\$125.9	\$134.9
Portable Heater	\$75.9	\$67.6	\$87.6	\$77.0
Central Heating	\$29.9	\$26.5	\$24.9	\$27.1
Fireplace, Chimney, Chimney Connector ¹	\$115.2	\$126.6	\$110.3	\$117.4
Water Heater	\$65.4	\$77.8	\$51.3	\$64.8
Air Conditioning	\$28.8	\$27.0	\$30.9	\$28.9
Other ¹	\$112.0	\$113.3	\$118.0	\$114.4
Total Cooking Equipment¹	\$412.7	\$372.4	\$434.8	\$406.6
Range / Oven	\$222.0	\$225.1	\$276.6	\$241.2
<i>Gas</i>	\$26.2	\$39.9	\$57.3	\$41.2
<i>Electric</i>	\$195.5	\$183.8	\$219.0	\$199.5
<i>Other</i>	\$0.2	\$1.4	\$0.2	\$0.6
All Other Cooking	\$157.3	\$123.6	\$136.9	\$139.2
<i>Gas</i>	\$62.2	\$22.4	\$24.5	\$36.4
<i>Electric</i>	\$90.3	\$89.1	\$103.9	\$94.4
<i>Other</i>	\$4.8	\$12.0	\$8.5	\$8.4
Total Electrical Distribution	\$361.3	\$388.6	\$425.5	\$391.8
Installed Wiring	\$121.6	\$145.3	\$175.7	\$147.5
Cord, Plug	\$49.4	\$44.0	\$44.7	\$46.0
Receptacle, Switch	\$31.9	\$52.6	\$36.4	\$40.3
Lighting	\$81.8	\$82.3	\$95.6	\$86.6
Other	\$76.6	\$64.5	\$73.1	\$71.4
Other Selected Equipment	\$177.4	\$181.5	\$281.7	\$213.5
Audio / Visual Equipment	\$13.3	\$19.6	\$14.5	\$15.8
Clothes Dryer	\$89.2	\$82.8	\$101.0	\$91.0
Washing Machine	\$0.9	\$3.1	\$2.0	\$2.0
Torch	\$35.3	\$23.4	\$113.9	\$57.5
Refrigerator / Freezer	\$20.1	\$21.1	\$21.0	\$20.8
Shop / Garden Tool	\$19.0	\$31.9	\$29.3	\$26.7

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.

¹ 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 6c on p. 31 for details.

TABLE 2a
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED PRODUCTS, 2005 – 2007

Product	2005	2006	2007	2005-2007 Average
Total Residential¹	375,100	390,900	389,200	385,100
By Heat Source				
Cigarette, Other Tobacco Products	10,700	12,200	11,600	11,500
Match	1,200	1,000	1,000	1,100
Lighter	2,000	2,100	2,100	2,000
Candle	12,100	10,800	9,700	10,800
By Item First Ignited				
Upholstered Furniture	6,700	6,900	6,600	6,700
Smoking Material Ignition	1,800	1,900	1,700	1,800
Open Flame Ignition	1,100	1,100	1,000	1,100
Other	3,800	3,900	3,800	3,900
Mattress, Bedding	10,200	10,000	9,500	9,900
Smoking Material Ignition	2,100	2,200	1,900	2,100
Open Flame Ignition	2,600	2,400	2,200	2,400
Other	5,600	5,400	5,400	5,400
Other Materials				
Cooking Materials ¹	142,300	154,000	150,900	149,000
Electric Cable Insulation	16,500	17,900	17,800	17,400
Interior Wall Covering	7,900	7,800	8,100	7,900
Wearing Apparel-Worn	300	300	300	300
Wearing Apparel-Not Worn	6,400	6,800	6,600	6,600
Floor Covering	4,700	4,600	5,000	4,700
Curtains, Drapes	2,200	2,100	2,000	2,100
Magazines, Newspaper	2,500	2,300	2,000	2,200
Thermal Insulation	6,200	6,100	6,600	6,300
Cabinet, Desk	5,200	5,300	5,400	5,300
Trash, Rubbish ¹	21,700	23,100	21,200	22,000
Toy, Game	200	200	200	200
Box, Carton, Bag, Basket, Barrel	2,700	2,800	2,900	2,800

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

¹ 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 6a on p. 30 for details.

TABLE 2b
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED PRODUCTS, 2005 – 2007

Product	2005	2006	2007	2005-2007 Average
Total Residential¹	2,630	2,280	2,490	2,470
By Heat Source				
Cigarette, Other Tobacco Products	650	600	660	640
Match	20	40	40	30
Lighter	90	70	60	70
Candle	170	120	160	150
By Item First Ignited				
Upholstered Furniture	520	480	540	510
Smoking Material Ignition	290	290	320	300
Open Flame Ignition	60	20	50	40
Other	170	170	170	170
Mattress, Bedding	370	370	360	370
Smoking Material Ignition	160	160	190	170
Open Flame Ignition	50	60	30	50
Other	160	150	140	150
Other Materials				
Cooking Materials ¹	130	110	140	130
Electric Cable Insulation	90	80	100	90
Interior Wall Covering	120	80	60	90
Wearing Apparel-Worn	90	90	100	90
Wearing Apparel-Not Worn	70	40	10	40
Floor Covering	110	120	80	100
Curtains, Drapes	40	10	30	30
Magazines, Newspaper	50	50	50	50
Thermal Insulation	10	*	*	10
Cabinet, Desk	60	40	40	50
Trash, Rubbish	50	50	70	60
Toy, Game	*	*	*	*
Box, Carton, Bag, Basket, Barrel	*	20	10	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.

¹ Includes an estimated 20 deaths in 2005 from confined cooking fires. There were no NFIRS confined cooking fire deaths in 2006 and a rounded estimate of fewer than 10 confined cooking fire deaths in 2007.

TABLE 2c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED PRODUCTS, 2005 – 2007

Product	2005	2006	2007	2005-2007 Average
Total Residential¹	12,820	12,070	12,910	12,600
By Heat Source				
Cigarette, Other Tobacco Products	1,100	1,240	1,080	1,140
Match	110	150	160	140
Lighter	360	340	380	360
Candle	1,070	1,040	900	1,000
By Item First Ignited				
Upholstered Furniture	880	860	780	840
Smoking Material Ignition	330	320	300	320
Open Flame Ignition	180	190	170	180
Other	380	340	310	340
Mattress, Bedding	1,240	1,250	1,200	1,230
Smoking Material Ignition	340	400	300	350
Open Flame Ignition	350	380	330	350
Other	540	480	570	530
Other Materials				
Cooking Materials ¹	3,780	3,640	3,930	3,780
Electric Cable Insulation	410	490	470	460
Interior Wall Covering	280	280	260	280
Wearing Apparel-Worn	100	100	120	110
Wearing Apparel-Not Worn	410	360	350	370
Floor Covering	320	230	300	280
Curtains, Drapes	140	170	200	170
Magazines, Newspaper	160	180	110	150
Thermal Insulation	80	100	120	100
Cabinet, Desk	350	270	350	320
Trash, Rubbish ¹	280	250	270	270
Toy, Game	10	30	10	10
Box, Carton, Bag, Basket, Barrel	110	130	110	120

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.

¹There 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 6b on p. 31 for details.

TABLE 2d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
SELECTED PRODUCTS, 2005 – 2007

Product	2005	2006	2007	2005-2007 Average
Total Residential¹	\$6,215.6	\$6,303.3	\$6,771.5	\$6,430.1
By Heat Source				
Cigarette, Other Tobacco Products	\$357.7	\$408.5	\$433.2	\$399.8
Match	\$40.1	\$34.6	\$31.3	\$35.4
Lighter	\$76.7	\$61.3	\$64.9	\$67.6
Candle	\$428.4	\$360.3	\$367.2	\$385.3
By Item First Ignited				
Upholstered Furniture	\$312.2	\$342.0	\$334.3	\$329.5
Smoking Material Ignition	\$81.9	\$111.3	\$103.8	\$99.0
Open Flame Ignition	\$66.3	\$64.5	\$47.7	\$59.5
Other	\$164.0	\$166.1	\$182.8	\$171.0
Mattress, Bedding	\$348.6	\$343.4	\$339.9	\$344.0
Smoking Material Ignition	\$56.9	\$61.5	\$53.9	\$57.4
Open Flame Ignition	\$109.1	\$86.5	\$79.8	\$91.8
Other	\$182.6	\$195.3	\$206.3	\$194.7
Other Materials				
Cooking Materials ¹	\$406.3	\$409.2	\$418.8	\$411.4
Electric Cable Insulation	\$373.3	\$385.1	\$407.1	\$388.5
Interior Wall Covering	\$257.0	\$264.1	\$316.5	\$279.2
Wearing Apparel-Worn	\$6.8	\$7.3	\$6.9	\$7.0
Wearing Apparel-Not Worn	\$149.5	\$144.3	\$132.0	\$141.9
Floor Covering	\$138.4	\$151.5	\$164.3	\$151.4
Curtains, Drapes	\$78.4	\$52.7	\$63.0	\$64.7
Magazines, Newspaper	\$77.9	\$73.7	\$62.5	\$71.3
Thermal Insulation	\$177.6	\$134.8	\$240.0	\$184.1
Cabinet, Desk	\$150.5	\$188.6	\$181.0	\$173.4
Trash, Rubbish ¹	\$132.3	\$148.9	\$112.5	\$131.2
Toy, Game	\$7.1	\$1.3	\$6.0	\$4.8
Box, Carton, Bag, Basket, Barrel	\$113.6	\$105.8	\$110.2	\$109.8

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.

¹ 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 6c on p. 31 for details.

TABLE 3a
ESTIMATED RESIDENTIAL STRUCTURE FIRES
HEATING AND COOLING EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	375,100	390,900	389,200	385,100
Total Heating and Cooling Equipment¹	56,100	55,500	57,700	56,400
Solid Fuel	2,400	2,500	2,800	2,600
Fixed Heater	700	600	700	700
Portable Heater	*	*	*	*
Fireplace, Chimney, Chimney Connector	1,600	1,800	2,100	1,800
Central Heating	*	*	*	*
Water Heater	*	*	*	*
Other	*	*	*	*
Gas-Fired	4,500	3,900	3,900	4,100
Fixed Heater	1,400	1,100	1,100	1,200
Portable Heater	200	200	200	200
Fireplace, Chimney, Chimney Connector	200	200	200	200
Central Heating	600	500	500	500
Water Heater	1,700	1,700	1,600	1,700
Fixed, Central Air Conditioning	*	*	*	*
Other	300	200	300	300
Electric	9,500	9,600	11,100	10,100
Fixed Heater	2,700	2,500	2,600	2,600
Portable Heater	1,000	1,000	1,400	1,100
Central Heating	400	400	400	400
Water Heater	900	800	1,100	900
Fixed, Central Air Conditioning	700	800	800	800
Portable Air Conditioner	400	400	500	400
Other	3,500	3,700	4,200	3,800
Liquid Fuel	800	600	600	600
Fixed Heater	200	100	100	100
Portable Heater	400	300	300	300
Fireplace, Chimney, Chimney Connector	*	*	*	*
Central Heating	200	100	100	100
Water Heater	*	*	*	*
Other	100	100	100	100
All Other Fuel	100	200	200	200

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.

¹ 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 6a on p. 30 for details.

TABLE 3b
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
HEATING AND COOLING EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	2,630	2,280	2,490	2,470
Total Heating and Cooling Equipment	280	200	230	240
Solid Fuel	120	30	60	70
Fixed Heater	90	20	30	50
Portable Heater	*	*	*	*
Fireplace, Chimney, Chimney Connector	20	*	20	10
Central Heating	10	*	*	*
Water Heater	*	*	*	*
Other	*	*	*	*
Gas-Fired	80	70	80	70
Fixed Heater	20	30	40	30
Portable Heater	*	*	*	*
Fireplace, Chimney, Chimney Connector	*	*	*	*
Central Heating	10	10	*	10
Water Heater	30	20	10	20
Fixed, Central Air Conditioning	*	*	*	*
Other	20	*	*	10
Electric	60	80	90	80
Fixed Heater	10	30	30	20
Portable Heater	30	30	40	30
Central Heating	*	10	*	*
Water Heater	*	*	*	*
Fixed, Central Air Conditioning	*	*	*	*
Portable Air Conditioner	*	*	*	*
Other	30	20	10	20
Liquid Fuel	20	20	10	20
Fixed Heater	10	*	*	*
Portable Heater	10	20	10	10
Fireplace, Chimney, Chimney Connector	*	*	*	*
Central Heating	*	*	*	*
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.

¹ Includes an estimated 20 deaths in 2005 from confined cooking fires. There were no NFIRS confined cooking fire deaths in 2006 and a rounded estimate of fewer than 10 confined cooking fire deaths in 2007.

TABLE 3c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
HEATING AND COOLING EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	12,820	12,070	12,910	12,600
Total Heating and Cooling Equipment¹	1,100	890	1,260	1,080
Solid Fuel	100	80	110	100
Fixed Heater	40	20	30	30
Portable Heater	*	*	*	*
Fireplace, Chimney, Chimney Connector	60	50	70	60
Central Heating	*	*	*	*
Water Heater	*	10	*	*
Other	*	*	*	*
Gas-Fired	280	250	270	270
Fixed Heater	50	90	50	60
Portable Heater	20	10	30	20
Fireplace, Chimney, Chimney Connector	10	*	*	*
Central Heating	40	30	20	30
Water Heater	140	110	140	130
Fixed, Central Air Conditioning	*	*	*	*
Other	10	10	20	10
Electric	530	390	690	540
Fixed Heater	220	120	220	190
Portable Heater	80	70	160	100
Central Heating	20	10	10	10
Water Heater	20	20	30	20
Fixed, Central Air Conditioning	30	30	50	40
Portable Air Conditioner	20	20	10	20
Other	140	120	210	160
Liquid Fuel	60	60	40	50
Fixed Heater	*	*	*	*
Portable Heater	40	50	10	40
Fireplace, Chimney, Chimney Connector	10	*	10	10
Central Heating	*	10	10	*
Water Heater	*	*	*	*
Other	*	*	*	*
All Other Fuel	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.

¹ 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 6b on p. 31 for details.

TABLE 3d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
HEATING AND COOLING EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	\$6,215.6	\$6,303.3	\$6,771.5	\$6,430.1
Total Heating and Cooling Equipment¹	\$558.3	\$586.5	\$548.9	\$564.6
Solid Fuel	\$125.3	\$110.7	\$121.7	\$119.2
Fixed Heater	\$35.2	\$21.6	\$31.1	\$29.3
Portable Heater	*	\$1.2	\$1.3	\$0.9
Fireplace, Chimney, Chimney Connector	\$87.1	\$85.1	\$88.3	\$86.8
Central Heating	\$3.0	\$2.3	*	*
Water Heater	*	*	*	*
Other	*	\$0.5	\$1.0	\$0.5
Gas-Fired	\$148.9	\$173.0	\$114.5	\$145.5
Fixed Heater	\$40.5	\$34.0	\$31.0	\$35.2
Portable Heater	\$23.0	\$12.7	\$5.3	\$13.7
Fireplace, Chimney, Chimney Connector	\$8.8	\$34.0	\$13.0	\$18.6
Central Heating	\$16.7	\$13.7	\$13.0	\$14.5
Water Heater	\$50.1	\$70.3	\$40.0	\$53.5
Fixed, Central Air Conditioning	\$0.4	*	*	*
Other	\$9.3	\$8.4	\$12.2	\$10.0
Electric	\$236.6	\$268.1	\$278.0	\$260.9
Fixed Heater	\$49.2	\$86.9	\$58.7	\$64.9
Portable Heater	\$40.7	\$43.2	\$68.8	\$50.9
Central Heating	\$8.1	\$4.9	\$9.8	\$7.6
Water Heater	\$15.2	\$7.4	\$11.1	\$11.2
Fixed, Central Air Conditioning	\$20.3	\$19.8	\$20.2	\$20.1
Portable Air Conditioner	\$8.0	\$7.2	\$10.7	\$8.7
Other	\$95.0	\$98.6	\$98.8	\$97.4
Liquid Fuel	\$20.9	\$25.1	\$21.5	\$22.5
Fixed Heater	\$5.4	\$4.4	\$5.0	\$5.0
Portable Heater	\$12.2	\$10.4	\$12.1	\$11.6
Fireplace, Chimney, Chimney Connector	*	\$1.6	\$1.0	\$0.9
Central Heating	\$2.1	\$5.6	\$2.2	\$3.3
Water Heater	\$0.1	*	*	*
Other	\$1.1	\$3.0	\$1.3	\$1.8
All Other Fuel	\$2.8	\$2.7	\$5.8	\$3.8

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.

¹ 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 6c on p. 31 for details.

TABLE 4a
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED ELECTRICAL EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	375,100	390,900	389,200	385,100
Total Electrical	43,700	48,000	52,200	48,000
Electric Heating and Cooling	9,500	9,600	11,100	10,100
Central Heating	400	400	400	400
Local Fixed Heater	2,700	2,500	2,600	2,600
Portable Heater	1,000	1,000	1,400	1,100
Water Heater	900	800	1,100	900
Fixed, Central Air Conditioning	700	800	800	800
Portable Air Conditioner	400	400	500	400
Other	3,500	3,700	4,200	3,800
Electric Cooking Equipment	14,700	15,700	17,000	15,800
Range / Oven	10,900	11,500	12,400	11,600
Range / Oven Hood	200	200	200	200
Deep Fat Fryer	*	100	100	100
Grill	*	*	*	*
Small Heat-Producing Appliance	800	1,000	900	900
Other	2,700	3,000	3,300	3,000
Electrical Distribution	9,700	12,000	12,700	11,500
Installed Wiring	3,500	4,600	5,200	4,400
Light Fixture	1,400	1,600	1,500	1,500
Receptacle, Switch	1,000	1,400	1,500	1,300
Cord, Plug	1,100	1,400	1,400	1,300
Lamp, Light Bulb	900	1,000	1,000	1,000
Panel Board	500	600	700	600
Meter	200	300	300	300
Transformer	100	100	100	100
Other	900	1,000	900	900
Other Selected Electrical Appliances	6,500	7,000	7,600	7,000
Clothes Dryer	4,600	5,100	5,500	5,100
Audio / Visual Equipment	600	600	500	600
Washing Machine	300	300	400	300
Refrigerator / Freezer	600	600	800	700
Shop / Garden Tools	200	200	300	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.

¹ 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 6a on p. 30 for details.

TABLE 4b
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED ELECTRICAL EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	2,630	2,280	2,490	2,470
Total Electrical	450	370	320	380
Electric Heating and Cooling	60	80	90	80
Central Heating	*	10	*	*
Local Fixed Heater	10	30	30	20
Portable Heater	30	30	40	30
Water Heater	*	*	*	*
Fixed, Central Air Conditioning	*	*	*	*
Portable Air Conditioner	*	*	*	*
Other	30	20	10	20
Electric Cooking Equipment	160	80	90	110
Range / Oven	130	80	70	90
Range / Oven Hood	*	*	*	*
Deep Fat Fryer	*	*	*	*
Grill	*	*	*	*
Small Heat-Producing Appliance	*	*	*	*
Other	30	*	20	20
Electrical Distribution	200	140	100	140
Installed Wiring	50	50	50	50
Light Fixture	10	10	*	*
Receptacle, Switch	10	*	*	*
Cord, Plug	90	50	30	60
Lamp, Light Bulb	20	10	10	10
Panel Board	*	10	*	*
Meter	10	*	*	*
Transformer	*	*	*	*
Other	20	10	*	10
Other Selected Electrical Appliances	10	*	*	*
Clothes Dryer	*	*	*	*
Audio / Visual Equipment	*	*	*	*
Washing Machine	*	*	*	*
Refrigerator / Freezer	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.

¹ Includes an estimated 20 deaths in 2005 from confined cooking fires. There were no NFIRS confined cooking fire deaths in 2006 and a rounded estimate of fewer than 10 confined cooking fire deaths in 2007.

TABLE 4c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED ELECTRICAL EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	12,820	12,070	12,910	12,600
Total Electrical	2,960	2,550	3,390	2,970
Electric Heating and Cooling	530	390	690	540
Central Heating	20	10	10	10
Local Fixed Heater	220	120	220	190
Portable Heater	80	70	160	100
Water Heater	20	20	30	20
Fixed, Central Air Conditioning	30	30	50	40
Portable Air Conditioner	20	20	10	20
Other	140	120	210	160
Electric Cooking Equipment	1,490	1,310	1,550	1,450
Range / Oven	1,270	1,040	1,260	1,190
Range / Oven Hood	*	*	10	10
Deep Fat Fryer	*	10	*	*
Grill	*	*	*	*
Small Heat-Producing Appliance	50	80	80	70
Other	170	180	190	180
Electrical Distribution	500	430	570	500
Installed Wiring	110	120	150	120
Light Fixture	60	40	100	70
Receptacle, Switch	50	60	70	60
Cord, Plug	150	100	130	130
Lamp, Light Bulb	60	50	80	70
Panel Board	20	10	20	20
Meter	10	*	*	*
Transformer	10	*	*	*
Other	40	50	10	30
Other Selected Electrical Appliances	260	200	390	280
Clothes Dryer	140	120	210	160
Audio / Visual Equipment	60	30	60	50
Washing Machine	*	20	10	10
Refrigerator / Freezer	40	20	50	40
Shop / Garden Tool	10	10	30	20
Torch	*	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.

¹ 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 6b on p. 31 for details.

TABLE 4d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
SELECTED ELECTRICAL EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	\$6,215.6	\$6,303.3	\$6,771.5	\$6,430.1
Total Electrical	\$1,130.9	\$1,174.6	\$1,312.3	\$1,206.0
Electric Heating and Cooling	\$236.6	\$268.1	\$278.0	\$260.9
Central Heating	\$8.1	\$4.9	\$9.8	\$7.6
Local Fixed Heater	\$49.2	\$86.9	\$58.7	\$64.9
Portable Heater	\$40.7	\$43.2	\$68.8	\$50.9
Water Heater	\$15.2	\$7.4	\$11.1	\$11.2
Fixed, Central Air Conditioning	\$20.3	\$19.8	\$20.2	\$20.1
Portable Air Conditioner	\$8.0	\$7.2	\$10.7	\$8.7
Other	\$95.0	\$98.6	\$98.8	\$97.4
Electric Cooking Equipment	\$285.9	\$272.9	\$323.0	\$293.9
Range / Oven	\$195.5	\$183.8	\$219.0	\$199.5
Range / Oven Hood	\$2.8	\$2.7	\$2.2	\$2.6
Deep Fat Fryer	\$2.3	\$2.2	\$2.6	\$2.4
Grill	*	\$0.1	\$0.3	\$0.1
Small Heat-Producing Appliance	\$20.2	\$26.3	\$20.8	\$22.4
Other	\$65.1	\$57.7	\$78.0	\$67.0
Electrical Distribution	\$361.3	\$388.6	\$425.5	\$391.8
Installed Wiring	\$121.6	\$145.3	\$175.7	\$147.5
Light Fixture	\$48.9	\$51.6	\$59.0	\$53.2
Receptacle, Switch	\$31.9	\$52.6	\$36.4	\$40.3
Cord, Plug	\$49.4	\$44.0	\$44.7	\$46.0
Lamp, Light Bulb	\$33.0	\$30.7	\$36.6	\$33.4
Panel Board	\$15.7	\$10.4	\$15.5	\$13.9
Meter	\$11.0	\$3.9	\$9.4	\$8.1
Transformer	\$3.1	\$6.7	\$9.6	\$6.5
Other	\$46.8	\$43.5	\$38.6	\$43.0
Other Selected Electrical Appliances	\$110.0	\$116.7	\$133.0	\$119.9
Clothes Dryer	\$67.3	\$63.2	\$83.4	\$71.3
Audio / Visual Equipment	\$13.3	\$19.5	\$14.5	\$15.8
Washing Machine	\$0.9	\$3.1	\$2.0	\$2.0
Refrigerator / Freezer	\$19.6	\$20.8	\$20.8	\$20.4
Shop / Garden Tool	\$3.1	\$2.4	\$9.5	\$5.0
Torch	\$5.7	\$7.7	\$2.8	\$5.4

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.

¹ 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 6c on p. 31 for details.

TABLE 5a
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED GAS-FIRED EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	375,100	390,900	389,200	385,100
Total Gas-Fired Equipment	10,900	10,300	10,700	10,600
Gas Heating Equipment	4,500	3,900	3,900	4,100
Fixed Heater	1,400	1,100	1,100	1,200
Portable Heater	200	200	200	200
Central Heating	600	500	500	500
Fireplace, Chimney, Connector	200	200	200	200
Water Heater	1,700	1,700	1,600	1,700
Fixed, Central Air Conditioning	*	*	*	*
Other	300	200	300	300
Gas Cooking Equipment	3,300	3,500	3,500	3,400
Range / Oven	2,400	2,700	2,600	2,600
Open Gas Grill	300	400	400	400
Other	600	500	500	500
Other Selected Gas Equipment	2,700	2,500	2,800	2,700
Clothes Dryer	1,700	1,700	1,900	1,800
Torch	600	500	400	500
Shop / Garden Tool	400	400	500	400

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.

¹ 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 6a on p. 30 for details.

TABLE 5b
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED GAS-FIRED EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	2,630	2,280	2,490	2,470
Total Gas-Fired Equipment	110	120	120	120
Gas Heating Equipment	80	70	80	70
Fixed Heater	20	30	40	30
Portable Heater	*	*	20	10
Central Heating	10	10	*	10
Fireplace, Chimney, Connector	*	*	*	*
Water Heater	30	20	10	20
Fixed, Central Air Conditioning	*	*	*	*
Other	20	*	*	10
Gas Cooking Equipment	30	50	40	40
Range / Oven	30	50	40	40
Open Gas Grill	*	*	*	*
Other	*	*	*	*
Other Selected Gas Equipment	*	*	*	*
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.

¹Includes an estimated 20 deaths in 2005 from confined cooking fires. There were no NFIRS confined cooking fire deaths in 2006 and a rounded estimate of fewer than 10 confined cooking fire deaths in 2007.

TABLE 5c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED GAS-FIRED EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	12,820	12,070	12,910	12,600
Total Gas-Fired Equipment	610	620	760	660
Gas Heating Equipment	280	250	270	270
Fixed Heater	50	90	50	60
Portable Heater	20	10	30	20
Central Heating	40	30	20	30
Fireplace, Chimney, Connector	10	*	*	*
Water Heater	140	110	140	130
Fixed, Central Air Conditioning	*	*	*	*
Other	10	10	20	10
Gas Cooking Equipment	210	270	250	250
Range / Oven	130	220	220	190
Open Gas Grill	20	10	10	20
Other	70	40	20	40
Other Selected Gas Equipment	100	80	140	110
Clothes Dryer	60	50	90	70
Torch	20	20	20	20
Shop / Garden Tool	30	10	30	20

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.

¹ 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 6b on p. 31 for details.

TABLE 5d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
SELECTED GAS-FIRED EQUIPMENT, 2005 – 2007

Equipment	2005	2006	2007	2005-2007 Average
Total Residential¹	\$6,215.6	\$6,303.3	\$6,771.5	\$6,430.1
Total Gas-Fired Equipment	\$311.2	\$308.0	\$357.1	\$325.4
Gas Heating Equipment	\$148.9	\$173.0	\$114.5	\$145.5
Fixed Heater	\$40.5	\$34.0	\$31.0	\$35.2
Portable Heater	\$23.0	\$12.7	\$5.3	\$13.7
Central Heating	\$16.7	\$13.7	\$13.0	\$14.5
Fireplace, Chimney, Connector	\$8.8	\$34.0	\$13.0	\$18.6
Water Heater	\$50.1	\$70.3	\$40.0	\$53.5
Fixed, Central Air Conditioning	\$0.4	*	*	*
Other	\$9.3	\$8.4	\$12.2	\$10.0
Gas Cooking Equipment	\$88.4	\$62.4	\$81.8	\$77.5
Range / Oven	\$26.2	\$39.9	\$57.3	\$41.2
Open Gas Grill	\$43.4	\$9.5	\$15.0	\$22.6
Other	\$18.8	\$12.9	\$9.5	\$13.7
Other Selected Gas Equipment	\$64.1	\$60.5	\$140.4	\$88.3
Clothes Dryer	\$21.9	\$19.6	\$17.6	\$19.7
Torch	\$29.3	\$14.8	\$110.6	\$51.6
Shop / Garden Tool	\$12.8	\$26.1	\$12.1	\$17.0

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.

¹ 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 6c on p. 31 for details.

Methodology

The Methodology section is divided into four major sections. Section 1 describes the data from which fire loss estimates were made, Section 2 describes the procedures for preparing the data especially focusing on missing data, Section 3 describes the quality control checking and correcting 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 USFA's (USFA) National Fire Incident Reporting System (NFIRS) data.

The NFPA survey is a stratified random sample of fire departments in the U.S.¹ 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 2005 through 2007.

NFPA Estimates of Residential Structure Fires and Associated Losses 2005 – 2007

	2005	2006	2007
Structure Fires	396,000	412,500	414,000
Civilian Deaths	3,055	2,580	2,865
Civilian Injuries	13,825	12,925	14,000
Property Loss	\$6.88 billion	\$6.99 billion	\$7.55 billion

Source: See footnote 1 below.

The table above contains the only data used from the NFPA survey for making fire loss estimates.

The NFIRS is a compilation of voluntarily submitted incident reports completed by U.S. fire departments. As such, the NFIRS is not a probability sample and is insufficient to support precision estimation. The reports come from states (49 in 2005, 50 in 2006 and 2007), the District of Columbia (in 2005 and 2007), and U.S. territories. Not all the states reporting data included data from all fire departments in the state. In 2007, over 21,000 fire departments participated in NFIRS. The next table shows the number of residential structure fires and the corresponding losses reported to USFA during the years 2005 through 2007.

¹ M.J. Karter, "Fire Loss in the U.S. During 2005", National Fire Protection Association (NFPA), September 2006; M.J. Karter, "Fire Loss in the U.S. During 2006", National Fire Protection Association (NFPA), September 2007; M.J. Karter, "Fire Loss in the U.S. During 2007", National Fire Protection Association (NFPA), August 2008. NFPA estimates include intentionally set fires and associated losses.

Residential Structure Fires and Associated Losses Reported to USFA 2005 – 2007

	2005		2006		2007	
	All	5.0 Only	All	5.0 Only	All	5.0 Only
Structure Fires	252,739	238,204	260,507	247,201	268,017	260,478
Civilian Deaths	1,328	1,225	1,444	1,335	1,472	1,419
Civilian Injuries	7,125	6,574	7,387	6,867	7,447	7,098
Property Loss	\$3.19 billion	\$2.95 billion	\$3.55 billion	\$3.24 billion	\$4.73 billion	\$4.53 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 407,500 residential structure fires in the U.S. during 2005-2007. NFIRS captured about 64% of these fires. During the same time period, NFPA also estimated an annual average of 2,833 deaths, 13,583 injuries and \$7.1 billion in property loss. On average, NFIRS captured 50% of the deaths, 54% of the injuries and 54% of the property loss.

NFIRS Variables

The NFIRS version 5.0 coding system includes many variables but CPSC staff has used only a few of them 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 / multi family 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, etc. 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, e.g., heater, clothes dryer, etc.
<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, e.g., candle, lighter, cigarette, heat from operating equipment, hot object, etc.
<i>Item First Ignited</i>	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, etc.
<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, etc.

* 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, etc.

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 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.¹

Data Preparation – Addressing Different Types of Missing Data

There are four general types of missing data in NFIRS. These are as follows: (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 less is 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 the Equipment Power Source. In an effort to lessen the extent of missing data, the CPSC staff has implemented some conventions as necessary following consultation with USFA technical staff.

Some examples illustrate this. If the heat source is known to be matches, lighters, or candles, and no equipment is reported, then it is likely that no equipment was 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 would be when the reported equipment code is one that can only be electrical but the equipment power source is missing. In this case, it is evident that the power source should have been reported as electrical. On the other hand, when it is known that there is no equipment involved, power source should be reported as “none” instead of “unknown”.

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

¹ 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 however many 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, the CPSC staff transferred the fire cause values such as Cause of Ignition, Equipment Involved, Heat Source, etc. from the initial fire to the exposure fire. Thus, if the initial fire was caused by a portable heater, all exposures would be considered portable heater fires. All associated deaths, injuries, and property loss 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 within scope for this report. If the initial fire is not a residential structure fire but the exposure fire is, 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 non-combustible 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 in version 5.0, these codes were created to simplify the coding of these fires. When reporting confined fires, the Cause of Ignition, Equipment Involved, Item First Ignited, or Power Source is not required to be reported.

Since 1999, more and more of the NFIRS data has 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 increased. 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, the CPSC staff separated out all confined fires from the data before the product-specific estimates were 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 on 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 since there is no information available on equipment power source.

Table 6a : Estimated Residential Confined Fires: 2005 – 2007

Included in Table Categories:	Appear in Tables:	2005	2006	2007
Total Residential	1a, 2a, 3a, 4a, 5a	177,300	190,400	185,200
Total Heating and Cooling Equipment	1a, 3a	38,900	38,800	39,100
<i>Fireplace, Chimney, Connector</i>	<i>1a, 3a</i>	<i>22,600</i>	<i>24,300</i>	<i>24,600</i>
<i>Other (Burner / Boiler)</i>	<i>1a, 3a</i>	<i>16,300</i>	<i>14,600</i>	<i>14,500</i>
Cooking	1a, 2a	119,200	130,900	127,800
Trash, Rubbish	2a	17,000	18,200	16,300
Incinerator		600	800	700
Trash Compactor		1,500	1,700	1,300

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.

There were 20 deaths estimated in 2005 from confined residential cooking fires. In 2006 there were no NFIRS confined fire deaths and in 2007 there were fewer than 10 deaths estimated from all residential confined fires. No confined fire table is presented showing these death estimates.

Table 6b : Estimated Residential Confined Fire Injuries: 2005 – 2007

Included in Table Categories:	Appear in Tables:	2005	2006	2007
Total Residential	1c, 2c, 3c, 4c, 5c	1,710	1,670	1,900
Total Heating and Cooling Equipment	1c, 3c	120	110	140
<i>Fireplace, Chimney, Connector</i>	<i>1c, 3c</i>	<i>30</i>	<i>40</i>	<i>60</i>
<i>Other (Burner / Boiler)</i>	<i>1c, 3c</i>	<i>90</i>	<i>70</i>	<i>90</i>
Cooking	1c, 2c	1,500	1,510	1,700
Trash, Rubbish	2c	80	50	60
Incinerator		*	*	*
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 6c : Estimated Residential Confined Fire Property Loss (In Millions): 2005 – 2007

Included in Table Categories:	Appear in Tables:	2005	2006	2007
Total Residential	1d, 2d, 3d, 4d, 5d	\$61.4	\$33.5	\$30.8
Total Heating and Cooling Equipment	1d, 3d	\$23.8	\$6.9	\$7.4
<i>Fireplace, Chimney, Connector</i>	<i>1d, 3d</i>	<i>\$17.3</i>	<i>\$5.2</i>	<i>\$5.1</i>
<i>Other (Burner / Boiler)</i>	<i>1d, 3d</i>	<i>\$6.6</i>	<i>\$1.7</i>	<i>\$2.3</i>
Cooking	1d, 2d	\$33.4	\$23.7	\$21.4
Trash, Rubbish	2d	\$3.7	\$2.2	\$1.7
Incinerator		\$0.3	\$0.7	\$0.3
Trash Compactor		\$0.2	\$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 7a-7c 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 version 5.0 reporting instructions, they have been excluded from the tabulations below. Confined fires are discussed later in this section.

Table 7a
Missing Data on Residential Structure Fires: 2005 – 2007

	2005	2006	2007
Cause of Ignition	29%	29%	30%
Heat Source	32%	32%	34%
Item First Ignited	32%	32%	33%
Equipment Involved	52%	50%	52%
Equipment Power	51%	50%	52%

Source: U.S. Consumer Product Safety Commission / EPHA, from NFIRS data obtained from the USFA. Table excludes confined fires. Table includes only version 5.0 component of total residential structure fires data (94% of the 2005 fires are coded in 5.0, 95% in 2006, and 97% in 2007).

Table 7b
Missing Data on Residential Structure Fire Deaths: 2005 – 2007

	2005	2006	2007
Cause of Ignition	51%	49%	51%
Heat Source	53%	50%	51%
Item First Ignited	48%	52%	53%
Equipment Involved	51%	47%	55%
Equipment Power	51%	47%	55%

Source: U.S. Consumer Product Safety Commission / EPHA, from NFIRS data obtained from the USFA. Table excludes deaths from confined fires. Table includes only version 5.0 component of total residential structure fire death data (92% of the fire deaths in 2005 and 2006 were coded in 5.0 and 96% in 2007).

Table 7c
Missing Data on Residential Structure Fire Injuries: 2005 – 2007

	2005	2006	2007
Cause of Ignition	26%	28%	27%
Heat Source	26%	26%	27%
Item First Ignited	24%	27%	28%
Equipment Involved	45%	43%	44%
Equipment Power	45%	44%	44%

Source: U.S. Consumer Product Safety Commission / EPHA, from NFIRS data obtained from the USFA. Table excludes injuries from confined fires. Table includes only version 5.0 component of total residential structure fire injury data (92% of the fire injuries in 2005 were coded in 5.0, 93% in 2006, and 95% in 2007).

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 used. A SAS[®] macro¹ performed the raking. The raking procedure maintains the marginal distributions for the known data while allocating the unknown data for all characteristics involved.² 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 thousand. The property loss was corrected and the weight used for property loss estimates was changed accordingly.

In light of this the CPSC staff did more quality control checking of the NFIRS 2007 data. 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 19 such high property loss fires assigned for investigation. In 13 of them, the property loss estimate was confirmed. In the remaining six, a different property loss estimate was obtained and the data were corrected.

¹ 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.

² 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.

In addition to the quality control checking of high property loss fire reports, some checking was done of multiple-death fire incidents. 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 12 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, nine of these cases had fire cause information edited. A common scenario was a report that had the *cause of ignition* variable as missing or unknown, which was then changed to ‘unintentional’ as a result of the CPSC field staff investigation.

In addition to the nine multiple-death cases that were corrected based on information that was obtained by field investigations, two cases were corrected based on information obtained from internet accounts where no field investigation was deemed necessary.

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 content loss 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 were then used to produce the estimates in the tables. As already mentioned, the confined fires were separated out and the estimates for them were computed separately.

The estimates presented in this report pertain to unintentional fires and fire losses only. To this end, the CPSC analysts excluded all incidents where the Cause of Ignition could be identified as intentional. 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 un-rounded 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 loss.

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 the 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 is reported in version 5.0, fire departments are not required to fill in these three variable fields. Consequently, much of the data is missing and since 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 set to “unintentional”. This ensures that the fire 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% in 1999 to 89% in 2004). Since fires can only be coded as confined fires in 5.0, this rapid increase also meant a rapid increase in the proportion of the data that was confined fires (from 2% in 1999 to 41% in 2004). If the proportion of fires reported to NFPA that were confined fires did not increase likewise during this period then this would have a downward effect on the fire estimates for non-confined fire products. Without knowing whether fires reported to NFPA were confined or non-confined, looking at specific product fire estimates from 1999 to 2004 suggested that this downward effect was occurring. Since 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% 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 2007 (42% to 45%). This small increase should have little effect on the fire estimates for specific products. This is reflected in the year-to-year estimates in this report. There does not appear to be an overall downward trend in the fire estimates. Now that the proportion of NFIRS residential structure fires that were originally coded in 5.0 has stabilized, the product-specific fire estimates have as well. This is more evidence in support of the hypothesis that the quickly increasing proportion of 5.0 cases from 1999 – 2004 may have had a downward effect on product-specific fire estimates but the hypothesis cannot be proven.