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RESEARCH

Electrical Fires

March 2017

Richard Campbell

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Abstract

Electrical fires

U.S. fire departments responded to an estimated average of 45,210 home structure fires each year between 2010 and 2014 that involved some type of electrical failure or malfunction as a factor contributing to ignition. These fires resulted in an estimated 420 deaths, 1,370 injuries and \$1.4 billion in direct property damage per year. An estimated 16,070 non-home structure fires involving some type of electrical failure or malfunction as a factor contributing to ignition were also reported to U.S. fire departments per year. These fires resulted in an estimated annual average of 12 civilian deaths, 210 civilian injuries, and \$614 million in direct property damage.

Electrical distribution and lighting equipment fires

An estimated annual average of 31,960 non-confined home structure fires involving electrical distribution or lighting equipment in 2010-2014 resulted in an estimated 400 civilian deaths, 1,180 civilian injuries, and \$1.2 billion in direct property damage per year. An estimated annual average of 14,760 non-confined non-home fires resulted 20 civilian deaths, 190 civilian injuries, and \$659 million in direct property damage per year over this period.

These estimates are based on data from the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA's) annual fire department experience survey.

Keywords: electrical fires, wiring, extension cords, lighting equipment, electrical arcing, residential fires, fire statistics

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We are also grateful to the U.S. Fire Administration for its work in developing, coordinating, and maintaining NFIRS.

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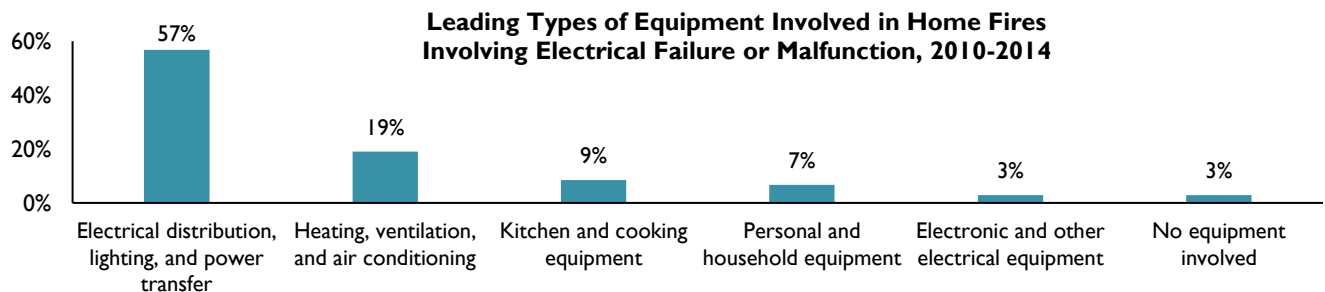
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ELECTRICAL FIRES FACT SHEET

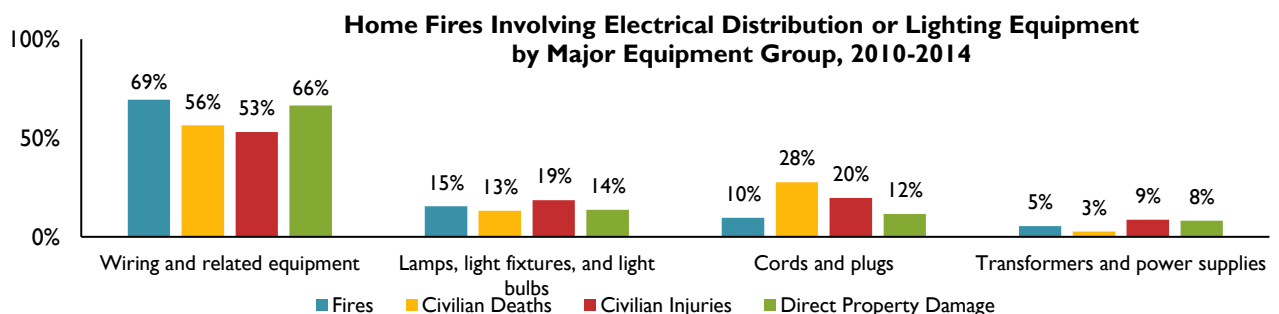
U.S. fire departments responded to an estimated annual average of 45,210 reported U.S. home structure fires involving electrical failure or malfunction in 2010-2014. These fires resulted in 420 civilian deaths, 1,370 civilian injuries and \$1.4 billion in direct property damage each year. Some type of electrical failure or malfunction also contributed to the ignition of 16,070 *non-home* structure fires during this period, resulting in an estimated annual average of 12 civilian deaths, 210 civilian injuries, and \$614 million in direct property damage.



Electrical distribution or lighting equipment was involved in 57% of the home fires involving electrical failure or malfunction. One-fifth (19%) of fires involved heating, ventilation and air conditioning equipment, 9% involved kitchen and cooking equipment, and 7% involved personal and household equipment.

Fires Involving Electrical Distribution or Lighting Equipment

U.S. fire departments responded to an estimated annual average of 31,960 reported non-confined home structure fires involving electrical distribution or lighting equipment in 2010-2014. These fires resulted in 400 civilian fire deaths, 1,180 civilian fire injuries, and \$1.2 billion in direct damage. An estimated annual average of 14,760 non-confined *non-home* fires resulted in 20 civilian deaths, 190 civilian injuries, and \$659 million in direct property damage each year over this period.

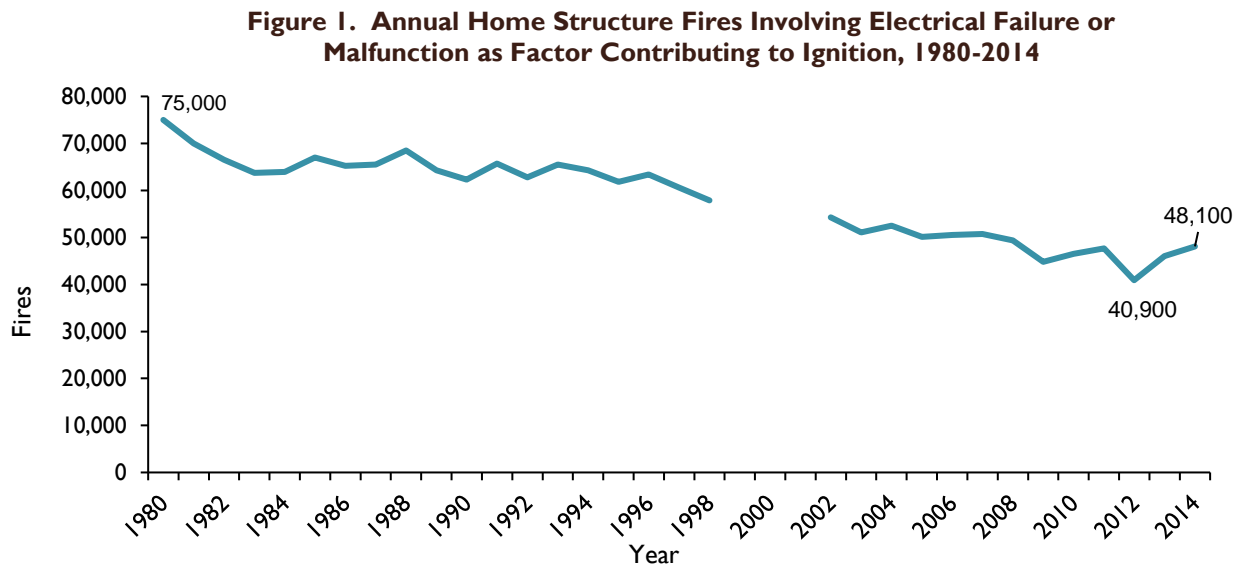


Wiring and related equipment accounted for the great majority of home fires and losses involving electrical distribution and lighting equipment (69% of fires, 56% of civilian deaths, 53% of civilian injuries, and 66% of direct property damage). Cords and plugs accounted for 10% of fires, but 28% of civilian deaths and 20% of civilian injuries, as well as 12% of direct property damage.

Section 1: Home Electrical Fires

In the five-year period from 2010 through 2014, there were an estimated annual average of 45,210 home structure fires that were reported to U.S. fire departments that involved some type of electrical failure or malfunction as a factor contributing to ignition. These fires resulted in an estimated 420 deaths, 1,370 injuries and \$1.4 billion in direct property damage each year. Home electrical fires represented 13% of total 2010-2014 home fires, 17% of associated civilian deaths, 11% of associated civilian injuries, and 21% of associated direct property damage.

As shown in Figure 1 and Table 1, these fires were generally decreasing from 1980 until recent years. An estimated 48,100 home electrical fires in 2014, the most recent year for which data are available, is 36% lower than the estimated 75,000 such fires in 1980. However, the downward trend has generally abated in the past few years after a low of 40,900 estimated home electric fires in 2012.



Note: Because of low participation in NFIRS Version 5.0 during 1999-2001, data from these years is not reported in these tables. See note for Table 1.

The estimates presented in this report are derived from data reported by municipal fire departments. These data are compiled by the U.S. Fire Administration’s National Fire Incident Reporting System (NFIRS), which distinguish between “non-confined” and “confined” fires. Confined fires are assumed to be limited to the object of origin and are generally associated with minimal losses, as indicated in Table A. The data on fires involving electrical failure or malfunction are identified through the NFIRS data element, “factor contributing to ignition.” Because the NFIRS system allows for the inclusion of more than one factor for each incident, it is possible to produce different results for home fires involving electrical failure or malfunction on the basis of either fire incidents (“fires”) or the number of factors contributing to ignition, which is normally greater than the number of fires, also shown in Table A. **Unless otherwise noted, the data in this report will be restricted to non-confined fires, not factors.**

**Table A. Home Fires Involving Electrical Failure or Malfunction, Fires versus Factor Contributing to Ignition
2010-2014 Annual Averages**

Category	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Fires	45,210	(100%)	420	(100%)	1,370	(100%)	\$1,370	(100%)
Non-confined	39,670	(88%)	420	(100%)	1,360	(99%)	\$1,370	(100%)
Confined	5,540	(12%)	0	(0%)	10	(1%)	\$0	(0%)
Factors	46,270	(100%)	440	(100%)	1,370	(100%)	\$1,430	(100%)
Non-confined	40,670	(88%)	440	(100%)	1,360	(99%)	\$1,420	(100%)
Confined	5,600	(12%)	0	(0%)	10	(1%)	\$0	(0%)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported to federal or state agencies or industrial fire brigades. Analyses were performed separately for non-confined and confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest ten million dollars. Totals may not equal sums due to rounding errors.

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

This report analyzes fires involving electrical failure or malfunction in homes and non-home structures. Homes include one- and two-family homes, manufactured homes, and apartments or other multi-family housing, regardless of ownership. Non-home structures refers generically to structures other than homes. Generally speaking, any fire in or on a structure is considered a structure fire, including incidents in which only contents were damaged.

Types of electrical failure or malfunction involved in home fires

There were an estimated 45,210 home structure fires in 2010-2014 involving electrical failure or malfunction. In 51% of these, the specific type of failure or malfunction was not classified. When the type of failure or malfunction could be determined, some form of arcing was most often involved in these fires, with unspecified short circuit arcs in 25% of fires and short circuit arcs from defective or worn insulation in another 11% of fires. Other types of arcing events included an arc or spark from operating equipment (6%), an arc from a faulty contact or broken conductor (5%), a short circuit arc from mechanical damage (4%), and a water-caused short circuit arc (1%). See [Table B](#). for details.

A note of caution in interpreting 2010-2014 data

Estimates for 2012-2014 were influenced by a change in NFIRS rules. In an effort to improve data quality while reducing inconsistent or missing data, the USFA introduced a new data entry rule for NFIRS in 2012. When the heat source or factor contributing to ignition is reported as being equipment-related, the specific type of equipment involved in ignition must be identified.

This had two effects on the reported data. First, the number of fires coded with undetermined causal factors other than equipment involved in ignition increased (i.e., some fires were no longer reported as being equipment-related). At the same time, more fires were reported as having some specific type of equipment involved in ignition, because now all the fires caused by heat from equipment have that added detail. This resulted in a marked increase in reported fires involving electrical distribution or lighting equipment. With the allocation of unknown data, the impact of these changes becomes even greater. The impact of these changes is particularly noticeable with respect to trend data and requires caution when interpreting the recent increases.

**Table B. Home Fires Involving Electrical Failure or Malfunction, by Factor Contributing to Ignition
2010-2014 Annual Averages**

Type of Electrical Failure or Malfunction	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	22,860	(51%)	220	(53%)	700	(51%)	\$760	(55%)
Unspecified short-circuit arc	11,250	(25%)	130	(30%)	420	(31%)	\$380	(28%)
Short circuit arc from defective or worn insulation	4,890	(11%)	40	(10%)	130	(9%)	\$120	(9%)
Arc or spark from operating equipment	2,620	(6%)	10	(3%)	80	(6%)	\$60	(4%)
Arc from faulty contact or broken conductor	2,140	(5%)	10	(3%)	30	(3%)	\$50	(4%)
Short circuit arc from mechanical damage	1,730	(4%)	20	(4%)	40	(3%)	\$40	(3%)
Water caused short-circuit arc	650	(1%)	0	(0%)	10	(1%)	\$10	(1%)
Fluorescent light ballast	130	(0%)	0	(0%)	10	(0%)	\$0	(0%)
Total fires	45,210	(100%)	420	(100%)	1,370	(100%)	\$1,380	(100%)
Total factors	46,270	(102%)	440	(105%)	1,430	(104%)	\$1,430	(104%)

Note: Data in this table *include* non-confined and confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest ten million dollars. Figures reflect a proportional share of home fires with factor contributing to ignition reports as unknown, unreported, none, or blank, with allocations performed separately for non-confined and confined fires. Totals may not equal sums due to rounding.

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Timing of fires

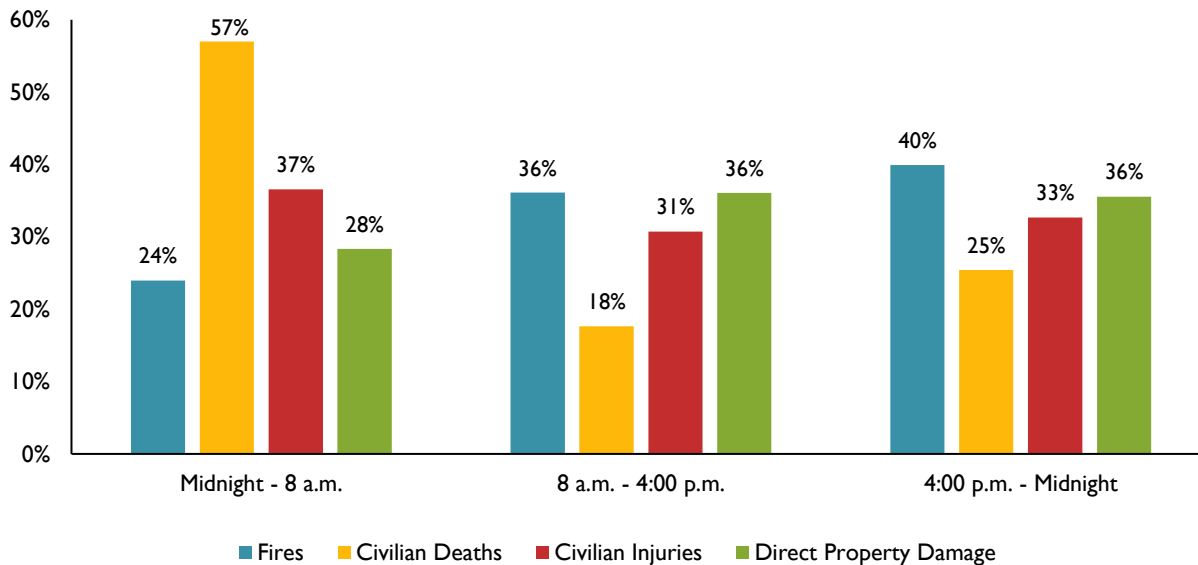
The peak period for home fires involving electrical failure or malfunction from 2010 through 2014 were the cold weather months from November through February, which accounted for 39% of fires, as well as 40% of civilian deaths, 37% of civilian injuries, and 40% of direct property damage. The highest single month for electrical fires was January, with 11% of fires, as well as 17% of civilian fatalities. Another 10% of fires were recorded in December. See [Table 2](#) for details.

Electrical fires were distributed fairly evenly by day of week, as shown in [Table 3](#), with each day of the week accounting for a 14% to 15% share of fires.

[Figure 2](#) shows that the smallest share of electrical fires in homes by time of day in 2010 to 2014 occurred in the period from midnight to 8 a.m., with 24% of fires. However, this period accounted for the highest shares of civilian deaths (57%) and civilian injuries (37%), as well as 28% of direct property damage. The period from 4 p.m. to midnight accounted for the largest share of fires (40%), while also accounting for 25% of civilian deaths, 33% of civilian injuries, and 36% of direct property damage. Nearly two of five fires occurred in the hours between

8 a.m. and 4 p.m. (36%). This period was also associated with the smallest share of civilian deaths (18%) and injuries (31%).

Figure 2. Home Fires Involving Electrical Failure or Malfunction by, Time of Day, 2010 - 2014 Annual Averages



Note: See Note for Table 4.

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Equipment involved in fire ignition

There were 39,670 non-confined home structure fires involving electrical failure or malfunction in 2010-2014. Electrical distribution, lighting, and power transfer equipment accounted for the largest share of these, with 57% of the total, followed by heating, ventilation, and air conditioning equipment (19%), kitchen and cooking equipment (9%), personal and household equipment (7%), and electronic and other electrical equipment (3%), as shown in Table C and Table 5.

Table C shows that unclassified wiring was involved in 20% of fires, while an outlet or receptacle was involved in 8% of fires, an electrical branch circuit was involved in 6% of fires, and a panelboard, switchboard, or circuit breaker board and extension cords were each involved in 3% of fires. The 3% of fires involving extension cords caused 13% of civilian deaths and 7% of civilian injuries. Fires involving electrical branch circuits accounted for 6% of fires, but 14% of civilian deaths). Leading types of heating, ventilation, and air conditioning equipment involved were fans (6% of fires), air conditioners (4%), fixed or portable space heaters (4%), and water heaters (3%). Space heater fires were associated with 8% of civilian deaths. Other leading types of equipment included ranges or cooktops (3% of fires) and clothes dryers (4% of fires).

**Table C. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Equipment Involved in Ignition
2010-2014 Annual Averages**

Equipment Involved	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical distribution, lighting, and power transfer	22,510	(57%)	300	(70%)	760	(56%)	\$840	(61%)
Unclassified electrical wiring	7,880	(20%)	100	(24%)	200	(15%)	\$310	(22%)
Outlet or receptacle	3,090	(8%)	30	(7%)	140	(10%)	\$90	(7%)
Electrical branch circuit	2,230	(6%)	60	(14%)	50	(4%)	\$90	(7%)
Panelboard, switchboard or circuit breaker board	1,180	(3%)	0	(0%)	30	(2%)	\$40	(3%)
Extension cord	1,180	(3%)	60	(13%)	100	(7%)	\$50	(4%)
Heating, ventilation, and air conditioning	7,530	(19%)	70	(16%)	260	(19%)	\$210	(15%)
Fan	2,470	(6%)	20	(4%)	90	(6%)	\$60	(5%)
Air conditioner	1,500	(4%)	20	(5%)	70	(5%)	\$50	(3%)
Fixed or portable space heater	1,400	(4%)	30	(8%)	50	(4%)	\$50	(4%)
Water heater	1,100	(3%)	0	(0%)	20	(1%)	\$20	(1%)
Kitchen and cooking equipment	3,380	(9%)	20	(4%)	150	(11%)	\$90	(7%)
Range or cooktop	1,050	(3%)	10	(1%)	50	(3%)	\$20	(1%)
Personal and household equipment	2,660	(7%)	20	(4%)	80	(6%)	\$70	(5%)
Clothes dryer	1,670	(4%)	0	(0%)	40	(3%)	\$30	(2%)
Electronic and other electrical equipment	1,170	(3%)	10	(3%)	50	(4%)	\$50	(3%)
No equipment involved	1,160	(3%)	0	(1%)	30	(2%)	\$50	(4%)
Total*	39,670	(100%)	420	(100%)	1,360	(100%)	\$1,370	(100%)

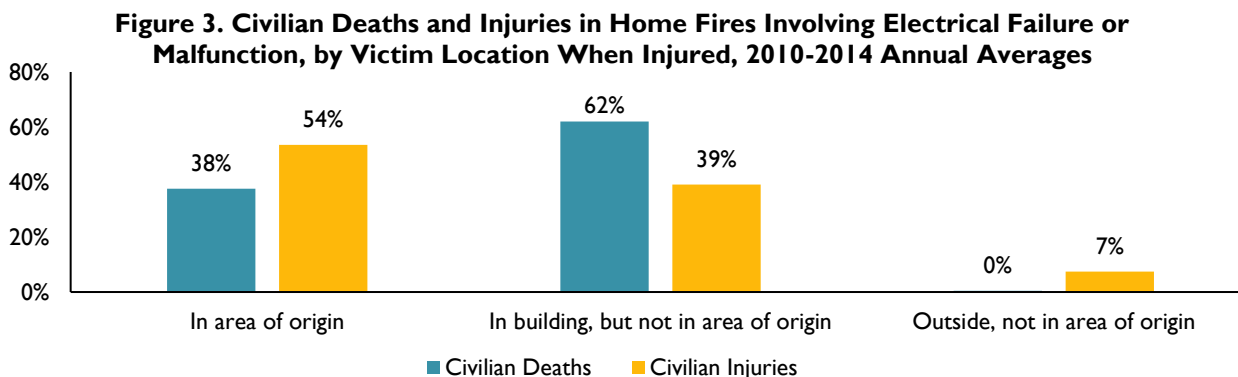
Note: Data in this table include non-confined fires only. Analyses were performed separately for non-confined and confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest ten million dollars. Figures reflect a proportional share of home fires with factor contributing to ignition reports as unknown, unreported, none, or blank, with allocations performed separately for non-confined and confined fires. Totals may not equal sums due to rounding.
Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Area of origin. The leading areas of origin for home fires involving electrical failure or malfunction were bedrooms (14% of fires), attics or ceiling/roof assemblies or concealed spaces (12%), kitchens or cooking areas (11%), wall assemblies or concealed spaces (7%), living rooms, family rooms or dens (6%), laundry rooms or areas (6%), and bathrooms or lavatories (5%). Fires originating in the bedroom had the highest share of civilian injuries (27%) and direct property damage (15%), as well as 18% of civilian deaths. Fires originating in a living room, family room or den accounted for 6% of the total, but 24% of civilian deaths. See [Table 6](#).

Item first ignited. The leading items first ignited in home fires involving electrical failure or malfunction were electrical wire or insulation (31% of fires) and structural member or framing (16%), followed by insulation within a structural area (7%), interior wall covering, excluding

drapes (6%), appliance housing or casing (5%), and exterior wall covering or finish (5%). The complete list of items first ignited is available in [Table 7](#).

Locations and activities of victims at time of injury. Information on the general location of civilians who died or were injured in these fires indicates that 38% of those fatally injured and 54% of non-fatal injuries were in the area of fire origin, while 62% of those fatally injured and 39% of non-fatally injured were in the building, but not in the area of origin. Seven percent of civilians who experienced non-fatal injuries were outside and not in the area of origin. See [Figure 3](#). and [Table 8](#).



Note: See Note on [Table 8](#). Source: NFIRS Version 5.0 and NFPA Fire Experience Survey

The vast majority of civilians who died in home electrical fires were either sleeping (42% of deaths) or trying to escape (41%) at the time of injury, while 6% were unable to act. See [Table D](#) and [Table 9](#). Civilians who received non-fatal injuries were far less likely to be sleeping (13% of injuries) and somewhat less likely to be in the act of escaping (36%); 25% were engaged in fire control. Eight percent of civilians with non-fatal injuries were returning to the vicinity of the fire before it was controlled and 7% were involved in a rescue attempt at the time of injury.

Table D. Home Fires Involving Electrical Failure or Malfunction as a Factor Contributing to Ignition, by Victim Activity When Injured 2010-2014 Annual Averages

Activity When Injured	Civilian Deaths		Civilian Injuries	
	Count	Percentage	Count	Percentage
Sleeping	180	(42%)	170	(13%)
Escaping	170	(41%)	490	(36%)
Unable to act	30	(6%)	30	(2%)
Fire control	10	(3%)	350	(25%)
Rescue attempt	10	(3%)	100	(7%)
Irrational act	10	(2%)	10	(1%)
Returning to vicinity of fire before control	10	(2%)	120	(8%)
Unclassified activity	0	(0%)	90	(7%)
Total	420	(100%)	1,360	(100%)

Note: See Note on [Table 9](#). Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

**Table 1. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition, by Year
Structure Fires Reported to U.S. Fire Departments**

Year	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)			
							As Reported		In 2014 Dollars	
1980	75,000		471		1,500		\$426		\$1,227	
1981	70,000		477		1,670		\$409		\$1,064	
1982	66,500		405		1,760		\$450		\$1,104	
1983	63,700		463		1,750		\$530		\$1,260	
1984	63,960		328		1,440		\$551		\$1,255	
1985	67,000		451		1,600		\$603		\$1,326	
1986	65,200		639		1,640		\$600		\$1,298	
1987	65,500		562		1,880		\$616		\$1,285	
1988	68,500		545		2,190		\$745		\$1,494	
1989	64,300		590		2,000		\$693		\$1,325	
1990	62,300		435		2,000		\$737		\$1,338	
1991	65,700		393		2,370		\$981		\$1,706	
1992	62,800		486		2,270		\$727		\$1,228	
1993	65,500		485		2,540		\$936		\$1,535	
1994	64,300		518		2,160		\$835		\$1,336	
1995	61,800		582		2,110		\$867		\$1,348	
1996	63,400		593		2,070		\$1,031		\$1,559	
1997	60,600		380		1,790		\$980		\$1,447	
1998	57,900		479		1,820		\$943		\$1,372	
1999	46,000	(44,300)	387	(387)	1,620	(1,620)	\$917	(917)	\$1,304	(1,304)
2000	49,200	(46,400)	348	(348)	1,670	(1,670)	\$1,085	(1,082)	\$1,494	(1,490)
2001	53,600	(49,200)	548	(548)	1,680	(1,630)	\$1,237	(1,235)	\$1,656	(1,653)
2002	54,300	(49,300)	278	(278)	1,290	(1,290)	\$1,183	(1,181)	\$1,559	(1,556)
2003	51,100	(45,200)	639	(639)	1,350	(1,350)	\$1,283	(1,281)	\$1,654	(1,651)
2004	52,500	(46,400)	614	(614)	1,500	(1,490)	\$1,360	(1,357)	\$1,708	(1,704)
2005	50,100	(44,500)	438	(438)	1,360	(1,340)	\$1,530	(1,522)	\$1,856	(1,847)
2006	50,500	(45,100)	333	(333)	1,370	(1,360)	\$1,390	(1,389)	\$1,634	(1,633)
2007	50,700	(45,500)	451	(451)	1,640	(1,630)	\$1,228	(1,227)	\$1,403	(1,401)
2008	49,400	(44,800)	519	(519)	1,350	(1,320)	\$1,633	(1,632)	\$1,799	(1,798)
2009	44,800	(39,500)	472	(472)	1,500	(1,470)	\$1,644	(1,643)	\$1,815	(1,814)
2010	46,500	(42,000)	419	(419)	1,520	(1,510)	\$1,507	(1,506)	\$1,639	(1,638)
2011	47,700	(42,600)	418	(418)	1,570	(1,570)	\$1,434	(1,432)	\$1,512	(1,510)
2012	40,900	(35,300)	359	(359)	1,410	(1,390)	\$1,310	(1,309)	\$1,354	(1,352)
2013	46,000	(39,900)	419	(419)	1,220	(1,200)	\$1,370	(1,368)	\$1,393	(1,391)
2014	48,100	(41,200)	538	(538)	1,280	(1,270)	\$1,387	(1,385)	\$1,387	(1,385)

**Table 1. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition, by Year
Structure Fires Reported to U.S. Fire Departments (Continued)**

Note: Figures in parentheses exclude confined fires, which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported to only federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of a small number of unusually serious fires. Fires are rounded to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Figures for 1980-1998 are based on ignition factor 54-55 and reflect a proportional share of home fires with ignition factor unknown, unreported, none, or blank. Figures for 1999 and later years reflect a proportional share of home fires with factor contributing to ignition as unknown, unreported, none, or blank. Because of low participation in NFIRS Version 5.0 during 1999-2001, estimates for these years are highly uncertain and must be used with caution. Inflation adjustment to 2014 dollars is calculated using the Consumer Price Index. Home fire property damage figures for 1991 are inflated by estimation problems related to the Oakland fire storm.

Source: NFIRS (Version 5.0 after 1998) and NFPA Fire Experience Survey.

**Table 2. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition, by Month
2010-2014 Annual Averages**

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	4,410	(11%)	70	(17%)	150	(11%)	\$160	(12%)
February	3,460	(9%)	40	(9%)	130	(10%)	\$120	(9%)
March	3,260	(8%)	50	(12%)	130	(9%)	\$120	(9%)
April	2,960	(7%)	30	(7%)	120	(9%)	\$110	(8%)
May	2,940	(7%)	30	(8%)	110	(8%)	\$100	(7%)
June	3,100	(8%)	20	(5%)	120	(8%)	\$110	(8%)
July	3,400	(9%)	40	(8%)	110	(8%)	\$110	(8%)
August	3,030	(8%)	20	(5%)	100	(8%)	\$90	(7%)
September	2,680	(7%)	20	(5%)	80	(6%)	\$90	(7%)
October	2,800	(7%)	40	(9%)	90	(6%)	\$90	(7%)
November	3,450	(9%)	30	(6%)	90	(7%)	\$120	(9%)
December	4,160	(10%)	30	(8%)	130	(9%)	\$150	(11%)
Total	39,670	(100%)	420	(100%)	1,360	(100%)	\$1,370	(100%)

Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. Fires, deaths, and injuries are rounded to the nearest ten, and direct property damage to the nearest ten million dollars. Figures reflect a proportional share of home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Fire Experience Survey.

**Table 3. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Day of Week
2010-2014 Annual Averages**

Alarm Day of Week	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Sunday	5,680	(14%)	50	(12%)	210	(15%)	\$190	(14%)
Monday	5,690	(14%)	50	(13%)	180	(14%)	\$190	(14%)
Tuesday	5,620	(14%)	60	(13%)	210	(15%)	\$190	(14%)
Wednesday	5,600	(14%)	60	(13%)	160	(12%)	\$200	(14%)
Thursday	5,660	(14%)	70	(16%)	190	(14%)	\$210	(15%)
Friday	5,610	(14%)	70	(15%)	220	(16%)	\$190	(14%)
Saturday	5,810	(15%)	70	(17%)	190	(14%)	\$210	(15%)
Totals	39,670	(100%)	420	(100%)	1,360	(100%)	\$1,370	(100%)

Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. Fires, deaths, and injuries are rounded to the nearest ten, and direct property damage to the nearest ten million dollars. Figures reflect a proportional share of home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Fire Experience Survey.

**Table 4. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Time of Day
2010-2014 Annual Averages**

Alarm time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Midnight-12:59 a.m.	1,410	(4%)	30	(6%)	60	(4%)	\$50	(4%)
1:00-1:59 a.m.	1,230	(3%)	50	(12%)	70	(5%)	\$50	(4%)
2:00-2:59 a.m.	1,180	(3%)	30	(7%)	80	(6%)	\$60	(4%)
3:00-3:59 a.m.	1,110	(3%)	30	(7%)	70	(5%)	\$50	(4%)
4:00-4:59 a.m.	1,080	(3%)	30	(8%)	70	(5%)	\$50	(3%)
5:00-5:59 a.m.	1,040	(3%)	20	(5%)	60	(4%)	\$40	(3%)
6:00-6:59 a.m.	1,130	(3%)	20	(6%)	40	(3%)	\$40	(3%)
7:00-7:59 a.m.	1,340	(3%)	30	(6%)	50	(4%)	\$50	(3%)
8:00-8:59 a.m.	1,460	(4%)	10	(3%)	50	(4%)	\$50	(4%)
9:00-9:59 a.m.	1,570	(4%)	20	(4%)	50	(4%)	\$60	(4%)
10:00-10:59 a.m.	1,650	(4%)	10	(3%)	50	(4%)	\$60	(4%)
11:00-11:59 a.m.	1,810	(5%)	10	(2%)	60	(4%)	\$60	(5%)
12:00-12:59 p.m.	1,880	(5%)	10	(2%)	60	(4%)	\$70	(5%)
1:00-1:59 p.m.	1,900	(5%)	10	(1%)	60	(4%)	\$70	(5%)
2:00-2:59 p.m.	1,980	(5%)	10	(1%)	40	(3%)	\$60	(5%)
3:00-3:59 p.m.	2,080	(5%)	0	(1%)	50	(4%)	\$70	(5%)
4:00-4:59 p.m.	2,070	(5%)	10	(2%)	60	(4%)	\$70	(5%)
5:00-5:59 p.m.	2,200	(6%)	10	(3%)	50	(4%)	\$70	(5%)
6:00-6:59 p.m.	2,180	(6%)	10	(2%)	60	(5%)	\$70	(5%)
7:00-7:59 p.m.	2,140	(5%)	10	(3%)	50	(4%)	\$60	(5%)
8:00-8:59 p.m.	2,040	(5%)	10	(4%)	70	(5%)	\$60	(4%)
9:00-9:59 p.m.	1,980	(5%)	20	(4%)	50	(4%)	\$60	(4%)
10:00-10:59 p.m.	1,740	(4%)	20	(5%)	40	(3%)	\$50	(4%)
11:00-11:59 p.m.	1,480	(4%)	10	(3%)	50	(4%)	\$50	(4%)
Total	39,670	(100%)	420	(100%)	1,360	(100%)	\$1,370	(100%)

Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. Fires, deaths, and injuries are rounded to the nearest ten, and direct property damage to the nearest ten million dollars. Figures reflect a proportional share of home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Fire Experience Survey.

**Table 5. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Equipment Involved in Ignition
2010-2014 Annual Averages**

Equipment Involved	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical distribution, lighting, and power transfer	22,510	(57%)	300	(70%)	760	(56%)	\$840	(61%)
Unclassified electrical wiring	7,880	(20%)	100	(24%)	200	(15%)	\$310	(22%)
Outlet or receptacle	3,090	(8%)	30	(7%)	140	(10%)	\$90	(7%)
Electrical branch circuit	2,230	(6%)	60	(14%)	50	(4%)	\$90	(7%)
Panelboard, switchboard or circuit breaker board	1,180	(3%)	0	(0%)	30	(2%)	\$40	(3%)
Extension cord	1,180	(3%)	60	(13%)	100	(7%)	\$50	(4%)
Electrical service supply wires from utility	820	(2%)	0	(1%)	10	(1%)	\$30	(2%)
Electric meter or meter box	760	(2%)	0	(0%)	10	(1%)	\$20	(1%)
Wiring from meter box to circuit breaker	590	(1%)	0	(0%)	0	(0%)	\$20	(1%)
Unclassified lamp or lighting	560	(1%)	10	(2%)	20	(2%)	\$20	(1%)
Electrical power (utility) line	560	(1%)	0	(0%)	10	(1%)	\$20	(1%)
Incandescent lighting fixture	530	(1%)	0	(0%)	20	(1%)	\$20	(1%)
Surge protector	460	(1%)	10	(2%)	30	(2%)	\$20	(2%)
Unclassified cord or plug	390	(1%)	20	(4%)	20	(1%)	\$20	(2%)
Tabletop, floor or desk lamp	290	(1%)	0	(1%)	20	(2%)	\$10	(1%)
Detachable power cord or plug	270	(1%)	0	(1%)	10	(1%)	\$10	(1%)
Permanently attached power cord or plug	260	(1%)	0	(1%)	10	(1%)	\$10	(1%)
Wall switch	250	(1%)	0	(0%)	0	(0%)	\$10	(1%)
Fluorescent lighting fixture or ballast	220	(1%)	0	(0%)	10	(0%)	\$10	(1%)
Battery charger or rectifier	210	(1%)	0	(0%)	20	(1%)	\$20	(1%)
Other known electrical distribution or lighting equipment	780	(0%)	0	(1%)	30	(2%)	\$30	(2%)
Heating, ventilation, and air conditioning	7,530	(19%)	70	(16%)	260	(19%)	\$210	(15%)
Fan	2,470	(6%)	20	(4%)	90	(6%)	\$60	(5%)
Air conditioner	1,500	(4%)	20	(5%)	70	(5%)	\$50	(3%)
Fixed or portable space heater	1,400	(4%)	30	(8%)	50	(4%)	\$50	(4%)
Water heater	1,100	(3%)	0	(0%)	20	(1%)	\$20	(1%)
Furnace or central heating unit	360	(1%)	0	(0%)	10	(0%)	\$10	(1%)
Other known heating, ventilation, and air conditioning equipment	700	(0%)	0	(0%)	20	(2%)	\$20	(2%)

**Table 5. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Equipment Involved in Ignition
2010-2014 Annual Averages (Continued)**

Equipment Involved	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Kitchen and cooking equipment	3,380	(9%)	20	(4%)	150	(11%)	\$90	(7%)
Range or cooktop	1,050	(3%)	10	(1%)	50	(3%)	\$20	(1%)
Refrigerator or freezer	620	(2%)	10	(1%)	30	(2%)	\$20	(2%)
Microwave oven	480	(1%)	0	(0%)	10	(1%)	\$10	(1%)
Dishwasher	450	(1%)	0	(1%)	10	(1%)	\$10	(1%)
Oven or rotisserie	210	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Other known kitchen and cooking equipment	570	(1%)	10	(1%)	40	(3%)	\$20	(2%)
Personal and household equipment	2,660	(7%)	20	(4%)	80	(6%)	\$70	(5%)
Clothes dryer	1,670	(4%)	0	(0%)	40	(3%)	\$30	(2%)
Other known personal and household equipment	990	(0%)	20	(4%)	40	(3%)	\$40	(3%)
Electronic and other electrical equipment	1,170	(3%)	10	(3%)	50	(4%)	\$50	(3%)
Television	410	(1%)	0	(0%)	20	(2%)	\$20	(1%)
Other known electronic and other electrical equipment	750	(0%)	10	(3%)	30	(2%)	\$30	(2%)
Shop tools and industrial equipment	290	(1%)	0	(0%)	10	(1%)	\$10	(1%)
Other equipment involved in ignition	980	(2%)	10	(2%)	30	(2%)	\$50	(4%)
No equipment involved	1,160	(3%)	0	(1%)	30	(2%)	\$50	(4%)
Total	39,670	(100%)	420	(100%)	1,360	(100%)	\$1,370	(100%)

Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. Fires, deaths, and injuries are rounded to the nearest ten, and direct property damage to the nearest ten million dollars. Figures reflect a proportional share of home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Fire Experience Survey.

**Table 6. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Area of Origin
2010-2014 Annual Averages**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	5,410	(14%)	80	(18%)	370	(27%)	\$210	(15%)
Attic or ceiling/roof assembly or concealed space	4,730	(12%)	20	(6%)	60	(4%)	\$180	(13%)
Kitchen or cooking area	4,450	(11%)	50	(12%)	180	(13%)	\$120	(9%)
Wall assembly or concealed space	2,850	(7%)	20	(4%)	60	(4%)	\$80	(6%)
Living room, family room or den	2,440	(6%)	100	(24%)	180	(13%)	\$110	(8%)
Laundry room or area	2,230	(6%)	10	(2%)	60	(4%)	\$60	(4%)
Bathroom or lavatory	2,020	(5%)	10	(2%)	40	(3%)	\$40	(3%)
Exterior wall surface	1,720	(4%)	0	(1%)	20	(1%)	\$40	(3%)
Garage or vehicle storage area	1,520	(4%)	10	(2%)	50	(4%)	\$110	(8%)
Unclassified function area	1,460	(4%)	30	(8%)	90	(7%)	\$60	(5%)
Crawl space or substructure space	1,400	(4%)	10	(3%)	30	(3%)	\$40	(3%)
Ceiling/floor assembly or concealed space	1,270	(3%)	20	(5%)	30	(2%)	\$50	(4%)
Heating equipment room	770	(2%)	0	(0%)	10	(1%)	\$20	(1%)
Unclassified structural area	710	(2%)	10	(2%)	20	(1%)	\$30	(2%)
Closet	690	(2%)	0	(1%)	20	(1%)	\$20	(2%)
Unclassified storage area	500	(1%)	0	(1%)	20	(1%)	\$20	(1%)
Duct for HVAC, cable, exhaust, heating, or AC	490	(1%)	0	(0%)	10	(1%)	\$10	(1%)
Dining room, bar or beverage area, cafeteria	400	(1%)	10	(2%)	10	(1%)	\$10	(1%)
Exterior balcony or unenclosed porch	380	(1%)	10	(2%)	10	(1%)	\$20	(1%)
Unclassified outside area	370	(1%)	0	(0%)	10	(0%)	\$10	(1%)
Unclassified equipment or service area	350	(1%)	0	(0%)	10	(1%)	\$10	(1%)
Conduit, pipe, utility, or ventilation shaft	300	(1%)	0	(0%)	0	(0%)	\$10	(0%)
Storage room, area, tank, or bin	250	(1%)	0	(0%)	0	(0%)	\$10	(1%)
Exterior roof surface	210	(1%)	0	(0%)	0	(0%)	\$10	(0%)
Storage of supplies or tools	210	(1%)	0	(1%)	10	(0%)	\$10	(1%)
Lobby or entrance way	210	(1%)	10	(2%)	10	(1%)	\$10	(1%)

**Table 6. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Area of Origin
2010-2014 Annual Averages (Continued)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Other known area of origin	1,520	(4%)	10	(2%)	40	(3%)	\$60	(4%)
Total	39,670	(100%)	420	(100%)	1,360	(100%)	\$1,370	(100%)

Note: Figures exclude confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. Fires, deaths and injuries are rounded to the nearest ten and direct property damage to the nearest ten million dollars. Figures reflect a proportional share of home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Figures reflect a proportional share of home fires with factor contributing to ignition coded as electrical failure or malfunction and area of origin shown as unknown or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 7. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Item First Ignited
2010-2014 Annual Averages**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical wire or cable insulation	12,460	(31%)	110	(27%)	360	(27%)	\$350	(25%)
Structural member or framing	6,200	(16%)	90	(20%)	150	(11%)	\$280	(20%)
Insulation within structural area	2,630	(7%)	0	(1%)	30	(2%)	\$60	(5%)
Interior wall covering, excluding drapes	2,310	(6%)	20	(6%)	70	(5%)	\$90	(7%)
Appliance housing or casing	2,090	(5%)	10	(2%)	70	(5%)	\$50	(4%)
Exterior wall covering or finish	1,930	(5%)	10	(3%)	40	(3%)	\$60	(4%)
Unclassified structural component or finish	1,550	(4%)	10	(3%)	50	(4%)	\$70	(5%)
Unclassified item first ignited	1,480	(4%)	0	(0%)	50	(4%)	\$40	(3%)
Interior ceiling cover or finish	1,000	(3%)	10	(3%)	20	(1%)	\$40	(3%)
Mattress or bedding	1,000	(3%)	10	(3%)	100	(7%)	\$40	(3%)
Floor covering, rug, carpet, or mat	790	(2%)	20	(6%)	60	(5%)	\$30	(2%)
Clothing	660	(2%)	0	(1%)	40	(3%)	\$20	(2%)
Unclassified furniture or utensils	630	(2%)	20	(5%)	40	(3%)	\$30	(2%)
Cabinetry	630	(2%)	10	(2%)	20	(2%)	\$30	(2%)
Upholstered furniture or vehicle seat	610	(2%)	40	(10%)	60	(4%)	\$30	(2%)
Multiple items first ignited	500	(1%)	20	(4%)	30	(2%)	\$40	(3%)
Unclassified soft goods or wearing apparel	370	(1%)	0	(1%)	20	(2%)	\$10	(1%)
Exterior roof covering or finish	240	(1%)	0	(0%)	0	(0%)	\$10	(1%)
Curtains, blinds, drapery, tapestry	220	(1%)	0	(0%)	20	(2%)	\$10	(1%)
Dust, fiber, lint, including sawdust or excelsior	200	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Other known item first ignited	2,160	(5%)	20	(4%)	110	(8%)	\$70	(5%)
Total	39,670	(100%)	420	(100%)	1,360	(100%)	\$1,370	(100%)

Note: Figures *exclude* confined fires. Fires, deaths and injuries are rounded to the nearest ten and direct property damage to the nearest ten million dollars. Figures reflect a proportional share of home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Figures reflect a proportional share of home fires with factor contributing to ignition coded as electrical failure or malfunction and item first ignited shown as unknown or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 8. Home Fires Involving Electrical Failure or Malfunction as a Factor Contributing to Ignition, by General Victim Location When Injured
2010-2014 Annual Averages**

General Location When Injured	Civilian Deaths		Civilian Injuries	
In area of origin	160	(38%)	730	(54%)
In building, but not in area of origin	260	(62%)	530	(39%)
Outside, not in area of origin	0	(0%)	100	(7%)
Totals	420	(100%)	1,360	(100%)

Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. Deaths and injuries are rounded to the nearest ten. Figures reflect a proportional share of home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Figures reflect a proportional share of home fires with factor contributing to ignition coded as electrical failure or malfunction and victim location at ignition unknown or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

Table 9. Home Fires Involving Electrical Failure or Malfunction as a Factor Contributing to Ignition, by Victim Activity When Injured 2010-2014 Annual Averages

Activity When Injured	Civilian Deaths		Civilian Injuries	
Sleeping	180	(42%)	170	(13%)
Escaping	170	(41%)	490	(36%)
Unable to act	30	(6%)	30	(2%)
Fire control	10	(3%)	350	(25%)
Rescue attempt	10	(3%)	100	(7%)
Irrational act	10	(2%)	10	(1%)
Returning to vicinity of fire before control	10	(2%)	120	(8%)
Unclassified activity	0	(0%)	90	(7%)
Total	420	(100%)	1,360	(100%)

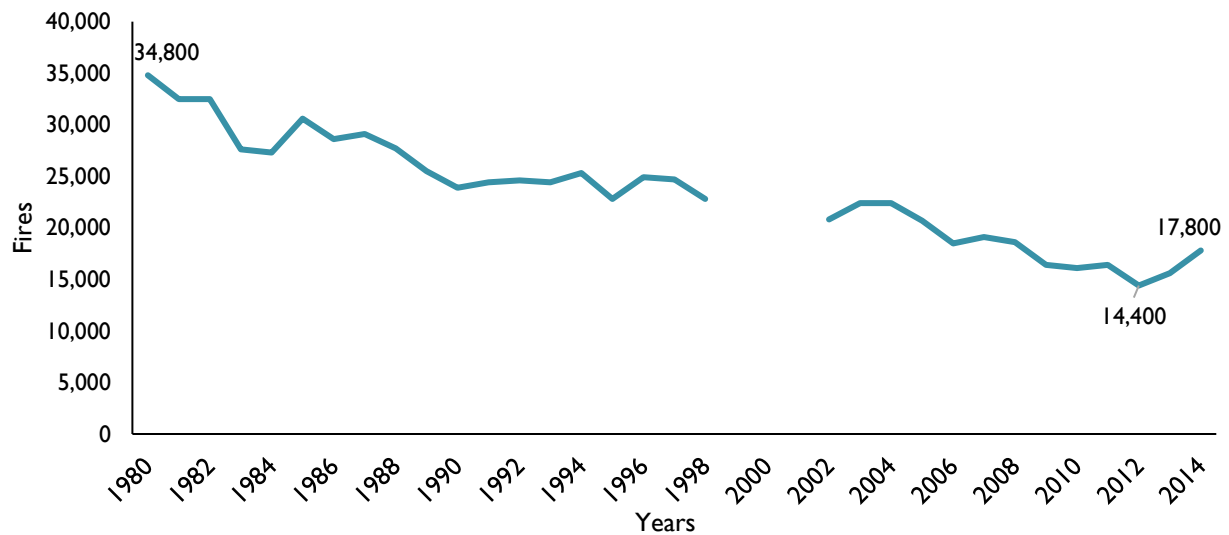
Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. Deaths and injuries are rounded to the nearest ten. Figures reflect a proportional share of home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Figures include a proportional share of home fires with factor contributing to ignition coded as electrical failure or malfunction and victim activity unknown or blank. Totals may not equal sums because of rounding error

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

Section 2. Non-Home Electrical Fires

From 2010 through 2014, an estimated 16,070 non-home electrical fires (structure fires that involved some type of electrical failure or malfunction as a factor contributing to ignition) were reported to U.S. fire departments each year. These fires resulted in an estimated annual average of 10 civilian deaths, 200 civilian injuries, and \$610 million in direct property damage. As shown in Figure 2.1 and Table 2.1, the number of non-home electrical fires has fallen considerably since 1980, though the downward trend was arrested for most of the 1990s, then again since 2009, although an estimated 14,400 non-home electrical fires in 2012 represented a historic low point. Note that confined fires are included in these data.

Figure 2.1. Annual Non-Home Structure Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition, 2010-2014



Note: Because of low participation in NFIRS Version 5.0 during 1999-2001, data from these years is not reported in these tables. See note for Table 2.1.

There is generally little specific information on the type of electrical failure or malfunction that was involved in non-home electrical fires. Over half (53%) of fires were reported as unclassified electrical failure or malfunction, with another 22% reported as unspecified short-circuit arc. Short-circuit arcs from defective or worn insulation accounted for 8% of fires and an arc or spark from operating equipment accounted for 7% of fires, as well as 13% of civilian injuries. Other types of failure or malfunction included arc from faulty contact or broken conductor (4% of fires), short circuit arc from mechanical damage (3%), water caused short-circuit arc (2%), and fluorescent light bulb (2%). Data are presented in Table 2.A.

Table 2.A. Non-Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition, 2010-2014 Annual Averages

Type of Electrical Failure or Malfunction	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	8,530	(53%)	10	(87%)	90	(42%)	\$364	(59%)
Unspecified short-circuit arc	3,530	(22%)	7	(22%)	60	(29%)	\$143	(23%)
Short circuit arc from defective or worn insulation	1,300	(8%)	1	(6%)	20	(8%)	\$36	(6%)
Arc or spark from operating equipment	1,160	(7%)	0	(0%)	30	(13%)	\$34	(5%)
Arc from faulty contact or broken conductor	610	(4%)	0	(0%)	10	(6%)	\$17	(3%)
Short circuit arc from mechanical damage	560	(3%)	0	(0%)	0	(2%)	\$18	(3%)
Water caused short-circuit arc	370	(2%)	0	(0%)	0	(2%)	\$7	(1%)
Fluorescent light bulb	330	(2%)	0	(0%)	0	(1%)	\$11	(2%)
Total fires	16,070	(100%)	12	(100%)	200	(100%)	\$614	(100%)
Total factors*	16,390	(102%)	12	(115%)	220	(102%)	\$630	(103%)

*Multiple entries are allowed, which can result in sums higher than total fires.

Note: Data in this table include non-confined and confined fires. Analyses were performed separately for non-confined and confined fires. Fires and injuries are rounded to the nearest ten, deaths to the nearest one, and direct property damage to the nearest million dollars. Figures reflect a proportional share of home fires with factor contributing to ignition reports as unknown, unreported, none, or blank, with allocations performed separately for non-confined and confined fires. Totals may not equal sums due to rounding.

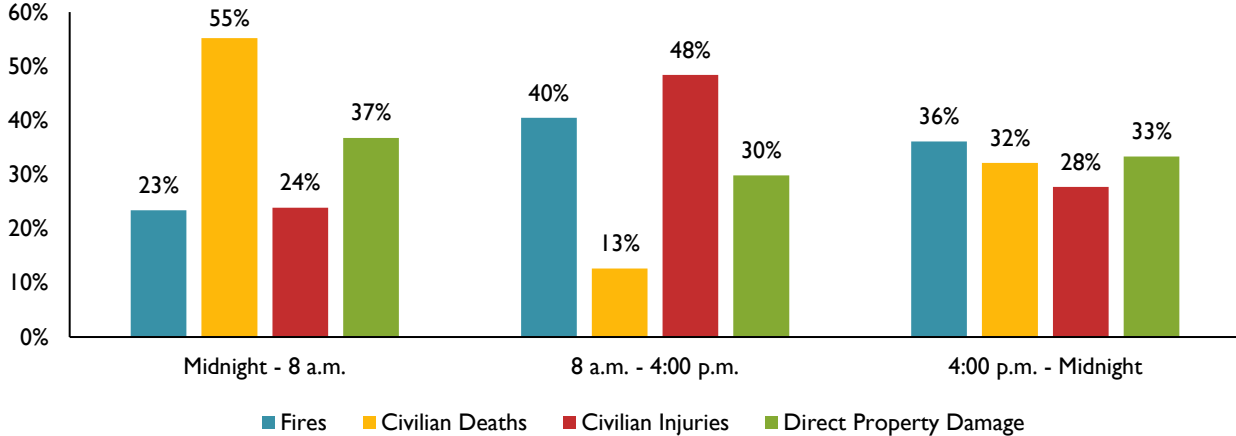
Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Timing of fires

The greatest number of non-home fires involving electrical failure or malfunction occurred in January, which accounted for 10% of fires. February, March, December and July each had 9% shares of fires. The fewest fires occurred in September (7% of annual total). See [Table 2.2](#). Electrical fires were distributed fairly evenly by day of week, with each day of the week except Sunday accounting for a 14% to 15% share of fires. See [Table 2.3](#).

[Figure 2.2](#) shows that the smallest share of non-home electrical fires by time of day occurred in the period from midnight to 8 a.m., with 23% of fires. However, these fires accounted for the highest share of civilian deaths (55%) and direct property damage. The hours from 8 a.m. to 4 p.m. accounted for the largest shares of fires (40%) and civilian injuries (48%), as well as smallest shares of civilian deaths (13%) and direct property damage (30%). The period from 4 p.m. to midnight accounted for 36% of fires, 32% of civilian deaths, 28% of civilian injuries, and 33% of direct property damage. Also see [Table 2.4](#).

Figure 2.2. Non-Home Fires Involving Electrical Failure or Malfunction, by Time of Day, 2010-2014 Annual Averages



Note: See Note on [Table 2.4](#).

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Equipment involved in fire ignition. Electrical distribution, lighting, and power transfer equipment accounted for the largest share of non-home fires involving electrical failure or malfunction, with 59% of the total in the 2010-2014 period, followed by heating, ventilation, and air conditioning equipment (16%), kitchen and cooking equipment (6%), shop tools and industrial equipment (4%), electronic and other electrical equipment (3%), and personal and household equipment (3%). Unclassified electrical wiring was the type of electrical distribution or lighting equipment most often involved in non-home electrical fires (17% of total), while fans (under the heating, ventilation, and air conditioning equipment category), accounted for 6% of fires. See [Table 2.5](#) for more information.

Area of origin. The area of fire origin in non-home fires involving electrical failure or malfunction was dispersed over a wide range of categories, with kitchen or cooking area having the largest share of fires (6% of total), followed by unclassified storage area (5%), wall assembly or concealed space (5%), and garage or vehicle storage area (5%). The full listing of areas of origin is available in [Table 2.6](#).

Item first ignited. The item first ignited in nearly two of every five non-home fires involving electrical failure or malfunction was electrical wire or cable insulation (38% of total), followed by structural member or framing (10%). Other leading items first ignited included interior wall covering, exterior wall covering or finish, insulation with a structural area, unclassified structural component or finish, and appliance housing or casing, each with 4% of the total. See [Table 2.7](#) for more information.

**Table 2.1 Non-Home Fires Involving Electrical Failure or Malfunction As Factor Contributing to Ignition, by Year
Structure Fires Reported to U.S. Fire Departments**

Year	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)		Direct Property Damage (in 2014 Dollars)	
1980	34,800		30		330		\$311		\$895	
1981	32,500		20		510		\$373		\$971	
1982	32,500		40		490		\$333		\$817	
1983	27,600		10		480		\$491		\$1,167	
1984	27,300		10		510		\$329		\$749	
1985	30,600		30		410		\$426		\$937	
1986	28,600		20		460		\$375		\$811	
1987	29,100		50		450		\$414		\$863	
1988	27,700		30		490		\$585		\$1,173	
1989	25,500		10		380		\$371		\$709	
1990	23,900		20		530		\$578		\$1,049	
1991	24,400		10		320		\$551		\$958	
1992	24,600		30		480		\$410		\$693	
1993	24,400		20		610		\$436		\$715	
1994	25,300		20		460		\$489		\$782	
1995	22,800		30		380		\$553		\$860	
1996	24,900		10		470		\$638		\$965	
1997	24,700		30		400		\$497		\$734	
1998	22,800		40		320		\$545		\$793	
1999	15,500	(14,400)	0	(0)	350	(350)	\$540	(\$531)	\$768	(\$755)
2000	18,300	(16,600)	10	(10)	240	(240)	\$737	(\$736)	\$1,015	(\$1,013)
2001	22,300	(20,100)	20	(20)	240	(240)	\$629	(\$628)	\$842	(\$841)
2002	20,800	(19,200)	30	(30)	270	(270)	\$757	(\$748)	\$997	(\$986)
2003	22,400	(20,200)	10	(10)	300	(300)	\$721	(\$719)	\$929	(\$927)
2004	22,400	(20,400)	20	(20)	220	(220)	\$704	(\$703)	\$884	(\$883)
2005	20,700	(18,800)	40	(40)	340	(330)	\$660	(\$659)	\$801	(\$800)
2006	18,500	(16,700)	20	(20)	260	(240)	\$601	(\$601)	\$706	(\$706)
2007	19,100	(16,800)	10	(10)	250	(250)	\$768	(\$767)	\$877	(\$876)
2008	18,600	(16,800)	20	(20)	240	(240)	\$993	(\$992)	\$1,094	(\$1,093)
2009	16,400	(15,000)	10	(10)	310	(310)	\$821	(\$820)	\$907	(\$905)
2010	16,100	(14,700)	0	(0)	250	(240)	\$619	(\$617)	\$673	(\$671)
2011	16,400	(14,900)	10	(10)	240	(240)	\$501	(\$501)	\$528	(\$528)
2012	14,400	(12,700)	10	(10)	200	(200)	\$579	(\$577)	\$598	(\$596)
2013	15,600	(14,200)	20	(20)	210	(190)	\$741	(\$740)	\$753	(\$752)
2014	17,800	(16,100)	10	(10)	160	(150)	\$654	(\$653)	\$654	(\$653)

**Table 2.1 Non-Home Fires Involving Electrical Failure or Malfunction As Factor Contributing to Ignition, by Year
Structure Fires Reported to U.S. Fire Departments**

Note: Figures in parentheses exclude confined fires, which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported to only federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of a small number of unusually serious fires. Fires are rounded to the nearest hundred, civilian deaths and injuries to the nearest ten, and direct property damage to the nearest million dollars. Figures for 1980-1998 are based on ignition factor 54-55 and reflect a proportional share of home fires with ignition factor unknown, unreported, none, or blank. Figures for 1999 and later years reflect a proportional share of non-home fires with factor contributing to ignition as unknown, unreported, none, or blank. Because of low participation in NFIRS Version 5.0 during 1999-2001, estimates for these years are highly uncertain and must be used with caution. Inflation adjustment to 2014 dollars is calculated using the Consumer Price Index.

Source: NFIRS (Version 5.0 after 1998) and NFPA Fire Experience Survey.

**Table 2.2. Non-Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition, by Month
2010-2014 Annual Averages**

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	1,470	(10%)	1	(8%)	20	(10%)	\$56	(9%)
February	1,310	(9%)	1	(4%)	20	(8%)	\$40	(7%)
March	1,270	(9%)	2	(14%)	20	(10%)	\$59	(10%)
April	1,150	(8%)	1	(5%)	20	(8%)	\$54	(9%)
May	1,160	(8%)	0	(0%)	20	(9%)	\$48	(8%)
June	1,200	(8%)	2	(13%)	10	(7%)	\$41	(7%)
July	1,240	(9%)	1	(8%)	20	(7%)	\$48	(8%)
August	1,160	(8%)	2	(15%)	10	(7%)	\$56	(9%)
September	1,020	(7%)	0	(0%)	20	(9%)	\$43	(7%)
October	1,100	(8%)	2	(17%)	10	(5%)	\$51	(8%)
November	1,180	(8%)	2	(16%)	20	(10%)	\$67	(11%)
December	1,270	(9%)	0	(0%)	20	(8%)	\$51	(8%)
Total	14,530	(100%)	12	(100%)	200	(100%)	\$613	(100%)

Note: Figures *exclude* confined fires. Fires and injuries are rounded to the nearest ten, deaths to the nearest one, and direct property damage to the nearest million dollars. Figures reflect a proportional share of non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 2.3. Non-Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Day of Week
2010-2014 Annual Averages**

Day of Week	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Sunday	1,890	(13%)	2	(14%)	30	(15%)	\$94	(15%)
Monday	2,160	(15%)	0	(0%)	30	(15%)	\$81	(13%)
Tuesday	2,120	(15%)	3	(25%)	30	(15%)	\$96	(16%)
Wednesday	2,130	(15%)	1	(6%)	30	(15%)	\$115	(18%)
Thursday	2,090	(14%)	1	(9%)	30	(15%)	\$75	(11%)
Friday	2,100	(14%)	1	(12%)	30	(15%)	\$80	(13%)
Saturday	2,040	(14%)	4	(35%)	30	(15%)	\$72	(11%)
Total	14,530	(100%)	12	(100%)	200	(100%)	\$613	(100%)

Note: Figures *exclude* confined fires. Fires and injuries are rounded to the nearest ten, deaths to the nearest one, and direct property damage to the nearest million dollars. Figures reflect a proportional share of non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 2.4. Non-Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Alarm Time
2010-2014 Annual Averages**

Alarm Time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Midnight-12:59 a.m.	450	(3%)	2	(16%)	0	(2%)	\$31	(5%)
1:00-1:59 a.m.	399	(3%)	0	(0%)	0	(2%)	\$30	(5%)
2:00-2:59 a.m.	371	(3%)	2	(18%)	10	(6%)	\$30	(5%)
3:00-3:59 a.m.	373	(3%)	1	(8%)	0	(1%)	\$39	(6%)
4:00-4:59 a.m.	374	(3%)	0	(0%)	0	(1%)	\$31	(5%)
5:00-5:59 a.m.	379	(3%)	1	(4%)	10	(5%)	\$21	(3%)
6:00-6:59 a.m.	483	(3%)	1	(4%)	0	(2%)	\$23	(4%)
7:00-7:59 a.m.	574	(4%)	1	(4%)	10	(5%)	\$21	(3%)
8:00-8:59 a.m.	645	(4%)	0	(0%)	20	(10%)	\$21	(3%)
9:00-9:59 a.m.	685	(5%)	0	(0%)	10	(5%)	\$21	(3%)
10:00-10:59 a.m.	710	(5%)	0	(0%)	10	(5%)	\$19	(3%)
11:00-11:59 a.m.	767	(5%)	0	(0%)	10	(6%)	\$30	(5%)
12:00-12:59 p.m.	741	(5%)	1	(5%)	10	(4%)	\$20	(3%)
1:00-1:59 p.m.	810	(6%)	0	(0%)	20	(10%)	\$19	(3%)
2:00-2:59 p.m.	762	(5%)	1	(8%)	10	(5%)	\$31	(5%)
3:00-3:59 p.m.	759	(5%)	0	(0%)	10	(5%)	\$21	(4%)
4:00-4:59 p.m.	763	(5%)	0	(0%)	10	(3%)	\$21	(3%)
5:00-5:59 p.m.	730	(5%)	0	(0%)	10	(4%)	\$20	(3%)
6:00-6:59 p.m.	692	(5%)	0	(0%)	10	(3%)	\$40	(7%)
7:00-7:59 p.m.	721	(5%)	0	(0%)	10	(5%)	\$20	(3%)
8:00-8:59 p.m.	679	(5%)	0	(0%)	0	(2%)	\$29	(5%)
9:00-9:59 p.m.	621	(4%)	1	(6%)	10	(5%)	\$22	(4%)
10:00-10:59 p.m.	562	(4%)	2	(13%)	10	(4%)	\$24	(4%)
11:00-11:59 p.m.	481	(3%)	2	(13%)	0	(1%)	\$28	(5%)
Total	14,530	(100%)	12	(100%)	200	(100%)	\$613	(100%)

Note: Figures *exclude* confined fires. Fires and injuries are rounded to the nearest ten, deaths to the nearest one, and direct property damage to the nearest million dollars. Figures reflect a proportional share of non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 2.5. Non-Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Equipment Involved in Ignition
2010-2014 Annual Averages**

Equipment Involved	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical distribution and lighting equipment	8,600	(59%)	9	(75%)	100	(47%)	\$388	(63%)
Unclassified electrical wiring	2,470	(17%)	5	(41%)	20	(11%)	\$85	(14%)
Outlet or receptacle	710	(5%)	0	(0%)	10	(5%)	\$33	(5%)
Electrical power (utility) line	620	(4%)	0	(0%)	0	(0%)	\$11	(2%)
Fluorescent lighting fixture, ballast	580	(4%)	3	(24%)	10	(3%)	\$13	(2%)
Panelboard, switchboard, circuit breaker board	500	(3%)	0	(0%)	20	(8%)	\$25	(4%)
Electrical branch circuit	460	(3%)	0	(0%)	0	(2%)	\$29	(5%)
Electrical service supply wires from utility	430	(3%)	0	(0%)	0	(0%)	\$10	(2%)
Extension cord	350	(2%)	1	(11%)	0	(1%)	\$12	(2%)
Transformer, distribution type	300	(2%)	0	(0%)	0	(1%)	\$8	(1%)
Unclassified lamp or lighting	290	(2%)	0	(0%)	0	(0%)	\$18	(3%)
Sign	220	(2%)	0	(0%)	0	(1%)	\$4	(1%)
Electric meter or meter box	220	(2%)	0	(0%)	0	(2%)	\$5	(1%)
Battery charger or rectifier	150	(1%)	0	(0%)	0	(0%)	\$11	(2%)
Wiring from meter box to circuit breaker	150	(1%)	0	(0%)	10	(3%)	\$4	(1%)
Incandescent lighting fixture	120	(1%)	0	(0%)	0	(0%)	\$5	(1%)
Decorative lights or line voltage	120	(1%)	0	(0%)	0	(0%)	\$6	(1%)
Unclassified cord or plug	100	(1%)	0	(0%)	0	(1%)	\$4	(1%)
Surge protector	90	(1%)	0	(0%)	0	(1%)	\$15	(3%)
Wall switch	80	(1%)	0	(0%)	0	(0%)	\$5	(1%)
Detachable power cord or plug	80	(1%)	0	(0%)	0	(1%)	\$2	(0%)
Other known electrical distribution or lighting equipment	570	(4%)	0	(0%)	10	(7%)	\$83	(14%)
Heating, ventilation, and air conditioning equipment	2,360	(16%)	0	(0%)	40	(18%)	\$67	(11%)
Fan	880	(6%)	0	(0%)	10	(7%)	\$12	(2%)
Air conditioner	510	(3%)	0	(0%)	10	(4%)	\$8	(1%)
Fixed or portable space heater	380	(3%)	0	(0%)	10	(5%)	\$38	(6%)
Water heater	180	(1%)	0	(0%)	0	(0%)	\$3	(0%)

**Table 2.5. Non-Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition, by Equipment Involved in Ignition
2010-2014 Annual Averages (Continued)**

Equipment Involved	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat lamp	140	(1%)	0	(0%)	0	(0%)	\$2	(0%)
Other known heating, ventilation, and air conditioning equipment	280	(2%)	0	(0%)	0	(2%)	\$4	(1%)
Kitchen and cooking equipment	930	(6%)	3	(25%)	10	(6%)	\$34	(6%)
Refrigerator or refrigerator freezer	400	(3%)	3	(25%)	0	(0%)	\$16	(3%)
Freezer when separate from refrigerator	110	(1%)	0	(0%)	0	(1%)	\$6	(1%)
Other known kitchen and cooking equipment	420	(3%)	0	(0%)	10	(5%)	\$12	(2%)
Shop tools and industrial equipment	650	(4%)	0	(0%)	20	(8%)	\$61	(10%)
Torch, burner, soldering iron	100	(1%)	0	(0%)	0	(1%)	\$5	(1%)
Air compressor	100	(1%)	0	(0%)	0	(0%)	\$6	(1%)
Other known	460	(3%)	0	(0%)	20	(7%)	\$50	(8%)
Electronic and other electrical equipment	480	(3%)	0	(0%)	0	(2%)	\$15	(2%)
Computer	110	(1%)	0	(0%)	0	(0%)	\$3	(0%)
Other electronic and other electrical equipment	370	(3%)	0	(0%)	0	(2%)	\$12	(2%)
Personal and household equipment	420	(3%)	0	(0%)	10	(4%)	\$9	(1%)
Clothes dryer	200	(1%)	0	(0%)	0	(2%)	\$2	(0%)
Other known personal and household equipment	220	(2%)	0	(0%)	10	(2%)	\$6	(1%)
Commercial and medical equipment	160	(1%)	0	(0%)	10	(5%)	\$3	(1%)
Garden tools and agricultural equipment	120	(1%)	0	(0%)	0	(1%)	\$10	(2%)
Unclassified equipment involved in ignition	480	(3%)	0	(0%)	10	(7%)	\$18	(3%)
None	310	(2%)	0	(0%)	0	(2%)	\$9	(1%)
Total	14,530	(100%)	12	(100%)	200	(100%)	\$613	(100%)

Note: Figures *exclude* confined fires. Fires and injuries are rounded to the nearest ten, deaths to the nearest one, and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Figures reflect a proportional share of non-home fires with factor contributing to ignition coded as electrical failure or malfunction and equipment involved in ignition as unknown or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 2.6. Non-Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Area of Origin
2010-2014 Annual Averages**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Kitchen or cooking area	810	(6%)	3	(26%)	10	(5%)	\$29	(5%)
Unclassified storage area	750	(5%)	0	(0%)	0	(2%)	\$34	(6%)
Wall assembly or concealed space	730	(5%)	1	(4%)	10	(3%)	\$23	(4%)
Garage or vehicle storage area*	730	(5%)	0	(0%)	10	(7%)	\$32	(5%)
Attic or ceiling/roof assembly or concealed space	640	(4%)	0	(0%)	0	(2%)	\$37	(6%)
Unclassified equipment or service area	590	(4%)	0	(0%)	0	(2%)	\$42	(7%)
Exterior wall surface	580	(4%)	0	(0%)	10	(3%)	\$15	(2%)
Bathroom or lavatory	560	(4%)	1	(7%)	0	(1%)	\$7	(1%)
Bedroom	520	(4%)	1	(9%)	40	(18%)	\$14	(2%)
Switchgear area or transformer vault	470	(3%)	0	(0%)	10	(5%)	\$43	(7%)
Office	460	(3%)	0	(0%)	10	(6%)	\$30	(5%)
Unclassified outside area	440	(3%)	1	(9%)	0	(1%)	\$6	(1%)
Unclassified structural area	440	(3%)	1	(11%)	0	(1%)	\$15	(2%)
Storage of supplies or tools or dead storage	410	(3%)	0	(0%)	10	(3%)	\$12	(2%)
Ceiling/floor assembly or concealed space	380	(3%)	0	(0%)	0	(1%)	\$24	(4%)
Exterior roof surface	380	(3%)	0	(0%)	0	(1%)	\$16	(3%)
Unclassified function area	330	(2%)	0	(0%)	0	(2%)	\$10	(2%)
Conduit, pipe, utility, or ventilation shaft	320	(2%)	0	(0%)	0	(1%)	\$6	(1%)
Storage room, area, tank, or bin	310	(2%)	0	(0%)	10	(3%)	\$19	(3%)
Sales or showroom area	260	(2%)	0	(0%)	0	(2%)	\$18	(3%)
Duct for HVAC, cable, exhaust, heating, or air conditioning	240	(2%)	0	(0%)	0	(1%)	\$2	(0%)
Laundry room or area	230	(2%)	0	(0%)	0	(2%)	\$4	(1%)
Machinery room or area or elevator machinery room	220	(2%)	0	(0%)	0	(2%)	\$9	(1%)
Crawl space or substructure space	210	(1%)	0	(0%)	0	(2%)	\$6	(1%)
Processing or manufacturing area, or workroom	210	(1%)	0	(0%)	10	(6%)	\$16	(3%)
Maintenance or paint shop or area	200	(1%)	0	(0%)	10	(4%)	\$16	(3%)
Common room, living room, family room, lounge or den	200	(1%)	1	(9%)	10	(4%)	\$7	(1%)

*Fires in which the property use was coded as a garage with a different area of origin are not captured here.

**Table 2.6. Non-Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Area of Origin
2010-2014 Annual Averages (Continued)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heating equipment room	190	(1%)	0	(0%)	0	(0%)	\$5	(1%)
Small assembly area	130	(1%)	0	(0%)	0	(0%)	\$3	(1%)
Unclassified service facility	130	(1%)	0	(0%)	0	(2%)	\$4	(1%)
Engine area, running gear or wheel area vehicle	130	(1%)	0	(0%)	0	(0%)	\$6	(1%)
Lobby or entrance way	120	(1%)	0	(0%)	0	(0%)	\$7	(1%)
Unclassified assembly or sales area	120	(1%)	0	(0%)	0	(0%)	\$3	(1%)
Closet	110	(1%)	0	(0%)	0	(0%)	\$2	(0%)
Dining room, bar or beverage area, cafeteria	100	(1%)	0	(0%)	0	(1%)	\$3	(1%)
Hallway, corridor, mall	100	(1%)	1	(10%)	0	(1%)	\$2	(0%)
Awning	100	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Unclassified vehicle area	90	(1%)	0	(0%)	0	(0%)	\$6	(1%)
On or near highway, public way or street	90	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Operating room	10	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Computer room, control room or center	80	(1%)	0	(0%)	0	(1%)	\$8	(1%)
Shipping, receiving or loading area	70	(0%)	0	(0%)	0	(1%)	\$18	(3%)
Unclassified area of origin	440	(3%)	1	(9%)	0	(0%)	\$9	(1%)
Other known area of origin	1,240	(9%)	1	(5%)	10	(7%)	\$54	(9%)
Total	14,530	(100%)	12	(100%)	200	(100%)	\$613	(100%)

Note: Figures *exclude* confined fires. Fires and injuries are rounded to the nearest ten, deaths to the nearest one, and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Figures reflect a proportional share of non-home fires with factor contributing to ignition coded as electrical failure or malfunction and area of origin as unknown or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 2.7. Non-Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition,
by Item First Ignited
2010-2014 Annual Averages**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Electrical wire or cable insulation	5,500	(38%)	1	(6%)	60	(31%)	\$176	(29%)
Structural member or framing	1,480	(10%)	0	(0%)	10	(4%)	\$72	(12%)
Interior wall covering, excluding drapes	610	(4%)	1	(8%)	10	(4%)	\$36	(6%)
Exterior wall covering or finish	610	(4%)	0	(0%)	0	(2%)	\$22	(4%)
Insulation within structural area	540	(4%)	1	(12%)	0	(2%)	\$15	(2%)
Unclassified structural component or finish	530	(4%)	3	(30%)	10	(3%)	\$23	(4%)
Appliance housing or casing	520	(4%)	0	(0%)	10	(3%)	\$10	(2%)
Flammable or combustible liquid or gas, piping or filter	430	(3%)	0	(0%)	30	(15%)	\$40	(6%)
Interior ceiling cover or finish	370	(3%)	0	(0%)	0	(1%)	\$25	(4%)
Exterior roof covering or finish	270	(2%)	0	(0%)	0	(1%)	\$17	(3%)
Transformer or transformer fluids	250	(2%)	0	(0%)	0	(1%)	\$7	(1%)
Multiple items first ignited	230	(2%)	0	(0%)	10	(3%)	\$19	(3%)
Floor covering, rug, carpet, or mat	140	(1%)	0	(0%)	0	(1%)	\$5	(1%)
Box, carton, bag, basket, barrel	140	(1%)	0	(0%)	0	(1%)	\$18	(3%)
Dust, fiber, lint, including sawdust or excelsior	130	(1%)	0	(0%)	0	(2%)	\$11	(2%)
Sign, including outdoor signs such as billboards	120	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Light vegetation including grass	120	(1%)	0	(0%)	0	(0%)	\$3	(0%)
Cabinetry	120	(1%)	0	(0%)	0	(1%)	\$5	(1%)
Unclassified furniture or utensils	120	(1%)	0	(0%)	0	(2%)	\$6	(1%)
Unclassified storage supplies	110	(1%)	0	(0%)	0	(1%)	\$5	(1%)
Mattress or bedding	100	(1%)	1	(11%)	10	(4%)	\$3	(0%)
Unclassified organic materials	100	(1%)	0	(0%)	0	(0%)	\$5	(1%)
Upholstered furniture or vehicle seat	90	(1%)	1	(11%)	10	(4%)	\$5	(1%)
Fence or pole	90	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Unclassified item first ignited	910	(6%)	1	(11%)	10	(4%)	\$36	(6%)
Other known item first ignited	880	(6%)	1	(12%)	30	(13%)	48	(8%)
Total	14,530	(100%)	12	(100%)	200	(100%)	\$610	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Figures reflect a proportional share of non-home fires with factor contributing to ignition coded as electrical failure or malfunction and item first ignited as unknown or blank. Totals may not equal sums because of rounding error.

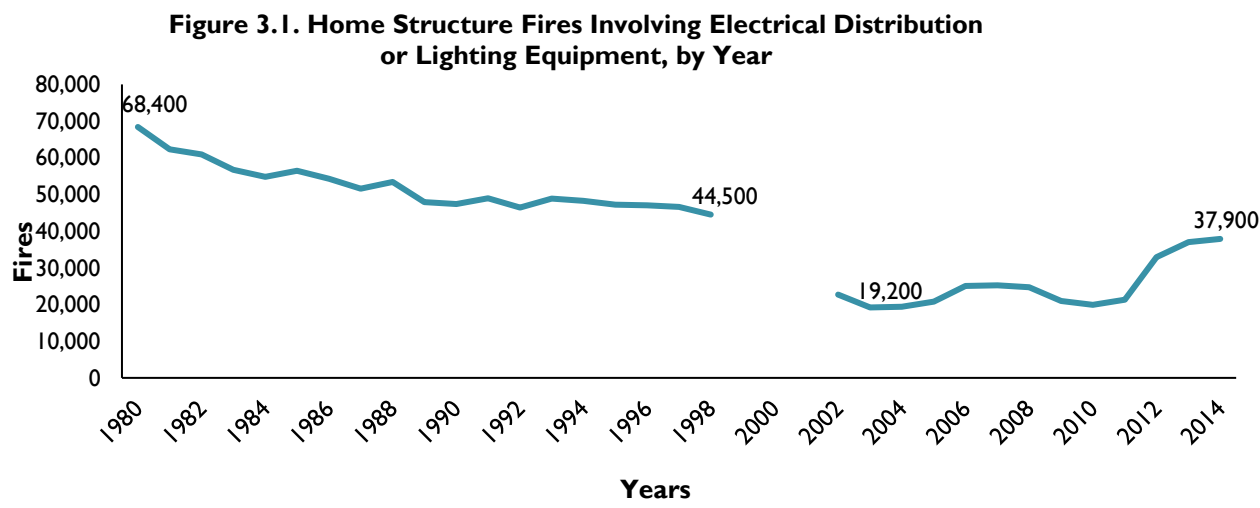
Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

Section 3: Home Fires Involving Electrical Distribution or Lighting Equipment

In the five-year period from 2010 to 2014, there were an estimated average of 31,960 non-confined home structure fires involving electrical distribution or lighting equipment in the U.S. each year. These fires resulted in an estimated 400 civilian deaths, 1,180 civilian injuries, and \$1.2 billion in direct property damage each year. Note that these are fires in which electrical distribution or lighting equipment was involved in ignition and this involvement does not necessarily indicate electrical failure or malfunction.

Electrical distribution or lighting equipment was involved in 9% of home structure fires in 2010-2014, according to the 2016 NFPA report, *Home Structure Fires*, by Marty Ahrens. These fires accounted for 16% of associated civilian deaths, 9% of civilian injuries, and 18% of direct property damage.

As shown in Figure 3.1 (and Table 3.1), home fires involving electrical distribution or lighting equipment showed a steady downward trend between 1980 and 1998, declining by about one-third during this period. Following the introduction of a new version of NFIRS (NFIRS 5.0) and a transition period of 1999-2001, the downward trend was arrested and has even reversed since 2011, although fires are still well below those reported prior to 1999. Note that changes in the National Fire Incident Reporting System (NFIRS), the source of detailed information about fires, may have played a role. See note on page 2.



Note: Because of low participation in NFIRS Version 5.0 during 1999-2001, data from these years is not reported in these tables. See Note on Table 3.1.

NFIRS designates several major sub-groups of electrical distribution or lighting equipment: wiring and related equipment; lamps, light fixtures, light bulbs, and signs; cords and plugs; transformers and power supplies (including surge protectors); electric fences; and, lightning rods and lightning arresters. Electric fences and lightning rods and lightning arresters account for too few fires to support detailed analysis and are not included in the discussion. In addition, because confined fires in 2010-2014 were not a major part of fires involving electrical distribution and lighting equipment – 500 confined fires resulted in just \$0.1 million in direct property damage and no civilian deaths or injuries -- the analysis in this section is restricted to non-confined fires.

Table 3.A shows that wiring and related equipment accounted for an estimated 22,190 home structure fires (69%) involving electrical distribution or lighting equipment in 2010-2014. These fires were associated with 56% of civilian deaths, 53% of civilian injuries; and 66% of direct property damage. Lamps, light fixtures, and light bulbs accounted for 15% of fires, with another 10% of fires involving cords and plugs and 5% involving transformers and power supplies. The 10% of fires involving cords and plugs accounted for 28% of civilian deaths and 20% of civilian injuries.

**Table 3.A. Home Fires Involving Electrical Distribution or Lighting Equipment, Major Equipment Group
2010-2014 Annual Averages**

Major Equipment Group	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wiring and related equipment	22,190	(69%)	230	(56%)	630	(53%)	\$804	(66%)
Lamps, light fixtures, and light bulbs	4,920	(15%)	50	(13%)	220	(19%)	\$166	(14%)
Cords and plugs	3,070	(10%)	110	(28%)	230	(20%)	\$141	(12%)
Transformers and power supplies	1,760	(5%)	10	(3%)	100	(9%)	\$99	(8%)
Other known electrical distribution or lighting equipment	20	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Total	31,960	(100%)	400	(100%)	1,180	(100%)	\$1,210	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

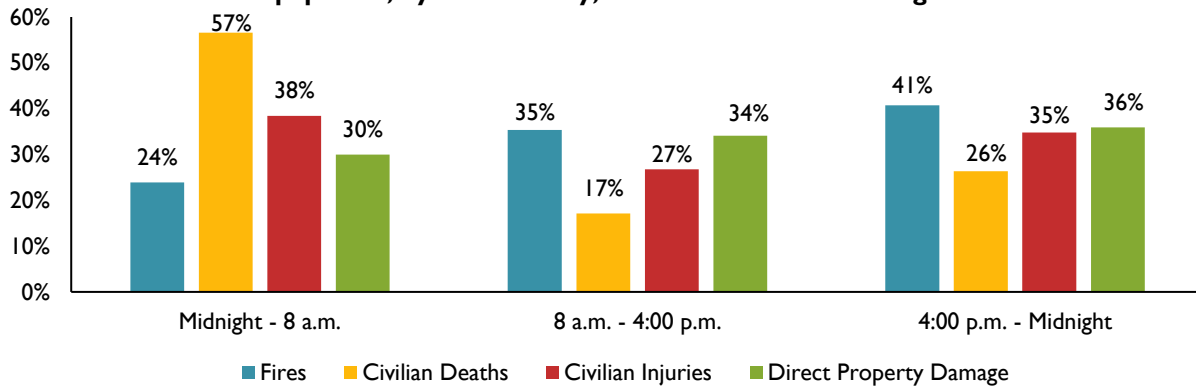
Timing of fires

The cold weather months of January (11% of total) and December (10%) had the largest shares of home fires involving electrical distribution and lighting equipment in 2010-2014, followed by November (9%) and July (9%). The remaining months each had either a 7% or 8% share of the total. See [Table 3.2](#).

There was a fairly even distribution of fires by day of week, as shown in [Table 3.3](#), with each day of the week accounting for a 14% share of the total.

By time of day, the low period for home fires involving electrical distribution was between midnight and 8 a.m., when 24% of fires occurred during 2010-2014. See [Figure 3.2](#) (and [Table 3.4](#)). However, these fires accounted for 57% of civilian deaths and 38% of civilian injuries, as well as 30% of direct property damage. The greatest share of fires came between 4 p.m. and midnight (41% of total). These fires accounted for 26% of civilian deaths, 35% of civilian injuries, and 36% of direct property damage. The period from 8 a.m. to 4 p.m. accounted for 35% of fires, 17% of civilian deaths, 27% of civilian injuries, and 34% of direct property damage.

Figure 3.2. Home Fires Involving Electrical Distribution or Lighting Equipment, by Time of Day, 2010-2014 Annual Averages



Note: See Note for Table 3.4.

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Area of Origin. The bedroom was the leading area of origin for home fires involving electrical distribution and lighting equipment, with 17% of total. These fires accounted for approximately one-third (33%) of civilian injuries, as well as 18% of civilian deaths and 16% of direct property damage. An attic or ceiling/roof assembly or concealed space was the area of origin in 13% of fires, accounting for 5% of civilian deaths, 4% of civilian injuries, and 13% of direct property damage. Another 8% of fires originated in a wall assembly or concealed space (3% of civilian deaths, 4% of civilian injuries, and 7% of direct property damage). Fires originating in the living room, family room, or den accounted for 7% of fires, but these fires were responsible for 23% of civilian deaths and 15% of civilian injuries, as well as 9% of direct property damage. See Table 3.5 for details.

Factor Contributing to Ignition. Approximately one-third (34%) of home fires involving electrical distribution and lighting equipment resulted from an unclassified electrical failure or malfunction. Unspecified short circuit arcing was a factor in 24% of fires, while short circuit arcing from defective or worn insulation was a factor in another 11% of fires. A heat source too close to combustible materials was a factor in 6% of fires and arcing from a faulty contact or broken conductor was a factor in 5% of fires. See Table 3.6 for details.

Item First Ignited. Electrical wire or cable insulation was the item first ignited in 31% of home fires involving electrical distribution and lighting equipment, followed by structural member or framing (17%). Other leading items first ignited included insulation within structural area (7%), exterior wall covering or finish (6%), interior wall covering, excluding drapes (5%), and unclassified structural component or finish (4%). A mattress or bedding was the item first ignited in just 3% of fires, but these were associated with 7% of civilian deaths and 9% of civilian injuries, as well as 4% of direct property damage. Details are available in Table 3.7.

Nearly two-thirds (65%) of fatally injured victims in home structure fires involving electrical distribution or lighting equipment were in the home but outside the area of origin when injured. This is a higher share than is the case in all home structure fires, where 47% of fatally injured victims were in the home and outside the area of origin at time of injury. See [Table 3.8](#).

For non-fatal injury victims, 40% of those injured in home fires involving electrical distribution or lighting equipment were in the home but outside the area of origin at the time of injury and 53% were in the area of origin, with 7% outside the home. In comparison, 64% of all home structure fire injury victims were in the area of origin at time of injury, and 30% in the home but outside the area of origin. While the disparity in victim location between home fires involving electrical distribution and lighting equipment and all home structure fires can likely be attributed to the influence of fires caused by cooking and, smoking materials in all home structure fires, it nevertheless underscores the critical need for homes to be protected by fire detection equipment.

Over two in five (44%) of fatally injured victims in home structure fires involving electrical distribution and lighting equipment were neither in the area of origin nor involved at the time of ignition, compared to 26% in all home fires. Approximately one-quarter (26%) of those who were fatally injured were outside the area of origin but involved, similar to all home fires, where the share was 24%. Twenty percent of fatally injured victims in home fires involving electrical distribution and lighting equipment were in the area of origin and not involved at the time of ignition (14% in all home fires), while 10% were in the area of origin and involved (36% in all home fires). See [Table 3.9](#) for full results.

Almost half (48%) of those who were fatally injured in home fires involving electrical distribution and lighting equipment were attempting to escape at the time of injury. Another 29% were sleeping, with 10% unable to act and 6% engaged in a rescue attempt. By comparison, 37% of fatal injury victims in all home fires were attempting to escape at the time of injury and 32% were sleeping, with 11% unable to act and 3% were engaged in a rescue attempt. A sizeable share of those who experienced non-fatal injuries were engaged in fire control – 25% of victims in home electrical distribution and lighting equipment fires and 32% in all home structure fires. See [Table 3.10](#) for details.

**Table 3.1 Home Fires Involving Electrical Distribution or Lighting Equipment, by Year
Structure Fires Reported to U.S. Fire Departments**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	
				As Reported	In 2014 Dollars
1980	68,400	523	1,650	\$493	\$1,419
1981	62,300	553	1,500	\$459	\$1,194
1982	60,900	408	1,820	\$519	\$1,273
1983	56,700	500	1,570	\$548	\$1,302
1984	54,800	445	1,520	\$549	\$1,250
1985	56,500	470	1,400	\$720	\$1,583
1986	54,300	717	1,420	\$597	\$1,292
1987	51,600	522	1,580	\$512	\$1,068
1988	53,400	439	1,720	\$715	\$1,433
1989	47,900	610	1,500	\$642	\$1,228
1990	47,400	438	1,540	\$683	\$1,240
1991	49,000	354	1,890	\$958	\$1,666
1992	46,400	403	1,770	\$617	\$1,042
1993	48,900	418	1,900	\$818	\$1,341
1994	48,300	464	1,640	\$714	\$1,142
1995	47,200	489	1,650	\$775	\$1,205
1996	47,000	470	1,560	\$839	\$1,268
1997	46,600	352	1,580	\$865	\$1,277
1998	44,500	363	1,370	\$843	\$1,227
1999	34,800	183	530	\$806	\$1,146
2000	26,600	122	1,130	\$631	\$869
2001	26,200	436	1,030	\$717	\$960
2002	22,700	166	700	\$593	\$781
2003	19,200	320	600	\$698	\$900
2004	19,400	292	840	\$623	\$782
2005	20,800	498	1,060	\$858	\$1,041
2006	25,100	366	840	\$776	\$912
2007	25,200	274	1,050	\$663	\$757
2008	24,700	515	880	\$964	\$1,062
2009	21,000	318	1,000	\$935	\$1,032
2010	19,900	242	980	\$774	\$842
2011	21,300	295	840	\$822	\$867
2012	32,900	292	1,250	\$1,326	\$1,370
2013	37,000	601	1290	\$1,418	\$1,441
2014	37,900	535	1290	\$1,433	\$1,433

**Table 3.1 Home Fires Involving Electrical Distribution or Lighting Equipment, by Year
Structure Fires Reported to U.S. Fire Departments (Continued)**

* All 1991 home fire property damage figures are inflated by estimation problems related to the handling of the Oakland fire storm.

Note: Figures *exclude* confined fires. Fires are rounded to the nearest hundred, deaths to the nearest one, injuries to the nearest ten, and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Because of low participation in NFIRS Version 5.0 during 1999-2001, estimates for those years are highly uncertain and must be used with caution. Inflation adjustment to 2014 dollars is calculated using the Consumer Price Index.

Source: Data from NFIRS and NFPA Survey.

**Table 3.2 Home Fires Involving Electrical Distribution or Lighting Equipment, by Month
2010-2014 Annual Averages**

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	3,520	(11%)	50	(13%)	130	(11%)	\$135	(11%)
February	2,710	(8%)	40	(9%)	100	(8%)	\$104	(9%)
March	2,620	(8%)	50	(14%)	130	(11%)	\$108	(9%)
April	2,460	(8%)	30	(9%)	80	(6%)	\$100	(8%)
May	2,430	(8%)	10	(3%)	90	(8%)	\$91	(8%)
June	2,540	(8%)	20	(5%)	80	(7%)	\$97	(8%)
July	2,830	(9%)	40	(9%)	100	(8%)	\$103	(9%)
August	2,360	(7%)	40	(10%)	100	(8%)	\$81	(7%)
September	2,110	(7%)	20	(5%)	70	(6%)	\$84	(7%)
October	2,230	(7%)	40	(10%)	80	(7%)	\$78	(6%)
November	2,840	(9%)	20	(6%)	110	(9%)	\$100	(8%)
December	3,310	(10%)	30	(8%)	120	(10%)	\$127	(11%)
Total	31,960	(100%)	400	(100%)	1,180	(100%)	\$1,210	(100%)

Note: Figures *exclude* confined fires. Fires, deaths and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 3.3. Home Fires Involving Electrical Distribution or Lighting Equipment, by Day of Week
2010-2014 Annual Averages**

Day of Week	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Sunday	4,530	(14%)	40	(10%)	210	(17%)	\$173	(14%)
Monday	4,620	(14%)	40	(10%)	130	(11%)	\$168	(14%)
Tuesday	4,610	(14%)	60	(15%)	200	(17%)	\$172	(14%)
Wednesday	4,600	(14%)	70	(17%)	150	(13%)	\$164	(14%)
Thursday	4,500	(14%)	80	(19%)	170	(15%)	\$186	(15%)
Friday	4,520	(14%)	40	(10%)	170	(15%)	\$178	(15%)
Saturday	4,570	(14%)	70	(18%)	150	(13%)	\$169	(14%)
Total	31,960	(100%)	400	(100%)	1,180	(100%)	\$1,210	(100%)

Note: Figures *exclude* confined fires. Fires, deaths and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 3.4. Home Fires Involving Electrical Distribution or Lighting Equipment, by Alarm Time
2010-2014 Annual Averages**

Alarm Time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Midnight-12:59 a.m.	1,190	(4%)	20	(6%)	60	(5%)	\$54	(4%)
1:00-1:59 a.m.	940	(3%)	50	(11%)	80	(7%)	\$47	(4%)
2:00-2:59 a.m.	960	(3%)	40	(9%)	50	(5%)	\$55	(5%)
3:00-3:59 a.m.	890	(3%)	30	(8%)	50	(4%)	\$42	(3%)
4:00-4:59 a.m.	860	(3%)	40	(10%)	70	(6%)	\$45	(4%)
5:00-5:59 a.m.	810	(3%)	10	(3%)	40	(3%)	\$41	(3%)
6:00-6:59 a.m.	940	(3%)	10	(3%)	60	(5%)	\$34	(3%)
7:00-7:59 a.m.	1,040	(3%)	30	(7%)	40	(3%)	\$46	(4%)
8:00-8:59 a.m.	1,130	(4%)	0	(1%)	40	(4%)	\$40	(3%)
9:00-9:59 a.m.	1,210	(4%)	10	(4%)	50	(4%)	\$45	(4%)
10:00-10:59 a.m.	1,320	(4%)	20	(5%)	30	(3%)	\$43	(4%)
11:00-11:59 a.m.	1,390	(4%)	10	(3%)	40	(3%)	\$53	(4%)
12:00-12:59 p.m.	1,440	(4%)	10	(2%)	40	(3%)	\$59	(5%)
1:00-1:59 p.m.	1,560	(5%)	0	(0%)	50	(4%)	\$56	(5%)
2:00-2:59 p.m.	1,600	(5%)	10	(1%)	30	(3%)	\$57	(5%)
3:00-3:59 p.m.	1,660	(5%)	10	(1%)	40	(3%)	\$59	(5%)
4:00-4:59 p.m.	1,640	(5%)	10	(2%)	50	(4%)	\$61	(5%)
5:00-5:59 p.m.	1,720	(5%)	10	(2%)	50	(4%)	\$56	(5%)
6:00-6:59 p.m.	1,700	(5%)	20	(4%)	60	(5%)	\$58	(5%)
7:00-7:59 p.m.	1,800	(6%)	10	(3%)	50	(4%)	\$59	(5%)
8:00-8:59 p.m.	1,730	(5%)	20	(4%)	50	(4%)	\$57	(5%)
9:00-9:59 p.m.	1,690	(5%)	10	(3%)	50	(4%)	\$46	(4%)
10:00-10:59 p.m.	1,500	(5%)	10	(3%)	40	(4%)	\$44	(4%)
11:00-11:59 p.m.	1,230	(4%)	20	(5%)	70	(6%)	\$52	(4%)
Total	31,960	(100%)	400	(100%)	1,180	(100%)	\$1,210	(100%)

Note: Figures *exclude* confined fires. Fires, deaths and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 3.5. Home Fires Involving Electrical Distribution or Lighting Equipment, by Area of Origin
2010-2014 Annual Averages**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	5,360	(17%)	70	(18%)	380	(33%)	\$196	(16%)
Attic or ceiling/roof assembly or concealed space	4,060	(13%)	20	(5%)	50	(4%)	\$154	(13%)
Wall assembly or concealed space	2,680	(8%)	10	(3%)	50	(4%)	\$83	(7%)
Living room, family room, or den	2,280	(7%)	90	(23%)	180	(15%)	\$114	(9%)
Exterior wall surface	2,000	(6%)	10	(1%)	20	(2%)	\$50	(4%)
Kitchen or cooking area	1,980	(6%)	40	(10%)	80	(7%)	\$69	(6%)
Garage or vehicle storage area	1,320	(4%)	10	(1%)	50	(4%)	\$94	(8%)
Crawl space or substructure space	1,200	(4%)	20	(4%)	30	(2%)	\$44	(4%)
Ceiling/floor assembly or concealed space	1,140	(4%)	30	(7%)	20	(2%)	\$53	(4%)
Unclassified function area	1,120	(4%)	30	(8%)	60	(5%)	\$43	(4%)
Bathroom or lavatory	1,030	(3%)	0	(0%)	20	(2%)	\$25	(2%)
Laundry room or area	1,020	(3%)	0	(1%)	50	(4%)	\$28	(2%)
Closet	660	(2%)	10	(3%)	30	(2%)	\$29	(2%)
Unclassified structural area	530	(2%)	10	(2%)	10	(1%)	\$28	(2%)
Exterior balcony or unenclosed porch	480	(2%)	20	(5%)	10	(1%)	\$23	(2%)
Unclassified storage area	420	(1%)	10	(2%)	20	(1%)	\$14	(1%)
Unclassified outside area	400	(1%)	0	(1%)	0	(0%)	\$18	(1%)
Conduit, pipe, utility, or ventilation shaft	370	(1%)	0	(0%)	0	(0%)	\$8	(1%)
Dining room	340	(1%)	0	(1%)	20	(1%)	\$12	(1%)
Unclassified area of origin	340	(1%)	0	(1%)	10	(1%)	\$7	(1%)
Unclassified equipment or service area	310	(1%)	0	(0%)	10	(1%)	\$12	(1%)
Heating equipment room	240	(1%)	0	(0%)	0	(0%)	\$9	(1%)
Storage room, area, tank, or bin	230	(1%)	0	(0%)	0	(0%)	\$10	(1%)
Exterior roof surface	220	(1%)	0	(0%)	0	(0%)	\$5	(0%)
Lobby or entrance way	220	(1%)	0	(0%)	10	(1%)	\$9	(1%)
Storage of supplies or tools or dead storage	220	(1%)	0	(1%)	10	(1%)	\$8	(1%)
Courtyard, terrace or patio	220	(1%)	0	(0%)	10	(1%)	\$13	(1%)
Hallway or corridor	190	(1%)	0	(0%)	10	(0%)	\$6	(0%)

**Table 3.5. Home Fires Involving Electrical Distribution or Lighting Equipment, by Area of Origin
2010-2014 Annual Averages (Continued)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Other known area of origin	1,400	(4%)	10	(2%)	30	(2%)	\$48	(4%)
Total	31,960	(100%)	400	(100%)	1,180	(100%)	\$1,210	(100%)

Note: Figures *exclude* confined fires. Fires, deaths and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires in which the area of origin was unknown or not reported were allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 3.6. Home Fires Involving Electrical Distribution or Lighting Equipment, by Factor Contributing to Ignition
2010-2014 Annual Averages**

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	10,740	(34%)	120	(30%)	400	(34%)	\$446	(37%)
Unspecified short circuit arc	7,550	(24%)	120	(31%)	290	(24%)	\$308	(25%)
Short circuit arc from defective or worn insulation	3,490	(11%)	30	(8%)	100	(8%)	\$106	(9%)
Heat source too close to combustibles.	2,020	(6%)	40	(10%)	110	(10%)	\$77	(6%)
Arc from faulty contact or broken conductor	1,590	(5%)	20	(4%)	30	(3%)	\$53	(4%)
Unclassified mechanical failure or malfunction	1,070	(3%)	10	(2%)	30	(3%)	\$39	(3%)
Equipment overloaded	1,000	(3%)	30	(7%)	80	(7%)	\$40	(3%)
Short circuit arc from mechanical damage	840	(3%)	20	(5%)	20	(2%)	\$31	(3%)
Arc or spark from operating equipment	750	(2%)	10	(2%)	20	(2%)	\$31	(3%)
Unclassified misuse of material or product	550	(2%)	0	(1%)	50	(4%)	\$17	(1%)
Worn out	440	(1%)	10	(2%)	10	(1%)	\$13	(1%)
Unclassified factor contributing to ignition	390	(1%)	0	(1%)	10	(1%)	\$11	(1%)
Storm	360	(1%)	10	(2%)	0	(0%)	\$13	(1%)
Water caused short-circuit arc	350	(1%)	0	(0%)	0	(0%)	\$9	(1%)
Installation deficiency	330	(1%)	0	(0%)	10	(1%)	\$16	(1%)
Equipment unattended	260	(1%)	0	(0%)	20	(1%)	\$11	(1%)
High wind	220	(1%)	0	(0%)	10	(0%)	\$12	(1%)
Animal	200	(1%)	0	(1%)	0	(0%)	\$4	(0%)
Equipment not being operated properly	170	(1%)	0	(1%)	10	(1%)	\$7	(1%)
Other known factor contributing to ignition	1,750	(5%)	20	(4%)	110	(9%)	\$71	(6%)
Total fires	31,960	(100%)	400	(100%)	1,180	(100%)	\$1,210	(100%)
Total factors	34,060	(107%)	440	(110%)	1,320	(112%)	\$1,316	(109%)

Note: Figures *exclude* confined fires. Multiple entries are allowed, which can result in sums higher than totals. Fires, deaths and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires in which the factor contributing to ignition was unknown, not reported or coded as none were allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 3.7. Home Fires Involving Electrical Distribution or Lighting Equipment, by Item First Ignited
2010-2014 Annual Averages**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical wire or cable insulation	10,060	(31%)	100	(25%)	350	(29%)	\$316	(26%)
Structural member or framing	5,420	(17%)	90	(23%)	140	(12%)	\$267	(22%)
Insulation within structural area	2,190	(7%)	0	(0%)	20	(2%)	\$56	(5%)
Exterior wall covering or finish	1,970	(6%)	20	(4%)	30	(2%)	\$67	(6%)
Interior wall covering, excluding drapes	1,590	(5%)	10	(3%)	50	(4%)	\$70	(6%)
Unclassified structural component or finish	1,320	(4%)	10	(2%)	30	(3%)	\$50	(4%)
Mattress or bedding	1,080	(3%)	30	(7%)	100	(9%)	44	(4%)
Unclassified item first Ignited	860	(3%)	10	(3%)	20	(2%)	\$20	(2%)
Clothing	700	(2%)	0	(1%)	50	(4%)	20	(2%)
Interior ceiling cover or finish	670	(2%)	10	(2%)	10	(1%)	\$25	(2%)
Floor covering rug, carpet, or mat	660	(2%)	10	(3%)	40	(4%)	\$31	(3%)
Upholstered furniture	560	(2%)	40	(10%)	80	(6%)	\$32	(3%)
Unclassified furniture or utensils	490	(2%)	10	(2%)	30	(3%)	\$21	(2%)
Appliance housing or casing	450	(1%)	0	(1%)	30	(2%)	\$18	(1%)
Multiple items first ignited	430	(1%)	10	(3%)	30	(3%)	\$32	(3%)
Cabinetry	360	(1%)	10	(2%)	20	(2%)	\$21	(2%)
Flammable and combustible liquids and gases, piping and filter	340	(1%)	0	(0%)	40	(3%)	16	(1%)
Unclassified soft goods, or wearing apparel	330	(1%)	0	(1%)	20	(2%)	\$14	(1%)
Light vegetation including grass	260	(1%)	0	(0%)	0	(0%)	\$6	(0%)
Curtains, blinds, drapery, or tapestry	250	(1%)	10	(2%)	30	(2%)	\$9	(1%)
Exterior roof covering or finish	230	(1%)	0	(0%)	0	(0%)	\$7	(1%)
Box, carton, bag, basket, barrel	200	(1%)	0	(0%)	10	(1%)	\$13	(1%)
Linen other than bedding	200	(1%)	0	(0%)	10	(1%)	\$7	(1%)
Unclassified organic materials	170	(1%)	0	(0%)	0	(0%)	\$5	(0%)
Other known item first ignited	1,150	(4%)	20	(6%)	50	(4%)	\$45	(4%)
Total	31,960	(100%)	400	(100%)	1,180	(100%)	\$1,210	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of non-home fires with item first ignited listed as unknown, unreported, none, or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 3.8. Home Fires Involving Electrical Distribution or Lighting Equipment, by Victim Location When Injured
2010-2014 Annual Averages**

Victim Location When Injured	Home Electrical Distribution or Lighting Equipment Fires				All Home Fires			
	Civilian Deaths		Civilian Injuries		Civilian Deaths		Civilian Injuries	
In area of origin	140	(34%)	620	(53%)	1,320	(53%)	7,030	(64%)
In building, but not in area of origin	260	(65%)	470	(40%)	1,180	(47%)	3,350	(30%)
Outside, not in area of origin	10	(1%)	90	(7%)	10	(1%)	680	(6%)
Total	400	(100%)	1,180	(100%)	2,520	(100%)	11,060	(100%)

Note: Figures *exclude* confined fires. Deaths and injuries are rounded to the nearest ten. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type and of victim location. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 3.9. Home Fires Involving Electrical Distribution or Lighting Equipment, by Victim Location at Ignition
2010-2014 Annual Averages**

Victim Location at Ignition	Home Electrical Distribution or Lighting Equipment Fires				All Home Fires			
	Civilian Deaths		Civilian Injuries		Civilian Deaths		Civilian Injuries	
Not in area of origin and not involved	180	(44%)	390	(33%)	650	(26%)	2,940	(27%)
Not in area of origin but involved	110	(26%)	210	(18%)	610	(24%)	1,690	(15%)
In area of origin and not involved	80	(20%)	310	(26%)	350	(14%)	2,620	(24%)
In area of origin and involved	40	(10%)	260	(22%)	910	(36%)	3,810	(34%)
Total	400	(100%)	1,180	(100%)	2,520	(100%)	11,060	(100%)

Note: Figures *exclude* confined fires. Deaths and injuries are rounded to the nearest ten. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type and of victim location. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 3.10. Home Fires Involving Electrical Distribution or Lighting Equipment,
by Victim Activity When Injured
2010-2014 Annual Averages**

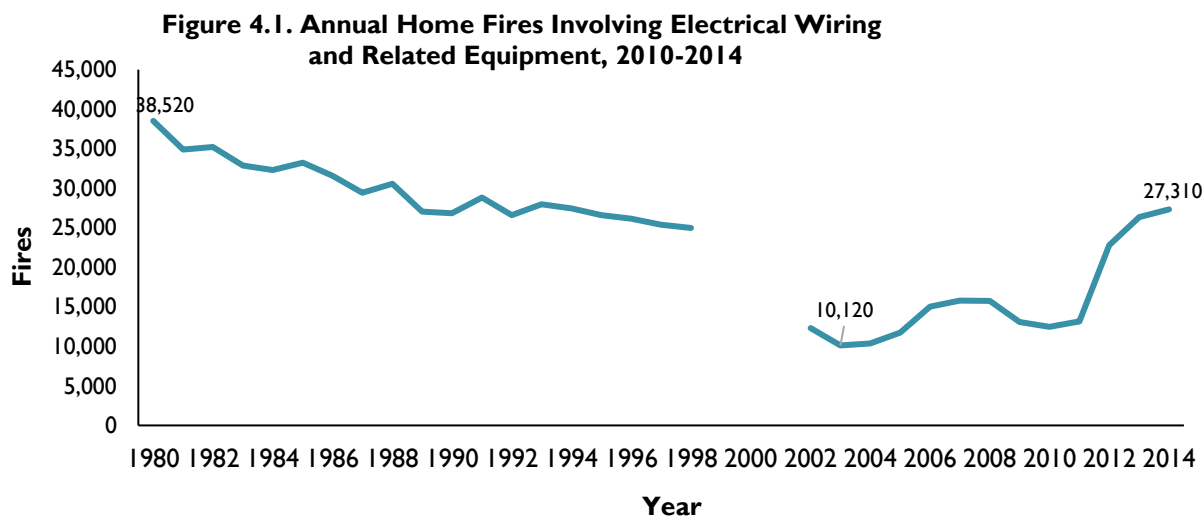
Victim Activity When Injured	Home Electrical Distribution or Lighting Equipment Fires				All Home Fires			
	Civilian Deaths		Civilian Injuries		Civilian Deaths		Civilian Injuries	
Escaping	190	(48%)	420	(36%)	930	(37%)	3,120	(28%)
Sleeping	120	(29%)	160	(13%)	810	(32%)	1,300	(12%)
Unable to act	40	(10%)	20	(1%)	280	(11%)	310	(3%)
Rescue attempt	30	(6%)	100	(9%)	70	(3%)	820	(7%)
Fire control	10	(2%)	290	(25%)	70	(3%)	3,510	(32%)
Returning to vicinity of fire before control	10	(2%)	90	(8%)	70	(3%)	790	(7%)
Irrational act	10	(2%)	0	(0%)	140	(5%)	320	(3%)
Unclassified activity	0	(1%)	80	(7%)	130	(5%)	840	(8%)
Returning to vicinity of fire after control	0	(0%)	10	(0%)	10	(0%)	50	(0%)
Total	400	(100%)	1,180	(100%)	2,520	(100%)	11,060	(100%)

Note: Figures *exclude* confined fires. Deaths and injuries are rounded to the nearest ten. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type and of unknown victim activity. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

Section 4. Home Fires Involving Wiring and Related Equipment

In 2010-2014, an estimated average of 22,190 non-confined home structure fires involving electrical wiring and related equipment occurred each year. These fires resulted in 230 civilian deaths, 630 civilian injuries, and \$804 million in direct property damage each year. As shown in Figure 4.1 (and Table 4.1), fires involving electrical wiring and related equipment showed a steady decline from 1980 to 1998. Following a transition period in 1999-2001, when NFIRS 5.0 was being phased in, the estimates settled into a range roughly one-half lower than the levels of the late 1980s, a much larger decline than would have been anticipated if the 1980-1998 trend had continued unchanged. Some of the sharp decline after 1998 may have been due to the changes in data categories, definitions, and rules introduced in NFIRS 5.0, rather than a true decline in the size of the fire problem. Since 2012, the number of home fires involving electrical wiring and related equipment have been on the rise. Some of the increase may be related to the change in NFIRS described on page 2.



Note: Because of low participation in NFIRS Version 5.0 during 1999-2001, data from these years is not reported in these tables. See Note for Table 4.1.

Unclassified electrical wiring was the major type of wiring and related equipment involved in home fires in 2010-2014, with 45% of the total. These fires also accounted for 52% of civilian deaths, 49% of civilian injuries, and 49% of direct property damage. Other leading types of electrical wiring and related equipment that were involved in home fires included outlets or receptacles (18%) of fires, electrical branch circuits (13%), panelboards, switchboards, or circuit breaker boards (7%), power lines (5%), and electric meters or meter boxes (5%). Fires involving electrical branch circuits accounted for the second highest share of civilian deaths (25%), while those involving outlets or receptacles account for the second highest share of civilian injuries (23%). See Table 4.A for details.

**Table 4.A. Home Fires Involving Electrical Wiring and Related Equipment, Major Equipment Group
2010-2014 Annual Averages**

Major Equipment Group	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical wiring	9,950	(45%)	120	(52%)	310	(49%)	\$391	(49%)
Outlet or receptacle	3,930	(18%)	40	(19%)	150	(23%)	\$117	(15%)
Electrical branch circuit	2,780	(13%)	60	(25%)	70	(11%)	\$119	(15%)
Panelboard, switchboard, or circuit breaker board	1,500	(7%)	0	(0%)	40	(6%)	\$44	(6%)
Power (utility) lines	1,130	(5%)	10	(3%)	10	(2%)	\$43	(5%)
Electric meter or meter box	1,000	(5%)	0	(0%)	30	(4%)	\$28	(4%)
Electrical power (utility) line	800	(4%)	0	(0%)	10	(2%)	\$27	(3%)
Wiring from meter box to circuit breaker	730	(3%)	0	(1%)	10	(2%)	\$21	(3%)
Wall switch	320	(1%)	0	(0%)	10	(1%)	\$11	(1%)
Ground fault circuit interrupter	70	(0%)	0	(0%)	0	(1%)	\$3	(0%)
Total	22,190	(100%)	230	(100%)	630	(100%)	\$804	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

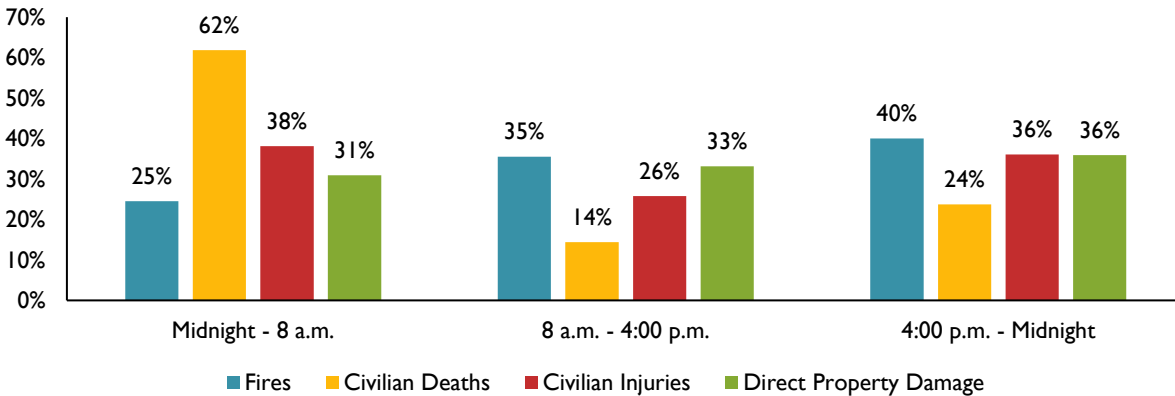
Timing of fires

The peak months for home fires involving electrical wiring and related equipment were January (12% of total) and December (11%), while September had the smallest share of fires (6%). February, July, and November each recorded 9% of the total, and all other months had 7% or 8% of fires. The fires resulting in the greatest amount of property damage were those occurring in December and January, each of which had 11% of the total. See [Table 4.2](#) for details.

Home fires involving electrical wiring and related equipment were quite evenly distributed by day of week, with each day having either a 14% or 15% share of the total. See [Table 4.3](#) for more information.

As shown in [Figure 4.2](#), the hours between 4 p.m. and midnight accounted for the greatest share of home fires involving electrical wiring and related equipment (40%), with 35% of fires taking place between 8 a.m. and 4 p.m. The remaining 25% of fires that occur between midnight and 8 a.m. resulted in 62% of civilian deaths and 38% of civilian injuries, as well as 31% of direct property damage. Detailed information on fires by time of day is available in [Table 4.4](#).

Figure 4.2 Home Fires Involving Electrical Wiring or Related Equipment by Time of Day, 2010-2014 Annual Averages



Note: See Note on Table 4.4.

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Factor contributing to ignition. The leading factor contributing to ignition in home fires involving electrical wiring or related equipment was an unclassified electrical failure or malfunction, with 37% of the total. However, various forms of electrical arcing, when combined, represented factors contributing to over half of the fires. These included unspecified short circuit arcs (27%), short circuit arcs from defective or worn insulation (13%), arcs from faulty contacts or broken conductors (6%), short circuit arcs from mechanical damage (3%), arcs or sparks from operating equipment (2%), and water caused short circuit arcs (1%). See [Table 4.5](#).

Area of origin. The leading area of origin in home fires involving electrical wiring or related equipment was an attic or ceiling/roof assembly or concealed space, with 16% of the total, followed by bedroom (13%), wall assembly or concealed space (11%), exterior wall surface (7%), kitchen or cooking area (7%), and living room, family room, or den (6%). More than one-quarter of civilian injuries (28%) occurred in the bedroom fires. See [Table 4.6](#).

Item first ignited. Electrical wire or cable insulation was the leading item first ignited in home fires involving electrical wiring or related equipment, with 34% of the total, while a structural member or framing was first ignited in another 22% of fires. Other leading items first ignited included insulation with structural area (8%), exterior wall covering or finish (7%), interior wall covering, excluding drapes (6%), and unclassified structural component or finish (5%). See [Table 4.7](#) for details.

**Table 4.1 Home Fires Involving Electrical Wiring and Related Equipment, by Year
Structure Fires Reported to U.S. Fire Departments**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	
				As Reported	in 2014 Dollars
1980	38,520	270	670	\$307	\$884
1981	34,900	320	670	\$261	\$679
1982	35,220	160	720	\$316	\$775
1983	32,880	270	680	\$330	\$784
1984	32,300	170	660	\$338	\$770
1985	33,230	270	600	\$385	\$847
1986	31,570	330	550	\$365	\$790
1987	29,410	300	730	\$295	\$615
1988	30,550	260	720	\$439	\$880
1989	27,030	340	560	\$393	\$752
1990	26,820	150	590	\$391	\$710
1991	28,820	130	700	\$568	\$988
1992	26,580	210	760	\$363	\$613
1993	27,970	140	730	\$402	\$659
1994	27,440	260	650	\$409	\$654
1995	26,600	300	680	\$449	\$698
1996	26,150	210	630	\$495	\$748
1997	25,380	180	710	\$484	\$715
1998	24,960	190	580	\$485	\$706
1999	18,950	60	110	\$416	\$591
2000	14,260	40	240	\$308	\$424
2001	14,750	170	510	\$411	\$550
2002	12,310	50	250	\$314	\$414
2003	10,120	120	180	\$354	\$456
2004	10,380	120	360	\$331	\$416
2005	11,730	190	380	\$452	\$548
2006	15,000	140	390	\$448	\$527
2007	15,790	140	450	\$328	\$375
2008	15,760	390	290	\$595	\$656
2009	13,080	110	440	\$558	\$616
2010	12,480	80	440	\$462	\$503
2011	13,140	110	450	\$501	\$528
2012	22,780	170	650	\$903	\$933
2013	26,370	350	670	\$945	\$961
2014	27,310	370	750	\$982	\$982

**Table 4.1 Home Fires Involving Electrical Wiring and Related Equipment, by Year
Structure Fires Reported to U.S. Fire Departments (Continued)**

* All 1991 home fire property damage figures are inflated by estimation problems related to the handling of the Oakland fire storm.

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Because of low participation in NFIRS Version 5.0 during 1999-2001, estimates for those years are highly uncertain and must be used with caution. Inflation adjustment to 2014 dollars is calculated using the Consumer Price Index.

Source: Data from NFIRS and NFPA Survey.

**Table 4.2. Home Fires Involving Electrical Wiring and Related Equipment, by Month
2010-2014 Annual Averages**

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	2,580	(12%)	30	(14%)	70	(11%)	\$87	(11%)
February	1,910	(9%)	30	(11%)	50	(8%)	\$67	(8%)
March	1,820	(8%)	30	(12%)	80	(12%)	\$70	(9%)
April	1,620	(7%)	20	(9%)	30	(5%)	\$71	(9%)
May	1,630	(7%)	0	(0%)	50	(8%)	\$59	(7%)
June	1,740	(8%)	10	(2%)	50	(8%)	\$66	(8%)
July	1,980	(9%)	30	(12%)	50	(8%)	\$70	(9%)
August	1,590	(7%)	20	(10%)	60	(10%)	\$54	(7%)
September	1,420	(6%)	10	(3%)	40	(6%)	\$53	(7%)
October	1,530	(7%)	30	(14%)	30	(5%)	\$52	(6%)
November	2,020	(9%)	10	(4%)	50	(9%)	\$69	(9%)
December	2,360	(11%)	20	(8%)	60	(10%)	\$85	(11%)
Total	22,190	(100%)	230	(100%)	630	(100%)	\$804	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 4.3. Home Fires Involving Electrical Wiring and Related Equipment, by Day of Week
2010-2014 Annual Averages**

Day of Week	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Sunday	3,160	(14%)	30	(11%)	90	(15%)	\$111	(14%)
Monday	3,230	(15%)	20	(8%)	70	(11%)	\$117	(15%)
Tuesday	3,200	(14%)	30	(13%)	90	(14%)	\$115	(14%)
Wednesday	3,230	(15%)	40	(19%)	100	(15%)	\$113	(14%)
Thursday	3,120	(14%)	60	(27%)	80	(14%)	\$124	(15%)
Friday	3,130	(14%)	20	(9%)	110	(18%)	\$119	(15%)
Saturday	3,130	(14%)	30	(13%)	80	(13%)	\$105	(13%)
Total	22,190	(100%)	230	(100%)	630	(100%)	\$804	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 4.4. Home Fires Involving Electrical Wiring and Related Equipment, by Alarm Time
2010-2014 Annual Averages**

Alarm Time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Midnight-12:59 a.m.	830	(4%)	20	(9%)	30	(5%)	\$35	(4%)
1:00-1:59 a.m.	670	(3%)	20	(10%)	50	(8%)	\$29	(4%)
2:00-2:59 a.m.	670	(3%)	30	(14%)	30	(4%)	\$42	(5%)
3:00-3:59 a.m.	650	(3%)	30	(12%)	20	(3%)	\$27	(3%)
4:00-4:59 a.m.	630	(3%)	20	(8%)	30	(5%)	\$32	(4%)
5:00-5:59 a.m.	580	(3%)	10	(5%)	30	(4%)	\$29	(4%)
6:00-6:59 a.m.	670	(3%)	10	(2%)	30	(4%)	\$25	(3%)
7:00-7:59 a.m.	760	(3%)	10	(2%)	20	(3%)	\$30	(4%)
8:00-8:59 a.m.	790	(4%)	0	(1%)	20	(4%)	\$28	(4%)
9:00-9:59 a.m.	840	(4%)	10	(3%)	20	(3%)	\$30	(4%)
10:00-10:59 a.m.	920	(4%)	10	(3%)	10	(2%)	\$25	(3%)
11:00-11:59 a.m.	960	(4%)	0	(2%)	30	(4%)	\$35	(4%)
12:00-12:59 p.m.	980	(4%)	0	(2%)	10	(2%)	\$36	(4%)
1:00-1:59 p.m.	1,080	(5%)	0	(1%)	30	(4%)	\$36	(4%)
2:00-2:59 p.m.	1,120	(5%)	10	(3%)	20	(4%)	\$39	(5%)
3:00-3:59 p.m.	1,180	(5%)	0	(1%)	20	(3%)	\$37	(5%)
4:00-4:59 p.m.	1,110	(5%)	0	(1%)	20	(4%)	\$39	(5%)
5:00-5:59 p.m.	1,190	(5%)	10	(3%)	30	(5%)	\$37	(5%)
6:00-6:59 p.m.	1,170	(5%)	10	(5%)	30	(5%)	\$41	(5%)
7:00-7:59 p.m.	1,240	(6%)	10	(2%)	20	(4%)	\$40	(5%)
8:00-8:59 p.m.	1,140	(5%)	10	(5%)	30	(4%)	\$37	(5%)
9:00-9:59 p.m.	1,140	(5%)	10	(4%)	20	(3%)	\$31	(4%)
10:00-10:59 p.m.	1,030	(5%)	10	(2%)	40	(6%)	\$30	(4%)
11:00-11:59 p.m.	860	(4%)	0	(2%)	30	(5%)	\$33	(4%)
Total	22,190	(100%)	230	(100%)	630	(100%)	\$804	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 4.5. Home Fires Involving Electrical Wiring and Related Equipment, by Factor Contributing to Ignition
2010-2014 Annual Averages**

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	8,180	(37%)	90	(40%)	250	(40%)	\$316	(39%)
Unspecified short-circuit arc	5,990	(27%)	60	(25%)	200	(33%)	\$245	(30%)
Short circuit arc from defective or worn insulation	2,800	(13%)	20	(8%)	60	(10%)	\$82	(10%)
Arc from faulty contact or broken conductor	1,340	(6%)	10	(4%)	20	(3%)	\$45	(6%)
Unclassified mechanical failure or malfunction	740	(3%)	10	(2%)	20	(4%)	\$22	(3%)
Short circuit arc from mechanical damage	640	(3%)	20	(7%)	10	(1%)	\$21	(3%)
Arc or spark from operating equipment	470	(2%)	10	(5%)	10	(2%)	\$17	(2%)
Equipment overloaded	450	(2%)	0	(2%)	20	(4%)	\$16	(2%)
Worn out	350	(2%)	0	(1%)	0	(1%)	\$9	(1%)
Heat source too close to combustibles	320	(1%)	0	(1%)	20	(2%)	\$14	(2%)
Storm	320	(1%)	0	(2%)	0	(0%)	\$12	(2%)
Water caused short-circuit arc	280	(1%)	0	(0%)	0	(1%)	\$7	(1%)
Unclassified factor contributing to ignition	230	(1%)	0	(1%)	10	(1%)	\$6	(1%)
Installation deficiency	210	(1%)	0	(0%)	0	(1%)	\$12	(2%)
High wind	200	(1%)	0	(0%)	10	(1%)	\$10	(1%)
Unclassified misuse of material or product	200	(1%)	0	(0%)	10	(2%)	\$5	(1%)
Other known factor contributing to ignition	820	(4%)	10	(3%)	40	(6%)	\$30	(4%)
Total fires	22,190	(100%)	230	(100%)	630	(100%)	\$804	(100%)
Total factors	23,540	(106%)	230	(102%)	690	(110%)	\$870	(108%)

Note: Figures *exclude* confined fires. Multiple entries are allowed, which can result in sums higher than totals. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type and of fires in which the factor contributing to ignition was unknown, not reported or coded as none.. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 4.6. Home Fires Involving Electrical Wiring and Related Equipment, by Area of Origin
2010-2014 Annual Averages**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Attic or ceiling/roof assembly or concealed space	3,530	(16%)	20	(9%)	40	(7%)	\$133	(17%)
Bedroom	2,920	(13%)	30	(13%)	170	(28%)	\$101	(13%)
Wall assembly or concealed space	2,510	(11%)	10	(5%)	40	(7%)	\$77	(10%)
Exterior wall surface	1,500	(7%)	10	(2%)	10	(2%)	\$37	(5%)
Kitchen or cooking area	1,500	(7%)	30	(15%)	40	(7%)	\$51	(6%)
Living room, family room, or den	1,230	(6%)	40	(16%)	90	(14%)	\$61	(8%)
Crawl space or substructure space	970	(4%)	10	(5%)	20	(3%)	\$35	(4%)
Ceiling/floor assembly or concealed space	890	(4%)	30	(13%)	20	(3%)	\$46	(6%)
Laundry room or area	800	(4%)	0	(2%)	40	(7%)	\$24	(3%)
Garage or vehicle storage area*	660	(3%)	0	(0%)	20	(3%)	\$40	(5%)
Unclassified function area	650	(3%)	10	(6%)	30	(4%)	\$26	(3%)
Lavatory or bathroom	640	(3%)	0	(1%)	10	(2%)	\$17	(2%)
Closet	390	(2%)	0	(1%)	10	(2%)	\$17	(2%)
Unclassified structural area	390	(2%)	0	(2%)	10	(2%)	\$21	(3%)
Conduit, pipe, utility, or ventilation shaft	340	(2%)	0	(1%)	0	(0%)	\$6	(1%)
Unclassified storage area	270	(1%)	10	(3%)	10	(1%)	\$8	(1%)
Unclassified outside area	260	(1%)	0	(0%)	0	(0%)	\$10	(1%)
Unclassified equipment or service area	260	(1%)	0	(0%)	10	(2%)	\$7	(1%)
Unclassified area of origin	240	(1%)	0	(1%)	0	(0%)	\$5	(1%)
Exterior balcony or unenclosed porch	210	(1%)	0	(1%)	0	(0%)	\$10	(1%)
Dining room	190	(1%)	0	(0%)	0	(1%)	\$6	(1%)
Heating equipment room	190	(1%)	0	(1%)	0	(0%)	\$7	(1%)
Exterior roof surface	180	(1%)	0	(0%)	0	(0%)	\$4	(1%)
Storage room, area, tank, or bin	150	(1%)	0	(0%)	0	(0%)	\$7	(1%)
Storage of supplies or tools or dead storage	120	(1%)	0	(2%)	10	(1%)	\$4	(0%)
Lobby or entrance way	120	(1%)	0	(0%)	0	(1%)	\$6	(1%)
Hallway or corridor	110	(1%)	0	(0%)	0	(0%)	\$4	(1%)
Other known area of origin	960	(4%)	10	(3%)	20	(3%)	\$34	(4%)
Total	22,190	(100%)	230	(100%)	630	(100%)	804	(100%)

*Does not include fires in which the property use was coded as a residential garage.

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type and of unknown area of origin. Totals may not equal sums because of rounding error. Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 4.7. Home Fires Involving Electrical Wiring and Related Equipment, by Item First Ignited
2010-2014 Annual Averages**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical wire or cable insulation	7,500	(34%)	60	(28%)	200	(32%)	\$216	(27%)
Structural member or framing	4,820	(22%)	80	(34%)	130	(22%)	\$236	(29%)
Insulation within structural area	1,820	(8%)	0	(0%)	20	(3%)	\$44	(5%)
Exterior wall covering or finish	1,520	(7%)	0	(2%)	20	(3%)	\$48	(6%)
Interior wall covering, excluding drapes	1,330	(6%)	10	(6%)	40	(6%)	\$53	(7%)
Unclassified structural component or finish	1,090	(5%)	10	(3%)	20	(4%)	\$40	(5%)
Unclassified item first ignited	520	(2%)	10	(3%)	0	(1%)	\$9	(1%)
Mattress or bedding	460	(2%)	0	(2%)	40	(7%)	\$19	(2%)
Interior ceiling cover or finish	460	(2%)	0	(2%)	0	(1%)	\$19	(2%)
Multiple items first ignited	250	(1%)	0	(2%)	10	(1%)	\$13	(2%)
Unclassified furniture or utensils	240	(1%)	0	(1%)	10	(2%)	\$12	(2%)
Upholstered furniture or vehicle seat	200	(1%)	10	(4%)	20	(3%)	\$12	(1%)
Clothing	200	(1%)	0	(1%)	20	(3%)	\$9	(1%)
Floor covering rug, carpet, or mat	200	(1%)	0	(1%)	10	(2%)	\$10	(1%)
Cabinetry	180	(1%)	10	(3%)	10	(1%)	\$10	(1%)
Exterior roof covering or finish	180	(1%)	0	(0%)	0	(0%)	\$6	(1%)
Appliance housing or casing	170	(1%)	0	(2%)	10	(1%)	\$5	(1%)
Unclassified soft goods or wearing apparel	120	(1%)	0	(1%)	10	(1%)	\$7	(1%)
Other known item first ignited	930	(4%)	10	(6%)	50	(8%)	\$36	(5%)
Total	22,190	(100%)	230	(100%)	630	(100%)	\$804	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type and of unknown item. Totals may not equal sums because of rounding error.

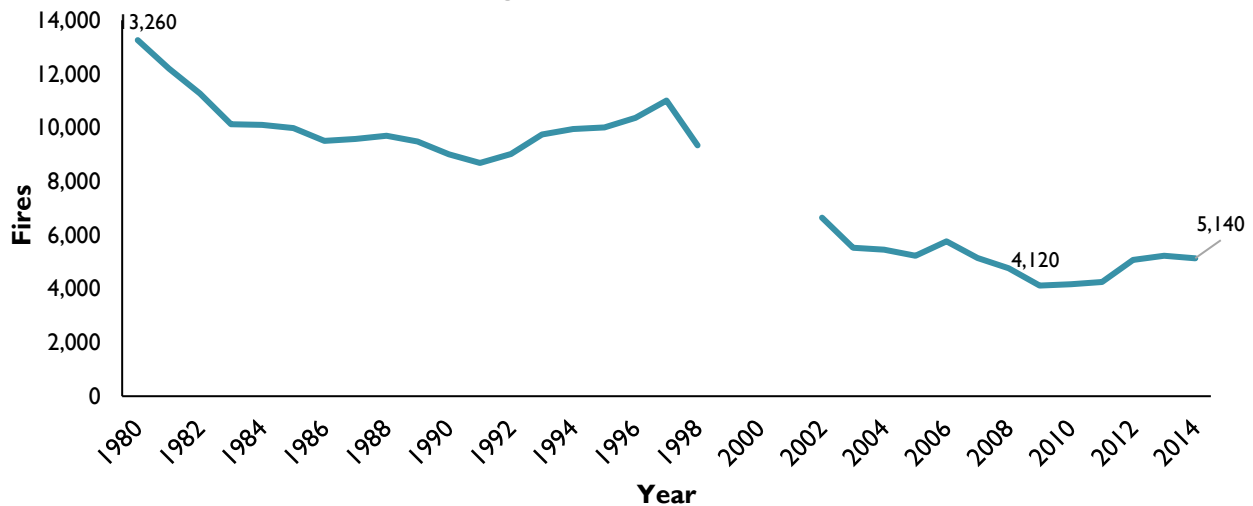
Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

Section 5. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs

In 2010-2014, there were an estimated 4,920 non-confined home structure fires involving lamps, light fixtures, and light bulbs each year. These fires resulted in an estimated annual average of 50 civilian deaths, 220 civilian injuries, and \$166 million in direct property damage.

As shown in Figure 5.1, home structure fires involving lamps, light fixtures, and light bulbs declined sharply in the early 1980s, followed by a less dramatic downward trend through the rest of the decade, and then rose through most of the 1990s. The number of annual fires throughout the 2000s has been substantially lower than prior levels, despite year to year fluctuations. The historic low of 4,120 fires in 2009 was 69% lower than the high of 13,260 fires in 1980. Detailed information is available in [Table 5.1](#).

Figure 5.1. Annual Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, 1980-2014



Note: See Note on [Table 5.1](#). Because of low participation in NFIRS Version 5.0 during 1999-2001, data from these years is not reported in these tables.

Three types of equipment together accounted for 70% of home fires involving lamps, light fixtures and light bulbs: unclassified lamps or lighting (31%), incandescent lighting fixtures (21%), and tabletop, floor, or desk lamps (18%). The fires involving tabletop, floor or desk lamps, while accounting for just under one-fifth of the fires, caused approximately one-third of the civilian injuries (34%). Light bulbs accounted for 7% of fires, but 20% of civilian deaths, as well as 4% of civilian injuries and 5% of direct property damage. Halogen lighting fixtures and lamps also accounted for 7% of fires, while fluorescent lighting fixtures or ballasts accounted for 6% of fires. Details are shown in [Table 5.A](#).

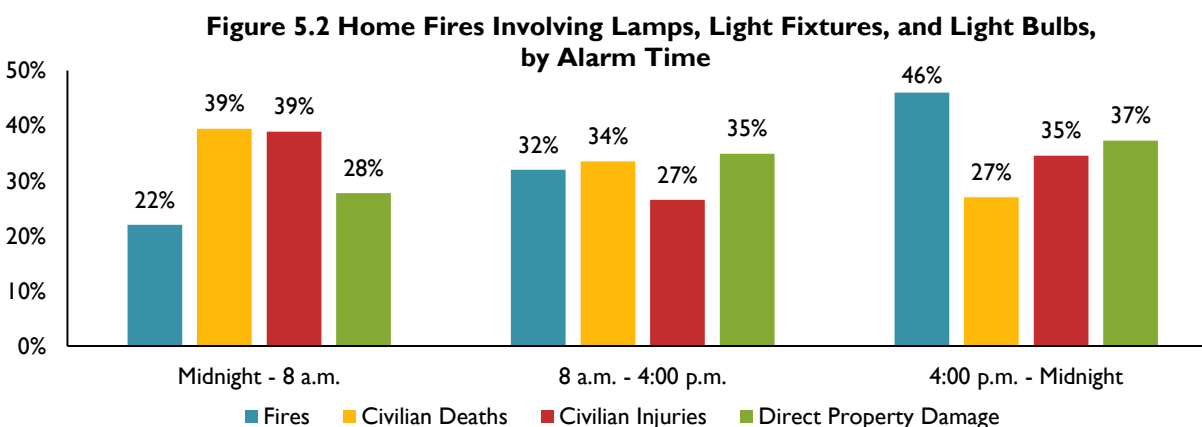
**Table 5.A. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Type of Equipment
2010-2014 Annual Averages**

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified lamp or lighting	1,510	(31%)	20	(35%)	70	(30%)	\$48	(29%)
Incandescent lighting fixture	1,050	(21%)	0	(3%)	20	(11%)	\$31	(18%)
Tabletop, floor or desk lamp	870	(18%)	10	(21%)	70	(34%)	\$31	(18%)
Light bulb	360	(7%)	10	(20%)	10	(4%)	\$8	(5%)
Halogen lighting fixture or lamp	340	(7%)	0	(4%)	10	(3%)	\$15	(9%)
Fluorescent lighting fixture or ballast	280	(6%)	0	(0%)	10	(5%)	\$11	(7%)
Decorative lights or line voltage	190	(4%)	10	(10%)	10	(7%)	\$11	(6%)
Work light or trouble light	160	(3%)	0	(4%)	10	(3%)	\$6	(4%)
Other known equipment involved in ignition	150	(3%)	0	(3%)	0	(4%)	\$6	(4%)
Total	4,920	(100%)	50	(100%)	220	(100%)	\$166	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Timing of fires. December, January, and April were the peak months for home fires involving lamps, light fixtures, and light bulbs, each with 10% of the total. May and November fires each accounted for 9% of fires. All remaining months had 7% or 8% of the total. See [Table 5.2](#). Fires showed no pattern for day of week, with each day of the week having either 14% or 15% of the total, as shown in [Table 5.3](#). Home fires involving lamps, light fixtures, and bulbs are less frequent in the overnight hours from midnight to 8 a.m. (22% of total), but these fires result in higher shares of civilian death (39%) and injury (39%) than fires at other times of day. Nearly half of the fires (46%) occurred between 4 p.m. and midnight. See [Figure 5.2](#) for details. More information of fires by alarm time is also available in [Table 5.4](#).



Note: See Note on [Table 5.4](#).

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Factor Contributing to Ignition. The leading factor contributing to ignition in home fires involving lamps, light fixtures, and bulbs is being too close to combustible material (31% of total), as shown in [Table 5.5](#). These fires resulted in a disproportionate share of civilian deaths (58%), as well as 37% of civilian injuries and 28% of direct property damage. This underscores the importance of maintaining lighting sources at a safe distance from materials that may be ignited by the heat. Unclassified electrical failures or malfunctions contributed to 18% of the fires, followed by unspecified short circuit arcs (12%), short circuit arcs from defective or worn insulation (5%), and leaving equipment unattended (4%).

Area of Origin. The bedroom was the leading area of origin for home fires involving lamps, light fixtures, and bulbs, with 22% of the total, while also accounting for 25% of civilian deaths, 40% of civilian injuries, and 20% of direct property damage. One-tenth of the fires (10%) originated in an attic or ceiling/roof assembly or concealed space; with 9% originating in a living room, family room, or den; 7% in a bathroom or lavatory; 6% on an exterior wall surface; and 5% in a kitchen or cooking area. The 9% of fires originating in a living room, family room, or den accounted for 29% of civilian deaths and 15% of civilian injuries from these fires.

Item First Ignited. The leading item first ignited in home fires involving lamps, light fixtures, and light bulbs was electrical wire or cable insulation, with 15% of the total, followed by structural member or framing (9%), mattress or bedding (7%), clothing (7%), insulation within structural area (7%), and exterior wall covering or finish (5%). The fires in which the item first ignited was mattress or bedding accounted for 25% of civilian deaths, 13% of civilian injuries, and 8% of direct property damage. See [Table 5.7](#) for more information.

**Table 5.1 Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Year
Structure Fires Reported to U.S. Fire Departments**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions) As Reported	In 2014 Dollars
1980	13,260	50	450	\$71	\$204
1981	12,200	80	350	\$70	\$182
1982	11,270	70	370	\$77	\$189
1983	10,130	70	320	\$79	\$188
1984	10,100	100	260	\$78	\$178
1985	9,980	50	280	\$88	\$194
1986	9,510	130	240	\$80	\$173
1987	9,580	40	280	\$69	\$144
1988	9,700	60	310	\$90	\$180
1989	9,490	40	270	\$88	\$168
1990	9,010	90	290	\$126	\$229
1991	8,690	60	300	\$139	\$242
1992	9,020	40	320	\$89	\$150
1993	9,750	90	370	\$109	\$179
1994	9,950	70	340	\$123	\$197
1995	10,010	60	350	\$146	\$227
1996	10,370	80	360	\$135	\$204
1997	11,010	40	390	\$179	\$264
1998	9,340	90	270	\$134	\$195
1999	9,510	60	210	\$228	\$324
2000	7,610	40	240	\$208	\$286
2001	7,050	90	330	\$177	\$237
2002	6,650	30	220	\$159	\$209
2003	5,530	120	210	\$136	\$175
2004	5,460	20	270	\$154	\$193
2005	5,230	60	240	\$210	\$255
2006	5,770	90	190	\$181	\$213
2007	5,150	40	325	\$214	\$244
2008	4,760	30	270	\$191	\$210
2009	4,120	60	240	\$192	\$212
2010	4,170	80	270	\$144	\$157
2011	4,250	60	190	\$136	\$143
2012	5,080	30	260	\$157	\$162
2013	5,230	70	190	\$191	\$194
2014	5,140	40	180	\$183	\$183

**Table 5.1 Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Year
Structure Fires Reported to U.S. Fire Departments (Continued)**

* All 1991 home fire property damage figures are inflated by estimation problems related to the handling of the Oakland fire storm.

Note: Figures *exclude* confined fires. Fires, deaths, and injuries to the nearest ten, and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Because of low participation in NFIRS Version 5.0 during 1999-2001, estimates for those years are highly uncertain and must be used with caution. Inflation adjustment to 2014 dollars is calculated using the Consumer Price Index.

Source: Data from NFIRS and NFPA Survey.

**Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Month
2010-2014 Annual Averages**

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	490	(10%)	10	(13%)	20	(10%)	\$21	(13%)
February	380	(8%)	0	(3%)	20	(11%)	\$14	(8%)
March	390	(8%)	10	(11%)	20	(9%)	\$12	(7%)
April	480	(10%)	0	(4%)	10	(6%)	\$11	(7%)
May	430	(9%)	0	(3%)	20	(8%)	\$16	(10%)
June	390	(8%)	10	(17%)	10	(5%)	\$12	(7%)
July	390	(8%)	0	(3%)	20	(10%)	\$11	(6%)
August	370	(7%)	10	(20%)	10	(3%)	\$10	(6%)
September	360	(7%)	0	(8%)	10	(6%)	\$11	(7%)
October	350	(7%)	0	(4%)	20	(10%)	\$10	(6%)
November	440	(9%)	0	(4%)	30	(12%)	\$17	(10%)
December	470	(10%)	10	(10%)	20	(10%)	\$21	(12%)
Total	4,920	(100%)	50	(100%)	220	(100%)	\$166	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 5.3. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Day
2010-2014 Annual Averages**

Day of Week	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Sunday	670	(14%)	0	(7%)	50	(21%)	\$27	(16%)
Monday	700	(14%)	10	(11%)	20	(9%)	\$21	(13%)
Tuesday	730	(15%)	10	(18%)	50	(25%)	\$25	(15%)
Wednesday	700	(14%)	10	(10%)	20	(8%)	\$21	(13%)
Thursday	680	(14%)	0	(3%)	30	(13%)	\$28	(17%)
Friday	720	(15%)	10	(24%)	30	(14%)	\$23	(14%)
Saturday	710	(15%)	10	(27%)	20	(11%)	\$22	(13%)
Total	4,920	(100%)	50	(100%)	220	(100%)	\$166	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 5.4. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Alarm Time
2010-2014 Annual Averages**

Alarm Time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Midnight-12:59 a.m.	200	(4%)	0	(0%)	20	(7%)	\$7	(4%)
1:00-1:59 a.m.	150	(3%)	0	(0%)	10	(3%)	\$10	(6%)
2:00-2:59 a.m.	140	(3%)	0	(0%)	10	(6%)	\$5	(3%)
3:00-3:59 a.m.	120	(2%)	0	(0%)	20	(10%)	\$5	(3%)
4:00-4:59 a.m.	120	(2%)	10	(11%)	10	(3%)	\$6	(4%)
5:00-5:59 a.m.	110	(2%)	0	(0%)	10	(4%)	\$5	(3%)
6:00-6:59 a.m.	110	(2%)	0	(0%)	10	(3%)	\$2	(1%)
7:00-7:59 a.m.	140	(3%)	10	(10%)	10	(3%)	\$5	(3%)
8:00-8:59 a.m.	160	(3%)	0	(0%)	10	(2%)	\$5	(3%)
9:00-9:59 a.m.	180	(4%)	0	(0%)	10	(5%)	\$6	(4%)
10:00-10:59 a.m.	180	(4%)	10	(20%)	10	(3%)	\$5	(3%)
11:00-11:59 a.m.	190	(4%)	0	(0%)	0	(0%)	\$7	(4%)
12:00-12:59 p.m.	200	(4%)	0	(0%)	10	(4%)	\$8	(5%)
1:00-1:59 p.m.	220	(5%)	0	(0%)	10	(3%)	\$8	(5%)
2:00-2:59 p.m.	220	(4%)	0	(0%)	0	(0%)	\$7	(4%)
3:00-3:59 p.m.	230	(5%)	0	(0%)	10	(6%)	\$11	(6%)
4:00-4:59 p.m.	240	(5%)	0	(0%)	10	(4%)	\$10	(6%)
5:00-5:59 p.m.	250	(5%)	0	(0%)	10	(4%)	\$7	(4%)
6:00-6:59 p.m.	270	(6%)	0	(0%)	10	(3%)	\$9	(5%)
7:00-7:59 p.m.	310	(6%)	0	(0%)	10	(6%)	\$9	(5%)
8:00-8:59 p.m.	350	(7%)	0	(0%)	10	(6%)	\$8	(5%)
9:00-9:59 p.m.	350	(7%)	0	(0%)	10	(5%)	\$7	(4%)
10:00-10:59 p.m.	270	(6%)	0	(0%)	0	(0%)	\$6	(4%)
11:00-11:59 p.m.	220	(4%)	0	(0%)	10	(5%)	\$7	(4%)
Total	4,920	(100%)	50	(100%)	220	(100%)	\$166	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 5.5. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition
2010-2014 Annual Averages**

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat source too close to combustibles	1,510	(31%)	30	(58%)	80	(37%)	\$50	(28%)
Unclassified electrical failure or malfunction	880	(18%)	10	(13%)	40	(18%)	\$36	(20%)
Unspecified short-circuit arc	600	(12%)	0	(9%)	20	(11%)	\$21	(12%)
Short circuit arc from defective or worn insulation	270	(5%)	0	(4%)	10	(6%)	\$9	(5%)
Equipment unattended	180	(4%)	0	(0%)	20	(7%)	\$6	(3%)
Animal	150	(3%)	0	(4%)	0	(1%)	\$2	(1%)
Unclassified mechanical failure or malfunction	140	(3%)	0	(0%)	10	(3%)	\$4	(2%)
Arc or spark from operating equipment	130	(3%)	0	(0%)	0	(1%)	\$5	(3%)
Fluorescent light ballast	130	(3%)	0	(0%)	10	(4%)	\$6	(3%)
Unclassified misuse of material or product	130	(3%)	0	(0%)	10	(5%)	\$3	(2%)
Accidentally turned on or not turned off	130	(3%)	0	(0%)	0	(1%)	\$7	(4%)
Collision, knock down, run over, or turn over	120	(2%)	0	(9%)	10	(6%)	\$3	(2%)
Unclassified factor contributing to ignition	100	(2%)	0	(0%)	10	(4%)	\$2	(1%)
Arc from faulty contact or broken conductor	100	(2%)	0	(0%)	0	(2%)	\$4	(2%)
Installation deficiency	80	(2%)	0	(0%)	0	(1%)	\$1	(1%)
Failure to clean	70	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Short circuit arc from mechanical damage	60	(1%)	0	(0%)	0	(0%)	\$3	(1%)
Equipment not being operated properly	60	(1%)	0	(5%)	0	(1%)	\$2	(1%)
Abandoned or discarded materials or products	50	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Equipment not used for intended purpose	50	(1%)	0	(0%)	0	(2%)	\$1	(1%)
Equipment overloaded	40	(1%)	0	(0%)	0	(0%)	\$2	(1%)
Worn out	40	(1%)	0	(8%)	0	(0%)	\$2	(1%)
Unclassified operational deficiency	40	(1%)	0	(0%)	0	(1%)	\$2	(1%)
Improper container or storage	30	(1%)	0	(0%)	0	(1%)	\$0	(0%)
Unclassified design, manufacture, or installation deficiency	30	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Other known factor contributing to ignition	150	(3%)	0	(4%)	10	(3%)	\$7	(4%)

**Table 5.5. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition
2010-2014 Annual Averages (Continued)**

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Total fires	4,920	(100%)	50	(100%)	220	(100%)	\$166	(100%)
Total factors	5,290	(107%)	60	(113%)	250	(115%)	\$180	(109%)

Note: Figures *exclude* confined fires. Multiple entries are allowed, which can result in sums higher than totals. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 5.6. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Area of Origin
2010-2014 Annual Averages**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	1,080	(22%)	10	(25%)	90	(40%)	\$33	(20%)
Attic or ceiling/roof assembly or concealed space	490	(10%)	0	(0%)	10	(3%)	\$19	(12%)
Living room, family room, or den	420	(9%)	20	(29%)	30	(15%)	\$20	(12%)
Bathroom or lavatory	340	(7%)	0	(0%)	10	(6%)	\$7	(4%)
Exterior wall surface	300	(6%)	0	(0%)	0	(1%)	\$6	(4%)
Kitchen or cooking area	230	(5%)	0	(4%)	10	(4%)	\$8	(5%)
Closet	220	(4%)	10	(17%)	10	(5%)	\$10	(6%)
Ceiling/floor assembly or concealed space	210	(4%)	0	(0%)	0	(2%)	\$7	(4%)
Garage or vehicle storage area*	190	(4%)	0	(4%)	10	(4%)	\$7	(4%)
Unclassified function area	190	(4%)	0	(4%)	10	(3%)	\$7	(4%)
Exterior balcony or unenclosed porch	190	(4%)	0	(7%)	0	(1%)	\$8	(5%)
Wall assembly or concealed space	90	(2%)	0	(0%)	10	(4%)	\$3	(2%)
Courtyard, terrace or patio	90	(2%)	0	(0%)	0	(0%)	\$3	(2%)
Unclassified outside area	70	(1%)	0	(0%)	0	(0%)	\$2	(1%)
Crawl space or substructure space	70	(1%)	0	(0%)	0	(2%)	\$3	(2%)
Dining room	70	(1%)	0	(7%)	0	(1%)	\$3	(2%)
Unclassified structural area	70	(1%)	0	(4%)	0	(1%)	\$3	(2%)
Laundry room or area	70	(1%)	0	(0%)	0	(2%)	\$1	(1%)
Unclassified storage area	60	(1%)	0	(0%)	0	(0%)	\$2	(1%)
Lobby or entrance way	60	(1%)	0	(0%)	0	(1%)	\$2	(1%)
Exterior stairway, ramp, or fire escape	40	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Hallway, corridor, or mall	40	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Storage room, area, tank, or bin	40	(1%)	0	(0%)	0	(0%)	\$2	(1%)
Unclassified area of origin	40	(1%)	0	(0%)	10	(3%)	\$1	(1%)
Storage of supplies or tools or dead storage	40	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Unclassified means of egress	30	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Interior stairway or ramp	30	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Exterior roof surface	20	(1%)	0	(0%)	0	(0%)	\$1	(0%)

*Does not include fires in which the property use was coded as a residential garage.

**Table 5.6. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Area of Origin
2010-2014 Annual Averages (Continued)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Other known areas of origin	120	(2%)	0	(0%)	0	(1%)	\$5	(3%)
Total	4,920	(100%)	50	(100%)	220	(100%)	\$166	(100%)

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 5.7. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Item First Ignited
2010-2014 Annual Averages**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Electrical wire or cable insulation	740	(15%)	10	(15%)	30	(16%)	\$20	(12%)
Structural member or framing	420	(9%)	0	(4%)	10	(3%)	\$18	(11%)
Mattress or bedding	370	(7%)	10	(25%)	30	(13%)	\$13	(8%)
Clothing	340	(7%)	0	(0%)	20	(10%)	\$6	(3%)
Insulation within structural area	330	(7%)	0	(0%)	0	(0%)	\$11	(7%)
Exterior wall covering or finish	270	(5%)	0	(0%)	0	(0%)	\$9	(5%)
Interior ceiling cover or finish	190	(4%)	0	(7%)	0	(2%)	\$6	(3%)
Light vegetation including grass	160	(3%)	0	(0%)	0	(1%)	\$2	(1%)
Unclassified item First Ignited	150	(3%)	0	(0%)	10	(3%)	\$3	(2%)
Upholstered furniture or vehicle seat	150	(3%)	10	(19%)	20	(7%)	\$9	(5%)
Linen other than bedding	140	(3%)	0	(0%)	10	(3%)	\$5	(3%)
Floor covering rug, carpet, or mat	140	(3%)	0	(0%)	10	(3%)	\$8	(5%)
Appliance housing or casing	140	(3%)	0	(0%)	10	(4%)	\$3	(2%)
Unclassified soft goods or wearing apparel	140	(3%)	0	(3%)	10	(5%)	\$4	(3%)
Unclassified furniture or utensils	120	(2%)	0	(8%)	10	(6%)	\$4	(2%)
Unclassified structural component or finish	120	(2%)	0	(0%)	0	(0%)	\$5	(3%)
Unclassified organic materials	120	(2%)	0	(0%)	0	(0%)	\$3	(2%)
Curtains, blinds, drapery, or tapestry	110	(2%)	0	(3%)	10	(6%)	\$3	(2%)
Interior wall covering, excluding drapes	90	(2%)	0	(0%)	0	(1%)	\$4	(3%)
Cabinetry	80	(2%)	0	(0%)	0	(1%)	\$4	(2%)
Box, carton, bag, basket, or barrel	70	(1%)	0	(0%)	0	(0%)	\$4	(2%)
Magazine, newspaper, or writing paper	60	(1%)	0	(8%)	0	(1%)	\$3	(2%)
Multiple items first ignited	50	(1%)	0	(0%)	0	(2%)	\$4	(3%)
Other known item first ignited	430	(9%)	0	(8%)	30	(12%)	\$17	(10%)
Total	4,920	(100%)	50	(100%)	220	(100%)	\$166	(100%)

Note: Figures *exclude* confined fires. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Damage has not been adjusted for inflation. Totals may not equal sums because of rounding error.

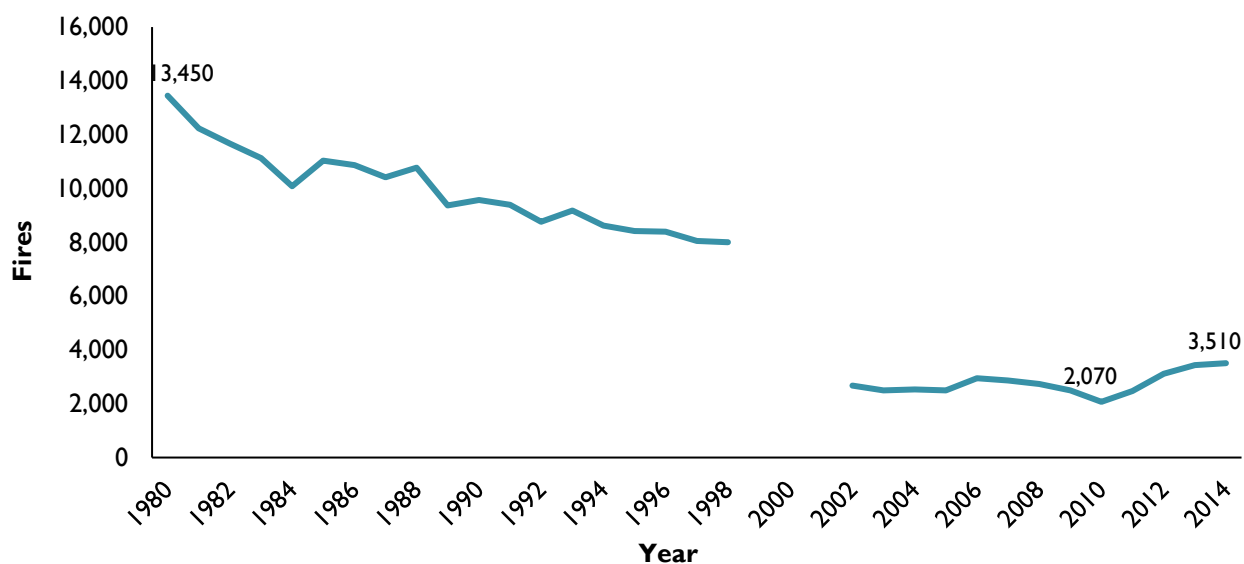
Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

Section 6. Home Fires Involving Cords and Plugs

In 2010-2014, there were an estimated 3,070 non-confined home fires each year involving cords or plugs. These fires annually resulted in 110 civilian deaths, 230 civilian injuries, and \$141 million in direct property damage.

As shown in Figure 6.1, home fires involving cords and plugs dropped sharply through the first half of the 1980s, then continued to decline, with some year-to-year fluctuation through 1998. Between 2002 and 2009, there was little change in the number of fires per year. Fires fell to a historic low of an estimated 2,070 fires in 2010. The estimated number of fires has increased every year since that low point, while remaining well below the numbers recorded prior to 2000.

Figure 6.1. Annual Home Fires Involving Cords or Plugs, 1980-2014



Note: Because of low participation in NFIRS Version 5.0 during 1999-2001, data from these years is not reported in these tables. See Note on [Table 6.1](#).

Extension cords account for the greatest share of home fires involving cords or plugs, with 57% of the fire total. These fires are responsible for even greater shares of civilian deaths (70%) and civilian injuries (69%), as well as 56% of direct property damage. See [Table 6.A](#). Unclassified cords or plugs were responsible for another 17% of home fires involving cords or plugs (21% of civilian deaths, 15% of civilian injuries, and 21% of direct property damage). Detachable cords and plugs accounted for 13% of fires involving cords and plugs and permanently attached power cords or plugs accounted for the remaining 12% of fires.

**Table 6.A. Home Fires Involving Cords or Plugs
2010-2014 Annual Averages**

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Extension cord	1,750	(57%)	80	(70%)	160	(69%)	\$79	(56%)
Unclassified cord or plug	540	(17%)	20	(21%)	40	(15%)	\$30	(21%)
Detachable power cord or plug	400	(13%)	0	(4%)	20	(8%)	\$16	(12%)
Permanently attached power cord or plug	380	(12%)	10	(5%)	20	(7%)	\$16	(11%)
Total	3,070	(100%)	110	(100%)	230	(100%)	\$141	(100%)

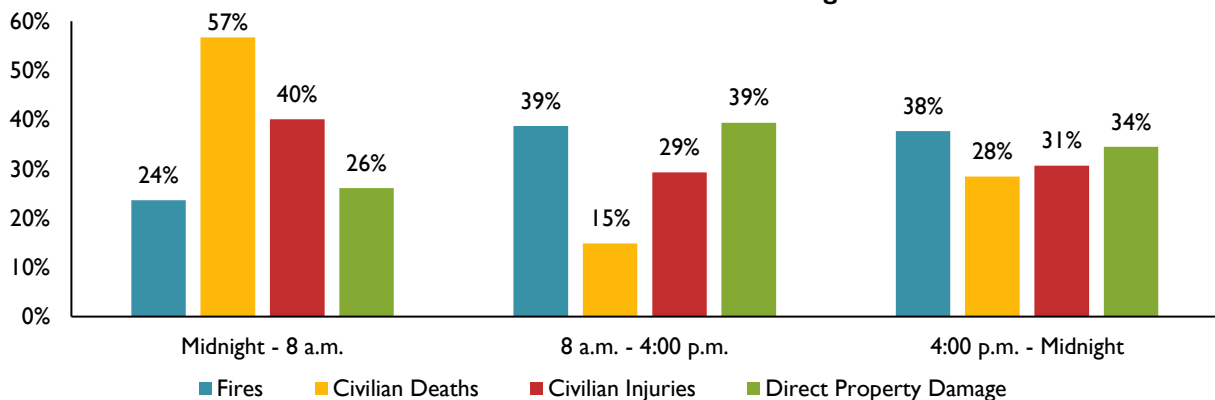
Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey

Timing of fires. The months with the greatest shares of home fires involving cords or plugs were December (11%), January (10%), February (9%), July (9%), and November (9%). See [Table 6.2](#). No significant trends are apparent in these fires by day of week. Results are shown in [Table 6.3](#).

As shown in Figure 6.2, fewer home fires involving cords and plugs took place between midnight and 8 a.m. (24% of total), but these fires accounted for nearly 3 in 5 civilian deaths (57%), 40% of civilian injuries, and 26% of direct property damage. Almost two in five fires occurred between 8 a.m. and 4 p.m., but these fires were associated with 15% of civilian deaths and 29% of civilian injuries. The remaining 38% of fires took place between 4 p.m. and midnight and were associated with 28% of civilian deaths, 31% of civilian injuries, and 34% of direct property damage. The complete data is available in [Table 6.4](#).

**Figure 6.2. Home Fires Involving Cords or Plugs, by Alarm Time
2010-2014 Annual Averages**



Note: See Note on [Table 6.4](#).

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Factor contributing to ignition. The leading factor contributing to ignition of home fires involving cords or plugs was unclassified electrical failure or malfunction (31% of total), followed by unspecified short circuit arc (22%), equipment overloaded (13%), and short circuit arc from defective or worn insulation (12%). The fires involving unspecified short circuit arcs accounted approximately half (49%) of the civilian deaths, while overloaded equipment fires were associated with one-fifth (20%) of civilian injuries. Other leading factors contributing to ignition included unclassified misuse of material or product (6%), arc from faulty contact or broken conductor (4%), short circuit arc from mechanical damage (3%), and heat source too close to combustibles (3%). See [Table 6.5](#) for details.

Area of origin. One-third (33%) of home fires involving cords or plugs originated in the bedroom. These fires accounted for 21% of civilian deaths, 41% of civilian injuries, and 33% of direct property damage. The second leading area of origin was a living room or family room, with 15% of fires, as well as 32% of civilian deaths, 21% of civilian injuries, and 18% of direct property damage. Other leading areas of origin included kitchens or cooking areas (6%), garages or vehicle storage areas (6%), unclassified function areas (6%), laundry rooms (4%), and crawl or substructure spaces (3%). See [Table 6.6](#) for more information

Item first ignited. The leading item first ignited in home fires involving cord or plugs was electrical wire or cable insulation, with 39% of the total, followed by floor covering, rug, carpet, or mat (8%), mattress or bedding (7%), clothing (5%), interior wall covering, excluding drapes (5%), structural member or framing (3%), unclassified furniture or utensils (3%), and multiple items first ignited (3%). See [Table 6.7](#) for details.

6.1 Home Fires Involving Extension Cords

As indicated in [Table 6.A](#), fires involving extension cords account for 57% of the fires involving cords or plugs, as well as disproportionate shares of civilian deaths (70%) and injuries (69%). Extension cords were involved in an estimated average of 1,750 non-confined home fires in the 2010-2014 period. These fires resulted in annual averages of 80 civilian deaths, 160 civilian injuries, and \$79 million in direct property damage, as indicated in [Table 6.A](#).

Factor contributing to ignition. Unclassified electrical failures or malfunctions (29% of fires) and unspecified short circuit arcs (22% of fires) were the leading factors contributing to the ignition of home fires involving extension cords. The fires in which unspecified short circuit arcs contributed to ignition accounted for 46% of civilian deaths. Other leading factors contributing to ignition included equipment overloaded (17% of fires), short circuit arc from defective or worn insulation (13%), and unclassified misuse of material or product (7%). See [Table 6.8](#) for details.

Area of origin. Bedrooms are the leading area of origin for home fires involving extension cords, with 35% of the total. These fires accounted for 24% of the civilian deaths, 43% of the civilian injuries, and 34% of the direct property damage. Another 14% of fires originated in living rooms, family rooms, or dens, and these fires resulted in 28% of the civilian deaths, 21% of civilian injuries, and 15% of direct property damage. Other leading areas of origin included garages or vehicle storage areas (7% of fires), unclassified function areas (7%), and kitchens or cooking areas (5%). See [Table 6.9](#).

Item first ignited. In nearly two of five home fires involving extension cords (39%), the item first ignited was electrical wire or cable insulation. These fires accounted for 18% of civilian deaths, 35% of civilian injuries, and 36% of direct property damage. Other leading items first ignited included floor coverings, rugs, carpets, or mats (9%), mattresses or bedding (7%), upholstered furniture (6%), and clothing (5%). Fires in which upholstered furniture was first ignited accounted for 27% of the civilian deaths. See [Table 6.10](#) for more information.

**Table 6.1 Home Fires Involving Cords or Plugs, by Year
Structure Fires Reported to U.S. Fire Departments**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	
				As Reported	In 2014 Dollars
1980	13,450	190	500	\$98	\$282
1981	12,240	160	450	\$113	\$294
1982	11,660	170	670	\$108	\$265
1983	11,130	130	470	\$114	\$271
1984	10,080	170	570	\$106	\$241
1985	11,040	150	470	\$228	\$501
1986	10,870	260	580	\$120	\$260
1987	10,420	170	510	\$104	\$217
1988	10,770	120	640	\$147	\$295
1989	9,370	210	600	\$121	\$231
1990	9,570	200	610	\$142	\$258
1991	9,390	150	790	\$207	\$360
1992	8,760	160	610	\$141	\$238
1993	9,180	180	720	\$154	\$253
1994	8,620	130	540	\$143	\$229
1995	8,420	120	550	\$142	\$221
1996	8,400	160	520	\$165	\$249
1997	8,050	130	420	\$152	\$224
1998	8,000	80	480	\$178	\$259
1999	4,980	60	110	\$115	\$164
2000	3,660	40	650	\$96	\$132
2001	3,380	40	140	\$89	\$119
2002	2,680	80	180	\$89	\$117
2003	2,490	70	190	\$156	\$201
2004	2,530	130	150	\$96	\$121
2005	2,500	220	300	\$121	\$147
2006	2,950	140	190	\$98	\$115
2007	2,870	80	250	\$61	\$70
2008	2,730	80	190	\$111	\$122
2009	2,490	130	200	\$134	\$148
2010	2,070	80	220	\$97	\$106
2011	2,470	100	150	\$103	\$109
2012	3,110	70	220	\$148	\$153
2013	3,430	160	260	\$163	\$166
2014	3,510	130	270	\$163	\$163

**Table 6.1 Home Fires Involving Cords or Plugs, by Year
Structure Fires Reported to U.S. Fire Departments (Continued)**

* All 1991 home fire property damage figures are inflated by estimation problems related to the handling of the Oakland fire storm.

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Because of low participation in NFIRS Version 5.0 during 1999-2001, estimates for those years are highly uncertain and must be used with caution. Inflation adjustment to 2014 dollars is calculated using the Consumer Price Index.

Source: Data from NFIRS and NFPA Survey.

**Table 6.2. Home Fires Involving Cords or Plugs, by Month
2010-2014 Annual Averages**

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	310	(10%)	20	(14%)	30	(14%)	\$19	(14%)
February	280	(9%)	10	(8%)	20	(9%)	\$12	(9%)
March	250	(8%)	10	(13%)	20	(7%)	\$13	(9%)
April	240	(8%)	10	(11%)	20	(10%)	\$12	(9%)
May	240	(8%)	10	(8%)	20	(8%)	\$11	(8%)
June	240	(8%)	10	(5%)	10	(5%)	\$10	(7%)
July	270	(9%)	10	(6%)	10	(5%)	\$14	(10%)
August	230	(7%)	0	(3%)	20	(8%)	\$9	(6%)
September	210	(7%)	10	(9%)	10	(4%)	\$9	(7%)
October	210	(7%)	10	(6%)	20	(7%)	\$8	(5%)
November	260	(9%)	10	(12%)	20	(9%)	\$10	(7%)
December	340	(11%)	10	(5%)	40	(15%)	\$13	(9%)
Total	3,070	(100%)	110	(100%)	230	(100%)	\$141	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 6.3. Home Fires Involving Cords or Plugs, by Day
2010-2014 Annual Averages**

Day of Week	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Sunday	420	(14%)	10	(11%)	40	(17%)	\$19	(14%)
Monday	450	(15%)	10	(9%)	30	(12%)	\$17	(12%)
Tuesday	430	(14%)	20	(15%)	30	(14%)	\$21	(15%)
Wednesday	420	(14%)	20	(15%)	30	(13%)	\$18	(13%)
Thursday	420	(14%)	20	(16%)	40	(19%)	\$18	(13%)
Friday	470	(15%)	10	(10%)	30	(13%)	\$23	(16%)
Saturday	460	(15%)	30	(26%)	30	(12%)	\$25	(18%)
Total	3,070	(100%)	110	(100%)	230	(100%)	\$141	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 6.4. Home Fires Involving Cords or Plugs, by Alarm Time
2010-2014 Annual Averages**

Alarm Time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Midnight-12:59 a.m.	100	(3%)	10	(5%)	10	(2%)	\$3	(2%)
1:00-1:59 a.m.	80	(3%)	20	(20%)	10	(5%)	\$4	(3%)
2:00-2:59 a.m.	100	(3%)	0	(3%)	10	(5%)	\$5	(4%)
3:00-3:59 a.m.	80	(3%)	0	(2%)	10	(3%)	\$5	(3%)
4:00-4:59 a.m.	90	(3%)	10	(13%)	20	(10%)	\$4	(3%)
5:00-5:59 a.m.	70	(2%)	0	(0%)	10	(2%)	\$5	(3%)
6:00-6:59 a.m.	100	(3%)	0	(2%)	10	(6%)	\$5	(3%)
7:00-7:59 a.m.	90	(3%)	10	(12%)	10	(6%)	\$6	(4%)
8:00-8:59 a.m.	120	(4%)	0	(2%)	10	(4%)	\$5	(3%)
9:00-9:59 a.m.	120	(4%)	0	(3%)	10	(4%)	\$6	(4%)
10:00-10:59 a.m.	130	(4%)	0	(2%)	10	(4%)	\$7	(5%)
11:00-11:59 a.m.	180	(6%)	0	(3%)	10	(4%)	\$7	(5%)
12:00-12:59 p.m.	160	(5%)	10	(5%)	10	(6%)	\$8	(6%)
1:00-1:59 p.m.	160	(5%)	0	(0%)	10	(4%)	\$8	(6%)
2:00-2:59 p.m.	150	(5%)	0	(0%)	0	(1%)	\$7	(5%)
3:00-3:59 p.m.	170	(6%)	0	(0%)	0	(2%)	\$8	(5%)
4:00-4:59 p.m.	180	(6%)	0	(3%)	10	(6%)	\$7	(5%)
5:00-5:59 p.m.	180	(6%)	0	(0%)	10	(3%)	\$9	(6%)
6:00-6:59 p.m.	140	(5%)	0	(3%)	10	(4%)	\$6	(4%)
7:00-7:59 p.m.	160	(5%)	0	(3%)	10	(4%)	\$6	(4%)
8:00-8:59 p.m.	140	(4%)	0	(0%)	10	(3%)	\$5	(3%)
9:00-9:59 p.m.	110	(4%)	0	(2%)	10	(5%)	\$3	(2%)
10:00-10:59 p.m.	140	(4%)	10	(5%)	0	(1%)	\$5	(4%)
11:00-11:59 p.m.	110	(4%)	10	(12%)	10	(4%)	\$8	(6%)
Total	3,070	(100%)	110	(100%)	230	(100%)	\$141	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 6.5. Home Fires Involving Cords or Plugs, by Factor Contributing to Ignition
2010-2014 Annual Averages**

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	940	(31%)	20	(14%)	80	(35%)	\$47	(34%)
Unspecified short circuit arc	680	(22%)	50	(49%)	40	(18%)	\$30	(21%)
Equipment overloaded	400	(13%)	20	(21%)	50	(20%)	\$18	(12%)
Short circuit arc from defective or worn insulation	370	(12%)	10	(11%)	20	(10%)	\$15	(10%)
Unclassified misuse of material or product	180	(6%)	0	(4%)	20	(9%)	\$8	(6%)
Arc from faulty contact or broken conductor	110	(4%)	0	(4%)	10	(4%)	\$4	(3%)
Short circuit arc from mechanical damage	100	(3%)	0	(4%)	10	(3%)	\$6	(5%)
Heat source too close to combustibles.	100	(3%)	10	(7%)	10	(3%)	\$6	(4%)
Arc or spark from operating equipment	70	(2%)	0	(0%)	0	(1%)	\$3	(2%)
Unclassified mechanical failure or malfunction	70	(2%)	0	(2%)	0	(2%)	\$3	(2%)
Equipment used for not intended purpose	60	(2%)	0	(2%)	10	(4%)	\$2	(1%)
Worn out	30	(1%)	0	(2%)	0	(1%)	\$2	(1%)
Water caused short-circuit arc	30	(1%)	0	(0%)	0	(0%)	\$3	(2%)
Equipment not being operated properly	30	(1%)	0	(0%)	10	(3%)	\$1	(1%)
Unclassified factor contributing to ignition	30	(1%)	0	(0%)	0	(0%)	\$2	(2%)
Installation deficiency	20	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Equipment unattended	20	(1%)	0	(0%)	0	(1%)	\$1	(0%)
Other known factor contributing to ignition	80	(2%)	0	(2%)	0	(2%)	\$4	(3%)
Total fires	3,070	(100%)	110	(100%)	230	(100%)	\$141	(100%)
Total factors	3,320	(108%)	140	(123%)	260	(115%)	\$154	(110%)

Note: Figures *exclude* confined fires. Multiple entries are allowed, which can result in sums higher than totals. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 6.6. Home Fires Involving Cords or Plugs, by Area of Origin
2010-2014 Annual Averages**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Bedroom	1,030	(33%)	20	(21%)	100	(41%)	\$46	(33%)
Living room or family room	460	(15%)	40	(32%)	50	(21%)	\$25	(18%)
Kitchen or cooking area	200	(6%)	10	(7%)	20	(7%)	\$7	(5%)
Garage or vehicle storage area*	190	(6%)	0	(3%)	10	(6%)	\$13	(9%)
Unclassified function area	190	(6%)	10	(10%)	20	(9%)	\$8	(6%)
Laundry room or area	120	(4%)	0	(0%)	0	(2%)	\$3	(2%)
Crawl space or substructure space	100	(3%)	0	(0%)	0	(1%)	\$2	(1%)
Exterior wall surface	80	(2%)	0	(0%)	0	(0%)	\$2	(1%)
Wall assembly or concealed space	60	(2%)	0	(2%)	0	(0%)	\$2	(1%)
Exterior balcony or unenclosed porch	60	(2%)	10	(11%)	0	(1%)	\$4	(3%)
Bathroom or lavatory	50	(2%)	0	(0%)	0	(0%)	\$1	(1%)
Unclassified storage area	50	(2%)	0	(0%)	0	(1%)	\$2	(2%)
Unclassified structural area	50	(2%)	0	(4%)	0	(1%)	\$3	(2%)
Dining room	50	(1%)	0	(0%)	0	(2%)	\$2	(1%)
Attic or ceiling/roof assembly or concealed space	40	(1%)	0	(2%)	0	(0%)	\$2	(1%)
Storage room, area, tank, or bin	30	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Courtyard, terrace or patio	30	(1%)	0	(2%)	0	(0%)	\$1	(1%)
Ceiling/floor assembly or concealed space	30	(1%)	0	(2%)	0	(1%)	\$1	(1%)
Closet	30	(1%)	0	(0%)	0	(1%)	\$1	(0%)
Storage of supplies or tools or dead storage	20	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Office	30	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Lobby or entrance way	20	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Unclassified outside area	20	(1%)	0	(4%)	0	(2%)	\$6	(4%)
Hallway or corridor	20	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Unclassified area of origin	20	(1%)	0	(2%)	0	(0%)	\$1	(1%)
Other known area of origin	110	(4%)	0	(2%)	0	(1%)	\$4	(3%)
Total	3,070	(100%)	110	(100%)	230	(100%)	\$141	(100%)

*Excludes fires in which property was coded as residential garage.

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 6.7. Home Fires Involving Cords or Plugs, by Item First Ignited
2010-2014 Annual Averages**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical wire or cable insulation	1,200	(39%)	30	(24%)	80	(36%)	\$48	(34%)
Floor covering, rug, carpet, or mat	250	(8%)	10	(11%)	20	(10%)	\$11	(8%)
Mattress or bedding	210	(7%)	10	(7%)	30	(13%)	\$9	(7%)
Upholstered furniture	160	(5%)	20	(19%)	40	(17%)	\$8	(6%)
Clothing	150	(5%)	0	(2%)	10	(3%)	\$5	(4%)
Interior wall covering, excluding drapes	140	(5%)	0	(0%)	0	(1%)	\$7	(5%)
Structural member or framing	100	(3%)	0	(4%)	0	(2%)	\$5	(3%)
Unclassified furniture or utensils	90	(3%)	0	(0%)	0	(1%)	\$4	(3%)
Multiple items first ignited	80	(3%)	10	(7%)	10	(3%)	\$7	(5%)
Cabinetry	70	(2%)	0	(0%)	0	(0%)	\$5	(4%)
Appliance housing or casing	70	(2%)	0	(0%)	0	(1%)	\$4	(3%)
Unclassified soft goods or wearing apparel	60	(2%)	0	(0%)	10	(3%)	\$2	(2%)
Exterior wall covering or finish	60	(2%)	10	(12%)	0	(1%)	\$3	(2%)
Unclassified item first ignited	60	(2%)	10	(5%)	0	(2%)	\$4	(3%)
Unclassified structural component or finish	50	(2%)	0	(0%)	0	(1%)	\$1	(1%)
Box, carton, bag, basket, or barrel	40	(1%)	0	(0%)	0	(0%)	\$4	(3%)
Insulation within structural area	30	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Magazine, newspaper, or writing paper	30	(1%)	10	(5%)	0	(0%)	\$2	(1%)
Curtains, blinds, drapery, or tapestry	30	(1%)	0	(0%)	0	(0%)	\$3	(2%)
Flammable and combustible liquids and gases, piping and filter	20	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Exterior trim, including doors	20	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Linen other than bedding	20	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Other known item first ignited	140	(5%)	0	(4%)	10	(3%)	\$7	(5%)
Total	3,070	(100%)	110	(100%)	230	(100%)	\$141	(100%)

Note: Figures *exclude* confined fires. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 6.8. Home Fires Involving Extension Cords, by Factor Contributing to Ignition
2010-2014 Annual Averages**

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	510	(29%)	10	(16%)	50	(32%)	\$27	(34%)
Unspecified short-circuit arc	380	(22%)	40	(46%)	30	(18%)	\$16	(20%)
Equipment overloaded	290	(17%)	20	(26%)	30	(20%)	\$12	(15%)
Short circuit arc from defective or worn insulation	220	(13%)	10	(9%)	20	(13%)	\$9	(11%)
Unclassified misuse of material or product	120	(7%)	0	(3%)	20	(11%)	\$5	(7%)
Arc from faulty contact or broken conductor	60	(3%)	0	(6%)	10	(5%)	\$2	(3%)
Heat source too close to combustibles	50	(3%)	10	(9%)	10	(4%)	\$4	(5%)
Short circuit arc from mechanical damage	50	(3%)	0	(3%)	0	(2%)	\$3	(3%)
Equipment not used for intended purpose	50	(3%)	0	(3%)	10	(5%)	\$1	(2%)
Arc or spark from operating equipment	30	(2%)	0	(0%)	0	(1%)	\$2	(2%)
Unclassified mechanical failure or malfunction	20	(1%)	0	(3%)	0	(0%)	\$1	(2%)
Equipment not being operated properly	20	(1%)	0	(0%)	10	(4%)	\$1	(1%)
Water caused short-circuit arc	20	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Worn out	20	(1%)	0	(3%)	0	(1%)	\$1	(2%)
Unclassified operational deficiency	10	(1%)	0	(3%)	0	(1%)	\$1	(1%)
Equipment unattended	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Installation deficiency	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Unclassified factor contributing to ignition	10	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Other known factor contributing to ignition	30	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Total fires	1,750	(100%)	80	(100%)	160	(100%)	\$79	(100%)
Total factors	1,920	(109%)	100	(129%)	190	(118%)	\$87	(111%)

Note: Figures *exclude* confined fires. Multiple entries are allowed, which can result in sums higher than totals. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 6.9. Home Fires Involving Extension Cords, by Area of Origin
2010-2014 Annual Averages**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Bedroom	620	(35%)	20	(24%)	70	(43%)	\$26	(34%)
Living room, family room, or den	240	(14%)	20	(28%)	30	(21%)	\$12	(15%)
Garage or vehicle storage area ⁸	120	(7%)	0	(2%)	10	(5%)	\$8	(10%)
Unclassified function area	120	(7%)	10	(14%)	20	(11%)	\$5	(6%)
Kitchen or cooking area	90	(5%)	0	(4%)	10	(4%)	\$3	(3%)
Crawl space or substructure space	60	(4%)	0	(0%)	0	(1%)	\$1	(2%)
Exterior wall surface	50	(3%)	0	(0%)	0	(1%)	\$2	(2%)
Laundry room or area	50	(3%)	0	(0%)	0	(2%)	\$1	(1%)
Exterior balcony or unenclosed porch	40	(2%)	10	(15%)	0	(1%)	\$3	(4%)
Dining room	30	(2%)	0	(0%)	0	(3%)	\$1	(1%)
Unclassified structural area	30	(2%)	0	(0%)	0	(1%)	\$2	(2%)
Unclassified storage area	20	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Storage room, area, tank, or bin	20	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Attic or ceiling/roof assembly or concealed space	20	(1%)	0	(2%)	0	(1%)	\$1	(2%)
Ceiling/floor assembly or concealed space	20	(1%)	0	(2%)	0	(1%)	\$1	(1%)
Lobby or entrance way	20	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Courtyard, terrace or patio	20	(1%)	0	(2%)	0	(0%)	\$1	(1%)
Bathroom or lavatory	20	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Storage of supplies or tools or dead storage	20	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Wall assembly or concealed space	20	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Closet	20	(1%)	0	(0%)	0	(1%)	\$0	(0%)
Hallway or corridor	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Office	10	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Interior stairway or ramp	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Unclassified outside area	10	(1%)	0	(5%)	0	(2%)	\$5	(6%)
Unclassified area of origin	10	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Other known area of origin	50	(3%)	0	(0%)	0	(1%)	\$2	(3%)
Total	1,750	(100%)	80	(100%)	160	(100%)	\$79	(100%)

*Excludes fires in which property was coded as residential garage.

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 6.10. Home Fires Involving Extension Cords, by Item First Ignited
2010-2014 Annual Averages**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical wire or cable insulation	690	(39%)	10	(18%)	60	(35%)	\$28	(36%)
Floor covering rug, carpet, or mat	160	(9%)	10	(12%)	20	(10%)	\$7	(8%)
Mattress or bedding	120	(7%)	10	(10%)	20	(13%)	\$6	(7%)
Upholstered furniture	110	(6%)	20	(27%)	30	(17%)	\$5	(6%)
Clothing	90	(5%)	0	(3%)	10	(3%)	\$3	(4%)
Interior wall covering, excluding drapes	70	(4%)	0	(0%)	0	(1%)	\$3	(3%)
Structural member or framing	60	(4%)	0	(0%)	0	(3%)	\$3	(4%)
Multiple items first ignited	50	(3%)	10	(7%)	10	(3%)	\$4	(5%)
Unclassified furniture or utensils	40	(2%)	0	(0%)	0	(1%)	\$1	(2%)
Cabinetry	40	(2%)	0	(0%)	0	(0%)	\$2	(3%)
Exterior wall covering or finish	40	(2%)	10	(17%)	0	(1%)	\$2	(3%)
Unclassified soft goods or wearing apparel	30	(2%)	0	(0%)	10	(3%)	\$2	(2%)
Box, carton, bag, basket, or barrel	30	(2%)	0	(0%)	0	(0%)	\$2	(3%)
Unclassified structural component or finish	20	(1%)	0	(0%)	0	(2%)	\$1	(1%)
Unclassified item first ignited	20	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Magazine, newspaper, or writing paper	20	(1%)	10	(6%)	0	(0%)	\$1	(2%)
Curtains, blinds, drapery, or tapestry	20	(1%)	0	(0%)	0	(1%)	\$2	(2%)
Appliance housing or casing	20	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Exterior trim, including doors	10	(1%)	0	(0%)	0	(1%)	\$0	(0%)
Insulation within structural area	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Rubbish, trash, or waste	10	(1%)	0	(0%)	0	(1%)	\$0	(0%)
Light vegetation, including grass	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Linen other than bedding	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Other known item first ignited	60	(4%)	0	(0%)	10	(3%)	\$4	(5%)
Total fires	1,750	(100%)	80	(100%)	160	(100%)	\$79	(100%)

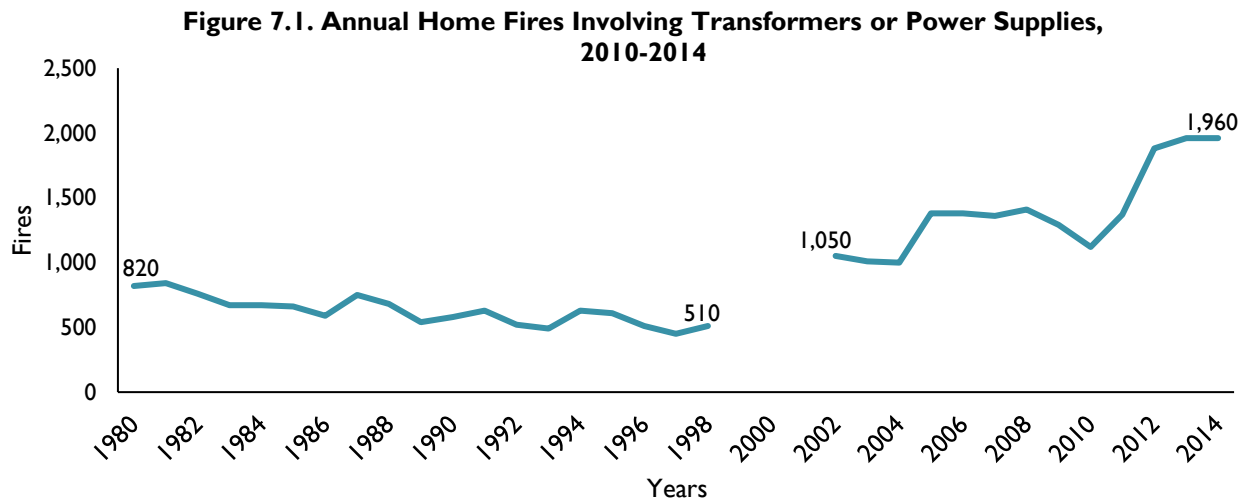
Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

Section 7. Home Fires Involving Transformers or Power Supplies

There were an estimated average of 1,760 non-confined home fires each year from 2010 through 2014 that involved transformers or power supplies. These fires resulted in annual averages of 10 civilian deaths, 100 civilian injuries, and \$99 in direct property damage.

Figure 7.1 shows that fires involving transformers or power supplies followed a general but inconsistent downward trend from 1980 into the late 1990s. The estimated number of annual fires since 2002 have risen substantially over the estimates from prior years and have risen sharply since 2011. Some of this increase may be due to the changes in NFIRS described on page 2. See [Table 7.1](#) for more information.



Note: Because of low participation in NFIRS Version 5.0 during 1999-2001, data from these years is not reported in these tables. See Note on [Table 7.1](#).

Surge protectors were involved in 34% of the fires involving transformers or power supplies during 2010-2014, and these fires accounted for all the civilian deaths, 38% of civilian injuries, and 30% of direct property damage. Approximately one-fifth (21%) of fires involved battery chargers or rectifiers (22% of civilian injuries, 32% of direct property damage). Generators accounted for 17% of the fires, as well as 18% of civilian injuries and 20% of direct property damage. Other types of equipment included batteries (8% of fires), overcurrent or disconnect equipment (7%), transformers or low voltage equipment (6%), and distribution type transformers (5%). See [Table 7.A](#) for details.

**Table 7.A. Home Fires Involving Transformers or Power Supplies, by Type of Equipment
2010-2014 Annual Averages**

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Surge protector	590	(34%)	10	(100%)	40	(38%)	\$30	(30%)
Battery charger or rectifier	360	(21%)	0	(0%)	20	(22%)	\$32	(32%)
Generator	300	(17%)	0	(0%)	20	(18%)	\$20	(20%)
Battery	150	(8%)	0	(0%)	10	(14%)	\$7	(7%)
Overcurrent or disconnect equipment	130	(7%)	0	(0%)	0	(3%)	\$2	(2%)
Transformer or low voltage	110	(6%)	0	(0%)	0	(1%)	\$4	(4%)
Distribution type transformer	90	(5%)	0	(0%)	0	(1%)	\$2	(2%)
Uninterrupted power supply	30	(2%)	0	(0%)	0	(3%)	\$1	(1%)
Inverter	10	(1%)	0	(0%)	0	(1%)	\$0	(0%)
Total	1,760	(100%)	10	(100%)	100	(100%)	\$99	(100%)

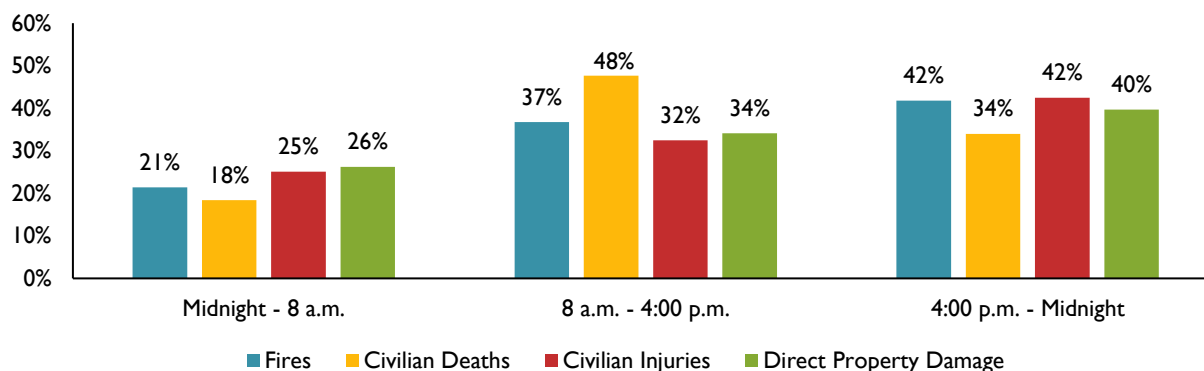
Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Timing of fires. The peak months for non-confined home fires involving transformers or power supplies were July and August, each with 10% of total, followed by June and January, each with 9% of total. All other months had either a 7% or 8% share of the annual fires. See [Table 7.2](#). No patterns were evident in fires by day of week (See [Table 7.3](#)).

As shown in [Figure 7.2](#), fewer fires involving transformers or power supplies took place during the overnight hours, with 21% of fires occurring between midnight and 8 a.m. These fires accounted for 18% of civilian deaths, 25% of civilian injuries, and 26% of direct property damage. The largest share of fires (42%) occurred between 4 p.m. and midnight, accounting for 34% of civilian deaths, 42% of civilian injuries, and 40% of direct property damage. The remaining 37% of the fires occurred between 8 a.m. and 4 p.m. These fires resulted in 48% of the civilian deaths, 32% of civilian injuries, and 34% of direct property damage. Detailed information is available in [Table 7.4](#).

Figure 7.2. Home Fires Involving Transformers or Power Supplies, by Alarm Hour 2010-2014 Annual Averages



Note: See Note on [Table 7.4](#).

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Factor Contributing to Ignition. Unclassified electrical failures or malfunctions were the leading factor contributing to the ignition of home fires involving transformers or power supplies (35% of the total), followed by unspecified short circuit arcs (19%), heat sources too close to combustible material (8%), unclassified mechanical failures or malfunctions (6%), and equipment overloaded (6%). More detailed information is available in [Table 7.5](#).

Area of Origin. Approximately one-fifth of fires (22%) involving transformers or power supplies originated in the bedroom, and these fires accounted for 50% of civilian deaths, 32% of civilian injuries, and 19% of direct property damage. Another 16% of the fires originated in a garage or vehicle storage area, and 11% originated in a living room, family room, or den. The fires originating in a garage or vehicle storage area accounted for the highest share of direct property damage, with 36% of the total. Other leading areas of origin included unclassified function areas (5%), exterior wall surfaces (5%), and kitchen or cooking areas (4%). See [Table 7.6](#).

Item First Ignited. The item first ignited in just over one-third of home fires involving transformers or power supplies was electrical wire or cable insulation (36%), followed by exterior wall covering or finish (7%), floor covering, rug, carpet, or mat (5%), flammable and combustible liquids and gases, piping and filter (5%), and structural member or framing (4%). A diffuse array of items accounted for the remaining share of the item first ignited total. See [Table 7.7](#).

**Table 7.1. Home Fires Involving Transformers or Power Supplies, by Year
Structure Fires Reported to U.S. Fire Departments**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions) As Reported	In 2014 Dollars
1980	820	16	10	\$3	\$9
1981	840	0	10	\$4	\$10
1982	760	0	10	\$5	\$12
1983	670	0	20	\$4	\$10
1984	670	0	10	\$10	\$23
1985	660	0	10	\$6	\$13
1986	590	0	0	\$7	\$15
1987	750	4	30	\$5	\$10
1988	680	0	10	\$6	\$12
1989	540	0	20	\$14	\$27
1990	580	0	10	\$4	\$7
1991	630	4	10	\$12	\$21
1992	520	0	20	\$4	\$7
1993	490	0	20	\$10	\$16
1994	630	0	40	\$9	\$14
1995	610	0	10	\$7	\$11
1996	510	19	10	\$10	\$15
1997	450	0	10	\$10	\$15
1998	510	0	0	\$10	\$15
1999	1,320	0	110	\$43	\$61
2000	1,100	0	0	\$18	\$25
2001	980	131	50	\$40	\$54
2002	1,050	15	40	\$31	\$41
2003	1,010	0	20	\$52	\$67
2004	1,000	29	60	\$41	\$51
2005	1,380	29	130	\$75	\$91
2006	1,380	10	70	\$50	\$59
2007	1,360	12	30	\$58	\$66
2008	1,410	14	130	\$64	\$71
2009	1,290	10	120	\$50	\$55
2010	1,120	0	40	\$71	\$77
2011	1,370	20	60	\$82	\$86
2012	1,880	15	110	\$116	\$119
2013	1,960	18	160	\$118	\$120
2014	1,960	0	90	\$91	\$91

**Table 7.1. Home Fires Involving Transformers or Power Supplies, by Year
Structure Fires Reported to U.S. Fire Departments (Continued)**

* All 1991 home fire property damage figures are inflated by estimation problems related to the handling of the Oakland fire storm.

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Because of low participation in NFIRS Version 5.0 during 1999-2001, estimates for those years are highly uncertain and must be used with caution. Inflation adjustment to 2014 dollars is calculated using the Consumer Price Index.

Source: Data from NFIRS and NFPA Fire Experience survey.

**Table 7.2. Home Fires Involving Transformers or Power Supplies, by Month
2010-2014 Annual Averages**

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	160	(9%)	0	(0%)	10	(6%)	\$8	(8%)
February	140	(8%)	0	(0%)	0	(4%)	\$10	(10%)
March	140	(8%)	0	(34%)	10	(13%)	\$9	(9%)
April	130	(7%)	0	(0%)	10	(9%)	\$7	(7%)
May	140	(8%)	0	(18%)	10	(6%)	\$7	(7%)
June	160	(9%)	0	(0%)	10	(6%)	\$10	(10%)
July	180	(10%)	0	(0%)	10	(14%)	\$10	(10%)
August	170	(10%)	0	(0%)	10	(10%)	\$8	(8%)
September	130	(7%)	0	(0%)	10	(10%)	\$8	(8%)
October	140	(8%)	0	(0%)	10	(8%)	\$7	(7%)
November	120	(7%)	0	(0%)	10	(9%)	\$6	(6%)
December	150	(8%)	10	(48%)	10	(5%)	\$8	(9%)
Total	1,760	(100%)	10	(100%)	100	(100%)	\$99	(100%)

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 7.3. Home Fires Involving Transformers or Power Supplies, by Day
2010-2014 Annual Averages**

Day of Week	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Sunday	260	(15%)	0	(0%)	20	(23%)	\$14	(15%)
Monday	250	(14%)	0	(16%)	10	(10%)	\$14	(14%)
Tuesday	240	(14%)	0	(37%)	20	(15%)	\$11	(11%)
Wednesday	250	(14%)	10	(48%)	10	(13%)	\$13	(13%)
Thursday	270	(15%)	0	(0%)	20	(21%)	\$18	(18%)
Friday	230	(13%)	0	(0%)	0	(5%)	\$16	(16%)
Saturday	260	(15%)	0	(0%)	10	(13%)	\$14	(14%)
Total	1,760	(100%)	10	(100%)	100	(100%)	\$99	(100%)

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 7.4. Home Fires Involving Transformers or Power Supplies, by Alarm Time
2010-2014 Annual Averages**

Alarm Time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Midnight-12:59 a.m.	60	(4%)	0	(0%)	10	(8%)	\$5	(5%)
1:00-1:59 a.m.	40	(2%)	0	(0%)	10	(5%)	\$3	(3%)
2:00-2:59 a.m.	50	(3%)	0	(0%)	0	(4%)	\$3	(3%)
3:00-3:59 a.m.	50	(3%)	0	(0%)	0	(2%)	\$5	(5%)
4:00-4:59 a.m.	30	(2%)	0	(18%)	0	(3%)	\$3	(3%)
5:00-5:59 a.m.	50	(3%)	0	(0%)	0	(1%)	\$2	(2%)
6:00-6:59 a.m.	50	(3%)	0	(0%)	0	(2%)	\$1	(1%)
7:00-7:59 a.m.	40	(3%)	0	(0%)	0	(1%)	\$2	(2%)
8:00-8:59 a.m.	60	(3%)	0	(0%)	0	(4%)	\$3	(3%)
9:00-9:59 a.m.	70	(4%)	0	(0%)	10	(6%)	\$3	(3%)
10:00-10:59 a.m.	70	(4%)	0	(16%)	0	(4%)	\$4	(4%)
11:00-11:59 a.m.	60	(4%)	0	(32%)	0	(2%)	\$3	(3%)
12:00-12:59 p.m.	90	(5%)	0	(0%)	0	(3%)	\$8	(9%)
1:00-1:59 p.m.	100	(6%)	0	(0%)	10	(7%)	\$4	(4%)
2:00-2:59 p.m.	100	(6%)	0	(0%)	10	(5%)	\$4	(4%)
3:00-3:59 p.m.	90	(5%)	0	(0%)	0	(1%)	\$3	(3%)
4:00-4:59 p.m.	100	(6%)	0	(0%)	0	(4%)	\$5	(5%)
5:00-5:59 p.m.	100	(6%)	0	(18%)	0	(3%)	\$4	(4%)
6:00-6:59 p.m.	110	(6%)	0	(0%)	0	(5%)	\$4	(4%)
7:00-7:59 p.m.	110	(6%)	0	(0%)	0	(4%)	\$5	(5%)
8:00-8:59 p.m.	100	(6%)	0	(16%)	0	(3%)	\$8	(8%)
9:00-9:59 p.m.	90	(5%)	0	(0%)	10	(7%)	\$5	(5%)
10:00-10:59 p.m.	70	(4%)	0	(0%)	0	(2%)	\$3	(3%)
11:00-11:59 p.m.	60	(3%)	0	(0%)	20	(17%)	\$4	(4%)
Total	1,760	(100%)	10	(100%)	100	(100%)	\$99	100%

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 7.5. Home Fires Involving Transformers or Power Supplies, by Factor Contributing to Ignition
2010-2014 Annual Averages**

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	610	(35%)	0	(27%)	30	(28%)	\$37	(37%)
Unspecified short circuit arc	330	(19%)	0	(27%)	20	(20%)	\$17	(17%)
Heat source too close to combustibles	150	(8%)	0	(0%)	10	(13%)	\$11	(11%)
Unclassified mechanical failure or malfunction	110	(6%)	0	(0%)	0	(0%)	\$10	(10%)
Equipment overloaded	100	(6%)	0	(23%)	10	(7%)	\$5	(5%)
Arc or spark from operating equipment	80	(4%)	0	(0%)	0	(4%)	\$4	(4%)
Short circuit arc from defective or worn insulation	70	(4%)	0	(0%)	0	(2%)	\$1	(1%)
Equipment unattended	50	(3%)	0	(0%)	0	(1%)	\$5	(5%)
Unclassified misuse of material or product	50	(3%)	0	(0%)	10	(6%)	\$1	(1%)
Arc from faulty contact or broken conductor	40	(2%)	10	(46%)	0	(0%)	\$1	(1%)
Short circuit arc from mechanical damage	30	(2%)	0	(0%)	10	(6%)	\$2	(2%)
Equipment not being operated properly	30	(2%)	0	(0%)	0	(0%)	\$1	(1%)
Flammable liquid or gas spilled	30	(2%)	0	(0%)	10	(6%)	\$2	(2%)
Improper fueling technique	30	(2%)	0	(0%)	10	(8%)	\$1	(1%)
Installation deficiency	20	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Storm	20	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Unclassified operational deficiency	20	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Unclassified factor contributing to ignition	20	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Improper container or storage	10	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Leak or break	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Automatic control failure	10	(1%)	0	(0%)	0	(4%)	\$1	(1%)
Worn out	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Water caused short-circuit arc	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Other known factor contributing to ignition	70	(4%)	0	(0%)	0	(2%)	\$6	(6%)
Total fires	1,760	(100%)	10	(100%)	100	(100%)	\$99	(100%)
Total factors	1,910	(109%)	10	(124%)	110	(109%)	\$109	(111%)

**Table 7.5. Home Fires Involving Transformers or Power Supplies, by Factor Contributing to Ignition
2010-2014 Annual Averages (Continued)**

Note: Figures *exclude* confined fires. Multiple entries are allowed, which can result in sums higher than totals. Fires, deaths, and injuries are rounded to the nearest ten and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 7.6. Home Fires Involving Transformers or Power Supplies, by Area of Origin
2010-2014 Annual Averages**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	380	(22%)	10	(50%)	30	(32%)	\$19	(19%)
Garage or vehicle storage area*	280	(16%)	0	(0%)	10	(11%)	\$35	(36%)
Living room, family room, or den	190	(11%)	0	(31%)	10	(13%)	\$9	(9%)
Unclassified function area	90	(5%)	0	(0%)	10	(9%)	\$3	(3%)
Exterior wall surface	80	(5%)	0	(0%)	0	(2%)	\$4	(4%)
Kitchen or cooking area	60	(4%)	0	(0%)	0	(2%)	\$2	(2%)
Crawl space or substructure space	50	(3%)	0	(0%)	0	(4%)	\$3	(3%)
Storage of supplies or tools or dead storage	40	(2%)	0	(0%)	0	(1%)	\$2	(2%)
Office	40	(2%)	0	(0%)	0	(1%)	\$2	(2%)
Exterior balcony or unenclosed porch	40	(2%)	0	(18%)	0	(2%)	\$1	(1%)
Unclassified outside area	30	(2%)	0	(0%)	0	(0%)	\$1	(1%)
Attic or ceiling/roof assembly or concealed space	30	(2%)	0	(0%)	0	(1%)	\$1	(1%)
Wall assembly or concealed space	30	(2%)	0	(0%)	0	(2%)	\$1	(1%)
Dining room	30	(2%)	0	(0%)	10	(7%)	\$1	(1%)
Unclassified storage area	30	(2%)	0	(0%)	0	(2%)	\$1	(1%)
Switchgear area or transformer vault	20	(1%)	0	(0%)	0	(2%)	\$1	(1%)
Unclassified area of origin	20	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Unclassified structural area	20	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Laundry room or area	20	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Closet	20	(1%)	0	(0%)	0	(1%)	\$0	(0%)
Courtyard, terrace or patio	20	(1%)	0	(0%)	0	(2%)	\$2	(2%)
Ceiling/floor assembly or concealed space	20	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Lobby or entrance way	20	(1%)	0	(0%)	0	(1%)	\$0	(0%)
Unclassified equipment or service area	20	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Bathroom or lavatory	20	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Exterior surface of vehicle	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Storage room, area, tank, or bin	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Heating equipment room	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Hallway or corridor	10	(1%)	0	(0%)	0	(3%)	\$0	(0%)
Machinery room or area or elevator machinery room	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)

*Excludes fires in which the property was coded as a residential garage.

**Table 7.6. Home Fires Involving Transformers or Power Supplies, by Area of Origin
2010-2014 Annual Averages (Continued)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified vehicle area	10	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Conduit, pipe, utility, or ventilation shaft	10	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Unclassified means of egress	10	(1%)	0	(0%)	0	(1%)	\$0	(0%)
Other known area of origin	60	(6%)	0	(0%)	0	(3%)	\$2	(2%)
Total	1,760	(100%)	10	(100%)	100	(100%)	\$99	(100%)

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 7.7. Home Fires Involving Transformers or Power Supplies, by Item First Ignited
2010-2014 Annual Averages**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical wire or cable insulation	620	(36%)	10	(66%)	30	(26%)	\$33	(34%)
Exterior wall covering or finish	110	(7%)	0	(0%)	10	(8%)	\$8	(8%)
Unclassified item first ignited	100	(6%)	0	(0%)	0	(4%)	\$3	(3%)
Floor covering rug, carpet, or mat	90	(5%)	0	(0%)	10	(5%)	\$4	(4%)
Flammable and combustible liquids and gases, piping and filter	90	(5%)	0	(0%)	10	(11%)	\$6	(6%)
Structural member or framing	80	(4%)	0	(0%)	0	(0%)	\$8	(8%)
Appliance housing or casing	70	(4%)	0	(0%)	10	(7%)	\$5	(5%)
Mattress or bedding	60	(3%)	0	(0%)	0	(3%)	5	(5%)
Interior wall covering, excluding drapes	50	(3%)	0	(0%)	0	(4%)	\$3	(3%)
Transformer or transformer fluids	50	(3%)	0	(0%)	0	(2%)	\$1	(1%)
Multiple items first ignited	50	(3%)	0	(0%)	10	(12%)	\$3	(3%)
Upholstered furniture	40	(3%)	0	(0%)	0	(1%)	\$4	(4%)
Unclassified furniture or utensils	40	(2%)	0	(18%)	0	(2%)	\$2	(2%)
Cabinetry	40	(2%)	0	(0%)	0	(1%)	\$3	(3%)
Unclassified structural component or finish	30	(2%)	0	(0%)	0	(3%)	\$2	(2%)
Clothing	30	(2%)	0	(0%)	0	(2%)	1	(1%)
Box, carton, bag, basket, or barrel	30	(2%)	0	(0%)	0	(4%)	\$1	(1%)
Insulation within structural area	20	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Unclassified soft goods or wearing apparel	20	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Toy or game	20	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Magazine, newspaper, or writing paper	20	(1%)	0	(0%)	0	(1%)	\$1	(1%)
Curtains, blinds, drapery, or tapestry	10	(1%)	0	(16%)	0	(1%)	\$0	(0%)
Exterior roof covering or finish	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Rubbish, trash, or waste	10	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Unclassified storage supplies	9	(1%)	0	(0%)	0	(3%)	\$0	(1%)
Other known item first ignited	57	(3%)	0	(0%)	0	(0%)	\$2	(3%)
Total	1,760	(100%)	10	(100%)	100	(100%)	\$99	(100%)

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey

Section 8. Non-Home Fires Involving Electrical Distribution or Lighting Equipment

Over the five-year period from 2010 through 2014, there were an estimated average of **14,760 non-confined non-home fires each year involving electrical distribution or lighting equipment**. These fires resulted in annual averages of 20 civilian deaths, 190 civilian injuries, and \$659 million in direct property damage.

As shown in Table 8.A, the majority of the fires (59%) involved wiring and related equipment, with another 22% involving lamps, bulbs, or lighting, 13% involving transformers or power supplies, and 6% involving cords or plugs. Fires involving transformers and power supplies (13% of fires) were responsible for a disproportionate share of direct property damage (33% of total). [Table 8.1](#) provides a detailed list of the type of equipment involved in non-home fires.

**Table 8.A. Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Type of Equipment
2010-2014 Annual Averages**

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wiring and related equipment	8,670	(59%)	10	(49%)	100	(53%)	\$301	(46%)
Lamp, bulb or lighting	3,280	(22%)	0	(26%)	50	(26%)	\$111	(17%)
Transformers and power supplies	1,870	(13%)	0	(6%)	20	(13%)	\$215	(33%)
Cord or plug	910	(6%)	0	(19%)	20	(9%)	\$26	(4%)
Electric fence	20	(0%)	0	(0%)	0	(0%)	\$5	(1%)
Lightning rod, arrester or grounding device	10	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Traffic control device	0	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Total	14,760	(100%)	20	(100%)	190	(100%)	\$659	(100%)

Note: Figures *exclude* confined fires. Fires, deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Timing of non-home fires involving electrical distribution or lighting equipment

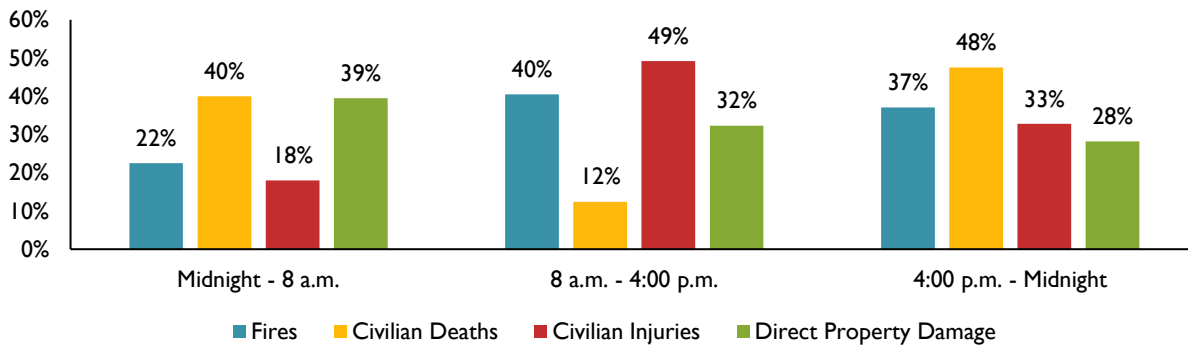
January and February were the peak months for non-home fires involving electrical distribution or lighting equipment, each with 10% of the total, with March and July each having 9% shares of the fire total, as shown in [Table 8.2](#). The fewest fires occurred in September and October, each of which had 7% of the annual total.

The fewest fires were recorded on Saturdays or Sundays (each with 13% of weekly total), with all other days having 14% or 15% of fires. See [Table 8.3](#).

As shown in [Figure 8.1](#), the fewest fires (22%) occurred between midnight and 8 a.m., but these fires accounted for 40% of civilian deaths and 39% of direct property damage. The hours between 8 a.m. and 4 p.m. experienced the highest share of fires (40%) and nearly half (49%) of

the injuries. The hours between 4 p.m. and midnight recorded 37% of fires and 48% of civilian deaths, as well as 33% of civilian injuries and 28% of direct property damage. More detailed information is available in [Table 8.4](#).

Figure 8.1 Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Time of Day, 2010-2014 Annual Averages



Note: See Note on [Table 8.4](#).

Source: NFIRS Version 5.0 and NFPA Fire Experience Survey.

Factor contributing to ignition. Unclassified electrical failures or malfunctions contributed to approximately one-third (34%) of non-home fires involving electrical distribution or lighting equipment, and these fires accounted for 50% of the civilian deaths, 22% of civilian injuries, and 35% of direct property damage. Some form of arcing contributed to two out of five of the fires, including unspecified short circuit arcs (19% of fires), short circuit arcs from defective or worn insulation (7%), arcs from faulty contacts or broken conductors (4%), arcs or sparks from operating equipment (3%), short circuit arcs from mechanical damage (3%), and water-caused short circuit arcs (3%). Unclassified mechanical failures or malfunctions contributed to 7% of fires, with heat sources too close to combustibles contributing to 6% of fires, and fluorescent light ballasts contributing to 3% of fires. See [Table 8.5](#) for details.

Area of origin. Non-home fires involving electrical distribution or lighting equipment originated in a wide variety of areas, with no dominant area of origin. The area of origin accounting for the largest share of fires was switchgear area or transformer vault, with 7% of the total, followed by wall assembly or concealed space (5%), exterior wall surface (5%), garage or vehicle storage area (5%), unclassified outside area (5%), unclassified equipment or service area (4%), unclassified storage area (4%), attic or ceiling/roof assembly or concealed space (4%), and conduit, pipe, utility, or ventilation shaft (4%). See [Table 8.6](#) for complete information.

Item first ignited. Electrical wire or cable insulation was the leading item first ignited in non-home fires involving electrical distribution or lighting equipment, with 38% of the fire total. These fires accounted for 17% of the civilian deaths, 26% of civilian injuries, and 27% of direct property damage. A structural member or framing was first ignited in another 10% of fires, followed by unclassified item first ignited (6%), exterior wall covering or finish (5%), flammable and combustible liquids and gases, piping and filter (4%), and transformer or transformer fluids (4%). Fires in which flammable and combustible liquids and gases, piping and filter were first ignited accounted for one-fifth (20%) of civilian injuries. See [Table 8.7](#).

**Table 8.1. Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Type of Equipment
2010-2014 Annual Averages**

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wiring and related equipment	8,670	(59%)	10	(49%)	100	(53%)	\$301	(46%)
Unclassified electrical wiring	3,700	(25%)	10	(49%)	40	(21%)	\$128	(19%)
Electrical power (utility) line	1,110	(8%)	0	(0%)	0	(0%)	\$17	(3%)
Outlet or receptacle	1,000	(7%)	0	(0%)	10	(8%)	\$39	(6%)
Electrical service supply wires from utility	770	(5%)	0	(0%)	10	(4%)	\$14	(2%)
Panelboard, switchboard or circuit breaker board	720	(5%)	0	(0%)	20	(10%)	\$33	(5%)
Electrical branch circuit	670	(5%)	0	(0%)	10	(4%)	\$36	(5%)
Electric meter or meter box	360	(2%)	0	(0%)	0	(2%)	\$21	(3%)
Wiring from meter box to circuit breaker	210	(1%)	0	(0%)	10	(3%)	\$7	(1%)
Wall switch	110	(1%)	0	(0%)	0	(1%)	\$5	(1%)
Ground fault circuit interrupter	10	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Lamp, bulb or lighting	3,280	(22%)	0	(26%)	50	(26%)	\$111	(17%)
Fluorescent lighting fixture or ballast	880	(6%)	0	(14%)	10	(5%)	\$29	(4%)
Unclassified lamp or lighting	800	(5%)	0	(0%)	0	(2%)	\$29	(4%)
Sign	340	(2%)	0	(0%)	0	(1%)	\$5	(1%)
Incandescent lighting fixture	310	(2%)	0	(0%)	0	(2%)	\$8	(1%)
Halogen lighting fixture or lamp	220	(1%)	0	(0%)	0	(0%)	\$7	(1%)
Decorative lights or line voltage	170	(1%)	0	(0%)	0	(1%)	\$5	(1%)
Light bulb	160	(1%)	0	(12%)	0	(1%)	\$2	(0%)
Work light or trouble light	140	(1%)	0	(0%)	20	(9%)	\$15	(2%)
Table, floor, or desk lamp	130	(1%)	0	(0%)	0	(3%)	\$4	(1%)
Sodium or mercury vapor lighting fixtures or lamps	90	(1%)	0	(0%)	0	(1%)	\$7	(1%)
Low voltage decorative or landscape lighting	10	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Nightlight	10	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Lantern or flashlight	10	(0%)	0	(0%)	0	(1%)	\$0	(0%)
Transformers and power supplies	1,870	(13%)	0	(6%)	20	(13%)	\$215	(33%)
Distribution type transformer	700	(5%)	0	(0%)	0	(1%)	\$47	(7%)
Generator	400	(3%)	0	(6%)	10	(3%)	\$87	(13%)
Battery charger or rectifier	230	(2%)	0	(0%)	0	(1%)	\$12	(2%)
Surge protector	140	(1%)	0	(0%)	0	(2%)	\$16	(2%)

**Table 8.1. Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Type of Equipment
2010-2014 Annual Averages (Continued)**

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Low voltage transformer	130	(1%)	0	(0%)	0	(1%)	\$27	(4%)
Battery	110	(1%)	0	(0%)	10	(3%)	\$5	(1%)
Overcurrent or disconnect equipment	70	(0%)	0	(0%)	0	(2%)	\$5	(1%)
Uninterrupted power supply	50	(0%)	0	(0%)	0	(0%)	\$4	(1%)
Inverter	30	(0%)	0	(0%)	0	(0%)	\$12	(2%)
Cord or plug	910	(6%)	0	(19%)	20	(9%)	\$26	(4%)
Extension cord	510	(3%)	0	(19%)	10	(5%)	\$16	(2%)
Unclassified cord or plug	150	(1%)	0	(0%)	0	(1%)	\$4	(1%)
Detachable power cord or plug	140	(1%)	0	(0%)	0	(1%)	\$3	(0%)
Permanently attached power cord or plug	110	(1%)	0	(0%)	0	(2%)	\$3	(0%)
Electric fence	20	(0%)	0	(0%)	0	(0%)	\$5	(1%)
Lightning rod, arrester or grounding device	10	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Traffic control device	0	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Total	14,760	(100%)	20	(100%)	190	(100%)	\$659	(100%)

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 8.2. Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Month
2010-2014 Annual Averages**

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	1,500	(10%)	0	(0%)	20	(11%)	\$68	(10%)
February	1,510	(10%)	0	(12%)	20	(9%)	\$99	(15%)
March	1,270	(9%)	0	(15%)	10	(5%)	\$66	(10%)
April	1,130	(8%)	0	(0%)	10	(5%)	\$72	(11%)
May	1,160	(8%)	0	(0%)	10	(7%)	\$48	(7%)
June	1,240	(8%)	0	(6%)	20	(8%)	\$54	(8%)
July	1,390	(9%)	0	(0%)	10	(7%)	\$49	(7%)
August	1,110	(8%)	10	(34%)	20	(10%)	\$49	(7%)
September	960	(7%)	0	(6%)	20	(10%)	\$39	(6%)
October	1,080	(7%)	0	(14%)	20	(8%)	\$30	(5%)
November	1,190	(8%)	0	(0%)	20	(9%)	\$46	(7%)
December	1,210	(8%)	0	(12%)	20	(12%)	\$39	(6%)
Total	14,760	(100%)	20	(100%)	190	(100%)	\$659	(100%)

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Experience Survey.

**Table 8.3. Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Day of Week
2010-2014 Annual Averages**

Day of Week	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Sunday	1,910	(13%)	0	(15%)	10	(7%)	\$132	(20%)
Monday	2,260	(15%)	0	(0%)	30	(16%)	\$81	(12%)
Tuesday	2,170	(15%)	0	(0%)	30	(14%)	\$100	(15%)
Wednesday	2,220	(15%)	0	(9%)	30	(14%)	\$165	(25%)
Thursday	2,170	(15%)	0	(0%)	40	(20%)	\$69	(10%)
Friday	2,080	(14%)	10	(38%)	30	(16%)	\$57	(9%)
Saturday	1,950	(13%)	10	(39%)	20	(13%)	\$55	(8%)
Total	14,760	(100%)	20	(100%)	190	(100%)	\$659	(100%)

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Fire Experience Survey.

**Table 8.4. Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Alarm Time
2010-2014 Annual Averages**

Alarm Time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Midnight-12:59 a.m.	460	(3%)	0	(0%)	10	(6%)	\$30	(5%)
1:00-1:59 a.m.	430	(3%)	0	(0%)	0	(2%)	\$27	(4%)
2:00-2:59 a.m.	330	(2%)	0	(15%)	10	(3%)	\$26	(4%)
3:00-3:59 a.m.	320	(2%)	0	(25%)	0	(0%)	\$22	(3%)
4:00-4:59 a.m.	350	(2%)	0	(0%)	0	(1%)	\$34	(5%)
5:00-5:59 a.m.	380	(3%)	0	(0%)	10	(4%)	\$27	(4%)
6:00-6:59 a.m.	480	(3%)	0	(0%)	0	(2%)	\$16	(2%)
7:00-7:59 a.m.	580	(4%)	0	(0%)	0	(1%)	\$78	(12%)
8:00-8:59 a.m.	660	(4%)	0	(0%)	10	(5%)	\$21	(3%)
9:00-9:59 a.m.	690	(5%)	0	(0%)	20	(11%)	\$14	(2%)
10:00-10:59 a.m.	730	(5%)	0	(0%)	10	(4%)	\$20	(3%)
11:00-11:59 a.m.	800	(5%)	0	(0%)	20	(9%)	\$43	(7%)
12:00-12:59 p.m.	760	(5%)	0	(0%)	10	(6%)	\$44	(7%)
1:00-1:59 p.m.	820	(6%)	0	(0%)	10	(6%)	\$32	(5%)
2:00-2:59 p.m.	760	(5%)	0	(0%)	10	(3%)	\$16	(2%)
3:00-3:59 p.m.	760	(5%)	0	(12%)	10	(6%)	\$23	(4%)
4:00-4:59 p.m.	740	(5%)	0	(12%)	10	(5%)	\$20	(3%)
5:00-5:59 p.m.	750	(5%)	0	(0%)	10	(5%)	\$15	(2%)
6:00-6:59 p.m.	730	(5%)	0	(0%)	0	(3%)	\$46	(7%)
7:00-7:59 p.m.	750	(5%)	0	(0%)	10	(5%)	\$21	(3%)
8:00-8:59 p.m.	750	(5%)	0	(0%)	10	(4%)	\$22	(3%)
9:00-9:59 p.m.	670	(5%)	0	(15%)	10	(4%)	\$21	(3%)
10:00-10:59 p.m.	600	(4%)	0	(6%)	10	(4%)	\$20	(3%)
11:00-11:59 p.m.	470	(3%)	0	(14%)	10	(4%)	\$21	(3%)
Total	14,760	(100%)	20	(100%)	190	(100%)	\$659	(100%)

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Fire Experience Survey.

**Table 8.5. Non-Home Fires Involving Electrical Distribution or Lighting Equipment,
by Factor Contributing to Ignition
2010-2014 Annual Averages**

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	4,950	(34%)	10	(50%)	40	(22%)	\$232	(35%)
Unspecified short circuit arc	2,810	(19%)	0	(0%)	40	(23%)	\$109	(17%)
Unclassified mechanical failure or malfunction	1,050	(7%)	0	(29%)	10	(6%)	\$110	(17%)
Short circuit arc from defective or worn insulation	1,020	(7%)	0	(11%)	10	(5%)	\$21	(3%)
Heat source too close to combustibles.	860	(6%)	0	(0%)	20	(9%)	\$23	(4%)
Arc from faulty contact or broken conductor	630	(4%)	0	(0%)	0	(2%)	\$13	(2%)
Arc or spark from operating equipment	450	(3%)	0	(0%)	10	(4%)	\$18	(3%)
Fluorescent light ballast	450	(3%)	0	(0%)	0	(2%)	\$11	(2%)
Short circuit arc from mechanical damage	380	(3%)	0	(0%)	10	(3%)	\$17	(3%)
Water-caused short-circuit arc	380	(3%)	0	(0%)	0	(1%)	\$7	(1%)
Worn out	220	(2%)	0	(0%)	0	(1%)	\$3	(0%)
Equipment overloaded	220	(1%)	0	(0%)	0	(2%)	\$4	(1%)
Storm	210	(1%)	0	(0%)	0	(0%)	\$9	(1%)
Unclassified factor contributing to ignition	210	(1%)	0	(0%)	10	(3%)	\$8	(1%)
Unclassified misuse of material or product	190	(1%)	0	(0%)	0	(2%)	\$5	(1%)
High wind	160	(1%)	0	(0%)	0	(1%)	\$6	(1%)
Equipment unattended	120	(1%)	0	(0%)	0	(1%)	\$8	(1%)
Installation deficiency	110	(1%)	0	(0%)	0	(0%)	\$3	(0%)
Animal	110	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Exposure fire	100	(1%)	0	(0%)	0	(1%)	\$27	(4%)
Leak or break	90	(1%)	0	(0%)	0	(1%)	\$8	(1%)
Equipment not being operated properly	80	(1%)	0	(14%)	0	(1%)	\$4	(1%)
Collision, knock down, run over, or turn over	80	(1%)	0	(0%)	0	(1%)	\$5	(1%)
Other known factor contributing to ignition	700	(5%)	0	(21%)	30	(18%)	50	(8%)
Total fires	14,760	(100%)	20	(100%)	190	(100%)	\$659	(100%)
Total factors	15,580	(106%)	20	(125%)	210	(109%)	\$702	(107%)

Note: Figures *exclude* confined fires. Multiple entries are allowed, which can result in sums higher than totals. Fires, deaths, and injuries are rounded to the nearest hundred and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Fire Experience Survey.

**Table 8.6. Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Area of Origin
2010-2014 Annual Averages**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Switchgear area or transformer vault	1,020	(7%)	0	(0%)	20	(8%)	\$74	(11%)
Wall assembly or concealed space	780	(5%)	0	(6%)	10	(4%)	\$21	(3%)
Exterior wall surface	750	(5%)	0	(0%)	0	(2%)	\$42	(6%)
Garage or vehicle storage area*	730	(5%)	0	(0%)	20	(9%)	\$24	(4%)
Unclassified outside area	700	(5%)	0	(0%)	0	(0%)	\$8	(1%)
Unclassified equipment or service area	650	(4%)	0	(0%)	10	(3%)	\$35	(5%)
Unclassified storage area	640	(4%)	0	(0%)	0	(2%)	\$32	(5%)
Attic or ceiling/roof assembly or concealed space	600	(4%)	0	(0%)	0	(0%)	\$29	(4%)
Conduit, pipe, utility, or ventilation shaft	550	(4%)	0	(0%)	0	(2%)	\$7	(1%)
Bedroom	450	(3%)	0	(25%)	20	(11%)	\$9	(1%)
Storage of supplies or tools or dead storage	450	(3%)	0	(0%)	0	(1%)	\$14	(2%)
Exterior roof surface	450	(3%)	0	(0%)	0	(1%)	\$18	(3%)
Unclassified area of origin	450	(3%)	0	(0%)	0	(1%)	\$6	(1%)
Kitchen or cooking area	440	(3%)	0	(15%)	0	(2%)	\$14	(2%)
Office	410	(3%)	0	(0%)	10	(4%)	\$26	(4%)
Ceiling/floor assembly or concealed space	390	(3%)	0	(0%)	0	(1%)	\$21	(3%)
Unclassified structural area	370	(3%)	0	(12%)	10	(5%)	\$12	(2%)
Storage room, area, tank, or bin	360	(2%)	0	(0%)	10	(3%)	\$16	(2%)
Lavatory, bathroom, locker room or check room	290	(2%)	0	(9%)	10	(4%)	\$5	(1%)
Unclassified function area	290	(2%)	0	(0%)	10	(4%)	\$7	(1%)
Sales or showroom area	280	(2%)	0	(0%)	0	(1%)	\$11	(2%)
Machinery room or area or elevator machinery room	250	(2%)	0	(6%)	0	(2%)	\$8	(1%)
Crawl space or substructure space	240	(2%)	0	(0%)	0	(1%)	\$8	(1%)
On or near highway, public way or street	220	(2%)	0	(0%)	0	(0%)	\$0	(0%)
Common room, living room, family room, lounge or den	180	(1%)	0	(0%)	10	(4%)	\$7	(1%)
Awning	160	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Maintenance or paint shop or area	160	(1%)	0	(0%)	10	(5%)	\$16	(2%)
Processing or manufacturing area, or workroom	150	(1%)	0	(0%)	0	(1%)	\$10	(2%)
Unclassified service facility	150	(1%)	0	(0%)	0	(2%)	\$6	(1%)
Small assembly area, less than 100 person capacity	130	(1%)	0	(0%)	0	(2%)	\$11	(2%)

*Fires in which the property use was coded as a garage with a different area of origin will not be captured here.

**Table 8.6. Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Area of Origin
2010-2014 Annual Averages (Continued)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Lobby or entrance way	120	(1%)	0	(0%)	0	(0%)	\$8	(1%)
Hallway, corridor, or mall	120	(1%)	0	(14%)	0	(0%)	\$2	(0%)
Lawn, field or open area	110	(1%)	0	(0%)	0	(1%)	\$0	(0%)
Closet	110	(1%)	0	(0%)	0	(1%)	\$2	(0%)
Unclassified assembly or sales area,	110	(1%)	0	(0%)	0	(0%)	\$4	(1%)
Exterior surface of vehicle	100	(1%)	0	(0%)	0	(0%)	\$7	(1%)
Dining room, bar or beverage area, or cafeteria	100	(1%)	0	(0%)	0	(3%)	\$1	(0%)
Laundry room or area	90	(1%)	0	(0%)	0	(1%)	\$1	(0%)
Shipping, receiving or loading area	80	(1%)	0	(0%)	0	(2%)	\$7	(1%)
Computer room, control room or center	80	(1%)	0	(0%)	0	(0%)	\$5	(1%)
Other known area of origin	1,070	(7%)	0	(12%)	20	(8%)	\$124	(19%)
Total	14,760	(100%)	20	(100%)	190	(100%)	\$659	(100%)

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Fire Experience Survey.

**Table 8.7. Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Item First Ignited
2010-2014 Annual Averages**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical wire or cable insulation	5,590	(38%)	0	(17%)	50	(26%)	\$177	(27%)
Structural member or framing	1,480	(10%)	0	(0%)	10	(6%)	\$72	(11%)
Unclassified item first Ignited	830	(6%)	0	(0%)	10	(7%)	\$100	(15%)
Exterior wall covering or finish	700	(5%)	0	(17%)	0	(1%)	\$54	(8%)
Flammable and combustible liquids and gases, piping and filter	600	(4%)	0	(8%)	40	(20%)	\$31	(5%)
Transformer or transformer fluids	520	(4%)	0	(0%)	0	(2%)	\$13	(2%)
Interior wall covering, excluding drapes	490	(3%)	0	(12%)	10	(3%)	\$25	(4%)
Unclassified structural component or finish	490	(3%)	0	(28%)	0	(2%)	\$40	(6%)
Insulation within structural area	440	(3%)	0	(0%)	0	(1%)	\$9	(1%)
Exterior roof covering or finish	350	(2%)	0	(0%)	0	(1%)	\$18	(3%)
Interior ceiling cover or finish	300	(2%)	0	(0%)	0	(1%)	\$18	(3%)
Light vegetation including grass	230	(2%)	0	(0%)	0	(1%)	\$1	(0%)
Appliance housing or casing	210	(1%)	0	(0%)	0	(1%)	\$2	(0%)
Multiple items first ignited	200	(1%)	0	(0%)	0	(1%)	\$16	(2%)
Box, carton, bag, basket, barrel	170	(1%)	0	(0%)	0	(2%)	\$8	(1%)
Sign	160	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Fence or pole	160	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Unclassified organic materials	150	(1%)	0	(0%)	0	(0%)	\$2	(0%)
Mattress or bedding	140	(1%)	0	(0%)	10	(5%)	\$2	(0%)
Floor covering rug, carpet, or mat	110	(1%)	0	(0%)	0	(2%)	\$3	(0%)
Agricultural crop, including fruits and vegetables	100	(1%)	0	(0%)	0	(0%)	\$5	(1%)
Unclassified storage supplies	90	(1%)	0	(0%)	0	(0%)	\$3	(0%)
Clothing	90	(1%)	0	(0%)	10	(5%)	\$8	(1%)
Unclassified furniture, utensils	90	(1%)	0	(0%)	0	(1%)	\$5	(1%)
Upholstered furniture or vehicle seat	90	(1%)	0	(0%)	10	(3%)	\$5	(1%)
Exterior trim, including doors	90	(1%)	0	(0%)	0	(1%)	\$1	(0%)
Cabinetry	80	(1%)	0	(0%)	0	(1%)	\$3	(0%)
Magazine, newspaper, or writing paper	80	(1%)	0	(0%)	0	(0%)	\$3	(0%)
Dust, fiber, lint, including sawdust or excelsior	80	(1%)	0	(0%)	0	(1%)	\$4	(1%)
Rubbish, trash, or waste	80	(1%)	0	(0%)	10	(3%)	\$2	(0%)

**Table 8.7. Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Item First Ignited
2010-2014 Annual Averages (Continued)**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Other known item first ignited	560	(4%)	0	(19%)	10	(4%)	\$29	(4%)
Total	14,760	(100%)	20	(100%)	190	(100%)	\$659	(100%)

Note: Figures *exclude* confined fires. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires deaths, and injuries are rounded to the nearest ten and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA Fire Experience Survey.

Appendix A.

How National Estimates Statistics Are Calculated

The statistics in this analysis are estimates derived from the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA's) annual survey of U.S. fire departments. NFIRS is a voluntary system by which participating fire departments report detailed factors about the fires to which they respond. Roughly two-thirds of U.S. fire departments participate, although not all of these departments provide data every year. Fires reported to federal or state fire departments or industrial fire brigades are not included in these estimates.

NFIRS provides the most detailed incident information of any national database not limited to large fires. NFIRS is the only database capable of addressing national patterns for fires of all sizes by specific property use and specific fire cause. NFIRS also captures information on the extent of flame spread, and automatic detection and suppression equipment. For more information about NFIRS visit <http://www.nfirs.fema.gov/>. Copies of the paper forms may be downloaded from http://www.nfirs.fema.gov/documentation/design/NFIRS_Paper_Forms_2008.pdf.

NFIRS has a wide variety of data elements and code choices. The NFIRS database contains coded information. Many code choices describe several conditions. These cannot be broken down further. For example, area of origin code 83 captures fires starting in vehicle engine areas, running gear areas or wheel areas. It is impossible to tell the portion of each from the coded data.

Methodology may change slightly from year to year.

NFPA is continually examining its methodology to provide the best possible answers to specific questions, methodological and definitional changes can occur. *Earlier editions of the same report may have used different methodologies to produce the same analysis, meaning that the estimates are not directly comparable from year to year.*

NFPA's fire department experience survey provides estimates of the big picture.

Each year, NFPA conducts an annual survey of fire departments which enables us to capture a summary of fire department experience on a larger scale. Surveys are sent to all municipal departments protecting populations of 50,000 or more and a random sample, stratified by community size, of the smaller departments. Typically, a total of roughly 3,000 surveys are returned, representing about one of every ten U.S. municipal fire departments and about one third of the U.S. population.

The survey is stratified by size of population protected to reduce the uncertainty of the final estimate. Small rural communities have fewer people protected per department and are less likely to respond to the survey. A larger number must be surveyed to obtain an adequate sample of those departments. (NFPA also makes follow-up calls to a sample of the smaller fire departments that do not respond, to confirm that those that did respond are truly representative of fire departments their size.) On the other hand, large city departments are so few in number and protect such a large proportion of the total U.S.

population that it makes sense to survey all of them. Most respond, resulting in excellent precision for their part of the final estimate.

The survey includes the following information: (1) the total number of fire incidents, civilian deaths, and civilian injuries, and the total estimated property damage (in dollars), for each of the major property use classes defined in NFIRS; (2) the number of on-duty firefighter injuries, by type of duty and nature of illness; (3) the number and nature of non-fire incidents; and (4) information on the type of community protected (e.g., county versus township versus city) and the size of the population protected, which is used in the statistical formula for projecting national totals from sample results. The results of the survey are published in the annual report *Fire Loss in the United States*. To download a free copy of the report, visit <http://www.nfpa.org/assets/files/PDF/OS.fireloss.pdf>.

Projecting NFIRS to National Estimates

As noted, NFIRS is a voluntary system. Different states and jurisdictions have different reporting requirements and practices. Participation rates in NFIRS are not necessarily uniform across regions and community sizes, both factors correlated with frequency and severity of fires. This means NFIRS may be susceptible to systematic biases. No one at present can quantify the size of these deviations from the ideal, representative sample, so no one can say with confidence that they are or are not serious problems. But there is enough reason for concern so that a second database -- the NFPA survey -- is needed to project NFIRS to national estimates and to project different parts of NFIRS separately. This multiple calibration approach makes use of the annual NFPA survey where its statistical design advantages are strongest.

Scaling ratios are obtained by comparing NFPA's projected totals of residential structure fires, non-residential structure fires, vehicle fires, and outside and other fires, and associated civilian deaths, civilian injuries, and direct property damage with comparable totals in NFIRS. Estimates of specific fire problems and circumstances are obtained by multiplying the NFIRS data by the scaling ratios. Reports for incidents in which mutual aid was given are excluded from NFPA's analyses.

Analysts at the NFPA, the USFA and the Consumer Product Safety Commission developed the specific basic analytical rules used for this procedure. "The National Estimates Approach to U.S. Fire Statistics," by John R. Hall, Jr. and Beatrice Harwood, provides a more detailed explanation of national estimates. A copy of the article is available online at <http://www.nfpa.org/osds> or through NFPA's One-Stop Data Shop.

Version 5.0 of NFIRS, first introduced in 1999, used a different coding structure for many data elements, added some property use codes, and dropped others. The essentials of the approach described by Hall and Harwood are still used, but some modifications have been necessary to accommodate the changes in NFIRS 5.0.

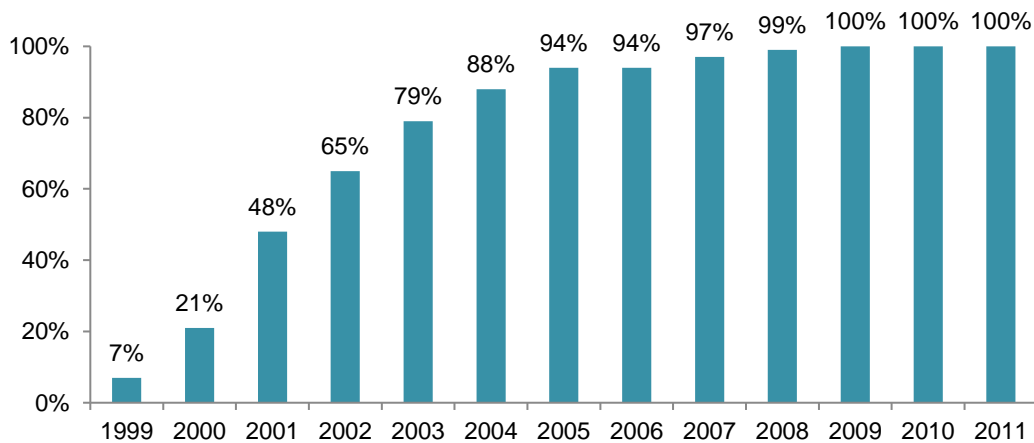
Figure A.1 shows the percentage of fires originally collected in the NFIRS 5.0 system. Each year's release version of NFIRS data also includes data collected in older versions of NFIRS that were converted to NFIRS 5.0 codes.

From 1999 data on, analyses are based on scaling ratios using only data originally collected in NFIRS 5.0:

NFPA survey projections
NFIRS totals (Version 5.0)

For 1999 to 2001, the same rules may be applied, but estimates for these years in this form will be less reliable due to the smaller amount of data originally collected in NFIRS 5.0; they should be viewed with extreme caution.

Figure A.1. Fires Originally Collected in NFIRS 5.0 by Year



NFIRS 5.0 introduced six categories of confined structure fires, including:

- cooking fires confined to the cooking vessel,
- confined chimney or flue fires,
- confined incinerator fire,
- confined fuel burner or boiler fire or delayed ignition,
- confined commercial compactor fire, and
- trash or rubbish fires in a structure with no flame damage to the structure or its contents.

Because this analysis focused on fatalities only, no distinction was made between confined and non-confined fires.

For most fields other than Property Use and Incident Type, NFPA allocates unknown data proportionally among known data. This approach assumes that if the missing data were known, it would be distributed in the same manner as the known data. NFPA makes additional adjustments to several fields. *Casualty and loss projections can be heavily influenced by the inclusion or exclusion of unusually serious fire.*

In the formulas that follow, the term “all fires” refers to all fires in NFIRS on the dimension studied. The percentages of fires with known or unknown data are provided for non-confined

fires and associated losses, and for confined fires only.

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Cause of Ignition: This field is used chiefly to identify intentional fires. “Unintentional” in this field is a specific entry and does not include other fires that were not intentionally set: failure of equipment or heat source, act of nature, or “other” (unclassified).” The last should be used for exposures but has been used for other situations as well. Fires that were coded as under investigation and those that were coded as undetermined after investigation were treated as unknown.

Factor Contributing to Ignition: In this field, the code “none” is treated as an unknown and allocated proportionally. For Human Factor Contributing to Ignition, NFPA enters a code for “not reported” when no factors are recorded. “Not reported” is treated as an unknown, but the code “none” is treated as a known code and not allocated. Multiple entries are allowed in both of these fields. Percentages are calculated on the total number of fires, not entries, resulting in sums greater than 100%. Although Factor Contributing to Ignition is only required when the cause of ignition was coded as: 2) unintentional, 3) failure of equipment or heat source; or 4) act of nature, data is often present when not required. Consequently, any fire in which no factor contributing to ignition was entered was treated as unknown.

In some analyses, all entries in the category of mechanical failure, malfunction (factor contributing to ignition 20-29) are combined and shown as one entry, “mechanical failure or malfunction.” This category includes:

21. Automatic control failure;
22. Manual control failure;
23. Leak or break. Includes leaks or breaks from containers or pipes. Excludes operational deficiencies and spill mishaps;
25. Worn out;
26. Backfire. Excludes fires originating as a result of hot catalytic converters;
27. Improper fuel used; Includes the use of gasoline in a kerosene heater and the like; and
20. Mechanical failure or malfunction, other.

Entries in “electrical failure, malfunction” (factor contributing to ignition 30-39) may also be combined into one entry, “electrical failure or malfunction.” This category includes:

31. Water-caused short circuit arc;
32. Short-circuit arc from mechanical damage;
33. Short-circuit arc from defective or worn insulation;
34. Unspecified short circuit arc;
35. Arc from faulty contact or broken connector, including broken power lines and loose connections;
36. Arc or spark from operating equipment, switch, or electric fence;
37. Fluorescent light ballast; and
30. Electrical failure or malfunction, other.

Heat Source. In NFIRS 5.0, one grouping of codes encompasses various types of open flames and smoking materials. In the past, these had been two separate groupings. A new code was added to NFIRS 5.0, which is code 60: “Heat from open flame or smoking material, other.” NFPA treats this code as a partial unknown and allocates it proportionally across the codes in the 61-69 range, shown below.

61. Cigarette;
62. Pipe or cigar;
63. Heat from undetermined smoking material;
64. Match;
65. Lighter: cigarette lighter, cigar lighter;
66. Candle;
67. Warning or road flare, fuse;
68. Backfire from internal combustion engine. Excludes flames and sparks from an exhaust system, (11); and
69. Flame/torch used for lighting. Includes gas light and gas-/liquid-fueled lantern.

In addition to the conventional allocation of missing and undetermined fires, NFPA multiplies fires with codes in the 61-69 range by

$$\frac{\text{All fires in range 60-69}}{\text{All fires in range 61-69}}$$

The downside of this approach is that heat sources that are truly a different type of open flame or smoking material are erroneously assigned to other categories. The grouping “smoking materials” includes codes 61-63 (cigarettes, pipes or cigars, and heat from undetermined smoking material, with a proportional share of the code 60s and true unknown data.

Equipment Involved in Ignition (EII). NFIRS 5.0 originally defined EII as the piece of equipment that provided the principal heat source to cause ignition if the equipment malfunctioned or was used improperly. In 2006, the definition was modified to “the piece of equipment that provided the principal heat source to cause ignition.” However, much of the data predates the change. Individuals who have already been trained with the older definition may not change their practices. To compensate, NFPA treats fires in which EII = NNN and heat source is not in the range of 40-99 as an additional unknown.

To allocate unknown data for EII, the known data is multiplied by

All fires

(All fires – blank – undetermined – [fires in which EII =NNN and heat source <>40-99])

In addition, the partially unclassified codes for broad equipment groupings (i.e., code 100 - heating, ventilation, and air conditioning, other; code 200 - electrical distribution, lighting and power transfer, other; etc.) were allocated proportionally across the individual code choices in their respective broad groupings (heating, ventilation, and air conditioning; electrical distribution, lighting and power transfer, other; etc.). Equipment that is totally unclassified is not allocated further. This approach has the same downside as the allocation of heat source 60 described above. Equipment that is truly different is erroneously assigned to other categories.

In some analyses, various types of equipment are grouped together.

Code Grouping	EII Code	NFIRS definitions
Central heat	132	Furnace or central heating unit
	133	Boiler (power, process or heating)
Fixed or portable space heater	131	Furnace, local heating unit, built-in
	123	Fireplace with insert or stove
	124	Heating stove
	141	Heater, excluding catalytic and oil-filled
	142	Catalytic heater
	143	Oil-filled heater
Fireplace or chimney	120	Fireplace or chimney
	121	Fireplace, masonry
	122	Fireplace, factory-built
	125	Chimney connector or vent connector
	126	Chimney – brick, stone or masonry
	127	Chimney-metal, including stovepipe or flue
Fixed wiring and related equipment	210	Unclassified electrical wiring
	211	Electrical power or utility line
	212	Electrical service supply wires from utility
	213	Electric meter or meter box
	214	Wiring from meter box to circuit breaker
	215	Panel board, switch board or circuit breaker board
	216	Electrical branch circuit

	217	Outlet or receptacle
	218	Wall switch
	219	Ground fault interrupter
Transformers and power supplies	221	Distribution-type transformer
	222	Overcurrent, disconnect equipment
	223	Low-voltage transformer
	224	Generator
	225	Inverter
	226	Uninterrupted power supply (UPS)
	227	Surge protector
	228	Battery charger or rectifier
	229	Battery (all types)
Code Grouping	EII Code	NFIRS definitions
Lamp, bulb or lighting	230	Unclassified lamp or lighting
	231	Lamp-tabletop, floor or desk
	232	Lantern or flashlight
	233	Incandescent lighting fixture
	234	Fluorescent light fixture or ballast
	235	Halogen light fixture or lamp
	236	Sodium or mercury vapor light fixture or lamp
	237	Work or trouble light
	238	Light bulb
	241	Nightlight
	242	Decorative lights – line voltage
	243	Decorative or landscape lighting – low voltage
	244	Sign
Cord or plug	260	Unclassified cord or plug
	261	Power cord or plug, detachable from appliance
	262	Power cord or plug- permanently attached
	263	Extension cord
Torch, burner or soldering iron	331	Welding torch
	332	Cutting torch
	333	Burner, including Bunsen burners
	334	Soldering equipment
Portable cooking or warming equipment	631	Coffee maker or teapot

632	Food warmer or hot plate
633	Kettle
634	Popcorn popper
635	Pressure cooker or canner
636	Slow cooker
637	Toaster, toaster oven, counter-top broiler
638	Waffle iron, griddle
639	Wok, frying pan, skillet
641	Breadmaking machine

Equipment was not analyzed separately for confined fires. Instead, each confined fire incident type was listed with the equipment or as other known equipment.

Item First Ignited. In most analyses, mattress and pillows (item first ignited 31) and bedding, blankets, sheets, and comforters (item first ignited 32) are combined and shown as “mattresses and bedding.” In many analyses, wearing apparel not on a person (code 34) and wearing apparel on a person (code 35) are combined and shown as “clothing.” In some analyses, flammable and combustible liquids and gases, piping and filters (item first ignited 60-69) are combined and shown together.

Area of Origin. Two areas of origin: bedroom for more than five people (code 21) and bedroom for less than five people (code 22) are combined and shown as simply “bedroom.” Chimney is no longer a valid area of origin code for non-confined fires.

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