

# **HOME STRUCTURE FIRES INVOLVING ELECTRICAL DISTRIBUTION OR LIGHTING EQUIPMENT**

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## **Abstract**

In 2005, an estimated 20,900 reported U.S. non-confined home structure fires involving electrical distribution or lighting equipment resulted in 500 civilian deaths, 1,100 civilian injuries, and \$862 million in direct property damage.

Lamps, light fixtures, and light bulbs accounted for the largest share of 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment, while cords and plugs accounted for the largest share of home structure fire civilian deaths.

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 fire, wiring, lamp, light, cord, plug, fuse, circuit breaker, transformer, outlet, receptacle, switch, generator, battery, fire statistics, home fires, residential fires.

## **Acknowledgements**

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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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## Executive Summary

In 2005, an estimated 20,900 reported U.S. non-confined home structure fires involving electrical distribution or lighting equipment resulted in 500 civilian deaths, 1,100 civilian injuries, and \$862 million in direct property damage. Fires involving electrical distribution or lighting equipment are not the same as fires involving electrical failure or malfunction. Some fires involving electrical distribution or lightning equipment do not involve electrical failure. For example, a hot light bulb can ignite cloth laid over the lamp to dry. And there are many types of electrical appliances and equipment other than electrical distribution or lightning equipment. For example, an electric space heater, electric range, or electric clothes dryer could suffer an electrical failure and start a fire.

A statistical comparison can be made using average 2002-2005 non-confined home structure fires. In this period, fires with electrical distribution or lighting equipment as the equipment involved in ignition (which is what is meant here by fires involving electrical distribution or lighting equipment) accounted for 24,180 fires, 321 civilian deaths, 828 civilian injuries, and \$698 million in direct property damage. Of these fires, those with some type of electrical failure or malfunction as a factor contributing to ignition accounted for 17,610 fires, 173 civilian deaths, 524 civilian injuries, and \$525 million in direct property damage. However, all home fires with any type of electrical failure or malfunction as a factor contributing to ignition accounted for 53,630 fires, 507 civilian deaths, 1,431 civilian injuries, and \$1,421 million in direct property damage.

Or, to put it another way electrical failure accounted for roughly three-fourths of home electrical distribution or lighting equipment fires and half of associated deaths, but electrical distribution or lighting equipment accounted for only one-third of total home electrical failure fires and one-third of associated deaths.

Electrical distribution or lighting equipment accounted for 6% of 2002-2005 home structure fires, ranking third among major causes behind cooking equipment and heating equipment. Electrical distribution or lighting equipment also accounted for 11% of associated civilian deaths (roughly the same as intentional and ranking behind smoking materials, heating equipment, and cooking equipment), 6% of associated civilian injuries (ranking seventh), and 12% of associated direct property damage (ranking third).

Electrical distribution or lighting equipment includes the following equipment groups:

- Lamps, light fixtures, and light bulbs
- Outlets, receptacles, and switches
- Fuse or circuit breaker panelboards and related equipment
- Meters and meter boxes
- Lightning rods and lightning arresters
- Wiring
- Cords and plugs
- Transformers
- Electric fences

Fires declined by about one-third from 1980 to 1998. After the transition period of 1999-2001, when NFIRS Version 5.0 was being phased in, the estimates settled into a level about one-half lower than the levels of the late 1990s, a much larger decline than would have been expected if

the 1980-1998 trend had continued unchanged. Associated losses also showed large declines coinciding with the shift to NFIRS Version 5.0.

Version 5.0 of NFIRS changed the wording and the requirements for the Equipment Involved in Ignition field, which identify electrical distribution or lighting equipment. These changes resulted in a sharp increase in non-reporting of the field, resulting in more unknowns and more volatile estimates. These changes also resulted in a sharp increase in the use of the “no equipment” entry, resulting in a sharp decline in estimates of fires involving all types of equipment. We have tried to compensate for the latter change in the analysis rules, but we remain skeptical of the sharp declines in estimated fires involving electrical distribution or lighting equipment after 1998.

The change to Version 5.0 of NFIRS also introduced six types of “confined fires” – fires confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. In our reports, we analyze confined fires separately from non-confined fires, and for fires involving electrical distribution or lighting equipment, none of the six types of confined fires appear to be relevant. Therefore, all estimates in this report specify that they are estimates of non-confined fires, even though we know from our analysis that fires reported as confined fires would not add significantly to the estimates of total electrical distribution or lighting equipment fires.

Lamps, light fixtures, and light bulbs accounted for the largest share of 2002-2005 home structure fires involving electrical distribution or lighting equipment, while cords and plugs accounted for the largest share of home structure fire civilian deaths.

In 2006, 65 people died of injuries from unvented carbon monoxide from generators. Fueled equipment to generate electricity is the only type of electrical distribution or lighting equipment that can produce carbon monoxide.

The death toll from carbon monoxide produced by generators has increased sharply in recent years, from less than 10 per year on average in 1999 and prior years to 19 per year in 2000-2001, 47 per year in 2002-2004, and 75 per year in 2005-2006.

Three-fourths (73%) of 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment cited some type of electrical failure or malfunction as a factor contributing to ignition.

The majority of 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment began with ignition of products and materials often found in structural areas, including wire or cable insulation (30%), structural member or framing (12%), insulation within structural area (5%), exterior wall covering (5%), or interior wall covering (5%).

Two-fifths (42%) of deaths in 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment resulted from fires that began in living room, family room, or den.

Three-fourths (73%) of deaths in 2002-2005 home structure fires involving electrical distribution or lighting equipment involved victims who were outside the area of origin when fire began. By comparison 59% of fatal victims for all home structure fires were outside the area of origin.

Home structure fires involving electrical distribution or lighting equipment, in 2002-2005, show a winter peak similar to that for heating equipment but less pronounced.



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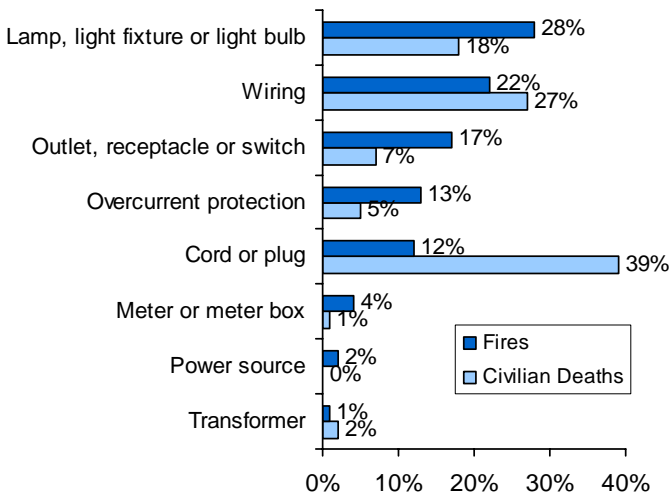




## Home Fires Involving Electrical Distribution or Lighting Equipment

U.S. fire departments responded to an estimated average of **20,900** reported U.S. home<sup>1</sup> structure fires involving electrical distribution or lighting equipment in 2005. These fires resulted in 500 civilian fire deaths, 1,100 civilian fire injuries, and \$862 million in direct property damage.

**Home Fires Involving Electrical Distribution or Lighting Equipment, by Major Equipment Group 2002-2005**



Halogen lights have a higher risk of fire than incandescent lights.

Some type of electrical failure or malfunction was cited as factor contributing to ignition for 73% of electrical distribution or lighting equipment home structure fires.

*Fires involving electrical distribution or lighting equipment are not the same as fires involving electrical failure or malfunction. Appliances and other home electrical equipment can also have electrical failures.*

**Home Structure Fires, 2002-2005 Annual Averages  
 Electrical Distribution or Lighting Equipment vs. Electrical Failure or Malfunction**

	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Electrical distribution or lighting equipment	24,180	321	828	\$698
Electrical failure or malfunction	53,600	507	1,431	\$1,421

Note: All statistics are based on non-confined fires.

<sup>1</sup>Homes are dwellings, duplexes, manufactured homes, apartments, townhouses, and rowhouses.

Lamps, light fixtures and light bulbs accounted for the largest share of the 2002-2005 home structure fires involving electrical distribution or lighting equipment.

Cords and plugs accounted for the largest share of the 2002-2005 home structure fire civilian deaths involving electrical distribution or lighting equipment.

Nearly half (42%) of civilian deaths in 2002-2005 home structure fires involving electrical distribution or lighting equipment began in the living room, family room or den.

Home structure fires involving electrical distribution or lighting equipment show a winter peak.

Wire or cable insulation is what ignited first in 30% of electrical distribution or lighting equipment home structure fires.



## Electrical Distribution or Lighting Equipment

**In 2005, an estimated 20,900 reported U.S. non-confined home structure fires involving electrical distribution or lighting equipment resulted in 500 civilian deaths, 1,100 civilian injuries, and \$862 million in direct property damage.**

A statistical comparison can be made using average 2002-2005 non-confined home structure fires. In this period, fires with electrical distribution or lighting equipment as the equipment involved in ignition (which is what is meant here by fires involving electrical distribution or lighting equipment) accounted for 24,180 fires, 321 civilian deaths, 828 civilian injuries, and \$698 million in direct property damage. Of these fires, those with some type of electrical failure or malfunction as a factor contributing to ignition accounted for 17,610 fires, 173 civilian deaths, 524 civilian injuries, and \$525 million in direct property damage. However, all home fires with any type of electrical failure or malfunction as a factor contributing to ignition accounted for 53,630 fires, 507 civilian deaths, 1,431 civilian injuries, and \$1,421 million in direct property damage.

Or, to put it another way electrical failure accounted for roughly three-fourths of home electrical distribution or lighting equipment fires and half of associated deaths, but electrical distribution or lighting equipment accounted for only one-third of total home electrical failure fires and one-third of associated deaths.

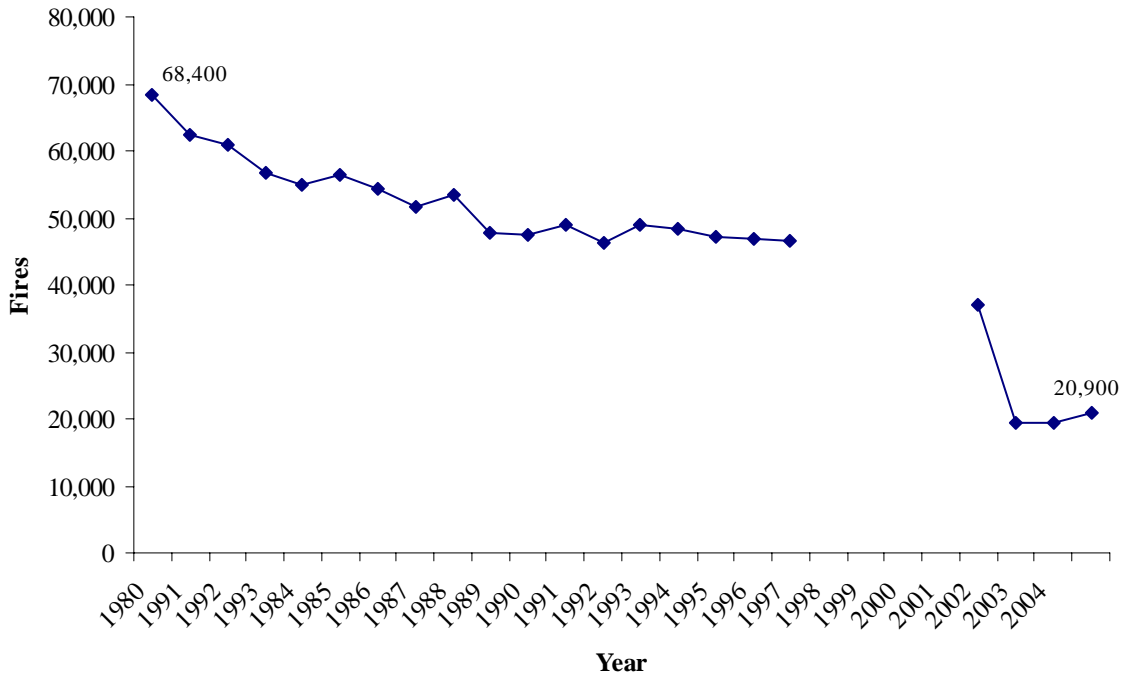
Electrical distribution or lighting equipment accounted for 6% of 2002-2005 home structure fires, ranking third among major causes behind cooking equipment and heating equipment. Electrical distribution or lighting equipment also accounted for 11% of associated civilian deaths (roughly the same as intentional and ranking behind smoking materials, heating equipment, and cooking equipment), 6% of associated civilian injuries (ranking seventh), and 12% of associated direct property damage (ranking third).

Electrical distribution or lighting equipment includes the following equipment groups:

- Lamps, light fixtures, and light bulbs
- Outlets, receptacles, and switches
- Fuse or circuit breaker panelboards and related equipment
- Meters and meter boxes
- Lightning rods and lightning arresters
- Wiring
- Cords and plugs
- Transformers
- Electric fences

Fires declined by about one-third from 1980 to 1998. (See Table 1.) After the transition period of 1999-2001, when Version 5.0 of the U.S. Fire Administration's National Fire Incident Reporting System (NFIRS) was being phased in, the estimates settled into a level about one-half lower than the levels of the late 1990s, a much larger decline than would have been expected if the 1980-1998 trend had continued unchanged. Associated losses also showed large declines coinciding with the shift to NFIRS Version 5.0.

**Figure 1. Home Structure Fires Involving  
Electrical Distribution and Lighting Equipment, by Year  
Structure Fires Reported to U.S. Fire Departments**



Source: Data from NFIRS Version 5.0 and NFPA Survey. Note: See Note in Table 1.

Version 5.0 of NFIRS changed the wording and the requirements for the Equipment Involved in Ignition field, which identify electrical distribution or lighting equipment. These changes resulted in a sharp increase in non-reporting of the field, resulting in more unknowns and more volatile estimates. These changes also resulted in a sharp increase in the use of the “no equipment” entry, resulting in a sharp decline in estimates of fires involving all types of equipment. We have tried to compensate for the latter change in the analysis rules, but we remain skeptical of the sharp declines in estimated fires involving electrical distribution or lighting equipment after 1998.

The change to Version 5.0 of NFIRS also introduced six types of “confined fires” – fires confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. In our reports, we analyze confined fires separately from non-confined fires, and for fires involving electrical distribution or lighting equipment, none of the six types of confined fires appear to be relevant. Therefore, all estimates in this report specify that they are estimates of non-confined fires, even though we know from our analysis that fires reported as confined fires would not add significantly to the estimates of total electrical distribution or lighting equipment fires.

**Lamps, light fixtures, and light bulbs accounted for the largest share of 2002-2005 home structure fires involving electrical distribution or lighting equipment, while cords and plugs accounted for the largest share of home structure fire civilian deaths.**

Electric fences accounted for fewer than five fires per year and are included here because their equipment code is in the block for electrical distribution and lighting equipment, even though they are not examples of electrical distribution or lighting equipment.

**Table A. Home Fires Involving Electrical Distribution or Lighting Equipment, by Major Equipment Group**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Major Equipment Group	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Lamps, light fixtures, and light bulbs	6,790 (28%)	57 (18%)	244 (30%)	\$166 (24%)
Wiring	5,400 (22%)	88 (28%)	75 (9%)	\$161 (23%)
Outlets, receptacles, and switches	4,210 (17%)	23 (7%)	155 (19%)	\$116 (17%)
Overcurrent protection devices	3,050 (13%)	15 (5%)	73 (9%)	\$70 (10%)
Cords and plugs	2,980 (12%)	125 (39%)	212 (26%)	\$116 (17%)
Meters and meter boxes	940 (4%)	4 (1%)	17 (2%)	\$32 (5%)
Power sources	450 (2%)	0 (0%)	37 (5%)	\$29 (4%)
Transformers	340 (1%)	8 (2%)	13 (2%)	\$7 (1%)
Lightning rods and arresters	10 (0%)	0 (0%)	0 (0%)	\$0 (0%)
Electric fences	0 (0%)	0 (0%)	2 (0%)	\$0 (0%)
<b>Total</b>	<b>24,180 (100%)</b>	<b>321 (100%)</b>	<b>828 (100%)</b>	<b>\$698 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash containers, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Totals may not equal sums because of rounding error.

Source: Data from NFIRS and NFPA survey.

**In 2006, 65 people died of injuries from unvented carbon monoxide from generators.\***

Fueled equipment to generate electricity is the only type of electrical distribution or lighting equipment that can produce carbon monoxide. (Fueled lighting devices are not included in the scope of this report.)

The death toll from carbon monoxide produced by generators has increased sharply in recent years, from less than 10 per year on average in 1999 and prior years to 19 per year in 2000-2001, 47 per year in 2002-2004, and 75 per year in 2005-2006.

\*Matthew V. Hnatov, “Incidents, deaths and in-depth investigations associated with non-fire carbon monoxide from engine-driven generators and other engine-driven tools, 1999-2006,” memorandum, U.S. Consumer Product Safety Commission, October 10, 2007, accessed at [www.cpsc.gov](http://www.cpsc.gov).

The large jump in deaths involving generators in 2000 may reflect the fact that roughly half the total generators in use in 2000 had been purchased in 1999 because of concerns over Y2K (year 2000) problems with the nation's power grid.\* This meant a large number of generator users had no experience in safe generator use. Disasters like Hurricane Katrina have added to the demand for generators and probably added to the number of inexperienced users.

The U.S. Consumer Product Safety Commission examined the circumstances of the 334 non-fire carbon monoxide deaths in 1999-2006. Nearly one-sixth (51 deaths) occurred in temporary shelters. For two-fifths (39%) of the 288 deaths where it was known why generators were in use, the reason for use was power outage due to weather or problem with power distribution. Further investigation showed that nearly all of these deaths specifically involved weather (93% of the 39% involving weather or power distribution, or 36% of all generator deaths where reason for using a generator was known). The types of weather were hurricanes or tropical storms (46% of carbon monoxide deaths involving generators used because of a weather related power outage), snow or ice storms (44%), wind storms (6%) and thunderstorms (5%). The second leading reason for use was providing power to a storage shed, trailer, boat, camper, cabin, or campsite (20% of deaths where a reason was reported), all types of properties where connection to area electrical service is often impractical. Other leading reasons for use were power shutoff by electric company due to bill dispute or non-payment (18% of deaths where a reason was reported), new home or homeowner with power not yet turned on or turned off for construction or renovation (12%), and providing power to a home that normally does not have electricity (7%).

**Table B. Electrocution Deaths Involving Electrical Distribution or Lighting Equipment, by Year and Type of Equipment**

Year	Installed household wiring	Lamp or light fixture	Extension cord	Work or trouble light	All four equipment groups combined
1995	53	14	9	6	82
1996	41	10	4	1	56
1997	22	15	9	6	52
1998	25	12	12	6	55
2000	10	10	3	2	25
2001	19	9	3	2	33
Average	28	12	7	4	51

Source: CPSC analysis of death certificate data base.

**In 1995-2001 (excluding 1999), four types of electrical distribution or lighting equipment accounted for an average of 51 electrocution deaths per year.\*\***

Some other types of electrical distribution or lighting equipment occasionally are involved in electrocution deaths but are not listed separately in CPSC's analysis of electrocution deaths by product. No analysis was done for 1999, and analyses for years after 2001 did not provide separate statistics for all the types of equipment discussed here.

\* *Portable Generators*, U.S. Consumer Product Safety Commission, May 20, 2004, accessed at [www.cpsc.gov](http://www.cpsc.gov).

\*\* Risana T. Chowdhury, *2001 Electrocutions Associated with Consumer Products*, U.S. Consumer Product Safety Commission, June 2004, accessed at [www.cpsc.gov](http://www.cpsc.gov), and previous reports in series.



**In 2006, an estimated 71,360 injuries involving electrical distribution or lighting equipment were reported to hospital emergency rooms.\***

Nearly half of these injuries involved lamps, light fixtures, or light bulbs. Interestingly, work and trouble lights were not involved in any reported hospital emergency room injuries in 2006 – and accounted for a small fraction of reported home structure fires and associated deaths and injuries involving lamps, light fixtures, or light bulbs – but as noted are involved in electrocution deaths every year. The reason for these very different statistics may be that there is much less usage of work or trouble lights than of any other type of equipment in the lamp, light fixture, and light bulb group, but the nature of usage of work or trouble lights may often place them in unusually hazardous environments, such as flooded areas where normal power has failed.

**Table C. Injuries Involving Electrical Distribution or Lighting Equipment, Reported to Hospital Emergency Rooms, 2006**

Equipment	Type of Injury	
	Total	Contusion or Abrasion
Lamps, light fixtures, or light bulbs	35,330	4,890
Power sources (e.g., batteries, generators, battery chargers)	14,680	1,650
Cords or plugs	12,070	2,230
Outlets, receptacles, or switches	4,200	320
Wiring	3,820	560
Panelboards or circuit boards for fuses or circuit breakers	1,220	70
Lightning rods or arresters	30	0
Total electrical distribution or lighting equipment	71,360	9,720

Source: CPSC’s National Electronic Injury Surveillance System.

Of the equipment groups identified in fire incident data, meters and meter boxes, transformers, and electric fences do not appear to be identified separately in the coding of products involved in hospital emergency room injuries.

**Electrical distribution and lighting equipment dwelling fires are the only type of home fires that have been shown to increase in frequency with increasing dwelling age.\*\***

When studies show higher fire risk generally for older homes, it is usually because the studies have not controlled for the risk levels associated with occupants. Statistically, older homes have a higher proportion of occupants who are poor or have other risk factors. NFPA’s annual study of variations in state fire death rates is one of the few studies of risk factors where the statistical link between older homes and higher-risk occupants is broken.\*\*\* This is because several states

\* “Statistics from National Electronic Injury Surveillance System (NEISS) data obtained from the U.S. Consumer Product Safety Commission (CPSC) website, [www.cpsc.gov](http://www.cpsc.gov).

\*\* Linda E. Smith and Dennis McCoskrie, “What causes wiring fires in residences?”, *Fire Journal*, January/February 1990, Volume 84, Number 1. The title cites wiring, but the study includes the other major types of electrical distribution and lighting equipment.

\*\*\* John R. Hall, Jr., *U.S. Unintentional Fire Death Rates, by State*, NFPA Fire Analysis and Research Division, Quincy, MA, September 2007.

(like Vermont and Connecticut) have large shares of older, expensive homes with affluent occupants. In that study, age of housing has a small or no statistical correlation with fire death risk. The Fire Protection Research Foundation is currently conducting a study of aging wiring in dwellings.

**Most 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment cited factors contributing to ignition that are electrical failures or malfunctions without details on the nature of the failure.**

Leading factors with specific detail include short circuit arc from defective or worn insulation (12% of fires), heat source too close to combustibles (11%), arc from faulty contact or broken conductor (3%). (See Table 2.) Table 3 shows human factors contributing to ignition.

**The majority of 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment began with ignition of products and materials often found in structural areas, including wire or cable insulation (30%), structural member or framing (12%), insulation within structural area (5%), exterior wall covering (5%), or interior wall covering (5%).**

Leading items ignited for fire deaths involving these types of equipment include wire or cable insulation (33%), upholstered furniture (11%), floor covering (9%), interior wall covering (9%), mattress or bedding (8%), and Christmas tree (6%). Unlike the leading items for fire incidents, these items are typically found in living areas. (See Table 4.)

**Two-fifths (42%) of deaths in 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment resulted from fires that began in living room, family room, or den.**

The leading areas of origin for fire incidents divide between those identified with specific living areas – e.g., living room, family room, or den (10%), kitchen (6%), unclassified function area (4%), bedroom (4%), and laundry room (4%) – and those identified as structural or exterior areas – e.g., attic or ceiling/roof assembly or concealed space (9%), wall assembly or concealed space (7%), exterior wall surface (6%), crawl space and substructure space (4%), and ceiling/floor assembly or concealed space (4%). It is not clear where garage (4%) would be grouped. (See Table 5.)

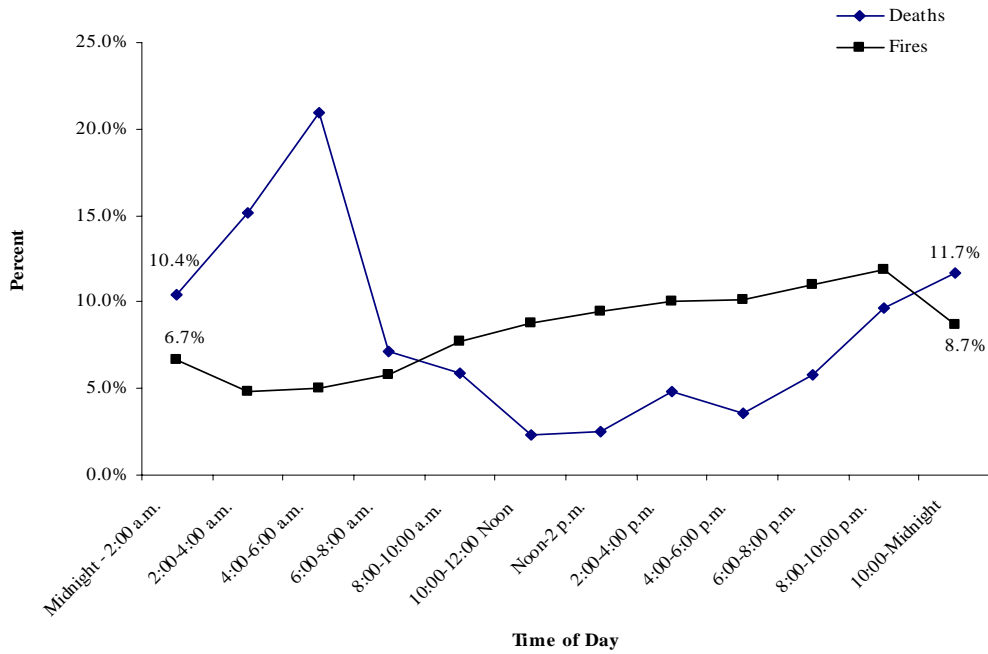
**Three-fourths (73%) of deaths in 2002-2005 home structure fires involving electrical distribution or lighting equipment involved victims who were outside the area of origin when fire began.**

This compares to 59% of the fatal victims being outside the area of origin for all home structure fire deaths. Table 6 provides additional details on victim location.

Table 7 provides an overview of victim activity when injured. Relative to all 2002-2005 home structure fire deaths, the fatal victims of 2002-2005 home structure fires involving electrical distribution or lighting equipment were more likely to be attempting to escape (37% vs. 33%) or to fight the fire (11% vs. 3%) and less likely to have been sleeping (32% vs. 39%).

This is despite the fact that 2002-2005 home structure fire deaths involving electrical distribution or lighting equipment show the same kind of night time peak as do 2002-2005 home structure fire deaths of all causes. (See Figure 2 and Table 8.)

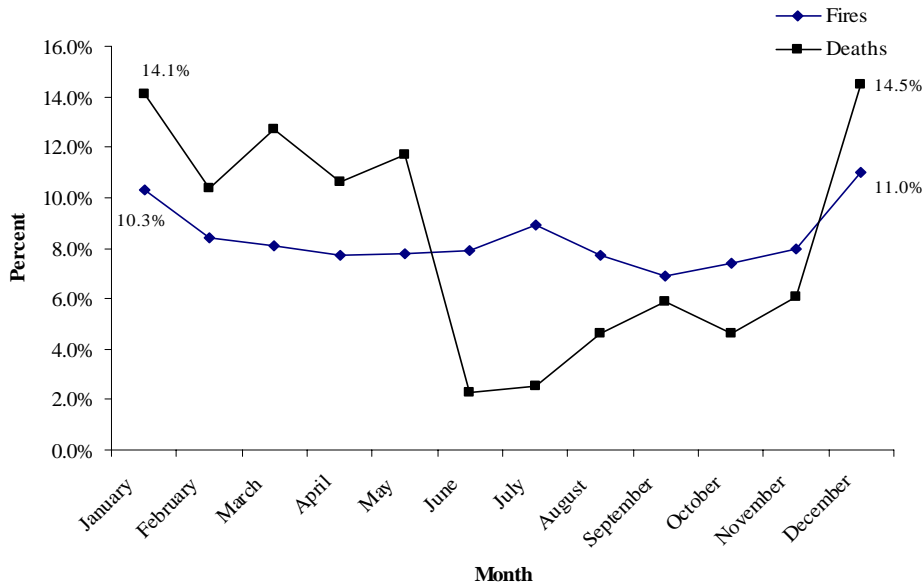
**Figure 2. 2002-2005 Non-Confined Home Fires and Deaths Involving Electrical Distribution or Lighting Equipment, by Time of Day**



Source: Data from NFIRS Version 5.0 and NFPA survey.

Note: See Note on Table 8.

**Figure 3. 2002-2005 Non-Confined Home Fires and Deaths Involving Electrical Distribution or Lighting Equipment, by Month**



Source: Data from NFIRS Version 5.0 and NFPA survey.

Note: See Note on Table 9.

**Home structure fires involving electrical distribution or lighting equipment, in 2002-2005, show a winter peak similar to that for heating equipment but less pronounced.**

Figure 3 and Table 9 show this pattern. Note that in winter, not only are the days and nights colder, but also more of the day is dark. A longer period of time requiring lighting each day, combined with increased demands from heating equipment, some of which are electric-powered, all help to explain this peak.

Because statistics from other countries often differ with regard to the properties included and the equipment included, it is only possible to make very rough comparisons. With these limits, it is not clear whether Canada's fire problem is different in size from its U.S. counterpart. U.K. electrical distribution fires and losses, adjusted for their population which is one-fourth the U.S. population and recognizing that lighting fires may not be included, still seem significantly lower. (See Table 10.)

### **Safety Tips**

- Home electrical safety begins with NFPA 70, *National Electrical Code*®, and related documents with special relevance to homes, notably NFPA 73, *Electrical Inspection Code for Existing Dwellings*. However, work on home electrical distribution or lighting equipment should only be conducted by someone qualified as an electrician.
- Call a qualified electrician or landlord if you have
  - recurring problems with blowing fuses or tripping circuit breakers,
  - a tingling feeling when you touch an electrical appliance,
  - discolored or warm wall outlets,
  - a burning smell or rubbery odor coming from an appliance,
  - flickering lights,
  - sparks from an outlet.
- Keep lamps, light fixtures, and light bulbs away from anything that can burn, including lamp shades, furniture, bedding, curtains, clothing, and flammable or combustible gases and liquids.
- Never place clothing over a lamp or a cloth over a light bulb.
- Place lamps away from where people and pets walk or where things might fall against them.
- If a fuse blows or a circuit breaker trips often, find out why and correct the problem.
- Replace fuses with the correct amp rating for the circuit they protect.
- Never replace a fuse with a higher rated fuse.
- If the problem continues, call an electrician.
- Only plug one heat-producing appliance (such as a coffee maker, toaster, space heater, etc.) into a receptacle outlet at a time.
- Never plug a major appliance into an extension cord.
- Buy only appliances that have the label of a recognized testing laboratory.
- Replace cracked and frayed electrical cords.
- Pinching cords against walls or furniture or running them under carpets or across doorways can cause a fire.
- Use extension cords for temporary wiring only.

- Consider having additional circuits or receptacles added by a qualified electrician.
- Replace receptacles if plugs do not fit.
- Receptacle outlets and switches should have wall plates to prevent shocks.
- Homes with young children should have tamper-resistant electrical receptacles.
- Use light bulbs that match the recommended wattage on the lamp or fixture.
- If an appliance is malfunctioning, unplug it if it is safe to do so. If necessary, cut off power by unscrewing a fuse or turning off the circuit breaker.
- Arc fault circuit interrupters (AFCIs) are a new kind of circuit breaker that shut off electricity when a dangerous condition occurs. Consider having them installed in your home. Use a qualified electrician.
- Ground fault circuit interrupters (GFCIs) reduce the risk of shock. GFCIs shut off an electrical circuit when it becomes a shock hazard.
- Test AFCIs and GFCIs once a month to make sure they are working properly.
- Keep ladders away from overhead power lines including the electrical service into your home.
- Never touch a power line. Stay at a safe distance – you could be electrocuted.
- Report downed power lines to authorities.
- Some power lines are underground. Call your local authority regarding digging.

**Table 1. Home Fires Involving Electrical Distribution or Lighting Equipment, by Year  
Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	
				As Reported	In 2005 Dollars
1980	68,400	520	1,650	\$493	\$1,171
1981	62,300	550	1,500	\$459	\$985
1982	60,900	410	1,820	\$519	\$1,050
1983	56,700	500	1,570	\$548	\$1,074
1984	54,800	440	1,520	\$549	\$1,030
1985	56,500	470	1,400	\$720	\$1,306
1986	54,300	720	1,420	\$597	\$1,065
1987	51,600	520	1,580	\$512	\$880
1988	53,400	440	1,720	\$715	\$1,182
1989	47,900	610	1,500	\$642	\$1,013
1990	47,400	440	1,540	\$683	\$1,022
1991	49,000	350	1,890	\$958*	\$1,373*
1992	46,400	400	1,770	\$617	\$859
1993	48,900	420	1,900	\$818	\$1,106
1994	48,300	460	1,640	\$714	\$941
1995	47,200	490	1,650	\$775	\$993
1996	47,000	470	1,560	\$839	\$1,046
1997	46,600	350	1,580	\$865	\$1,052
1998	44,500	360	1,370	\$843	\$1,011
1999	35,100	180	540	\$834	\$977
2000	17,200	130	910	\$638	\$724
2001	26,600	440	1,030	\$731	\$807
2002	37,000	170	790	\$603	\$655
2003	19,400	320	610	\$702	\$746
2004	19,500	290	850	\$625	\$646
2005	20,900	500	1,100	\$862	\$862

\* 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, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections exclude fires reported only to Federal or state agencies or industrial fire brigades. Fires are rounded to the nearest hundred, civilian deaths and civilian injuries are expressed to the nearest ten, and property damage is rounded to the nearest million dollars. *Fires, deaths, and injuries are rounded more on this table than on any other in the report, because otherwise, most of the entries shown would have four significant places, and that would suggest an unreasonably high degree of precision.* 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 reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. *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 2005 dollars is done using the consumer price index.

Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2005) and from NFPA survey.

**Table 2. Home Fires Involving Electrical Distribution or Lighting Equipment,  
by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	6,700	(28%)	53	(17%)	171	(21%)	\$228	(33%)
Unspecified short circuit arc	5,250	(22%)	53	(17%)	178	(21%)	\$168	(24%)
Short circuit arc from defective or worn insulation	2,870	(12%)	47	(15%)	102	(12%)	\$59	(8%)
Heat source too close to combustibles	2,620	(11%)	24	(8%)	99	(12%)	\$77	(11%)
Arc from faulty contact or broken conductor	990	(4%)	0	(0%)	19	(2%)	\$31	(4%)
Equipment overloaded	870	(4%)	25	(8%)	55	(7%)	\$26	(4%)
Short circuit arc from mechanical damage	770	(3%)	15	(5%)	29	(3%)	\$20	(3%)
Unclassified mechanical failure or malfunction	670	(3%)	19	(6%)	18	(2%)	\$17	(2%)
Installation deficiency	560	(2%)	9	(3%)	13	(2%)	\$15	(2%)
Arc or spark from operating equipment	540	(2%)	5	(1%)	21	(3%)	\$13	(2%)
Unclassified misuse of material or product	530	(2%)	14	(4%)	52	(6%)	\$12	(2%)
Unclassified factor contributed to ignition	430	(2%)	19	(6%)	14	(2%)	\$11	(2%)
Worn out	420	(2%)	10	(3%)	17	(2%)	\$11	(2%)
Water caused short circuit arc	350	(1%)	0	(0%)	5	(1%)	\$5	(1%)
Equipment unattended	290	(1%)	0	(0%)	5	(1%)	\$15	(2%)
Collision, knock down, or turn over	280	(1%)	5	(1%)	21	(3%)	\$7	(1%)
Animal	270	(1%)	0	(0%)	3	(0%)	\$3	(0%)
Storm	260	(1%)	0	(0%)	0	(0%)	\$6	(1%)
Equipment not being operated properly	230	(1%)	14	(4%)	2	(0%)	\$9	(1%)
Unclassified operational deficiency	210	(1%)	5	(1%)	24	(3%)	\$9	(1%)
Unintentionally turned on or not turned off	190	(1%)	0	(0%)	12	(1%)	\$4	(1%)
Equipment used for not intended purpose	170	(1%)	5	(1%)	11	(1%)	\$8	(1%)
Flourescant light ballast	140	(1%)	0	(0%)	0	(0%)	\$2	(0%)
Leak or break	140	(1%)	0	(0%)	8	(1%)	\$4	(1%)
Exposure fire	120	(1%)	0	(0%)	0	(0%)	\$4	(1%)
Other known factor contributing to ignition	910	(4%)	19	(6%)*	52	(6%)	\$25	(4%)
<b>Total fires</b>	<b>24,180</b>	<b>(100%)</b>	<b>321</b>	<b>(100%)</b>	<b>828</b>	<b>(100%)</b>	<b>\$698</b>	<b>(100%)</b>
<b>Total factor entries</b>	<b>26,790</b>	<b>(111%)</b>	<b>339</b>	<b>(106%)</b>	<b>930</b>	<b>(112%)</b>	<b>\$790</b>	<b>(113%)</b>

\* "Other known" includes flammable liquid or gas spilled (4% of deaths).

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude combined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5. and NFPA survey.

**Table 3. Home Fires Involving Electrical Distribution or Lighting Equipment,  
by Human Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

<b>Human Factor</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>
Unattended or unsupervised person	690 (3%)	8 (3%)	21 (3%)	\$20 (3%)
Asleep	580 (2%)	78 (24%)	87 (11%)	\$35 (5%)
Age was a factor	250 (1%)	20 (6%)	33 (4%)	\$7 (1%)
Multiple persons involved	150 (1%)	4 (1%)	9 (1%)	\$6 (1%)
Possibly impaired by alcohol or other drug	70 (0%)	16 (5%)	7 (1%)	\$3 (0%)
Possibly mentally disabled	50 (0%)	4 (1%)	16 (2%)	\$5 (1%)
Physically disabled	30 (0%)	13 (4%)	12 (2%)	\$1 (0%)
None	22,530 (93%)	202 (63%)	679 (82%)	\$630 (90%)
<b>Total fires</b>	<b>24,180 (100%)</b>	<b>321 (100%)</b>	<b>828 (100%)</b>	<b>\$698 (100%)</b>
<b>Total factor entries</b>	<b>24,350 (101%)</b>	<b>345 (108%)</b>	<b>865 (104%)</b>	<b>\$707 (101%)</b>

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash containers, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with human factor contributing to ignition listed as unknown, blank or not reported have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



**Table 4. Home Fires Involving Electrical Distribution or Lighting Equipment,  
by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

<b>Item First Ignited</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Wire or cable insulation	7,200	(30%)	107	(33%)	178	(22%)	\$169	(24%)
Structural member or framing	2,990	(12%)	17	(5%)	69	(8%)	\$125	(18%)
Insulation within structural area	1,280	(5%)	12	(4%)	17	(2%)	\$29	(4%)
Exterior wall covering or finish	1,130	(5%)	4	(1%)	25	(3%)	\$27	(4%)
Interior wall covering	1,110	(5%)	29	(9%)	53	(6%)	\$37	(5%)
Mattress or bedding	1,090	(5%)	25	(8%)	103	(12%)	\$37	(5%)
Unclassified item first ignited	1,040	(4%)	0	(0%)	33	(4%)	\$13	(2%)
Floor covering	850	(4%)	29	(9%)	39	(5%)	\$32	(5%)
Clothing	840	(3%)	0	(0%)	38	(5%)	\$26	(4%)
Unclassified structural component or finish	840	(3%)	12	(4%)	21	(3%)	\$26	(4%)
Upholstered furniture	560	(2%)	37	(11%)	53	(6%)	\$18	(3%)
Appliance housing or casing	500	(2%)	0	(0%)	25	(3%)	\$11	(2%)
Interior ceiling covering	480	(2%)	0	(0%)	3	(0%)	\$20	(3%)
Unclassified furniture or utensil	440	(2%)	4	(1%)	20	(2%)	\$16	(2%)
Curtain or drape	340	(1%)	4	(1%)	24	(3%)	\$14	(2%)
Cabinetry	330	(1%)	0	(0%)	12	(1%)	\$10	(1%)
Unclassified soft goods or clothing	280	(1%)	8	(3%)	12	(1%)	\$7	(1%)
Multiple items first ignited	270	(1%)	0	(0%)	7	(1%)	\$16	(2%)
Flammable or combustible gas or liquid	250	(1%)	12	(4%)	46	(6%)	\$14	(2%)
Box or bag	230	(1%)	0	(0%)	0	(0%)	\$12	(2%)
Light vegetation, including grass	220	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Linen other than bedding	220	(1%)	0	(0%)	8	(1%)	\$5	(1%)
Papers	180	(1%)	0	(0%)	10	(1%)	\$6	(1%)
Unclassified organic materials	160	(1%)	0	(0%)	2	(0%)	\$2	(0%)
Other known item	1,330	(5%)	20	(6%)	31	(4%)	\$27	(4%)
<b>Total fires</b>	<b>24,180</b>	<b>(100%)</b>	<b>321</b>	<b>(100%)</b>	<b>828</b>	<b>(100%)</b>	<b>\$698</b>	<b>(100%)</b>

\* "Other known" includes Christmas tree (6% of deaths).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Table 5. Home Fires Involving Electrical Distribution or Lighting Equipment,  
by Area of Origin  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Fires	(%)	Deaths	(%)	Injuries	(%)	Damage	(%)
Living room, family room, or den	2,330	(10%)	135	(42%)	143	(17%)	\$80	(11%)
Attic or ceiling/roof assembly or concealed space	2,190	(9%)	18	(6%)	20	(2%)	\$60	(9%)
Wall assembly or concealed space	1,670	(7%)	20	(6%)	35	(4%)	\$44	(6%)
Kitchen	1,450	(6%)	19	(6%)	31	(4%)	\$31	(4%)
Exterior wall surface	1,330	(6%)	0	(0%)	13	(2%)	\$17	(3%)
Unclassified function area	1,040	(4%)	18	(6%)	53	(6%)	\$35	(5%)
Bedroom	1,040	(4%)	18	(6%)	53	(6%)	\$35	(5%)
Crawl space or substructure space	940	(4%)	7	(2%)	30	(4%)	\$30	(4%)
Garage	930	(4%)	0	(0%)	34	(4%)	\$44	(6%)
Ceiling/floor assembly or concealed space	880	(4%)	7	(2%)	18	(2%)	\$30	(4%)
Laundry room	850	(4%)	4	(1%)	20	(2%)	\$19	(3%)
Bathroom	820	(3%)	0	(0%)	19	(2%)	\$19	(3%)
Closet	520	(2%)	0	(0%)	15	(2%)	\$17	(2%)
Unclassified equipment or service area	420	(2%)	7	(2%)	2	(0%)	\$13	(2%)
Unclassified structural area	380	(2%)	4	(1%)	2	(0%)	\$12	(2%)
Exterior balcony or unenclosed porch	370	(2%)	0	(0%)	13	(2%)	\$19	(3%)
Unclassified storage area	290	(1%)	0	(0%)	7	(1%)	\$11	(2%)
Unclassified area of origin	290	(1%)	0	(0%)	4	(1%)	\$6	(1%)
Heating equipment room	230	(1%)	0	(0%)	4	(1%)	\$5	(1%)
Unclassified outside area	230	(1%)	0	(0%)	4	(1%)	\$2	(0%)
Conduit, pipe, utility, or ventilation shaft	230	(1%)	0	(0%)	4	(1%)	\$5	(1%)
Storage room, area, tank, or bin	200	(1%)	4	(1%)	0	(0%)	\$6	(1%)
Lobby or entrance way	200	(1%)	4	(1%)	9	(1%)	\$6	(1%)
Switchgear area or transformer vault	190	(1%)	0	(0%)	7	(1%)	\$2	(0%)
Office	180	(1%)	11	(3%)	12	(1%)	\$13	(2%)
Hallway or corridor	160	(1%)	0	(0%)	5	(1%)	\$1	(0%)
Courtyard, terrace or patio	150	(1%)	0	(0%)	0	(0%)	\$6	(1%)
Tool or supply storage area	130	(1%)	4	(1%)	6	(1%)	\$3	(0%)
Interior stairway or ramp	120	(1%)	0	(0%)	2	(0%)	\$4	(1%)
Other known area of origin	750	(3%)	8	(3%)	11	(1%)	\$16	(2%)
<b>Total fires</b>	<b>24,180</b>	<b>(100%)</b>	<b>321</b>	<b>(100%)</b>	<b>828</b>	<b>(100%)</b>	<b>\$698</b>	<b>(100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Table 6. Civilian Deaths and Injuries in  
Home Fires Involving Electrical Distribution or Lighting Equipment,  
by Victim Location at Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Coded as Confined Fires)**

<b>Victim Location at Ignition</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>
In area of origin and not involved	7 (2%)	4 (0%)
Not in area of origin and not involved	77 (24%)	359 (43%)
Not in area of origin but involved	158 (49%)	331 (40%)
In area of origin and involved	79 (25%)	134 (16%)
In area of origin	86 (27%)	138 (17%)
Not in area of origin	235 (73%)	690 (83%)
Involved in ignition	238 (74%)	465 (56%)
Not involved in ignition	83 (26%)	363 (44%)
Total	321 (100%)	828 (100%)

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Home fire casualties involving indicated equipment with victim location unknown have been proportionally allocated. 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. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Casualties with this equipment involved in ignition but victim location unknown have been proportionally allocated. Totals may not equal sums because of rounding error. Civilian deaths and injuries are estimated to the nearest one.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Table 7. Civilian Deaths and Injuries in  
Home Fires Involving Electrical Distribution or Lighting Equipment,  
by Victim Activity When Injured  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

<b>Activity</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>
Attempting to escape	120 (37%)	213 (26%)
Sleeping	104 (32%)	113 (14%)
Unable to act	34 (11%)	14 (2%)
Attempting to fight fire	34 (11%)	251 (30%)
Returning to vicinity of fire	12 (4%)	89 (11%)
Irrational act	6 (2%)	13 (2%)
Attempting rescue	6 (2%)	79 (10%)
Unclassified activity	6 (2%)	56 (7%)
<b>Total</b>	<b>321 (100%)</b>	<b>828 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. 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. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Fires with this equipment involved but activity unknown have been proportionally allocated. Totals may not equal sums because of rounding error. Civilian deaths and injuries are estimated to the nearest one.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Table 8. Home Fires Involving Electrical Distribution or Lighting Equipment,  
by Time of Day  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**

<b>Time</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>
Midnight – 1:59 am	1,620 (7%)	33 (10%)	65 (8%)	\$58 (8%)
2:00 – 3:59 am	1,170 (5%)	49 (15%)	59 (7%)	\$49 (7%)
4:00 – 5:59 am	1,200 (5%)	67 (21%)	88 (11%)	\$50 (7%)
6:00 – 7:59 am	1,390 (6%)	23 (7%)	68 (8%)	\$37 (5%)
8:00 – 9:59 am	1,850 (8%)	19 (6%)	73 (9%)	\$46 (7%)
10:00 – 11:59 am	2,130 (9%)	7 (2%)	75 (9%)	\$78 (11%)
Noon – 1:59 pm	2,300 (10%)	8 (2%)	58 (7%)	\$65 (9%)
2:00 – 3:59 pm	2,420 (10%)	15 (5%)	43 (5%)	\$69 (10%)
4:00 – 5:59 pm	2,450 (10%)	12 (4%)	74 (9%)	\$67 (10%)
6:00 – 7:59 pm	2,670 (11%)	19 (6%)	52 (6%)	\$65 (9%)
8:00 – 9:59 pm	2,870 (12%)	31 (10%)	101 (12%)	\$65 (9%)
10:00 – 11:59 pm	2,100 (9%)	38 (12%)	71 (9%)	\$49 (7%)
<b>Total</b>	<b>24,180 (100%)</b>	<b>321 (100%)</b>	<b>828 (100%)</b>	<b>\$698 (100%)</b>

Note: Figures exclude combined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries to the nearest one, 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. Fires are rounded to the nearest hundred and civilian deaths to the nearest one. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5. and NFPA survey.

**Table 9. Home Fires Involving Electrical Distribution or Lighting Equipment, by Month  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	2,480	(10%)	45	(14%)	77	(9%)	\$76	(11%)
February	2,030	(8%)	33	(10%)	80	(10%)	\$60	(9%)
March	1,950	(8%)	41	(13%)	80	(10%)	\$68	(10%)
April	1,850	(8%)	34	(11%)	69	(8%)	\$63	(9%)
May	1,880	(8%)	38	(12%)	70	(8%)	\$51	(7%)
June	1,910	(8%)	7	(2%)	91	(11%)	\$42	(6%)
July	2,160	(9%)	8	(2%)	54	(6%)	\$50	(7%)
August	1,860	(8%)	15	(5%)	51	(6%)	\$54	(8%)
September	1,660	(7%)	19	(6%)	41	(5%)	\$43	(6%)
October	1,800	(7%)	15	(5%)	67	(8%)	\$46	(7%)
November	1,940	(8%)	20	(6%)	69	(8%)	\$60	(9%)
December	2,670	(11%)	47	(14%)	80	(10%)	\$86	(12%)
Total	24,180	(100%)	321	(100%)	828	(100%)	\$698	(100%)

Note: Figures exclude combined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. 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. Fires are rounded to the nearest ten, civilian deaths and injuries to the nearest one, and direct property damage to the nearest million dollars. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5. and NFPA survey.

**Table 10. Fires in Other Countries Related to Home Electrical Distribution or Lighting Equipment**

**A. Canada, 1990-2002, not limited to homes, electrical distribution excluding lighting**

Year	Fires	Civilian Deaths	Civilian Injuries	<u>Direct Property Damage (in Millions)</u>		
				Current Canada Dollars	In U.S. Dollars	In 2005 U.S. Dollars
1990	8,600	36	180	\$218	\$187	\$279
1991	8,600	33	120	\$230	\$201	\$287
1992	7,800	30	160	\$248	\$205	\$286
1993	6,100	10	120	\$175	\$136	\$183
1994	7,100	12	170	\$210	\$154	\$203
1995	7,800	19	150	\$215	\$157	\$201
1996	7,100	18	120	\$222	\$163	\$203
1997	5,800	16	130	\$184	\$133	\$162
1998	6,200	14	110	\$156	\$105	\$126
1999	6,400	15	120	\$191	\$128	\$150
2000	6,200	11	130	\$207	\$139	\$158
2001	6,700	22	160	\$235	\$152	\$168
2002	6,600	16	140	\$241	\$154	\$167

**B. U.K., 1990-2005, dwellings (corresponds to U.S. homes), electrical distribution but unclear whether lighting included**

Year	Fires	Civilian Deaths	Civilian Injuries
1990	3,200	22	410
1991	3,100	18	360
1992	3,100	9	380
1993	3,100	12	300
1994	2,000	13	290
1995	2,500	18	300
1996	2,500	21	300
1997	2,500	9	330
1998	2,700	9	340
1999	2,700	14	310
2000	2,800	15	330
2001	2,600	15	280
2002	2,700	9	300
2003	2,800	7	310
2004	2,900	11	320
2005	3,100	9	370

Note: Statistics include a proportional share of fires with undetermined cause. U.K. damage statistics are not available. U.K. statistics in and after 1997 include some incidents (e.g., heat or smoke damage only) that were not included previously and are not included in U.S. statistics. Sums may not equal totals because of rounding.

Source: Annual Report – Fire Losses in Canada; Fire Statistics – United Kingdom. Foreign exchange rates from Organisation for Economic Co-operation and Development. Consumer price index used to adjust for inflation.

**Table 10. Fires in Other Countries Related to Home Electrical Distribution or Lighting Equipment (Continued)**

**C. Japan, 1990-2004, all structures, wiring equipment, lighting, and telephone wiring**

Year	Fires	Deaths	Total in Billions of Yen	Property Damage	
				Total in Millions of U.S. Dollars As Reported	In 2005
1990	1,300	14	5.8	\$40	\$60
1991	1,400	13	6.2	\$46	\$66
1992	1,400	21	6.7	\$53	\$73
1993	1,300	10	8.9	\$80	\$108
1994	1,600	28	9.7	\$95	\$125
1995	1,700	21	8.3	\$88	\$113
1996	1,700	35	9.2	\$85	\$105
1997	1,700	32	10.0	\$83	\$101
1998	1,900	19	9.2	\$71	\$85
1999	1,800	34	11.9	\$104	\$122
2000	2,100	39	10.3	\$96	\$109
2001	2,100	35	13.1	\$108	\$119
2002	2,100	51	10.8	\$86	\$94
2003	1,900	40	7.6	\$66	\$70
2004	2,200	NA	9.5	\$88	\$91

NA – Not available because analysis of 2004 fire deaths was still under review.

Note: Statistics include a proportional share of fires with undetermined cause. Sums may not equal totals because of rounding. Japanese injury statistics are not available by cause. A bath furnace is a small local water heater that only heats water for a bath.

Source: Analyses of Japanese fire experience data by Dr. Ai Sekizawa, NRIFD, foreign exchange rates from Organisation for Economic Co-operation and Development. Consumer price index used to adjust for inflation.



## Lamps, Light Fixtures, and Light Bulbs

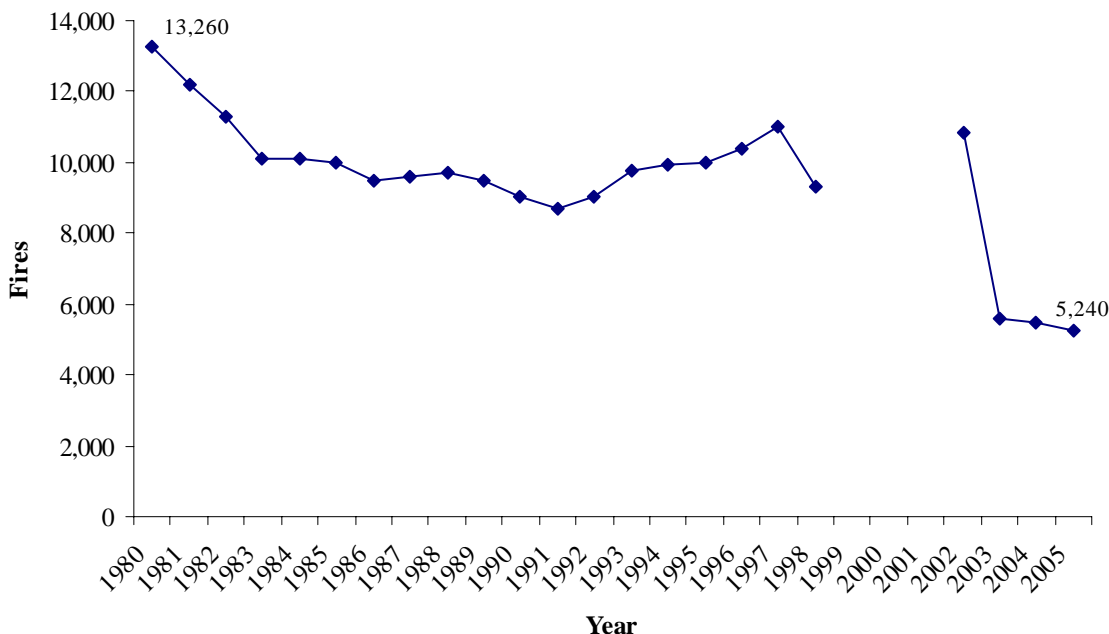
**In 2005, an estimated 5,240 reported U.S. non-confined home structure fires involving lamps, light fixtures, or light bulbs resulted in 59 civilian deaths, 241 civilian injuries, and \$211 million in direct property damage.**

Lamps, light fixtures, and light bulbs include the following specific types of equipment:

- Incandescent light fixtures
- Table or floor lamps
- Halogen light fixtures
- Light bulbs
- Fluorescent light fixtures
- Lanterns or flashlights
- Sodium or mercury vapor lights
- Nightlights
- Decorative lights on line voltage
- Work lights or trouble lights
- Decorative or landscape lighting
- Signs

Fires declined by nearly one-third from 1980 to 1998. After the transition period of 1999-2001, when NFIRS Version 5.0 was being phased in, the estimates for 2003-2005 have been fairly consistently about one-half lower than the levels of the late 1990s, a much larger decline than would have been expected if the 1980-1998 trend had continued unchanged. Associated losses also showed large declines coinciding with the shift to NFIRS Version 5.0.

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



Source: Data from NFIRS Version 5.0 and NFPA survey.

Note: See Note on year table.

Version 5.0 of NFIRS changed the wording and the requirements for the Equipment Involved in Ignition field, which identify electrical distribution or lighting equipment. These changes resulted in a

sharp increase in non-reporting of the field, resulting in more unknowns and more volatile estimates. These changes also resulted in a sharp increase in the use of the “no equipment” entry, resulting in a sharp decline in estimates of fires involving all types of equipment. We have tried to compensate for the latter change in the analysis rules, but we remain skeptical of the sharp declines in estimated fires involving electrical distribution or lighting equipment after 1998.

The change to Version 5.0 of NFIRS also introduced six types of “confined fires” – fires confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. In our reports, we analyze confined fires separately from non-confined fires, and for fires involving electrical distribution or lighting equipment, none of the six types of confined fires appear to be relevant. Therefore, all estimates in this report specify that they are estimates of non-confined fires, even though we know from our analysis that fires reported as confined fires would not add significantly to the estimates of total electrical distribution or lighting equipment fires.

Lamps, light fixtures, and light bulbs accounted for 28% of 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment, as well as 18% of associated civilian deaths, 30% of associated civilian injuries, and 24% of associated direct property damage.

**Home Fires Involving Lamps, Light Fixtures, or Light Bulbs,  
by Specific Type of Equipment  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Table and floor lamps	2,250	(33%)	43	(76%)	135	(55%)	\$63	(38%)
Incandescent light fixtures	1,720	(25%)	9	(15%)	39	(16%)	\$38	(23%)
Light bulbs	770	(11%)	0	(1%)	13	(5%)	\$11	(7%)
Halogen light fixtures	740	(11%)	0	(1%)	27	(11%)	\$19	(11%)
Fluorescent light fixtures	520	(8%)	0	(1%)	3	(1%)	\$10	(6%)
Work lights and trouble lights	370	(5%)	0	(0%)	7	(3%)	\$14	(8%)
Decorative lights on line voltage	240	(4%)	4	(6%)	14	(6%)	\$7	(4%)
Nightlights	70	(1%)	0	(0%)	3	(1%)	\$1	(1%)
Decorative or landscape lights	40	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Lanterns and flashlights	40	(1%)	0	(0%)	3	(1%)	\$3	(2%)
Signs	10	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Sodium or mercury vapor lights	10	(0%)	0	(0%)	0	(0%)	\$0	(0%)
<b>Total</b>	<b>6,790</b>	<b>(100%)</b>	<b>57</b>	<b>(100%)</b>	<b>244</b>	<b>(100%)</b>	<b>\$166</b>	<b>(100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Lamps (33%) and incandescent light fixtures (25%) accounted for more than half (58%) of the combined 2002-2005 non-confined home structure fires involving lamps, light fixtures, and light bulbs.**

Light bulbs (11%), halogen light fixtures (11%), and fluorescent light fixtures (8%) also have significant shares of fires involving lamps, light fixtures, or light bulbs.

**Halogen lights have a higher risk of fire than regular incandescent lights or fluorescent lights.**

Halogen lights are a type of incandescent light that provides 8% more lumens (more light) per watt than regular incandescent lights.\* Fluorescent lights are much more efficient but have until recently been much more expensive as well.

Incandescent light fixtures accounted for more 2002-2005 non-confined home structure fires than halogen light fixtures (by a factor of 2.3-to-1) and fluorescent light fixtures (by a factor of 3.3-to-1). If the fires attributed to lamps and light bulbs were all incandescent lighting equipment, then the ratio of fires involving incandescent lighting equipment to fires involving other types of lighting equipment could rise as high as 6.4-to-1 for halogen lights and 9.1-to-1 for fluorescent lights.

The latest usage statistics are for 1993.\*

The 1993 usage ratio for incandescent vs. halogen lights ranges from 153-to-1 for all bulbs down to 72-to-1 for the bulbs with heaviest use. (It is not surprising that usage of the more cost-efficient fluorescent and halogen lights increases in applications where bulbs are in use for long periods.) Even the lowest usage ratio is more than ten times higher than the highest incandescent vs. halogen fire incident ratio of 6.4-to-1. Therefore, the fire incident risk with halogen lights is estimated to be at least ten times the fire incident risk with incandescent lights. Even if all the “other or unknown” type bulbs are halogen and even if there has been some growth in the halogen share since 1993, the halogen light risk would still be higher. In view of the extensive publicity about the fire dangers of halogen lighting, it is considered unlikely that the halogen share of lighting has grown since 1993 as much as it would have to have done in order to shift the conclusion that halogen lighting has a higher fire risk than incandescent lighting and probably a much higher risk.

**Share of Lights by Type of Bulb, 1993**

	<b>Incandescent</b>	<b>Fluorescent</b>	<b>Halogen</b>	<b>Other or Unknown</b>
All bulbs studied	87.3%	8.7%	0.6%	3.4%
Bulbs used at least 1 hour per day	86.2%	10.2%	0.7%	2.9%
Bulbs used at least 2 hours per day	84.1%	11.8%	0.8%	3.2%
Bulbs used at least 4 hours per day	80.6%	14.8%	1.1%	3.5%

Source: U.S. Department of Energy

\* *Residential Lighting Use and Potential Savings*, U.S. Department of Energy, Energy Information Administration, September 1996, accessed at [www.eia.doe.gov/emeu/lighting](http://www.eia.doe.gov/emeu/lighting).

The usage ratio for incandescent vs. fluorescent lights ranges from 10-to-1 for all bulbs down to 5-to-1 for the bulbs with heaviest use. This range of usage ratios overlaps the range in ratios of fire incidents (from 3.3-to-1 to 9.1-to-1), and it seems likely that the fluorescent share has increased since 1993. Therefore, no conclusions can be made about relative fire risk between incandescent and fluorescent lights.

**In 1995-2001 (excluding 1999), two types of lamp, light fixture, or light bulb accounted for an average of 16 electrocution deaths per year.\***

No analysis was done for 1999, and analyses for years after 2001 did not provide separate statistics for these types of equipment.

The electrocution deaths associated with work lights and trouble lights appear to be far greater than their share of lighting usage (although no statistics on trouble light and work light usage could be found to confirm this). The difference may reflect the less controlled and possibly more hazardous environments in which work lights and trouble lights, by their nature, will tend to be used, which may include more frequent proximity to water.

**Electrocution Deaths by Year and Type of Equipment**

Year	Lamp or light fixture	Work or trouble light	Combined total
1999	14	6	20
1996	10	1	11
1997	15	6	21
1998	12	6	18
2000	10	2	12
2001	9	2	11
Average	12	4	16

Source: CPSC analysis of death certificate database.

**In 2006, an estimated 35,330 injuries involving lamps, light fixtures, or light bulbs were reported to hospital emergency rooms.\*\***

Note the large share of injuries involving Christmas tree lights, even though such lights are in heavy and widespread use only about one month out of 12 per year. If adjusted for usage, the Christmas tree light injury total would likely be a much larger share of the injuries. For example, in 2006, the combined injury total for light bulbs and floor or table lamps, excluding halogen, was 22,210 or 563% higher than the Christmas tree light injury total. (The estimate of 563% higher is the same as a ratio of

\* Risana T. Chowdhury, *2001 Electrocutions Associated with Consumer Products*, U.S. Consumer Product Safety Commission, June 2004, accessed at [www.cpsc.gov](http://www.cpsc.gov), and previous reports in series.

\*\* Statistics from National Electronic Injury Surveillance System (NEISS) data obtained from the U.S. Consumer Product Safety Commission website, [www.cpsc.gov](http://www.cpsc.gov).

6.63-to-1 for the two totals.) In December 2006 alone, the combined injury total for light bulbs and floor or table lamps, excluding halogen, was 2,004 – a roughly proportional share of the year’s total and divided roughly equally between the two groups of equipment. These 2,004 injuries were only 40% higher than the December-only injury total of 1,440 for Christmas tree lights. NFPA publishes a separate study of fires involving Christmas trees and related decorative lights and decorations. See that report for additional analysis.

**Injuries Involving Lamps, Light Fixtures, or Light Bulbs  
Reported to Hospital Emergency Rooms, 2006**

	<b>Type of Injury</b>			
	<b>Total</b>	<b>Laceration</b>	<b>Contusion or abrasion</b>	<b>Thermal burn</b>
Light bulb	13,320	5,200	1,170	2,400
Floor or table lamp, excluding halogen	8,900	4,720	1,460	600
Light fixture	5,270	3,750	350	60
Christmas tree lights	3,350	210	860	0
Flashlight	2,620	820	750	80
Other or unknown electric lighting equipment	1,020	560	180	60
Outdoor electric lighting equipment	420	80	110	0
Night light	350	180	0	40
Halogen floor or table lamp	90	40	20	30
<b>Total</b>	<b>35,330</b>	<b>15,560</b>	<b>4,890</b>	<b>3,260</b>

Source: CPSC’s National Electronic Injury Surveillance System

The injuries shown above do not include 2,000 injuries involving electric Christmas decorations other than tree lights, because the definition of the category allows for many decorations that are not lights. However, a review of a non-random sample of the injuries showed most of them to be falls sustained while putting up or taking down Christmas lights.

Similarly, the month from December 16 through January 15 accounts for 8% of the days but for 28% of the 2002-2005 non-confined home structure fires involving decorative lights on line voltage, 84% of associated civilian injuries, and all the associated civilian deaths.

**One-third (36%) of 2002-2005 non-confined home structure fires involving lamps, light fixtures, or light bulbs cited heat source too close to combustibles as a factor contributing to ignition.**

The percentage share for heat source too close to combustibles was:

- 42% for table or floor lamps,
- 21% for incandescent light fixtures,
- 60% for light bulbs,
- 60% for halogen light fixtures,
- 4% for fluorescent light fixtures (not shown on table)
- 55% for work lights and trouble lights, and
- 8% for decorative lights on line voltage (also not shown on table).

The low percentage for fluorescent light fixtures probably reflects the fact that fluorescent lights emit only about 30% of their energy as heat compared to about 90% for halogen lights and regular incandescent lights.\* The low percentage for decorative lights probably reflects the low wattage, hence low heat, associated with such lights.

Halogen lights are hotter than comparable regular incandescent lights because the smaller bulbs concentrate heat on a smaller surface and place the bulb surface closer to the filament. This means there is a larger volume of space around a halogen light in which combustibles can be ignited and that would be considered too close to heat source.

**Half (50%) of civilian fire deaths in 2002-2005 non-confined home structure fires involving lamps, light fixtures, or light bulbs resulted from fires that started with ignition of mattress or bedding (29%) or flammable or combustible gas or liquid (21%).**

Other items first ignited accounting for civilian fire deaths in fires involving this equipment were:

- Unclassified soft goods or clothing (14% of deaths),
- Wire or cable insulation (8%),
- Curtain or drape (7%),
- Upholstered furniture (7%),
- Christmas tree (7%, all involving decorative lights on line voltage), and
- Unclassified furniture or utensil (7%).

Christmas trees also accounted for 1% of fire incidents involving lamps, light fixtures, or light bulbs but for 22% of fires involving decorative lights on line voltage.

**Two out of five (40%) 2002-2005 non-confined home structure fires involving lamps, light fixtures, or light bulbs began in a bedroom (28%) or a living room, family room, or den (12%).**

These two areas of origin also accounted for:

- 77% of table or floor lamp fires,
- 13% of incandescent light fixture fires,
- 20% for light bulb fires,
- 47% for halogen light fixture fires,
- 12% for fluorescent light fixture fires,
- 15% for work light or trouble light fires, and
- 49% for decorative light (on line voltage) fires.

\* "FAQs – Halogen," accessed at <http://www.gelighting.com/na/business.lighting/faqs>.

## Safety Tips

- Home electrical safety begins with NFPA 70, *National Electrical Code*®, and related documents with special relevance to homes, notably NFPA 73, *Electrical Inspection Code for Existing Dwellings*. However, work on home electrical distribution or lighting equipment should only be conducted by someone qualified as an electrician.
- Call a qualified electrician or landlord if you have
  - flickering lights.
- Keep lamps, light fixtures, and light bulbs away from anything that can burn, including lamp shades, furniture, bedding, curtains, clothing, and flammable or combustible gases and liquids.
- Never place clothing over a lamp or a cloth over a light bulb.
- Place lamps away from where people and pets walk or where things might fall against them.
- Buy only appliances that have the label of a recognized testing laboratory.
- Use light bulbs that match the recommended wattage on the lamp or fixture.

**Home Fires Involving Lamps, Light Fixtures, or Light Bulbs, by Year  
Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

<b>Year</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions) As Reported</b>	<b>In 2005 Dollars</b>
1980	13,260	48	455	\$71	\$169
1981	12,200	82	348	\$70	\$150
1982	11,280	70	367	\$77	\$156
1983	10,120	72	324	\$79	\$154
1984	10,110	96	262	\$78	\$146
1985	9,990	48	282	\$88	\$159
1986	9,510	126	236	\$80	\$142
1987	9,580	36	279	\$69	\$118
1988	9,710	56	308	\$90	\$148
1989	9,490	36	272	\$88	\$139
1990	9,010	87	285	\$126	\$188
1991	8,690	59	301	\$139*	\$199*
1992	9,020	38	323	\$89	\$123
1993	9,750	88	367	\$109	\$148
1994	9,950	70	344	\$123	\$162
1995	10,000	60	349	\$146	\$187
1996	10,370	80	362	\$135	\$168
1997	11,000	43	377	\$179	\$218
1998	9,330	89	271	\$134	\$161
1999	9,570	61	215	\$235	\$276
2000	4,920	42	195	\$211	\$239
2001	7,170	88	331	\$181	\$200
2002	10,840	31	252	\$162	\$176
2003	5,580	124	211	\$137	\$145
2004	5,490	15	274	\$154	\$160
2005	5,240	59	241	\$211	\$211

\* 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, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and civilian injuries are expressed to the nearest one, 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 reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. *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 2005 dollars is done using the consumer price index.

Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2005) and from NFPA survey.



**Home Fires Involving Lamps, Light Fixtures, or Light Bulbs,  
by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat source too close to combustibles	2,440	(36%)	18	(31%)	105	(43%)	\$60	(36%)
Unclassified electrical failure or malfunction	900	(13%)	4	(8%)	16	(7%)	\$24	(15%)
Unspecified short-circuit arc	710	(10%)	9	(16%)	18	(7%)	\$18	(11%)
Short circuit arc from defective or worn insulation	450	(7%)	4	(7%)	15	(6%)	\$8	(5%)
Collision, knock down, or turn over	270	(4%)	4	(7%)	25	(10%)	\$7	(4%)
Animal	230	(3%)	0	(0%)	0	(0%)	\$1	(1%)
Unclassified factor contributed to ignition	230	(3%)	0	(0%)	10	(4%)	\$5	(3%)
Equipment unattended	220	(3%)	0	(0%)	6	(2%)	\$8	(5%)
Installation deficiency	210	(3%)	0	(0%)	0	(0%)	\$5	(3%)
Unintentionally turned on or not turned off	190	(3%)	0	(0%)	11	(4%)	\$4	(3%)
Unclassified misuse of material or product	180	(3%)	0	(0%)	9	(4%)	\$2	(1%)
Unclassified mechanical failure or malfunction	170	(3%)	0	(0%)	0	(0%)	\$4	(3%)
Fluorescent light ballast	150	(2%)	0	(0%)	0	(0%)	\$3	(2%)
Unclassified operational deficiency	110	(2%)	4	(8%)	13	(5%)	\$3	(2%)
Equipment not being operated properly	90	(1%)	0	(0%)	0	(0%)	\$2	(1%)
Arc from faulty contact or broken conductor	90	(1%)	0	(0%)	0	(1%)	\$5	(3%)
Arc or spark from operating equipment	80	(1%)	4	(7%)	6	(2%)	\$2	(1%)
Failure to clean	80	(1%)	0	(0%)	0	(0%)	\$3	(2%)
Equipment used for not intended purpose	70	(1%)	0	(0%)	3	(1%)	\$5	(3%)
Short circuit arc from mechanical damage	70	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Equipment overloaded	70	(1%)	0	(0%)	6	(3%)	\$3	(2%)
Worn out	70	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Other known factor contributing to ignition	380	(6%)	17	(30%)*	23	(10%)	\$8	(5%)
<b>Total fires</b>	<b>6,790</b>	<b>(100%)</b>	<b>57</b>	<b>(100%)</b>	<b>244</b>	<b>(100%)</b>	<b>\$166</b>	<b>(100%)</b>
<b>Total factor entries</b>	<b>7,480</b>	<b>(110%)</b>	<b>66</b>	<b>(115%)</b>	<b>268</b>	<b>(110%)</b>	<b>\$182</b>	<b>(110%)</b>

\* "Other known" includes flammable gas or liquid spilled (23% of deaths) and unclassified fire spread or control (7%).

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5. and NFPA survey.

**Home Fires Involving Table or Floor Lamps, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

<b>Factor</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Heat source too close to combustibles	950	(42%)	17	(40%)	40	(29%)	\$22	(36%)
Collision, knock down, or turn over	250	(11%)	0	(0%)	31	(23%)	\$9	(15%)
Unclassified electrical failure or malfunction	190	(9%)	9	(20%)	10	(8%)	\$9	(14%)
Unspecified short-circuit arc	190	(8%)	0	(0%)	0	(0%)	\$7	(11%)
Short circuit arc from defective or worn insulation	160	(7%)	9	(20%)	17	(13%)	\$3	(5%)
Equipment unattended	100	(5%)	0	(0%)	8	(6%)	\$7	(11%)
Unintentionally turned on or not turned off	80	(4%)	0	(0%)	10	(8%)	\$1	(2%)
Unclassified factor contributed to ignition	80	(3%)	0	(0%)	5	(4%)	\$1	(1%)
Unclassified misuse of material or product	70	(3%)	0	(0%)	4	(3%)	\$1	(1%)
Short circuit arc from mechanical damage	50	(2%)	0	(0%)	0	(0%)	\$1	(2%)
Other known factor contributing to ignition	370	(17%)	9	(20%)*	17	(12%)	\$8	(13%)
<b>Total fires</b>	<b>2,250</b>	<b>(100%)</b>	<b>43</b>	<b>(100%)</b>	<b>135</b>	<b>(100%)</b>	<b>\$63</b>	<b>(100%)</b>
<b>Total factor entries</b>	<b>2,500</b>	<b>(111%)</b>	<b>43</b>	<b>(100%)</b>	<b>143</b>	<b>(106%)</b>	<b>\$70</b>	<b>(111%)</b>

\* "Other known" includes operational deficiency (20% of deaths).

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Incandescent Light Fixtures, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

<b>Factor</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Heat source too close to combustibles	360	(21%)	9	(100%)	17	(45%)	\$9	(24%)
Unspecified short circuit arc	320	(19%)	0	(0%)	9	(23%)	\$10	(25%)
Unclassified electrical failure or malfunction	280	(16%)	0	(0%)	4	(11%)	\$6	(16%)
Short circuit arc from defective or worn insulation	200	(12%)	0	(0%)	0	(0%)	\$4	(10%)
Installation deficiency	130	(7%)	0	(0%)	0	(0%)	\$4	(10%)
Animal	120	(7%)	0	(0%)	0	(0%)	\$0	(0%)
Equipment overloaded	60	(3%)	0	(0%)	0	(0%)	\$1	(2%)
Other known factor contributing to ignition	380	(22%)	0	(0%)	8	(21%)	\$9	(23%)
<b>Total fires</b>	<b>1,720</b>	<b>(100%)</b>	<b>9</b>	<b>(100%)</b>	<b>39</b>	<b>(100%)</b>	<b>\$38</b>	<b>(100%)</b>
<b>Total factor entries</b>	<b>1,840</b>	<b>(107%)</b>	<b>9</b>	<b>(100%)</b>	<b>39</b>	<b>(100%)</b>	<b>\$42</b>	<b>(109%)</b>

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Light Bulbs, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Heat source too close to combustibles	460 (60%)	0 (*)	13 (100%)	\$9 (77%)
Animal	60 (8%)	0 (*)	0 (0%)	\$1 (7%)
Unclassified factor contributed to ignition	50 (7%)	0 (*)	0 (0%)	\$0 (3%)
Other known factor contributing to ignition	280 (36%)	0 (*)	0 (0%)	\$4 (32%)
Total fires	770 (100%)	0 (*)	13 (100%)	\$11 (100%)
Total factor entries	850 (111%)	0 (100%)	13 (100%)	\$13 (119%)

\* Percents not available because all deaths have factor contributing to ignition unknown; total deaths round to zero.

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Halogen Light Fixtures, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

<b>Factor</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>
Heat source too close to combustibles	440 (60%)	0 (*)	23 (84%)	\$15 (80%)
Unclassified electrical failure or malfunction	50 (7%)	0 (*)	0 (0%)	\$1 (5%)
Other known factor contributing to ignition	280 (38%)	0 (*)	9 (32%)	\$4 (21%)
Total fires	740 (100%)	0 (*)	27 (100%)	\$19 (100%)
Total factor entries	780 (106%)	0 (100%)	32 (116%)	\$20 (100%)

\* Percents not available because all deaths have factor contributing to ignition unknown; total deaths round to zero.

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Fluorescent Light Fixtures, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Fluorescent light ballast	240	(46%)	0	(*)	0	(*)	\$4	(38%)
Unclassified electrical failure or malfunction	110	(21%)	0	(*)	0	(*)	\$4	(39%)
Other known factor contributing to ignition	220	(41%)	0	(*)	0	(*)	\$2	(24%)
Total fires	520	(100%)	0	(*)	0	(*)	\$10	(100%)
Total factor entries	560	(108%)	0	(100%)	0	(100%)	\$10	(101%)

\* Percents not available because all deaths and injuries have factor contributing to ignition unknown; total deaths and injuries round to zero.

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Work Lights or Trouble Lights, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Heat source too close to combustibles	200 (55%)	0 (*)	3 (51%)	\$7 (48%)
Equipment unattended	50 (14%)	0 (*)	0 (0%)	\$2 (12%)
Other known factor contributing to ignition	150 (41%)	0 (*)	3 (49%)	\$7 (48%)
Total fires	370 (100%)	0 (*)	7 (100%)	\$14 (100%)
Total factor entries	410 (110%)	0 (100%)	7 (100%)	\$15 (109%)

\* Percents not available because all deaths have factor contributing to ignition unknown; total deaths round to zero.

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Decorative Lights, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Unclassified electrical failure or malfunction	70 (29%)	0 (0%)	0 (0%)	\$3 (34%)
Unspecified short circuit arc	60 (25%)	4 (100%)	10 (71%)	\$2 (33%)
Other known factor contributing to ignition	130 (55%)	4 (100%)*	11 (81%)	\$4 (49%)
Total fires	240 (100%)	4 (100%)	14 (100%)	\$7 (100%)
Total factor entries	260 (109%)	7 (200%)	21 (152%)	\$9 (116%)

\* "Other known" includes collision, knock down, or turn over (100% of deaths).

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



**Home Fires Involving Lamps, Light Fixtures, or Light Bulbs, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	740	(11%)	5	(8%)	20	(8%)	\$13	(8%)
Mattress or bedding	630	(9%)	17	(29%)	47	(19%)	\$20	(12%)
Clothing	570	(8%)	0	(0%)	19	(8%)	\$13	(8%)
Structural member or framing	400	(6%)	0	(0%)	5	(2%)	\$15	(9%)
Insulation within structural area	400	(6%)	0	(0%)	5	(2%)	\$11	(7%)
Unclassified item first ignited	350	(5%)	0	(0%)	10	(4%)	\$2	(1%)
Floor covering	270	(4%)	0	(0%)	3	(1%)	\$8	(5%)
Exterior wall covering	250	(4%)	0	(0%)	8	(3%)	\$6	(4%)
Interior ceiling covering	250	(4%)	0	(0%)	3	(1%)	\$8	(5%)
Curtain or drape	250	(4%)	4	(7%)	17	(7%)	\$7	(4%)
Appliance housing or casing	230	(3%)	0	(0%)	13	(5%)	\$6	(4%)
Upholstered furniture	210	(3%)	4	(7%)	25	(10%)	\$6	(3%)
Linen other than bedding	200	(3%)	0	(0%)	8	(3%)	\$5	(3%)
Unclassified structural component or finish	180	(3%)	0	(0%)	2	(1%)	\$4	(3%)
Light vegetation including grass	180	(3%)	0	(0%)	0	(0%)	\$0	(0%)
Unclassified furniture or utensil	180	(3%)	4	(7%)	5	(2%)	\$5	(3%)
Unclassified soft goods or clothing	170	(3%)	8	(14%)	12	(5%)	\$4	(2%)
Interior wall covering	130	(2%)	0	(0%)	5	(2%)	\$4	(2%)
Unclassified organic materials	120	(2%)	0	(0%)	2	(1%)	\$1	(1%)
Box or bag	110	(2%)	0	(0%)	0	(0%)	\$4	(2%)
Papers	110	(2%)	0	(0%)	2	(1%)	\$3	(2%)
Cabinetry	80	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Decoration	70	(1%)	0	(0%)	5	(2%)	\$1	(1%)
Multiple items first ignited	70	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Flammable or combustible gas or liquid	60	(1%)	12	(21%)	14	(6%)	\$4	(2%)
Christmas tree	50	(1%)	4	(7%)	8	(3%)	\$5	(3%)
Other known item first ignited	510	(8%)	0	(0%)	7	(3%)	\$6	(4%)
<b>Total fires</b>	<b>6,790</b>	<b>(100%)</b>	<b>57</b>	<b>(100%)</b>	<b>244</b>	<b>(100%)</b>	<b>\$166</b>	<b>(100%)</b>

Note: Figures exclude confined fires which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Table or Floor Lamps, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Mattress or bedding	400 (18%)	22 (50%)	53 (40%)	\$16 (25%)
Clothing	360 (16%)	0 (0%)	0 (0%)	\$6 (10%)
Wire or cable insulation	180 (8%)	0 (0%)	8 (6%)	\$8 (12%)
Upholstered furniture	170 (7%)	7 (17%)	29 (21%)	\$5 (7%)
Floor covering	160 (7%)	0 (0%)	4 (3%)	\$2 (3%)
Curtain or drape	140 (6%)	7 (17%)	11 (8%)	\$6 (10%)
Unclassified furniture or utensil	120 (5%)	0 (0%)	4 (3%)	\$3 (5%)
Appliance housing or casing	110 (5%)	0 (0%)	4 (3%)	\$6 (9%)
Linen other than bedding	80 (3%)	0 (0%)	12 (9%)	\$4 (6%)
Unclassified soft goods or clothing	70 (3%)	7 (17%)	0 (0%)	\$1 (1%)
Unclassified item first ignited	70 (3%)	0 (0%)	0 (0%)	\$1 (2%)
Other known item first ignited	400 (18%)	0 (0%)	10 (8%)	\$5 (8%)
<b>Total fires</b>	<b>2,250 (100%)</b>	<b>43 (100%)</b>	<b>135 (100%)</b>	<b>\$63 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Incandescent Light Fixtures, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	300 (18%)	0 (0%)	3 (9%)	\$2 (6%)
Structural member of framing	260 (15%)	0 (0%)	7 (19%)	\$11 (27%)
Insulation within structural area	210 (12%)	0 (0%)	7 (18%)	\$8 (20%)
Interior ceiling covering	150 (9%)	0 (0%)	0 (0%)	\$8 (20%)
Light vegetation including grass	90 (5%)	0 (0%)	0 (0%)	\$0 (0%)
Unclassified item first ignited	80 (5%)	0 (0%)	4 (10%)	\$0 (0%)
Exterior wall covering	80 (5%)	0 (0%)	0 (0%)	\$2 (4%)
Clothing	70 (4%)	0 (0%)	14 (35%)	\$2 (6%)
Unclassified structural component or finish	70 (4%)	0 (0%)	0 (0%)	\$2 (5%)
Mattress or bedding	60 (3%)	9 (100%)	0 (0%)	\$1 (4%)
Unclassified organic materials	50 (3%)	0 (0%)	0 (0%)	\$0 (0%)
Other known item first ignited	310 (18%)	0 (0%)	4 (9%)	\$3 (7%)
<b>Total fires</b>	<b>1,720 (100%)</b>	<b>9 (100%)</b>	<b>39 (100%)</b>	<b>\$38 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Light Bulbs, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Clothing	110 (14%)	0 (*)	0 (0%)	\$2 (21%)
Mattress or bedding	100 (13%)	0 (*)	3 (24%)	\$3 (26%)
Light vegetation including grass	60 (7%)	0 (*)	0 (0%)	\$0 (0%)
Other known item first ignited	500 (65%)	0 (*)	10 (76%)	\$6 (53%)
<b>Total fires</b>	<b>770 (100%)</b>	<b>0 (100%)</b>	<b>13 (100%)</b>	<b>\$11 (100%)</b>

\* Percents not available because all deaths have item first ignited unknown; total deaths round to zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Halogen Light Fixtures, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Curtain or drape	70 (10%)	0 (*)	8 (28%)	\$2 (13%)
Clothing	70 (9%)	0 (*)	7 (27%)	\$1 (3%)
Mattress or bedding	60 (8%)	0 (*)	5 (17%)	\$1 (5%)
Floor covering	60 (8%)	0 (*)	0 (0%)	\$2 (11%)
Other known item first ignited	480 (65%)	0 (*)	7 (27%)	\$13 (68%)
<b>Total fires</b>	<b>740 (100%)</b>	<b>0 (100%)</b>	<b>27 (100%)</b>	<b>\$19 (100%)</b>

\* Percents not available because all deaths have item first ignited unknown; total deaths round to zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming head source (codes 40-99) are also treated as unknown equipment and allocated. Home fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Fluorescent Light Fixtures, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	140 (27%)	0 (*)	0 (0%)	\$2 (20%)
Unclassified item first ignited	70 (14%)	0 (*)	3 (100%)	\$1 (6%)
Transformer or transformer fluids	60 (12%)	0 (*)	0 (0%)	\$0 (0%)
Appliance housing or casing	50 (10%)	0 (*)	0 (0%)	\$1 (10%)
Other known item first ignited	190 (37%)	0 (*)	0 (0%)	\$6 (63%)
<b>Total fires</b>	<b>520 (100%)</b>	<b>0 (100%)</b>	<b>3 (100%)</b>	<b>\$10 (100%)</b>

\* Percents not available because all deaths have item first ignited unknown; total deaths round to zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Work Lights or Trouble Lights, by Item First Ignited  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Insulation within structural areas	90 (25%)	0 (NA)	0 (0%)	\$3 (18%)
Other known item first ignited	280 (75%)	0 (NA)	7 (100%)	\$11 (82%)
Total fires	370 (100%)	0 (NA)	7 (100%)	\$14 (100%)

NA – Not available because all deaths have item first ignited unknown, but total deaths round to zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Decorative Lights, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Christmas tree	50 (22%)	4 (100%)	7 (52%)	\$4 (57%)
Other known item first ignited	190 (78%)	0 (0%)	7 (48%)	\$3 (43%)
Total fires	240 (100%)	4 (100%)	14 (100%)	\$7 (100%)

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming heat source (codes 40-99) are also treated as unknown equipment and allocated. Home fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.



**Home Fires Involving Lamps, Light Fixtures, or Light Bulbs, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	1,880	(28%)	17	(29%)	111	(45%)	\$44	(27%)
Living room, family room, or den	790	(12%)	28	(49%)	53	(22%)	\$27	(16%)
Attic or ceiling/roof assembly or concealed space	550	(8%)	0	(0%)	5	(2%)	\$16	(10%)
Bathroom	440	(6%)	0	(0%)	13	(5%)	\$7	(4%)
Exterior wall surface	430	(6%)	0	(0%)	3	(1%)	\$3	(2%)
Kitchen	280	(4%)	0	(0%)	4	(2%)	\$4	(2%)
Ceiling/floor assembly or concealed space	280	(4%)	0	(0%)	5	(2%)	\$5	(3%)
Closet	270	(4%)	0	(0%)	5	(2%)	\$6	(4%)
Unclassified function area	270	(4%)	8	(14%)	11	(5%)	\$13	(8%)
Garage	220	(3%)	0	(0%)	9	(4%)	\$4	(2%)
Exterior balcony or unenclosed porch	200	(3%)	0	(0%)	2	(1%)	\$4	(2%)
Crawl space or substructure space	130	(2%)	0	(0%)	0	(0%)	\$5	(3%)
Laundry room or area	110	(2%)	0	(0%)	0	(0%)	\$6	(4%)
Wall assembly or concealed space	110	(2%)	5	(8%)	5	(2%)	\$3	(2%)
Courtyard, terrace or patio	90	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Lobby or entrance way	80	(1%)	0	(0%)	2	(1%)	\$3	(2%)
Unclassified structural area	80	(1%)	0	(0%)	0	(0%)	\$2	(1%)
Unclassified outside area	80	(1%)	0	(0%)	2	(1%)	\$1	(0%)
Unclassified area of origin	50	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Unclassified storage area	50	(1%)	0	(0%)	5	(2%)	\$3	(2%)
Other known area of origin	400	(6%)	0	(0%)	9	(4%)	\$10	(6%)
<b>Total fires</b>	<b>6,790</b>	<b>(100%)</b>	<b>57</b>	<b>(100%)</b>	<b>244</b>	<b>(100%)</b>	<b>\$166</b>	<b>(100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Table or Floor Lamps, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	1,250	(56%)	22	(50%)	86	(64%)	\$33	(53%)
Living room, family room, or den	460	(21%)	15	(33%)	29	(21%)	\$16	(25%)
Unclassified function area	140	(6%)	7	(17%)	7	(5%)	\$6	(9%)
Closet	70	(3%)	0	(0%)	0	(0%)	\$1	(1%)
Other known area of origin	330	(14%)	0	(0%)	13	(10%)	\$7	(12%)
<b>Total fires</b>	<b>2,250</b>	<b>(100%)</b>	<b>43</b>	<b>(100%)</b>	<b>135</b>	<b>(100%)</b>	<b>\$63</b>	<b>(100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Incandescent Light Fixtures, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Attic or ceiling/roof assembly or concealed space	310 (18%)	0 (0%)	7 (18%)	\$11 (29%)
Bathroom	220 (13%)	0 (0%)	3 (9%)	\$4 (10%)
Ceiling/floor assembly or concealed space	180 (11%)	0 (0%)	8 (19%)	\$3 (8%)
Exterior wall surface	160 (10%)	0 (0%)	0 (0%)	\$1 (3%)
Bedroom	140 (8%)	9 (100%)	4 (10%)	\$2 (4%)
Kitchen	130 (7%)	0 (0%)	0 (0%)	\$2 (4%)
Exterior balcony or unclosed porch	100 (6%)	0 (0%)	0 (0%)	\$1 (2%)
Closet	90 (5%)	0 (0%)	4 (9%)	\$2 (6%)
Living room, family room, or den	80 (5%)	0 (0%)	14 (35%)	\$2 (4%)
Other known area of origin	300 (18%)	0 (0%)	0 (0%)	\$12 (30%)
<b>Total fires</b>	<b>1,720 (100%)</b>	<b>9 (100%)</b>	<b>39 (100%)</b>	<b>\$38 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Light Bulbs, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Bedroom	120 (15%)	0 (*)	3 (24%)	\$1 (7%)
Closet	90 (11%)	0 (*)	0 (0%)	\$3 (26%)
Exterior wall surface	80 (10%)	0 (*)	0 (0%)	\$0 (3%)
Bathroom	70 (9%)	0 (*)	0 (0%)	\$0 (4%)
Attic or ceiling/roof assembly or concealed space	70 (9%)	0 (*)	0 (0%)	\$1 (12%)
Exterior balcony or unenclosed porch	50 (7%)	0 (*)	0 (0%)	\$0 (1%)
Other known area of origin	300 (38%)	0 (*)	10 (76%)	\$5 (47%)
<b>Total fires</b>	<b>770 (100%)</b>	<b>0 (100%)</b>	<b>13 (100%)</b>	<b>\$11 (100%)</b>

\* Percents not available because all deaths have area of origin unknown; total deaths round to zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Halogen Light Fixtures, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Bedroom	240 (33%)	0 (*)	17 (62%)	\$6 (33%)
Living room, family room, or den	110 (14%)	0 (*)	3 (12%)	\$4 (23%)
Exterior wall surface	70 (10%)	0 (*)	0 (0%)	\$1 (3%)
Other known area of origin	320 (43%)	0 (*)	7 (26%)	\$8 (41%)
<b>Total fires</b>	<b>740 (100%)</b>	<b>0 (100%)</b>	<b>27 (100%)</b>	<b>\$19 (100%)</b>

\* Percents not available because all deaths have area of origin unknown; total deaths round to zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Fluorescent Light Fixtures, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Kitchen	130 (25%)	0 (*)	0 (0%)	\$2 (17%)
Crawl space or substructure space	50 (10%)	0 (*)	0 (0%)	\$1 (10%)
Other known area of origin	340 (65%)	0 (*)	0 (100%)	\$7 (73%)
<b>Total fires</b>	<b>520 (100%)</b>	<b>0 (100%)</b>	<b>0 (100%)</b>	<b>\$10 (100%)</b>

\* Percents not available because all deaths have area of origin unknown; total deaths round to zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Work Lights or Trouble Lights, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Attic or ceiling/roof assembly or concealed space	110 (31%)	0 (*)	0 (0%)	\$3 (21%)
Bedroom	50 (14%)	0 (*)	3 (49%)	\$3 (20%)
Other known area of origin	200 (55%)	0 (*)	3 (51%)	\$8 (59%)
Total fires	370 (100%)	0 (100%)	7 (100%)	\$14 (100%)

\* Percents not available because all deaths have area of origin unknown; total deaths round to zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Decorative Lights, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Department**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Living room, family room, or den	80 (35%)	4 (100%)	11 (83%)	\$4 (51%)
Other known area of origin	160 (65%)	0 (0%)	2 (17%)	\$4 (49%)
Total fires	240 (100%)	4 (100%)	14 (100%)	\$7 (100%)

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



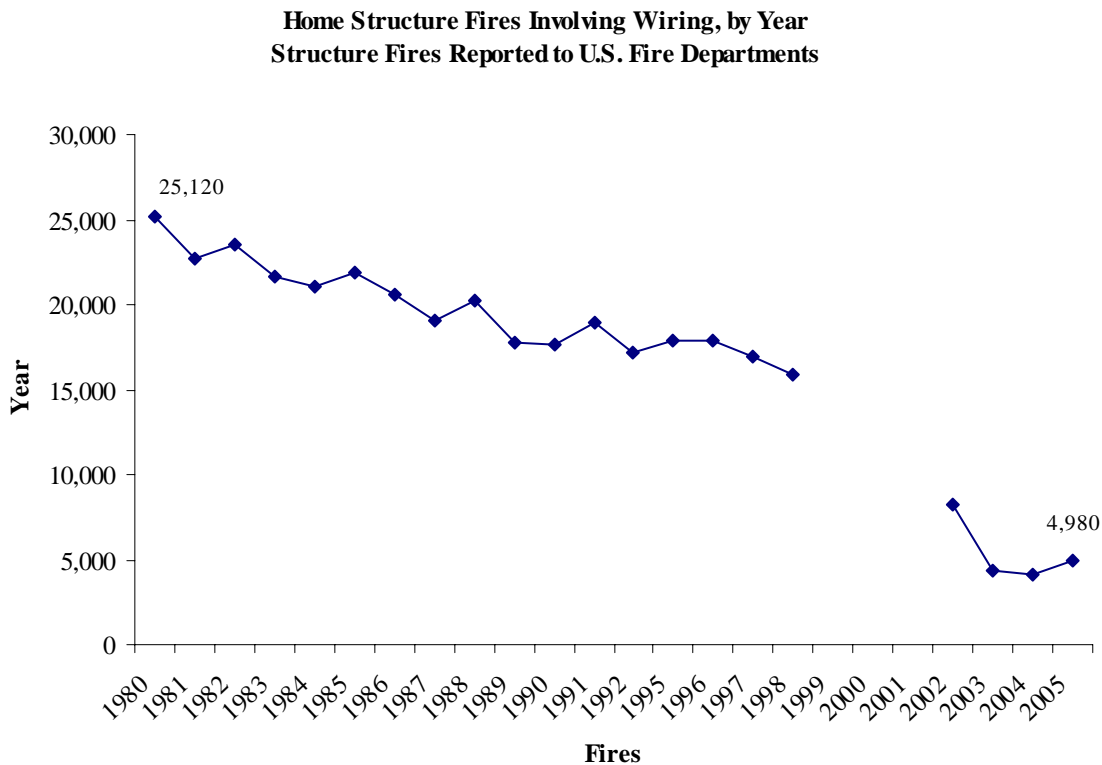
## Wiring

**In 2005, an estimated 5,000 reported U.S. non-confined home structure fires involving wiring resulted in 140 civilian deaths, 110 civilian injuries, and \$189 million in direct property damage.**

Wiring includes the following specific types of equipment:

- Branch circuit wiring
- Electrical service supply wiring
- Power (utility)line
- Wiring from meter box to service

Fires declined by more than one-third from 1980 to 1998. After the transition period of 1999-2001, when NFIRS Version 5.0 was being phased in, the estimates for 2003-2005 have been more than two-thirds lower than the levels of the late 1990s, a much larger decline than would have been expected if the 1980-1998 trend had continued unchanged.



Source: Data from NFIRS Version 5.0 and NFPA survey.

Note: See Note on year table.

Version 5.0 of NFIRS changed the wording and the requirements for the Equipment Involved in Ignition field, which identify electrical distribution or lighting equipment. These changes resulted in a sharp increase in non-reporting of the field, resulting in more unknowns and more volatile estimates. These changes also resulted in a sharp increase in the use of the “no equipment” entry, resulting in a sharp decline in estimates of fires involving all types of equipment. We have tried to compensate for the latter change in the analysis rules, but we remain skeptical of the sharp declines in estimated fires involving electrical distribution or lighting equipment after 1998.

The change to Version 5.0 of NFIRS also introduced six types of “confined fires” – fires confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. In our reports, we analyze confined fires separately from non-confined fires, and for fires involving electrical distribution or lighting equipment, none of the six types of confined fires appear to be relevant. Therefore, all estimates in this report specify that they are estimates of non-confined fires, even though we know from our analysis that fires reported as confined fires would not add significantly to the estimates of total electrical distribution or lighting equipment fires.

Wiring accounted for 22% of 2002-2005 non-confined structure fires involving electrical distribution or lighting equipment, as well as 28% of associated civilian deaths, 9% of associated civilian injuries, and 23% of associated direct property damage.

**Branch circuit wiring (51%) accounted for half of the 2002-2005 non-confined home structure fires involving wiring.**

The number of fires declines as one moves from inside the house along the wiring network to the utility poles outside the home. Branch circuit wiring had more fires than electrical service supply wiring (21%), which had more fires than wiring from meter box to service (16%), which had more fires than power (utility) lines (12%).

**Home Fires Involving Wiring, by Specific Type of Equipment  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Type of Equipment	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Branch circuit wiring	2,740 (51%)	83 (93%)	44 (59%)	\$100 (62%)
Electrical service supply wiring	1,130 (21%)	6 (7%)	16 (22%)	\$33 (20%)
Wiring from meter box to service	880 (16%)	0 (0%)	14 (19%)	\$17 (11%)
Power (utility) lines	660 (12%)	0 (0%)	0 (0%)	\$11 (7%)
<b>Total</b>	<b>5,400 (100%)</b>	<b>88 (100%)</b>	<b>75 (100%)</b>	<b>\$161 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest hundred, civilian deaths and injuries 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 home fires with equipment involve in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**In 2006, an estimated 3,820 injuries involving electrical wiring were reported to hospital emergency rooms.\***

The database provides no breakdown by type of wiring. These figures do not include injuries reported as involving unknown-type wiring, which could be electrical or non-electrical wire. About one-sixth of the injuries involved electric shock or electrical burns.

\* Statistics from National Electronic Injury Surveillance System (NEISS) data obtained from the U.S. Consumer Product Safety Commission (CPSC) website, [www.cpsc.gov](http://www.cpsc.gov).

**In 1995-2001 (excluding 1999), installed household wiring accounted for an average of 28 electrocution deaths per year.\***

No analysis was done by CPSC for 1999, and analysis for years after 2001 did not provide separate statistics for this type of equipment.

**Electrocution Deaths Involving Installed Household Wiring, by Year**

<b>Year</b>	<b>Deaths</b>
1995	53
1996	41
1997	22
1998	25
2000	10
2001	19
Average	28

Source: CPSC analysis of death certificate database.

**Half (53%) of 2002-2005 non-confined home structure fires involving wiring involved unspecified short circuit arc or unclassified electrical failure or malfunction as factor contributing to ignition.**

These two leading factors lack details on the nature of the failure. The leading factors contributing to ignition with details were short circuit arc from defective or worn insulation (16%), arc from faulty contact or broken conductor (7%), short circuit arc from mechanical damage (7%), installation deficiency (4%), and equipment overloaded (3%). These patterns vary little by specific type of equipment.

**One-third (32%) of 2002-2005 non-confined home structure fires involving wiring began with ignition of wire or cable insulation.**

Other leading items first ignited were structural member or framing (25%), insulation within structural areas (10%), and exterior wall coverings (9%).

**Half (52%) of 2002-2005 non-confined home structure fires involving wiring began in five areas of origin that are all concealed or exterior spaces.**

The leading areas of origin that were concealed or exterior spaces were attic or ceiling/roof assembly or concealed space (21%), exterior wall surface (10%), wall assembly or concealed space (9%), crawl space or substructure space (7%), and ceiling/floor assembly or concealed space (5%). The leading areas of origin that are normally occupied spaces were bedroom (5%), kitchen (4%), and living room, family room, or den (4%). Exterior wall surface has a smaller share for branch circuit wiring (3%) than for any other type of wiring, reflecting the locations of the different types of wiring.

\* Risana T. Chowdhury, *2001 Electrocutions Associated with Consumer Products*, U.S. Consumer Product Safety Commission, June 2004, accessed at [www.cpsc.gov](http://www.cpsc.gov), and previous reports in series.

## Safety Tips

- Home electrical safety begins with NFPA 70, *National Electrical Code*®, and related documents with special relevance to homes, notably NFPA 73, *Electrical Inspection Code for Existing Dwellings*. However, work on home electrical distribution or lighting equipment should only be conducted by someone qualified as an electrician.
- Call a qualified electrician or landlord if you have
  - recurring problems with blowing fuses or tripping circuit breakers,
  - a tingling feeling when you touch an electrical appliance,
  - discolored or warm wall outlets,
  - a burning smell or rubbery odor coming from an appliance,
  - flickering lights,
  - sparks from an outlet.
- Keep ladders away from overhead power lines including the electrical service into your home.
- Never touch a power line. Stay at a safe distance – you could be electrocuted.
- Report downed power lines to authorities.
- Some power lines are underground. Call your local authority regarding digging.

**Home Fires Involving Wiring, by Year**  
**Structure Fires Reported to U.S. Fire Departments**

Year	Fires	Civilian			
		Deaths	Injuries	As Reported	Direct Property Damage (in Millions) In 2005 Dollars
1980	25,120	208	445	\$236	\$559
1981	22,730	251	412	\$202	\$433
1982	23,520	132	540	\$251	\$507
1983	21,620	175	460	\$249	\$489
1984	21,080	141	463	\$259	\$486
1985	21,910	193	386	\$296	\$537
1986	20,550	233	336	\$279	\$497
1987	19,060	209	488	\$221	\$380
1988	20,270	201	447	\$345	\$571
1989	17,750	255	393	\$297	\$468
1990	17,640	107	381	\$299	\$447
1991	18,980	86	419	\$423*	\$606*
1992	17,170	166	475	\$265	\$369
1993	17,900	96	513	\$292	\$395
1994	17,900	191	446	\$305	\$402
1995	16,980	226	443	\$324	\$416
1996	16,850	155	405	\$356	\$443
1997	16,450	157	476	\$364	\$443
1998	15,940	139	354	\$349	\$418
1999	9,440	61	0	\$276	\$324
2000	4,530	21	98	\$160	\$181
2001	6,450	0	239	\$231	\$254
2002	8,250	23	53	\$140	\$152
2003	4,310	124	85	\$174	\$184
2004	4,070	67	56	\$142	\$147
2005	4,980	139	105	\$189	\$189

\* 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, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries to the nearest one, 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 reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. *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 2005 dollars is done using the consumer price index.

Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2005) and from NFPA survey.

**Home Fires Involving Wiring, by Factor Contributing to Ignition**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Continued Fires)**

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unspecified short circuit arc	1,500	(28%)	0	(0%)	35	(46%)	\$48	(30%)
Unclassified electrical failure or malfunction	1,350	(25%)	21	(23%)	16	(21%)	\$58	(36%)
Short circuit arc from defective or worn insulation	890	(16%)	0	(0%)	14	(19%)	\$17	(10%)
Arc from faulty contact or broken conductor	360	(7%)	0	(0%)	0	(0%)	\$8	(5%)
Short circuit arc from mechanical damage	350	(7%)	0	(0%)	5	(6%)	\$7	(4%)
Installation deficiency	220	(4%)	19	(22%)	10	(13%)	\$4	(2%)
Equipment overloaded	170	(3%)	19	(22%)	0	(0%)	\$3	(2%)
Storm	130	(2%)	0	(0%)	0	(0%)	\$6	(4%)
Unclassified mechanical failure or malfunction	120	(2%)	29	(33%)	0	(0%)	\$5	(3%)
Worn out	110	(2%)	0	(0%)	0	(0%)	\$3	(2%)
Arc or spark from operating equipment	100	(2%)	0	(0%)	0	(0%)	\$2	(1%)
Exposure fire	90	(2%)	0	(0%)	0	(0%)	\$0	(0%)
High wind	90	(2%)	0	(0%)	5	(6%)	\$2	(2%)
Unclassified factor contributed to ignition	80	(2%)	0	(0%)	0	(0%)	\$2	(1%)
Water caused short circuit arc	70	(1%)	0	(0%)	0	(0%)	\$2	(1%)
Heat source too close to combustibles	60	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Unclassified operational deficiency	50	(1%)	0	(0%)	0	(0%)	\$7	(4%)
Other known factor contributing to ignition	260	(5%)	0	(0%)	0	(0%)	\$8	(5%)
<b>Total fires</b>	<b>5,400</b>	<b>(100%)</b>	<b>88</b>	<b>(100%)</b>	<b>75</b>	<b>(100%)</b>	<b>\$161</b>	<b>(100%)</b>
<b>Total factor entries</b>	<b>5,990</b>	<b>(111%)</b>	<b>88</b>	<b>(100%)</b>	<b>84</b>	<b>(113%)</b>	<b>\$183</b>	<b>(114%)</b>

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Branch Circuit Wiring, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

<b>Factor</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Unspecified short circuit arc	790	(29%)	0	(0%)	15	(34%)	\$33	(33%)
Unclassified electrical failure or malfunction	670	(25%)	10	(12%)	10	(23%)	\$38	(38%)
Short circuit arc from defective or worn insulation	530	(19%)	0	(0%)	10	(22%)	\$12	(12%)
Installation deficiency	160	(6%)	21	(25%)	10	(22%)	\$3	(3%)
Equipment overloaded	140	(5%)	21	(25%)	0	(0%)	\$2	(2%)
Arc from faulty contact or broken conductor	140	(5%)	0	(0%)	0	(0%)	\$5	(5%)
Short circuit arc from mechanical damage	140	(5%)	0	(0%)	0	(0%)	\$3	(3%)
Worn out	500	(2%)	0	(0%)	0	(0%)	\$2	(2%)
Other known factor contributing to ignition	380	(14%)	31	(37%)*	0	(0%)	\$15	(15%)
<b>Total fires</b>	<b>2,740</b>	<b>(100%)</b>	<b>83</b>	<b>(100%)</b>	<b>44</b>	<b>(100%)</b>	<b>\$100</b>	<b>(100%)</b>
<b>Total factor entries</b>	<b>3,000</b>	<b>(110%)</b>	<b>83</b>	<b>(100%)</b>	<b>44</b>	<b>(100%)</b>	<b>\$113</b>	<b>(113%)</b>

\* "Other known" includes unclassified mechanical failure or malfunction (37% of deaths).

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Electrical Service Supply Wiring, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Unclassified electrical failure or malfunction	330 (29%)	6 (100%)	6 (38%)	\$11 (34%)
Unspecified short circuit arc	260 (23%)	0 (0%)	5 (31%)	\$10 (29%)
Short circuit arc from defective or worn insulation	160 (14%)	0 (0%)	5 (31%)	\$4 (11%)
Short circuit arc from mechanical damage	90 (8%)	0 (0%)	5 (31%)	\$2 (6%)
Arc from faulty contact or broken conductor	90 (8%)	0 (0%)	0 (0%)	\$2 (5%)
Other known factor contributing to ignition	320 (29%)	0 (0%)	5 (31%)	\$10 (29%)
<b>Total fires</b>	<b>1,130 (100%)</b>	<b>6 (100%)</b>	<b>16 (100%)</b>	<b>\$33 (100%)</b>
<b>Total factor entries</b>	<b>1,260 (111%)</b>	<b>6 (100%)</b>	<b>27 (162%)</b>	<b>\$38 (113%)</b>

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



**Home Fires Involving Wiring From Meter Boxes, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

<b>Factor</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Unspecified short circuit arc	320	(36%)	0	(NA)	14	(100%)	\$4	(22%)
Unclassified electrical failure or malfunction	190	(21%)	0	(NA)	0	(0%)	\$6	(32%)
Short circuit arc from defective or worn insulation	110	(12%)	0	(NA)	0	(0%)	\$1	(4%)
Arc from faulty contact or broken conductor	80	(9%)	0	(NA)	0	(0%)	\$1	(5%)
Short circuit arc from mechanical damage	60	(7%)	0	(NA)	0	(0%)	\$0	(3%)
Other known factor contributing to ignition	240	(28%)	0	(NA)	0	(0%)	\$9	(50%)
<b>Total fires</b>	<b>880</b>	<b>(100%)</b>	<b>0</b>	<b>(NA)</b>	<b>14</b>	<b>(100%)</b>	<b>\$17</b>	<b>(100%)</b>
<b>Total factor entries</b>	<b>1,000</b>	<b>(113%)</b>	<b>0</b>	<b>(NA)</b>	<b>14</b>	<b>(100%)</b>	<b>\$20</b>	<b>(116%)</b>

NA – Not applicable because total is zero.

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Power (Utility) Line Wiring, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

<b>Factor</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Unclassified electrical failure or malfunction	160	(25%)	0	(NA)	0	(NA)	\$3	(32%)
Unspecified short circuit arc	130	(20%)	0	(NA)	0	(NA)	\$1	(11%)
Short circuit arc from defective or worn insulation	90	(14%)	0	(NA)	0	(NA)	\$1	(11%)
Short circuit arc from mechanical damage	70	(11%)	0	(NA)	0	(NA)	\$2	(17%)
Arc from faulty contact or broken conductor	60	(9%)	0	(NA)	0	(NA)	\$1	(10%)
Other known factor contributing to ignition	220	(33%)	0	(NA)	0	(NA)	\$4	(37%)
<b>Total fires</b>	<b>660</b>	<b>(100%)</b>	<b>0</b>	<b>(NA)</b>	<b>0</b>	<b>(NA)</b>	<b>\$11</b>	<b>(100%)</b>
<b>Total factor entries</b>	<b>730</b>	<b>(112%)</b>	<b>0</b>	<b>(NA)</b>	<b>0</b>	<b>(NA)</b>	<b>\$13</b>	<b>(118%)</b>

NA – Not applicable because total is zero.

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Wiring, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	1,710	(32%)	62	(70%)	24	(32%)	\$38	(24%)
Structural member or framing	1,370	(25%)	7	(8%)	27	(37%)	\$59	(37%)
Insulation within structural area	550	(10%)	13	(15%)	0	(0%)	\$14	(9%)
Exterior wall covering or finish	510	(9%)	0	(0%)	9	(12%)	\$11	(7%)
Unclassified structural component or finish	200	(4%)	0	(0%)	0	(0%)	\$7	(4%)
Interior wall covering	160	(3%)	0	(0%)	5	(7%)	\$6	(4%)
Unclassified item first ignited	160	(3%)	0	(0%)	0	(0%)	\$4	(2%)
Interior ceiling covering	100	(2%)	0	(0%)	0	(0%)	\$4	(2%)
Exterior roof covering	70	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Other known item	580	(11%)	7	(8%)*	9	(12%)	\$17	(11%)
<b>Total fires</b>	<b>5,400</b>	<b>(100%)</b>	<b>88</b>	<b>(100%)</b>	<b>75</b>	<b>(100%)</b>	<b>\$161</b>	<b>(100%)</b>

\* "Other known" includes floor covering (8% of deaths).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Branch Circuit Wiring, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Structural member or framing	930	(34%)	7	(8%)	22	(49%)	\$42	(42%)
Wire or cable insulation	740	(27%)	55	(67%)	5	(12%)	\$20	(20%)
Insulation within structural area	450	(17%)	14	(17%)	0	(0%)	\$13	(13%)
Unclassified structural component or finish	120	(4%)	0	(0%)	0	(0%)	\$5	(5%)
Interior wall covering	80	(3%)	0	(0%)	6	(14%)	\$4	(4%)
Interior ceiling covering	70	(3%)	0	(0%)	0	(0%)	\$3	(3%)
Unclassified item first ignited	60	(2%)	0	(0%)	0	(0%)	\$3	(3%)
Exterior wall covering or finish	50	(2%)	0	(0%)	0	(0%)	\$3	(3%)
Other known item first ignited	230	(8%)	7	(8%)*	11	(24%)	\$7	(7%)
<b>Total fires</b>	<b>2,740</b>	<b>(100%)</b>	<b>83</b>	<b>(100%)</b>	<b>44</b>	<b>(100%)</b>	<b>\$100</b>	<b>(100%)</b>

\* "Other known" includes floor covering (8% of deaths).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Electrical Service Supply Wiring, by Item First Ignited  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	370 (33%)	6 (100%)	5 (29%)	\$9 (26%)
Exterior wall covering	230 (20%)	0 (0%)	8 (47%)	\$4 (13%)
Structural member or framing	180 (16%)	0 (0%)	4 (24%)	\$10 (29%)
Other known item first ignited	350 (31%)	0 (0%)	0 (0%)	\$11 (32%)
<b>Total fires</b>	<b>1,130 (100%)</b>	<b>6 (100%)</b>	<b>16 (100%)</b>	<b>\$33 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Wiring From Meter Boxes, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	440 (51%)	0 (NA)	10 (75%)	\$6 (38%)
Other known item first ignited	440 (49%)	0 (NA)	3 (25%)	\$11 (62%)
Total fires	880 (100%)	0 (NA)	14 (100%)	\$17 (100%)

NA – Not applicable because total is zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Power (Utility) Line Wiring, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	160 (25%)	0 (NA)	0 (NA)	\$3 (30%)
Exterior wall covering	150 (24%)	0 (NA)	0 (NA)	\$3 (23%)
Structural member or framing	100 (15%)	0 (NA)	0 (NA)	\$3 (30%)
Other known item first ignited	240 (37%)	0 (NA)	0 (NA)	\$2 (17%)
<b>Total fires</b>	<b>660 (100%)</b>	<b>0 (NA)</b>	<b>0 (NA)</b>	<b>\$11 (100%)</b>

NA – Not applicable because total is zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Wiring, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Attic or ceiling/roof assembly or concealed space	1,150	(21%)	21	(23%)	15	(20%)	\$34	(21%)
Exterior wall surface	530	(10%)	0	(0%)	0	(0%)	\$9	(6%)
Wall assembly or concealed space	480	(9%)	10	(12%)	4	(6%)	\$18	(11%)
Crawl space or substructure space	380	(7%)	5	(6%)	0	(0%)	\$13	(8%)
Bedroom	290	(5%)	5	(6%)	8	(11%)	\$6	(4%)
Ceiling/floor assembly or concealed space	280	(5%)	0	(0%)	4	(5%)	\$15	(9%)
Kitchen	230	(4%)	21	(24%)	0	(0%)	\$8	(5%)
Living room, family room, lounge or den	210	(4%)	26	(29%)	7	(10%)	\$9	(5%)
Unclassified equipment or service area	190	(3%)	0	(0%)	0	(0%)	\$4	(2%)
Laundry room or area	180	(3%)	0	(0%)	7	(10%)	\$2	(1%)
Conduit, pipe, utility, or ventilation shaft	170	(3%)	0	(0%)	7	(10%)	\$8	(5%)
Garage	160	(3%)	0	(0%)	0	(0%)	\$8	(5%)
Exterior roof surface	110	(2%)	0	(0%)	0	(0%)	\$1	(1%)
Unclassified function area	110	(2%)	0	(0%)	0	(0%)	\$3	(2%)
Heating equipment room	100	(2%)	0	(0%)	0	(0%)	\$1	(0%)
Closet	80	(2%)	0	(0%)	11	(15%)	\$5	(3%)
Switchgear area or transformer vault	80	(2%)	0	(0%)	7	(10%)	\$2	(1%)
Unclassified outside area	70	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Bathroom	70	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Unclassified storage area	60	(1%)	0	(0%)	0	(0%)	\$1	(0%)
Unclassified structural area	50	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Other known area of origin	410	(8%)	0	(0%)	4	(5%)	\$13	(8%)
<b>Total fires</b>	<b>5,400</b>	<b>(100%)</b>	<b>88</b>	<b>(100%)</b>	<b>75</b>	<b>(100%)</b>	<b>\$161</b>	<b>(100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



**Home Fires Involving Branch Circuit Wiring, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Attic or ceiling/roof assembly or concealed space	950	(35%)	21	(25%)	11	(25%)	\$30	(30%)
Wall assembly or concealed space	270	(10%)	10	(12%)	4	(10%)	\$13	(13%)
Crawl space or substructure space	210	(8%)	5	(6%)	0	(0%)	\$9	(9%)
Ceiling/floor assembly or concealed space	200	(7%)	0	(0%)	4	(8%)	\$10	(10%)
Kitchen	160	(6%)	16	(19%)	0	(0%)	\$5	(5%)
Bedroom	140	(5%)	5	(6%)	4	(8%)	\$3	(3%)
Living room, family room, or den	100	(4%)	26	(31%)	7	(16%)	\$3	(3%)
Exterior wall surface	90	(3%)	0	(0%)	0	(0%)	\$2	(2%)
Garage	90	(3%)	0	(0%)	0	(0%)	\$5	(5%)
Laundry room or area	60	(2%)	0	(0%)	4	(8%)	\$1	(1%)
Unclassified function area	60	(2%)	0	(0%)	0	(0%)	\$2	(2%)
Closet	50	(2%)	0	(0%)	11	(24%)	\$4	(4%)
Bathroom	50	(2%)	0	(0%)	0	(0%)	\$0	(0%)
Heating equipment room	50	(2%)	0	(0%)	0	(0%)	\$0	(0%)
Other known area of origin	250	(9%)	0	(0%)	0	(0%)	\$13	(13%)
<b>Total fires</b>	<b>2,740</b>	<b>(100%)</b>	<b>83</b>	<b>(100%)</b>	<b>44</b>	<b>(100%)</b>	<b>\$100</b>	<b>(100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Electrical Service Supply Wiring, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Exterior wall surface	200	(18%)	0	(0%)	0	(0%)	\$3	(10%)
Wall assembly or concealed space	100	(9%)	0	(0%)	0	(0%)	\$3	(10%)
Attic or ceiling/roof assembly or concealed space	90	(8%)	0	(0%)	4	(24%)	\$3	(8%)
Conduit, pipe, utility, or ventilation shaft	90	(8%)	0	(0%)	0	(0%)	\$1	(4%)
Unclassified equipment or service area	70	(6%)	0	(0%)	0	(0%)	\$3	(9%)
Exterior roof surface	70	(6%)	0	(0%)	0	(0%)	\$1	(3%)
Ceiling/floor assembly or concealed space	50	(5%)	0	(0%)	0	(0%)	\$3	(9%)
Bedroom	50	(5%)	0	(0%)	5	(29%)	\$2	(6%)
Crawl space or substructure space	50	(4%)	0	(0%)	0	(0%)	\$0	(1%)
Other known area of origin	360	(32%)	6	(100%)*	8	(47%)	\$13	(40%)
<b>Total fires</b>	<b>1,130</b>	<b>(100%)</b>	<b>6</b>	<b>(100%)</b>	<b>16</b>	<b>(100%)</b>	<b>\$33</b>	<b>(100%)</b>

\* "Other known" includes kitchen (100% of deaths).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Wiring From Meter Boxes, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Exterior wall surface	100	(11%)	0	(NA)	0	(0%)	\$2	(10%)
Wall assembly or concealed space	90	(10%)	0	(NA)	0	(0%)	\$2	(14%)
Crawl space or substructure space	90	(10%)	0	(NA)	0	(0%)	\$3	(17%)
Unclassified equipment or service area	80	(9%)	0	(NA)	0	(0%)	\$1	(6%)
Attic or ceiling/roof assembly or concealed space	70	(8%)	0	(NA)	0	(0%)	\$1	(3%)
Laundry room or area	70	(8%)	0	(NA)	0	(0%)	\$1	(3%)
Bedroom	70	(8%)	0	(NA)	0	(0%)	\$1	(6%)
Other known area of origin	310	(36%)	0	(NA)	14	(100%)	\$7	(41%)
<b>Total fires</b>	<b>880</b>	<b>(100%)</b>	<b>0</b>	<b>(NA)</b>	<b>14</b>	<b>(100%)</b>	<b>\$17</b>	<b>(100%)</b>

NA – Not applicable because total is zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Power (Utility) Line Wiring, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Exterior wall surface	140 (22%)	0 (NA)	0 (NA)	\$2 (22%)
Other known area of origin	510 (78%)	0 (NA)	0 (NA)	\$9 (78%)
<b>Total fires</b>	<b>660 (100%)</b>	<b>0 (NA)</b>	<b>0 (NA)</b>	<b>\$11 (100%)</b>

NA – Not applicable because total is zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

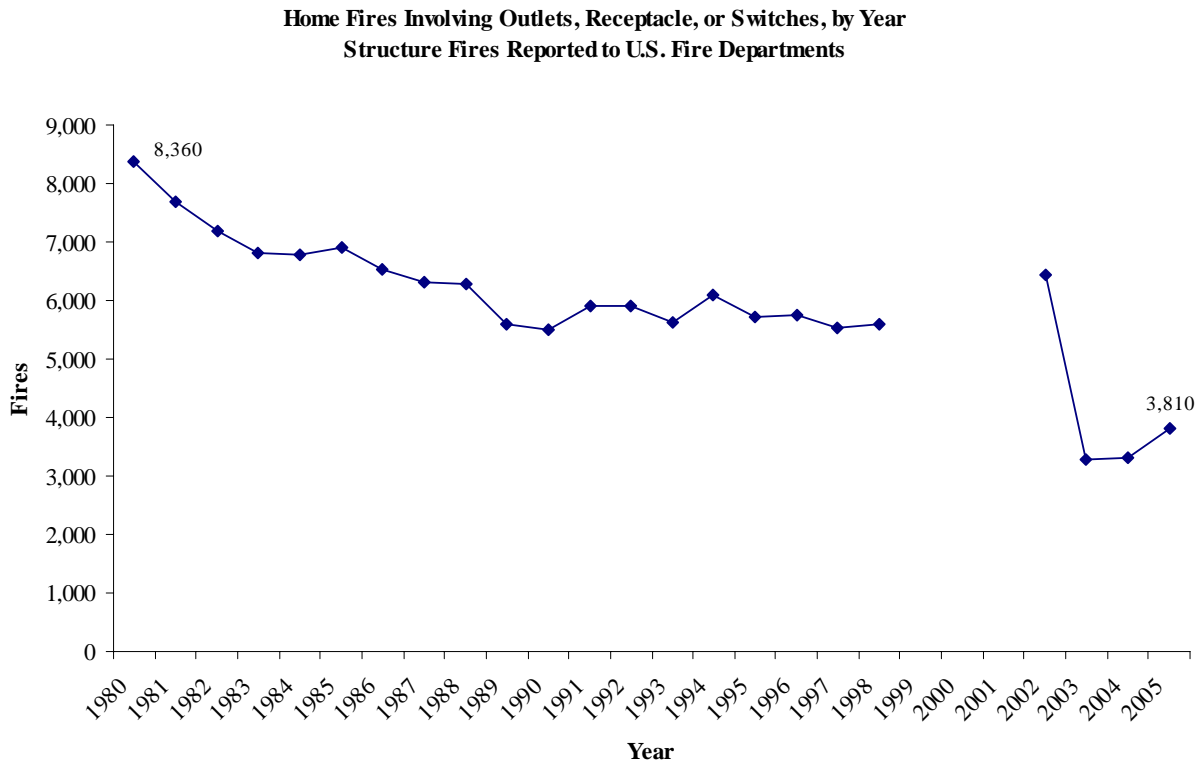
## Outlets, Receptacles, and Switches

**In 2005, an estimated 3,810 reported U.S. non-confined home structure fires involving outlets, receptacles, or switches resulted in 35 civilian deaths, 171 civilian injuries, and \$150 million in direct property damage.**

This equipment group includes the following specific types of equipment:

- Wall switches
- Outlets and receptacles

Fires declined by one-third from 1980 to 1998. After the transition period of 1999-2001, when NFIRS Version 5.0 was being phased in, the estimates fell by more than a third, comparing the 2003-2005 average to the levels of the late 1990s. This is a much larger decline than would have been expected if the 1980-1998 trend had continued unchanged.



Source: Data from NFIRS Version 5.0 and NFPA survey.

Note: See Note on year table.

Version 5.0 of NFIRS changed the wording and the requirements for the Equipment Involved in Ignition field, which identify electrical distribution or lighting equipment. These changes resulted in a sharp increase in non-reporting of the field, resulting in more unknown and more volatile estimates. These changes also resulted in a sharp increase in the use of the “no equipment” entry, resulting in a sharp decline in estimates of fires involving all types of equipment. We have tried to compensate for the latter change in the analysis rules, but we remain skeptical of the sharp declines in estimated fires involving electrical distribution or lighting equipment after 1998.

The change to Version 5.0 of NFIRS also introduced six types of “confined fires” – fires confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. In our reports, we analyze confined fires separately from non-confined fires, and for fires involving electrical distribution or lighting equipment, none of the six types of confined fires appear to be relevant. Therefore, all estimates in this report specify that they are estimates of non-confined fires, even though we know from our analysis that fires reported as confined fires would not add significantly to the estimates of total electrical distribution or lighting equipment fires.

Outlets, receptacles, and switches accounted for 17% of 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment, as well as 7% of associated civilian deaths, 19% of associated civilian injuries, and 17% of associated direct property damage.

**Outlets and receptacles accounted for nine out of ten of the 2002-2005 non-confined home structure fires involving outlets, receptacles, and switches.**

**Home Fires Involving Outlets, Receptacles, or Switches,  
by Specific Type of Equipment  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Type of Equipment	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Outlets and receptacles	3,790 (90%)	23 (100%)	145 (94%)	\$107 (92%)
Wall switches	420 (10%)	0 (0%)	10 (6%)	\$9 (8%)
Total	4,210 (100%)	23 (100%)	155 (100%)	\$116 (100%)

\* “Other known” includes floor covering (8% of deaths).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**In 2006, an estimated 4,200 injuries involving outlets or receptacles were reported to hospital emergency rooms.\***

The database has no code for switches, and the coding manual recommends that switch injuries be coded with wiring injuries, not with outlet or receptacle injuries. Of the 8,020 injuries involving

\* Statistics from National Electronic Injury Surveillance System (NEISS) data obtained from the U.S. Consumer Product Safety Commission (CPSC) website, [www.cpsc.gov](http://www.cpsc.gov).

wiring, outlets, or receptacles, 1,590 involved electric shock (about three-fourths involving outlets or receptacles) and 1,440 involved electrical burns (1,250 involving outlets or receptacles).

**Less than one-third of 2002-2005 non-confined home structure fires involving outlets receptacles, or switches cited factors contributing to ignition with specific details.**

The leading factors contributing to ignition with details were short circuit arc from defective or worn insulation (13% of fires), arc from faulty contact or broken conductor (9%), equipment overloaded (4%), short circuit arc from mechanical damage (3%), and water caused short circuit arc (3%).

**Two-thirds (63%) of 2002-2005 non-confined home structure fires involving outlets, receptacles, or switches, accounting for four-fifths (80%) of associated deaths, began with ignition of wire or cable insulation (39% of fires), structural member or framing (12%), or interior wall covering (12%).**

**Nearly half of 2002-2005 non-confined home structure fires involving outlets, receptacles, or switches began in the principal occupied spaces of bedroom (23%), kitchen (12%), and living room, family room, or den (12%).**

The leading concealed-space area of origin was wall assembly or concealed space (18%).

### **Safety Tips**

- Home electrical safety begins with NFPA 70, *National Electrical Code*®, and related documents with special relevance to homes, notably NFPA 73, *Electrical Inspection Code for Existing Dwellings*. However, work on home electrical distribution or lighting equipment should only be conducted by someone qualified as an electrician.
- Call a qualified electrician or landlord if you have
  - discolored or warm wall outlets,
  - sparks from an outlet.
- Consider having additional circuits or receptacles added by a qualified electrician.
- Replace receptacles if plugs do not fit.
- Receptacle outlets and switches should have wall plates to prevent shocks.
- Homes with young children should have tamper-resistant electrical receptacles.

**Home Fires Involving Outlets, Receptacle, or Switches, by Year**  
**Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

<b>Year</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions) As Reported</b>	<b>In 2005 Dollars</b>
1980	8,360	24	145	\$39	\$92
1981	7,690	30	196	\$36	\$78
1982	7,200	29	142	\$37	\$75
1983	6,800	62	156	\$50	\$97
1984	6,780	16	152	\$44	\$83
1985	6,920	56	148	\$55	\$100
1986	6,530	54	125	\$51	\$92
1987	6,320	55	184	\$42	\$72
1988	6,270	52	194	\$56	\$92
1989	5,580	52	116	\$51	\$80
1990	5,490	38	152	\$53	\$79
1991	5,910	34	232	\$88*	\$126*
1992	5,640	15	217	\$63	\$88
1993	6,100	29	184	\$69	\$94
1994	5,730	53	154	\$69	\$92
1995	5,750	56	185	\$83	\$106
1996	5,520	37	154	\$88	\$109
1997	5,370	19	184	\$72	\$87
1998	5,580	45	167	\$81	\$97
1999	4,260	0	108	\$78	\$91
2000	2,780	13	49	\$88	\$100
2001	4,840	176	160	\$103	\$114
2002	6,440	23	184	\$98	\$107
2003	3,280	0	85	\$90	\$95
2004	3,310	34	181	\$125	\$130
2005	3,810	35	171	\$150	\$150

\* 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, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries are the nearest one, 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 reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. *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 2005 dollars is done using the consumer price index.

Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2005) and from NFPA survey.



**Home Fires Involving Outlets, Receptacles, or Switches, by Factor Contributing to Ignition**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Unspecified short circuit arc	1,330 (32%)	10 (42%)	56 (36%)	\$37 (32%)
Unclassified electrical failure or malfunction	1,180 (28%)	9 (39%)	31 (20%)	\$38 (33%)
Short circuit arc from defective or worn insulation	560 (13%)	0 (0%)	27 (17%)	\$12 (11%)
Arc from faulty contact or broken conductor	390 (9%)	0 (0%)	16 (11%)	\$17 (14%)
Equipment overloaded	170 (4%)	0 (0%)	4 (2%)	\$8 (7%)
Short circuit arc from mechanical damage	130 (3%)	0 (0%)	13 (8%)	\$2 (2%)
Water caused short circuit arc	120 (3%)	0 (0%)	0 (0%)	\$1 (1%)
Unclassified mechanical failure or malfunction	120 (3%)	0 (0%)	0 (0%)	\$2 (2%)
Arc or spark from operating equipment	110 (3%)	0 (0%)	0 (0%)	\$1 (1%)
Unclassified misuse of material or product	100 (2%)	4 (19%)	4 (3%)	\$1 (0%)
Worn out	90 (2%)	0 (0%)	4 (3%)	\$2 (2%)
Heat source too close to combustibles	70 (2%)	0 (0%)	0 (0%)	\$7 (6%)
Other known factor contributing to ignition	290 (7%)	0 (0%)	8 (5%)	\$6 (5%)
Total fires	4,210 (100%)	23 (100%)	155 (100%)	\$116 (100%)
Total factor entries	4,650 (111%)	23 (100%)	163 (105%)	\$134 (115%)

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Outlets or Receptacles, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unspecified short circuit arc	1,210	(32%)	10	(42%)	57	(39%)	\$33	(31%)
Unclassified electrical failure or malfunction	1,060	(28%)	9	(39%)	24	(16%)	\$36	(34%)
Short circuit arc from defective or worn insulation	470	(12%)	0	(0%)	27	(19%)	\$12	(11%)
Arc from faulty contact or broken conductor	360	(10%)	0	(0%)	13	(9%)	\$15	(14%)
Equipment overloaded	160	(4%)	0	(0%)	4	(3%)	\$7	(7%)
Water caused short circuit arc	110	(3%)	0	(0%)	0	(0%)	\$1	(0%)
Unclassified mechanical failure or malfunction	110	(3%)	0	(0%)	0	(0%)	\$2	(2%)
Short circuit arc from mechanical damage	100	(3%)	0	(0%)	13	(9%)	\$2	(2%)
Unclassified misuse of material or product	90	(2%)	4	(19%)	4	(3%)	\$1	(1%)
Arc or spark from operating equipment	90	(2%)	0	(0%)	0	(0%)	\$1	(1%)
Worn out	70	(2%)	0	(0%)	0	(0%)	\$1	(1%)
Heat source too close to combustibles	60	(2%)	0	(0%)	0	(0%)	\$6	(6%)
Other known factor contributing to ignition	260	(7%)	0	(0%)	8	(5%)	\$6	(5%)
<b>Total fires</b>	<b>3,790</b>	<b>(100%)</b>	<b>23</b>	<b>(100%)</b>	<b>145</b>	<b>(100%)</b>	<b>\$107</b>	<b>(100%)</b>
<b>Total factor entries</b>	<b>4,160</b>	<b>(110%)</b>	<b>23</b>	<b>(100%)</b>	<b>149</b>	<b>(103%)</b>	<b>\$123</b>	<b>(115%)</b>

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Wall Switches, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Unspecified short circuit arc	120 (29%)	0 (NA)	0 (0%)	\$5 (53%)
Unclassified electrical failure or malfunction	120 (29%)	0 (NA)	7 (66%)	\$2 (28%)
Short circuit arc from defective or worn insulation	90 (21%)	0 (NA)	0 (0%)	\$0 (0%)
Other known factor contributing to ignition	160 (38%)	0 (NA)	7 (69%)	\$3 (35%)
Total fires	420 (100%)	0 (NA)	10 (100%)	\$9 (100%)
Total factor entries	490 (117%)	0 (NA)	13 (134%)	\$10 (115%)

NA – Not applicable because total is zero.

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Outlets, Receptacles, or Switches, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	1,660 (39%)	9 (39%)	25 (16%)	\$25 (21%)
Structural member or framing	500 (12%)	5 (22%)	29 (19%)	\$36 (31%)
Interior wall covering	490 (12%)	4 (19%)	23 (15%)	\$15 (13%)
Mattress or bedding	220 (5%)	0 (0%)	19 (13%)	\$6 (5%)
Unclassified item first ignited	170 (4%)	0 (0%)	4 (3%)	\$1 (1%)
Unclassified structural component or finish	130 (3%)	0 (0%)	4 (3%)	\$5 (4%)
Insulation within structural area	120 (3%)	0 (0%)	15 (10%)	\$2 (2%)
Exterior wall covering	120 (3%)	0 (0%)	0 (0%)	\$1 (1%)
Unclassified furniture or utensil	90 (2%)	0 (0%)	12 (8%)	\$2 (2%)
Floor covering	80 (2%)	0 (0%)	0 (0%)	\$5 (4%)
Upholstered furniture	70 (2%)	4 (19%)	4 (3%)	\$3 (2%)
Clothing	70 (2%)	0 (0%)	15 (10%)	\$4 (3%)
Appliance housing or casing	60 (2%)	0 (0%)	0 (0%)	\$1 (1%)
Curtain or drape	60 (1%)	0 (0%)	0 (0%)	\$3 (2%)
Cabinetry	60 (1%)	0 (0%)	0 (0%)	\$2 (1%)
Flammable or combustible gas or liquid	50 (1%)	0 (0%)	0 (0%)	\$0 (0%)
Other known item first ignited	260 (6%)	0 (0%)	4 (2%)	\$6 (5%)
<b>Total fires</b>	<b>4,210 (100%)</b>	<b>23 (100%)</b>	<b>155 (100%)</b>	<b>\$116 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Outlets or Receptacles, by Item First Ignited**  
**Annual Average of 2002-2005 Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	1,420 (37%)	9 (39%)	26 (18%)	\$21 (20%)
Interior wall covering	460 (12%)	4 (19%)	23 (16%)	\$15 (14%)
Structural member or framing	430 (11%)	5 (22%)	22 (15%)	\$31 (29%)
Mattress or bedding	220 (6%)	0 (0%)	20 (14%)	\$6 (5%)
Unclassified item first ignited	130 (4%)	0 (0%)	4 (3%)	\$1 (1%)
Insulation within structural area	120 (3%)	0 (0%)	15 (11%)	\$2 (2%)
Unclassified structural component or finish	120 (3%)	0 (0%)	0 (0%)	\$4 (4%)
Exterior wall covering	110 (3%)	0 (0%)	0 (0%)	\$1 (1%)
Unclassified furniture or utensil	90 (2%)	0 (0%)	12 (9%)	\$2 (2%)
Floor covering	70 (2%)	0 (0%)	0 (0%)	\$5 (4%)
Upholstered furniture	70 (2%)	4 (19%)	4 (3%)	\$3 (2%)
Clothing	70 (2%)	0 (0%)	15 (10%)	\$4 (3%)
Curtain or drape	60 (2%)	0 (0%)	0 (0%)	\$3 (3%)
Appliance housing or casing	60 (2%)	0 (0%)	0 (0%)	\$1 (1%)
Cabinetry	60 (2%)	0 (0%)	0 (0%)	\$2 (1%)
Flammable or combustible gas or liquid	50 (1%)	0 (0%)	0 (0%)	\$0 (0%)
Other known item first ignited	240 (6%)	0 (0%)	4 (3%)	\$6 (5%)
<b>Total fires</b>	<b>3,790 (100%)</b>	<b>23 (100%)</b>	<b>145 (100%)</b>	<b>\$107 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Wall Switches, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	240 (57%)	0 (NA)	0 (0%)	\$3 (36%)
Structural member or framing	70 (16%)	0 (NA)	7 (66%)	\$4 (47%)
Other known item first ignited	110 (27%)	0 (NA)	3 (34%)	\$2 (18%)
Total fires	420 (100%)	0 (NA)	10 (100%)	\$9 (100%)

NA – Not applicable because total is zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Outlets, Receptacles, or Switches, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Bedroom	980 (23%)	0 (0%)	79 (51%)	\$36 (31%)
Wall assembly or concealed space	740 (18%)	5 (22%)	22 (14%)	\$21 (18%)
Kitchen	510 (12%)	0 (0%)	4 (3%)	\$11 (10%)
Living room, family room, or den	510 (12%)	13 (58%)	23 (15%)	\$15 (13%)
Unclassified function area	240 (6%)	4 (19%)	11 (7%)	\$6 (5%)
Laundry room or area	220 (5%)	0 (0%)	4 (3%)	\$3 (3%)
Exterior wall surface	140 (3%)	0 (0%)	4 (2%)	\$0 (0%)
Bathroom	130 (3%)	0 (0%)	4 (2%)	\$1 (1%)
Garage	90 (2%)	0 (0%)	0 (0%)	\$3 (2%)
Crawl space or substructure space	70 (2%)	0 (0%)	0 (0%)	\$0 (0%)
Unclassified area of origin	60 (1%)	0 (0%)	4 (2%)	\$1 (1%)
Unclassified structural area	50 (1%)	0 (0%)	0 (0%)	\$2 (2%)
Other known area of origin	480 (11%)	0 (0%)	0 (0%)	\$17 (15%)
<b>Total fires</b>	<b>4,210 (100%)</b>	<b>23 (100%)</b>	<b>155 (100%)</b>	<b>\$116 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Outlets and Receptacles, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Bedroom	940 (25%)	0 (0%)	80 (55%)	\$35 (33%)
Wall assembly or concealed space	620 (16%)	5 (22%)	23 (16%)	\$16 (15%)
Living room, family room, or den	480 (13%)	13 (58%)	19 (13%)	\$14 (13%)
Kitchen	470 (12%)	0 (0%)	4 (3%)	\$11 (10%)
Laundry room or area	200 (5%)	0 (0%)	4 (3%)	\$3 (3%)
Unclassified function area	200 (5%)	4 (19%)	12 (8%)	\$5 (5%)
Exterior wall surface	130 (3%)	0 (0%)	4 (3%)	\$0 (0%)
Bathroom	100 (3%)	0 (0%)	0 (0%)	\$1 (1%)
Garage	80 (2%)	0 (0%)	0 (0%)	\$3 (3%)
Crawl space or substructure space	70 (2%)	0 (0%)	0 (0%)	\$0 (0%)
Unclassified structural area	50 (1%)	0 (0%)	0 (0%)	\$2 (2%)
Other known area of origin	450 (12%)	0 (0%)	0 (0%)	\$16 (15%)
<b>Total fires</b>	<b>3,790 (100%)</b>	<b>23 (100%)</b>	<b>145 (100%)</b>	<b>\$107 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



**Home Fires Involving Wall Switches, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wall assembly or concealed space	130 (31%)	0 (NA)	0 (0%)	\$5 (53%)
Other known area of origin	290 (69%)	0 (NA)	10 (100%)	\$4 (47%)
Total fires	420 (100%)	0 (NA)	10 (100%)	\$9 (100%)

NA – Not applicable because total is zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



## Overcurrent Protection Devices

**In 2005, an estimated 2,570 reported U.S. non-confined home structure fires involving overcurrent protection devices resulted in 29 civilian deaths, 102 civilian injuries, and \$90 million in direct property damage.**

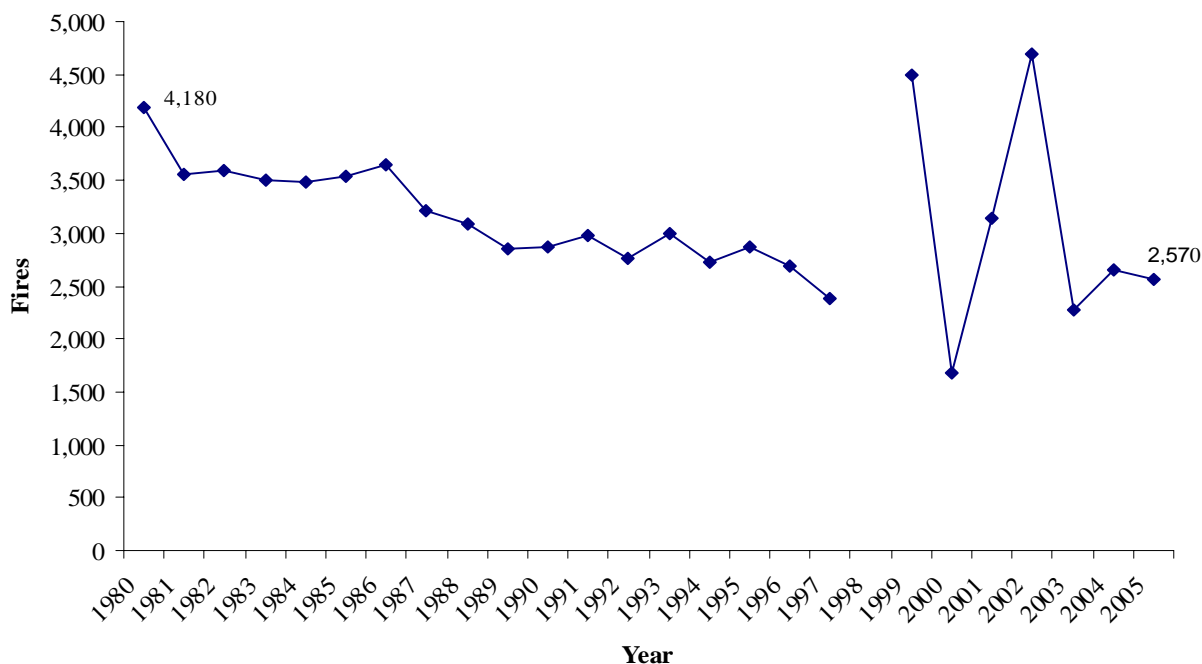
Overcurrent protection devices include the following:

- Panelboard or switchboard for fuses or circuit breakers
- Surge protectors
- Ground fault circuit interrupters (GFCIs)

The newest type of protection device – are fault circuit interrupter (AFCI) – is not separately identified among the choices for equipment involved in ignition.

Surge protectors came into widespread use as protection for home computer systems, which were in significant use prior to 1980, when these analyses begin. GFCIs and arc fault circuit interrupters (AFCIs) are triggered by different conditions from those that activate conventional circuit breakers. Conventional fuses and circuit breakers activate when too much current is flowing through the circuit. AFCIs activate when they detect a low but irregular electrical current, indicating current is leaking out of the circuit, possibly into adjacent combustible material. AFCIs have more of an effect in preventing fire ignitions, while GFCIs have more of an effect in preventing electric shock.

**Home Fires Involving Overcurrent Protection Devices, by Year  
Structure Fires Reported to U.S. Fire Departments**



Source: Data from NFIRS and NFPA survey.

Note: See Note in year table.

Fires declined by about one-third from the early 1980s to the late 1990s. After the transition period of 1999-2001, when NFIRS Version 5.0 was being phased in, the estimates for 2003-2005 are about at the same level as the late 1980s. This is the only major group of electrical distribution or lighting equipment that does not show a much larger post-1999 decline in fires than would have been projected from the late 1990s trend. However, this may be because this category includes some new types of equipment that have only recently been in widespread or significant usage. It may be that fires involving surge protectors and ground fault circuit interrupters (GFCIs) are increasing rapidly with increasing equipment usage, and this may be masking a disproportionate decline in fires involving traditional panelboards or circuitboards for fuses or circuit breakers.

Version 5.0 of NFIRS changed the wording and the requirements for the Equipment Involved in Ignition field, which identify electrical distribution or lighting equipment. These changes resulted in a sharp increase in non-reporting of the field, resulting in more unknowns and more volatile estimates. These changes also resulted in a sharp increase in the use of the “no equipment” entry, resulting in a sharp decline in estimates of fires involving all types of equipment. We have tried to compensate for the latter change in the analysis rules, but we remain skeptical of the sharp declines in estimated fires involving electrical distribution or lighting equipment after 1998.

The change to Version 5.0 of NFIRS also introduced six types of “confined fires” – fires confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. In our reports, we analyze confined fires separately from non-confined fires, and for fires involving electrical distribution or lighting equipment, none of the six types of confined fires appear to be relevant. Therefore, all estimates in this report specify that they are estimates of non-confined fires, even though we know from our analysis that fires reported as confined fires would not add significantly to the estimates of total electrical distribution or lighting equipment fires.

Overcurrent protection devices accounted for 13% of 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment, as well as 5% of associated civilian deaths, 9% of associated civilian injuries, and 10% of associated direct property damage.

**Panelboards and switchboards for traditional fuses and circuit breakers accounted for five-sixths (82%) of 2002-2005 non-confined home structure fires involving overcurrent protection equipment.** Surge protectors accounted for one-sixth (16%) of the fires. Ground fault circuit interrupters were involved in 2% of the fires.

The two types of conventional overcurrent protection devices – fuses and circuit breakers – have never been separated in fire incident coding. Special studies have been conducted, notably by the U.S. Consumer Product Safety Commission, but they have not had enough incidents to quantify differences in overall statistical reliability. Fuses are simpler devices and are more reliable as equipment, but fuses are easier to defeat through tampering, typically through the replacement of a fuse by a metal conductor, like a penny, that will keep the circuit open in all conditions and so will not protect the system.

**Home Fires Involving Overcurrent Protection Devices,  
by Specific Type of Equipment  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Panelboards and switchboards for fuses or circuit breakers	2,500	(82%)	4	(28%)	54	(74%)	\$55	(77%)
Surge protectors	490	(16%)	11	(72%)	16	(21%)	\$14	(20%)
Ground fault circuit interrupters (GFCIs)	60	(2%)	0	(0%)	3	(5%)	\$2	(3%)
<b>Total</b>	<b>3,050</b>	<b>(100%)</b>	<b>15</b>	<b>(100%)</b>	<b>73</b>	<b>(100%)</b>	<b>\$70</b>	<b>(100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**In 2006, an estimated 1,220 injuries involving panelboards or circuitboards for fuses or circuit breakers were reported to hospital emergency rooms.\***

The database provides no further breakdown of these injuries by type of equipment.

**Two-thirds (68%) of 2002-2005 non-confined home structure fires involving overcurrent protection devices cited unclassified electrical failure or malfunction or unspecified short circuit as factors contributing to ignition.**

Leading factors with specific details include short circuit arc from defective or worn insulation (6%), arc from faulty contact or broken conductor (6%), water caused short circuit arc (5%), and equipment overloaded (4%).

**The majority (57%) of 2002-2005 non-confined home structure fires involving overcurrent protection devices began with ignition of wire or cable insulation.**

Leading areas of origin for these fires were bedroom (13% of fires), crawl space or substructure space (8%), laundry room or area (8%), living room, family room, or den (8%), and wall assembly or concealed space (7%).

**Safety Tips:**

- Home electrical safety begins with NFPA 70, *National Electrical Code®*, and related documents with special relevance to homes, notably NFPA 73, *Electrical Inspection Code for Existing Dwellings*. However, work on home electrical distribution or lighting equipment should only be conducted by someone qualified as an electrician.

\* Statistics from National Electronic Injury Surveillance System (NEISS) data obtained from the U.S. Consumer Product Safety Commission (CPSC) website, [www.cpsc.gov](http://www.cpsc.gov).

Call a qualified electrician or landlord if you have

- Recurring problems with blowing fuses or tripping circuit breakers.
- Replace fuses with the correct amp rating for the circuit they protect.
- Never replace a fuse with a higher rated fuse.
- If the problem continues, call an electrician.
- Only plug one heat-producing appliance (such as a coffee maker, toaster, space heater, etc.) into a receptacle outlet at a time.
- If an appliance is malfunctioning, unplug it if it is safe to do so. If necessary, cut off power by unscrewing a fuse or turning off the circuit breaker.
- Arc fault circuit interrupters (AFCIs) are a new kind of circuit breaker that shut off electricity when a dangerous condition occurs. Consider having them installed in your home. Use a qualified electrician.
- Ground fault circuit interrupters (GFCIs) reduce the risk of shock. GFCIs shut off an electrical circuit when it becomes a shock hazard.
- Test AFCIs and GFCIs once a month to make sure they are working properly.

**Home Fires Involving Overcurrent Protection Devices, by Year**  
**Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	
				As Reported	In 2005 Dollars
1980	4,180	32	78	\$27	\$64
1981	3,560	30	38	\$17	\$37
1982	3,600	0	36	\$24	\$48
1983	3,510	31	64	\$26	\$52
1984	3,480	16	41	\$29	\$54
1985	3,530	22	53	\$29	\$53
1986	3,640	21	88	\$30	\$54
1987	3,210	32	54	\$29	\$49
1988	3,090	4	76	\$33	\$55
1989	2,850	24	52	\$39	\$62
1990	2,870	4	53	\$33	\$49
1991	2,970	11	41	\$46*	\$65*
1992	2,770	19	66	\$26	\$36
1993	2,990	8	23	\$34	\$47
1994	2,730	7	39	\$28	\$37
1995	2,870	19	55	\$31	\$40
1996	2,690	14	66	\$39	\$48
1997	2,390	0	39	\$34	\$41
1998	2,310	6	47	\$38	\$45
1999	4,500	0	0	\$75	\$88
2000	1,670	7	0	\$64	\$73
2001	3,140	0	138	\$76	\$84
2002	4,700	0	65	\$61	\$66
2003	2,280	0	14	\$60	\$63
2004	2,650	31	110	\$68	\$70
2005	2,570	29	102	\$90	\$90

\* 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, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries to the nearest one, 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 of lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. *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 2005 dollars is done using the consumer price index.

Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2005) and from NFPA survey.

**Home Fires Involving Overcurrent Protection Devices, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Unclassified electrical failure or malfunction	1,130	(37%)	11	(75%)	23	(32%)	\$30	(44%)
Unspecified short circuit arc	950	(31%)	0	(0%)	4	(5%)	\$20	(29%)
Short circuit arc from defective or worn insulation	180	(6%)	0	(0%)	7	(10%)	\$3	(4%)
Arc from faulty contact or broken conductor	170	(6%)	0	(0%)	4	(5%)	\$2	(2%)
Water caused short circuit arc	150	(5%)	0	(0%)	7	(10%)	\$3	(4%)
Equipment overloaded	130	(4%)	0	(0%)	7	(10%)	\$5	(7%)
Unclassified mechanical failure or malfunction	110	(4%)	4	(25%)	19	(26%)	\$4	(5%)
Arc or spark from operating equipment	90	(3%)	0	(0%)	4	(6%)	\$1	(2%)
Installation deficiency	70	(2%)	0	(0%)	0	(0%)	\$0	(1%)
Storm	60	(2%)	0	(0%)	0	(0%)	\$1	(1%)
Short circuit arc from mechanical damage	60	(2%)	0	(0%)	0	(0%)	\$2	(3%)
Other known factor contributing to ignition	270	(9%)	4	(25%)*	0	(0%)	\$11	(16%)
Total fires	3,050	(100%)	15	(100%)	73	(100%)	\$70	(100%)
Total factor entries	3,370	(110%)	19	(125%)	77	(105%)	\$82	(118%)

\* "Other known" includes equipment not being operated property (25% of deaths).

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



**Home Fires Involving Panelboards or Switchboards for Fuses or Circuit Breakers,  
by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unspecified short circuit arc	880	(35%)	0	(0%)	5	(9%)	\$21	(39%)
Unclassified electrical failure or malfunction	820	(33%)	0	(0%)	11	(20%)	\$18	(33%)
Arc from faulty contact or broken conductor	170	(7%)	0	(0%)	0	(0%)	\$2	(4%)
Short circuit arc from defective or worn insulation	150	(6%)	0	(0%)	10	(18%)	\$2	(5%)
Water caused short circuit arc	130	(5%)	0	(0%)	9	(17%)	\$3	(6%)
Unclassified mechanical failure or malfunction	90	(3%)	4	(100%)	20	(36%)	\$4	(7%)
Installation deficiency	80	(3%)	0	(0%)	0	(0%)	\$1	(1%)
Storm	70	(3%)	0	(0%)	0	(0%)	\$1	(2%)
Arc or spark from operating equipment	60	(2%)	0	(0%)	0	(0%)	\$1	(2%)
Equipment overloaded	60	(2%)	0	(0%)	0	(0%)	\$2	(3%)
Short circuit arc from mechanical damage	60	(2%)	0	(0%)	0	(0%)	\$2	(5%)
Other known factor contributing to ignition	170	(7%)	0	(0%)	0	(0%)	\$6	(10%)
<b>Total fires</b>	<b>2,500</b>	<b>(100%)</b>	<b>4</b>	<b>(100%)</b>	<b>54</b>	<b>(100%)</b>	<b>\$55</b>	<b>(100%)</b>
<b>Total factor entries</b>	<b>2,730</b>	<b>(109%)</b>	<b>4</b>	<b>(100%)</b>	<b>54</b>	<b>(100%)</b>	<b>\$63</b>	<b>(115%)</b>

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Surge Protectors, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Unspecified electrical failure or malfunction	230 (48%)	11 (100%)	9 (56%)	\$9 (64%)
Unspecified short circuit arc	110 (23%)	0 (0%)	0 (0%)	\$2 (12%)
Equipment overloaded	50 (11%)	0 (0%)	4 (27%)	\$2 (16%)
Other known factor contributing to ignition	160 (32%)	4 (33%)	5 (31%)	\$4 (28%)
Total fires	490 (100%)	11 (100%)	16 (100%)	\$14 (100%)
Total factor entries	550 (113%)	15 (133%)	18 (114%)	\$16 (119%)

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Overcurrent Protection Devices, by Item First Ignited  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	1,750 (57%)	4 (25%)	13 (18%)	\$22 (31%)
Structural member or framing	270 (9%)	0 (0%)	16 (23%)	\$14 (20%)
Unclassified item first ignited	200 (6%)	0 (0%)	4 (5%)	\$2 (3%)
Interior wall covering	140 (4%)	4 (25%)	10 (14%)	\$6 (9%)
Exterior wall covering	90 (3%)	0 (0%)	0 (0%)	\$2 (2%)
Floor covering	80 (3%)	0 (0%)	7 (9%)	\$2 (3%)
Clothing	70 (2%)	0 (0%)	0 (0%)	\$6 (8%)
Unclassified structural component or finish	60 (2%)	8 (50%)	7 (9%)	\$2 (3%)
Appliance housing or casing	60 (2%)	0 (0%)	3 (4%)	\$2 (3%)
Other known item first ignited	350 (11%)	0 (0%)	13 (18%)	\$12 (18%)
<b>Total fires</b>	<b>3,050 (100%)</b>	<b>15 (100%)</b>	<b>73 (100%)</b>	<b>\$70 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Panelboards or Switchboards for Fuses or Circuit Breakers,  
by Item First Ignited  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	1,570 (63%)	0 (0%)	11 (21%)	\$20 (37%)
Structural member or framing	280 (11%)	0 (0%)	19 (36%)	\$14 (25%)
Unclassified item first ignited	150 (6%)	0 (0%)	4 (8%)	\$1 (2%)
Interior wall covering	120 (5%)	4 (100%)	8 (14%)	\$7 (12%)
Exterior wall covering	90 (3%)	0 (0%)	0 (0%)	\$2 (3%)
Unclassified structural component or finish	60 (3%)	0 (0%)	8 (14%)	\$2 (2%)
Other known item first ignited	200 (9%)	0 (0%)	4 (7%)	\$9 (17%)
<b>Total fires</b>	<b>2,500 (100%)</b>	<b>4 (100%)</b>	<b>54 (100%)</b>	<b>\$55 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Surge Protectors, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	200 (42%)	4 (33%)	2 (14%)	\$3 (19%)
Other known item first ignited	280 (58%)	7 (67%)*	13 (86%)	\$11 (81%)
Total fires	490 (100%)	11 (100%)	16 (100%)	\$14 (100%)

\* “Other known” includes unclassified structural component or finish (67% of deaths).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Overcurrent Protection Devices, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Bedroom	400 (13%)	4 (25%)	27 (36%)	\$12 (18%)
Crawl space or substructure space	260 (8%)	0 (0%)	6 (9%)	\$6 (8%)
Laundry room or area	240 (8%)	0 (0%)	0 (0%)	\$7 (11%)
Living room, family room, or den	230 (8%)	8 (50%)	0 (0%)	\$7 (10%)
Wall assembly or concealed space	210 (7%)	0 (0%)	0 (0%)	\$6 (8%)
Unclassified function area	190 (6%)	0 (0%)	3 (4%)	\$4 (6%)
Unclassified equipment or service	160 (5%)	0 (0%)	0 (0%)	\$4 (6%)
Kitchen	140 (5%)	0 (0%)	6 (9%)	\$2 (3%)
Garage	140 (5%)	0 (0%)	3 (4%)	\$3 (5%)
Exterior wall surface	120 (4%)	0 (0%)	0 (0%)	\$1 (1%)
Closet	100 (3%)	0 (0%)	7 (9%)	\$3 (4%)
Switchgear area of transformer vault	90 (3%)	0 (0%)	0 (0%)	\$1 (1%)
Conduit, pipe, utility, or ventilation shaft	80 (3%)	0 (0%)	0 (0%)	\$1 (1%)
Office	80 (3%)	0 (0%)	4 (5%)	\$2 (3%)
Heating equipment room	70 (2%)	0 (0%)	0 (0%)	\$1 (1%)
Unclassified structural area	70 (2%)	0 (0%)	0 (0%)	\$3 (4%)
Unclassified area of origin	70 (2%)	0 (0%)	0 (0%)	\$0 (0%)
Other known area of origin	390 (13%)	4 (25%)	17 (23%)	\$7 (11%)
<b>Total fires</b>	<b>3,050 (100%)</b>	<b>15 (100%)</b>	<b>73 (100%)</b>	<b>\$70 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Panelboards or Switchboards for Fuses or Circuit Breakers,  
by Area of Origin  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Crawl space or substructure space	280	(11%)	0	(0%)	7	(14%)	\$6	(11%)
Laundry room or area	260	(10%)	0	(0%)	0	(0%)	\$8	(15%)
Wall assembly or concealed space	220	(9%)	0	(0%)	0	(0%)	\$7	(12%)
Unclassified equipment or service area	170	(7%)	0	(0%)	0	(0%)	\$5	(9%)
Bedroom	150	(6%)	0	(0%)	16	(29%)	\$5	(9%)
Kitchen	130	(5%)	0	(0%)	7	(14%)	\$2	(4%)
Exterior wall surface	130	(5%)	0	(0%)	0	(0%)	\$1	(2%)
Garage	120	(5%)	0	(0%)	4	(7%)	\$3	(6%)
Unclassified function area	120	(5%)	0	(0%)	0	(0%)	\$3	(5%)
Closet	100	(4%)	0	(0%)	8	(14%)	\$3	(6%)
Switchgear area or transformer vault	100	(4%)	0	(0%)	0	(0%)	\$1	(1%)
Conduit, pipe, utility, or ventilation shaft	90	(4%)	0	(0%)	0	(0%)	\$1	(2%)
Heating equipment room	80	(3%)	0	(0%)	0	(0%)	\$1	(1%)
Unclassified area of origin	70	(3%)	0	(0%)	0	(0%)	\$0	(0%)
Unclassified structural area	70	(3%)	0	(0%)	0	(0%)	\$2	(4%)
Other known area of origin	430	(17%)	4	(100%)*	12	(23%)	\$7	(13%)
<b>Total fires</b>	<b>2,500</b>	<b>(100%)</b>	<b>4</b>	<b>(100%)</b>	<b>54</b>	<b>(100%)</b>	<b>\$55</b>	<b>(100%)</b>

“Other known” includes lobby or entrance way (100% of deaths).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Surge Protectors, by Area of Origin**  
**Annual Average 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Bedroom	170 (35%)	4 (33%)	6 (41%)	\$5 (37%)
Living room, family room, or den	120 (25%)	7 (67%)	0 (0%)	\$4 (29%)
Unclassified function area	50 (11%)	0 (0%)	2 (14%)	\$1 (8%)
Office	50 (11%)	0 (0%)	3 (17%)	\$1 (11%)
Other known area of origin	90 (18%)	0 (0%)	4 (28%)	\$2 (15%)
<b>Total fires</b>	<b>490 (100%)</b>	<b>11 (100%)</b>	<b>16 (100%)</b>	<b>\$14 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



## Cords and Plugs

**In 2005, an estimated 2,500 reported U.S. non-confined home structure fires involving cords or plugs resulted in 220 civilian deaths, 303 civilian injuries, and \$121 million in direct property damage.**

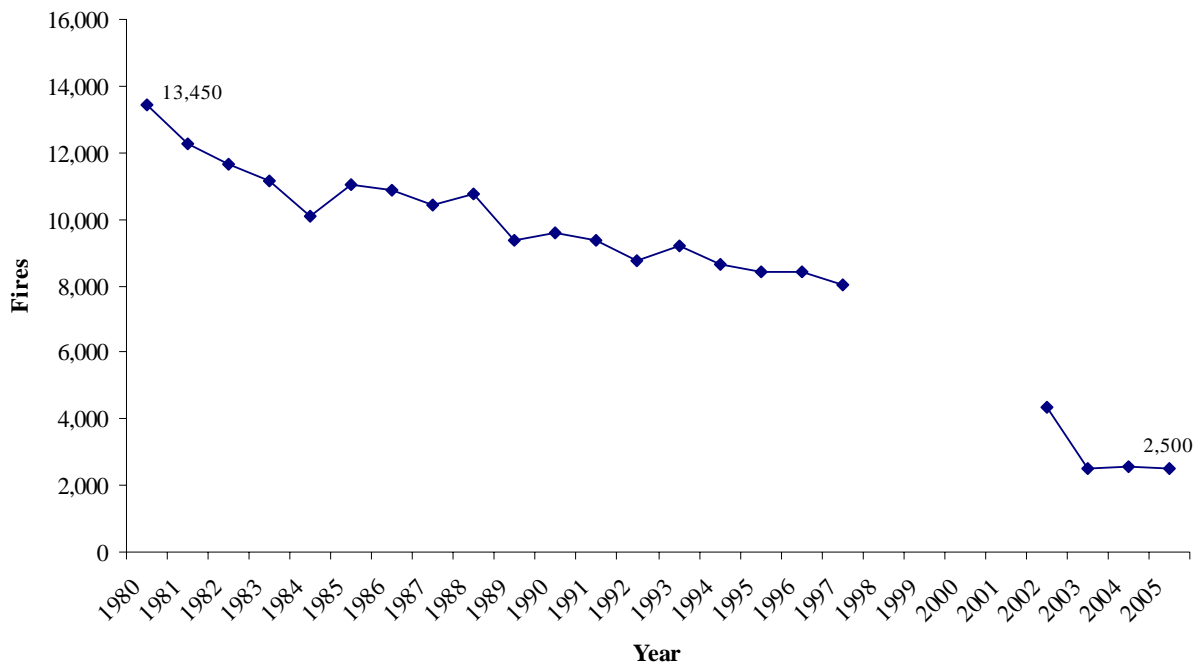
Cords and plugs include the following specific types of equipment:

- Extension cord
- Permanent power cord or plug
- Detachable power cord or plug

It is possible that for some fires for which a cord is equipment involved in ignition, the incident coding will instead cite the appliance powered by that cord.

Fires declined by more than one-third from 1980 to 1998. After the transition period of 1999-2001, when NFIRS Version 5.0 was being phased in, the estimates for 2003-2005 are lower by about two-thirds then the levels in the late 1990s and are much lower than what would have been projected from the trend of the late 1990s. Trends for associated losses have yet to stabilize.

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



Source: Data from NFIRS Version 5.0 and NFPA survey.

Note: See Note in year table.

Version 5.0 of NFIRS changed the wording and the requirements for the Equipment Involved in Ignition field, which identify electrical distribution or lighting equipment. These changes resulted in a

sharp increase in non-reporting of the field, resulting in more unknown and more volatile estimates. These changes also resulted in a sharp increase in the use of the “no equipment” entry, resulting in a sharp decline in estimates of fires involving all types of equipment. We have tried to compensate for the latter change in the analysis rules, but we remain skeptical of the sharp declines in estimated fires involving electrical distribution or lighting equipment after 1998.

The change to Version 5.0 of NFIRS also introduced six types of “confined fires” – fires confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. In our reports, we analyze confined fires separately from non-confined fires, and for fires involving electrical distribution or lighting equipment, none of the six types of confined fires appear to be relevant. Therefore, all estimates in this report specify that they are estimates of non-confined fires, even though we know from our analysis that fires reported as confined fires would not add significantly to the estimates of total electrical distribution or lighting equipment fires.

Cords and plugs accounted for 12% of 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment, as well as 39% of associated civilian deaths, 26% of associated civilian injuries, and 17% of associated direct property damage.

**Extension cords accounted for most of the 2002-2005 non-confined home structure fires involving cords or plugs.**

Permanent and detachable power cords are the other types of cords distinguishable in the fire incident data.

**Home Fires Involving Cords or Plugs, by Specific Type of Equipment**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Type of Equipment	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Extension cord	2,110 (71%)	96 (77%)	171 (81%)	\$91 (78%)
Permanent power cord or plug	510 (17%)	25 (20%)	20 (9%)	\$12 (10%)
Detachables power cord or plug	360 (12%)	4 (3%)	21 (10%)	\$13 (12%)
Total	2,980 (100%)	125 (100%)	212 (100%)	\$116 (100%)

Note: Figures include confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**In 2006, an estimated 12,070 injuries involving electrical cords were reported to hospital emergency rooms.\***

These consisted of 3,360 extension cord injuries and 8,720 injuries involving other or unknown-type electrical cords. The largest share of the 12,070 injuries were 2,810 injuries involving fractures.

**In 1995-2001 (excluding 1999), extension cords accounted for an average of 7 electrocution deaths per year.\*\***

No analysis was done for 1999, and analysis for years after 2001 did not provide separate statistics for any cords or plugs.

#### **Electrocution Deaths Involving Extension Cords, by Year**

<b>Year</b>	<b>Deaths</b>
1995	9
1996	4
1997	9
1998	12
2000	3
2001	3
Average	7

Source: CPSC analysis of death certificate database.

**Half (50%) of 2002-2005 non-confined home structure fires involving cords or plugs cited unclassified electrical failure or malfunction (31%) or unspecified short circuit arc (19%) as factors contributing to ignition.**

Leading factors with details on the nature of the failure were short circuit arc from defective or worn insulation (16%), equipment overloaded (12%), and short circuit arc from mechanical damage (5%).

**One-third (36%) of 2002-2005 non-confined home structure fires involving cords or plugs began with ignition of wire or cable insulation.**

Other leading items first ignited – which suggest unsafe locations for cords and plugs – include floor covering (12%), mattress or bedding (8%), upholstered furniture (7%), and interior wall covering (4%).

**Half (53%) of 2002-2005 non-confined home structure fires involving cords or plugs began in a bedroom (35%) or a living room, family room or den (18%).**

Other leading areas of origin were kitchen (7%), unclassified function area (7%), garage (4%), laundry room or area (4%), and crawl space or substructure space (3%). The shares are larger for kitchens (14%) and laundry room or area (11%) for fires involving permanent power cords.

\* Statistics from National Electronic Injury Surveillance System (NEISS) data obtained from the U.S. Consumer Product Safety Commission (CPSC) website, [www.cpsc.gov](http://www.cpsc.gov).

\*\* Risana T. Chowdhury, *2001 Electrocutions Associated with Consumer Products*, U.S. Consumer Product Safety Commission, June 2004, accessed at [www.cpsc.gov](http://www.cpsc.gov), and previous reports in series.

**Safety Tips:**

- Home electrical safety begins with NFPA 70, *National Electrical Code*®, and related documents with special relevance to homes, notably NFPA 73, *Electrical Inspection Code for Existing Dwellings*. However, work on home home electrical distribution or lighting equipment should only be conducted by someone qualified as an electrician.
- Never plug a major appliance into an extension cord.
- Buy only appliances that have the label of a recognized testing laboratory.
- Replace cracked and frayed electrical cords.
- Pinching cords against walls or furniture or running them under carpets or across doorways can cause a fire.
- Use extension cords for temporary wiring only.

**Home Fires Involving Cords or Plugs, by Year  
Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	
				As Reported	In 2005 Dollars
1980	13,450	193	496	\$98	\$232
1981	12,240	155	445	\$113	\$242
1982	11,660	172	667	\$108	\$219
1983	11,130	133	467	\$114	\$224
1984	10,080	172	569	\$106	\$198
1985	11,040	151	467	\$228	\$413
1986	10,870	258	581	\$120	\$215
1987	10,420	168	512	\$104	\$179
1988	10,770	117	641	\$147	\$243
1989	9,370	211	598	\$121	\$191
1990	9,570	198	613	\$142	\$212
1991	9,390	148	788	\$207*	\$296*
1992	8,760	155	610	\$141	\$196
1993	9,180	175	718	\$154	\$208
1994	8,620	134	544	\$143	\$189
1995	8,420	117	554	\$142	\$182
1996	8,400	160	522	\$165	\$206
1997	8,050	132	420	\$152	\$185
1998	8,000	78	477	\$178	\$213
1999	5,010	61	108	\$119	\$139
2000	2,370	42	521	\$97	\$110
2001	3,430	44	142	\$91	\$100
2002	4,370	77	201	\$91	\$98
2003	2,510	71	193	\$157	\$166
2004	2,540	132	150	\$96	\$100
2005	2,500	220	303	\$121	\$121

\* 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, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and civilian injuries are expressed to the nearest one, 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 reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. *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 2005 dollars is done using the consumer price index.

Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2005) and from NFPA survey.

**Home Fires Involving Cords or Plugs, by Factor Contributing to Ignition**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Factor	Fires		Civilian		Civilian		Direct Property	
			Deaths	Injuries	Injuries	Damage (in Millions)		
Unclassified electrical failure or malfunction	930	(31%)	5	(4%)	57	(27%)	\$42	(36%)
Unspecified short circuit arc	570	(19%)	14	(11%)	42	(20%)	\$22	(19%)
Short circuit arc from defective or worn insulation	490	(16%)	23	(19%)	41	(19%)	\$14	(12%)
Equipment overloaded	350	(12%)	15	(12%)	34	(16%)	\$9	(8%)
Unclassified misuse of material or product	180	(6%)	9	(8%)	30	(14%)	\$8	(7%)
Short circuit arc from mechanical damage	160	(5%)	15	(12%)	12	(6%)	\$7	(6%)
Arc or spark from operating equipment	110	(4%)	0	(0%)	5	(3%)	\$3	(3%)
Equipment not being operated properly	80	(3%)	9	(8%)	0	(0%)	\$6	(5%)
Arc from faulty contact or broken conductor	70	(2%)	0	(0%)	0	(0%)	\$5	(5%)
Installation deficiency	70	(2%)	0	(0%)	8	(4%)	\$1	(1%)
Equipment used for not intended purpose	70	(2%)	5	(4%)	5	(2%)	\$4	(3%)
Heat source too close to combustibles	60	(2%)	5	(4%)	5	(2%)	\$6	(5%)
Worn out	50	(2%)	10	(8%)	9	(4%)	\$2	(1%)
Other known factor contributing to ignition	170	(6%)	19	(15%)*	10	(5%)	\$4	(4%)
Total fires	2,980	(100%)	125	(100%)	212	(100%)	\$116	(100%)
Total factor entries	3,380	(113%)	130	(104%)	257	(121%)	\$134	(115%)

\* "Other known" includes unclassified factor contributing to ignition (15% of deaths).

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Extension Cords, by Factor Contributing to Ignition**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	580	(27%)	5	(6%)	38	(22%)	\$27	(29%)
Unspecified short circuit arc	380	(18%)	14	(15%)	29	(17%)	\$19	(21%)
Short circuit arc from defective or worn insulation	360	(17%)	9	(10%)	42	(24%)	\$13	(14%)
Equipment overloaded	320	(15%)	15	(16%)	29	(17%)	\$10	(10%)
Unclassified misuse of material or product	150	(7%)	9	(10%)	24	(14%)	\$8	(8%)
Short circuit arc from mechanical damage	130	(6%)	5	(5%)	13	(8%)	\$6	(7%)
Arc or spark from operating equipment	70	(4%)	0	(0%)	3	(2%)	\$2	(2%)
Equipment not being operated properly	70	(3%)	9	(10%)	0	(0%)	\$7	(8%)
Equipment used for not intended purpose	70	(3%)	5	(5%)	7	(4%)	\$5	(5%)
Arc from faulty contact or broken conductor	60	(3%)	0	(0%)	0	(0%)	\$2	(3%)
Installation deficiency	50	(3%)	0	(0%)	7	(4%)	\$1	(1%)
Other known factor contributing to ignition	160	(8%)	28	(29%)*	17	(10%)	\$10	(10%)
<b>Total fires</b>	<b>2,110</b>	<b>(100%)</b>	<b>96</b>	<b>(100%)</b>	<b>171</b>	<b>(100%)</b>	<b>\$91</b>	<b>(100%)</b>
<b>Total factor entries</b>	<b>2,410</b>	<b>(114%)</b>	<b>101</b>	<b>(105%)</b>	<b>208</b>	<b>(122%)</b>	<b>\$108</b>	<b>(118%)</b>

\* "Other known" includes unclassified factor contributing to ignition (20% of deaths), heat source too close to combustibles (5%), and worn out (5%).

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Permanent Power Cords, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

<b>Factor</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>
Unspecified short circuit arc	160 (31%)	0 (0%)	6 (29%)	\$2 (18%)
Unclassified electrical failure or malfunction	100 (20%)	0 (0%)	0 (0%)	\$2 (19%)
Short circuit arc from defective or worn insulation	100 (20%)	18 (72%)	8 (42%)	\$3 (27%)
Other known factor contributing to ignition	180 (35%)	7 (28%)*	6 (29%)	\$5 (42%)
Total fires	510 (100%)	25 (100%)	20 (100%)	\$12 (100%)
Total factor entries	540 (107%)	25 (100%)	20 (100%)	\$13 (105%)

\* "Other known" includes short circuit arc from mechanical damage (28% of deaths).

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



**Home Fires Involving Detachable Power Cords, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

<b>Factor</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>
Unclassified electrical failure or malfunction	120 (34%)	* (*)	8 (38%)	\$8 (60%)
Short circuit arc from defective or worn insulation	60 (17%)	* (*)	3 (13%)	\$1 (8%)
Unspecified short circuit arc	60 (17%)	* (*)	10 (50%)	\$1 (11%)
Other known factor contributing to ignition	170 (47%)	* (*)	5 (25%)	\$4 (32%)
Total fires excluding confined fires	360 (100%)	4 (100%)	21 (100%)	\$13 (100%)
Total factor entries	410 (114%)	* (*)	26 (125%)	\$14 (110%)

\* Not available because all deaths have factor contributing to ignition unknown.

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Cords or Plugs, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	1,060 (36%)	36 (29%)	80 (38%)	\$40 (35%)
Floor covering	350 (12%)	25 (20%)	30 (14%)	\$16 (14%)
Mattress or bedding	240 (8%)	8 (6%)	42 (20%)	\$11 (9%)
Upholstered furniture	200 (7%)	24 (19%)	20 (9%)	\$7 (6%)
Interior wall covering	130 (4%)	12 (10%)	7 (3%)	\$5 (5%)
Clothing	100 (3%)	0 (0%)	0 (0%)	\$4 (3%)
Structural member or framing	90 (3%)	0 (0%)	0 (0%)	\$3 (2%)
Cabinetry	90 (3%)	0 (0%)	3 (1%)	\$4 (3%)
Unclassified furniture or utensil	90 (3%)	0 (0%)	5 (2%)	\$3 (3%)
Unclassified item first ignited	70 (2%)	0 (0%)	11 (5%)	\$3 (3%)
Multiple items first ignited	60 (2%)	0 (0%)	2 (1%)	\$3 (3%)
Appliance housing or casing	60 (2%)	0 (0%)	8 (4%)	\$1 (1%)
Unclassified structural component or finish	50 (2%)	0 (0%)	0 (0%)	\$2 (1%)
Box or bag	50 (2%)	0 (0%)	0 (0%)	\$1 (1%)
Other known item first ignited	340 (11%)	20 (16%)*	0 (1%)	\$12 (10%)
<b>Total fires</b>	<b>2,980 (100%)</b>	<b>125 (100%)</b>	<b>212 (100%)</b>	<b>\$116 (100%)</b>

\* "Other known" includes Christmas tree (13% of deaths) and insulation within structural areas (3%).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Extension Cords, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	790 (37%)	26 (27%)	60 (35%)	\$35 (39%)
Floor covering	300 (14%)	18 (19%)	28 (17%)	\$16 (18%)
Mattress or bedding	170 (8%)	9 (9%)	41 (24%)	\$8 (9%)
Upholstered furniture	140 (7%)	9 (9%)	27 (16%)	\$5 (5%)
Interior wall covering	90 (4%)	13 (14%)	3 (2%)	\$4 (4%)
Clothing	90 (4%)	0 (0%)	0 (0%)	\$2 (3%)
Structural member or framing	60 (3%)	0 (0%)	0 (0%)	\$2 (2%)
Multiple items first ignited	50 (2%)	0 (0%)	3 (2%)	\$1 (1%)
Cabinetry	50 (2%)	0 (0%)	0 (0%)	\$2 (2%)
Other known item first ignited	370 (18%)	21 (22%)*	7 (4%)	\$16 (18%)
<b>Total fires</b>	<b>2,110 (100%)</b>	<b>96 (100%)</b>	<b>171 (100%)</b>	<b>\$91 (100%)</b>

\* "Other known" includes Christmas tree (18% of deaths) and insulation within structural areas (4%).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Permanent Power Cords, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	170 (33%)	5 (20%)	3 (13%)	\$3 (26%)
Upholstered furniture	50 (10%)	10 (40%)	0 (0%)	\$2 (20%)
Other known item first ignited	290 (57%)	10 (40%)*	17 (87%)	\$6 (54%)
<b>Total fires</b>	<b>510 (100%)</b>	<b>25 (100%)</b>	<b>20 (100%)</b>	<b>\$12 (100%)</b>

\* "Other known" includes floor covering (40% of deaths).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Detachable Power Cords, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

<b>Item First Ignited</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>
Wire or cable insulation	140 (40%)	4 (100%)	14 (67%)	\$6 (45%)
Other known item first ignited	220 (60%)	0 (0%)	17 (33%)	\$7 (55%)
<b>Total fires</b>	<b>360 (100%)</b>	<b>4 (100%)</b>	<b>21 (100%)</b>	<b>\$13 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Cords or Plugs, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Bedroom	1,050 (35%)	23 (18%)	80 (38%)	\$44 (37%)
Living room, family room, or den	530 (18%)	53 (42%)	59 (28%)	\$21 (18%)
Kitchen	210 (7%)	4 (3%)	7 (3%)	\$6 (5%)
Unclassified function area	200 (7%)	7 (6%)	16 (8%)	\$9 (8%)
Garage	130 (4%)	0 (0%)	8 (4%)	\$6 (5%)
Laundry room or area	110 (4%)	4 (3%)	5 (2%)	\$2 (2%)
Crawl space or substructure space	80 (3%)	4 (3%)	9 (4%)	\$4 (4%)
Other known area of origin	670 (22%)	31 (25%)*	29 (14%)	\$24 (21%)
<b>Total fires</b>	<b>2,980 (100%)</b>	<b>125 (100%)</b>	<b>212 (100%)</b>	<b>\$116 (100%)</b>

\* "Other known" includes office (9% of deaths) and dining room (7%).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Extension Cords, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Bedroom	770 (36%)	21 (22%)	72 (42%)	\$32 (35%)
Living room, family room, or den	360 (17%)	41 (43%)	48 (28%)	\$17 (19%)
Unclassified function area	150 (7%)	0 (0%)	6 (4%)	\$7 (7%)
Kitchen	120 (5%)	0 (0%)	4 (2%)	\$3 (4%)
Garage	110 (5%)	0 (0%)	7 (4%)	\$6 (7%)
Crawl space or substructure space	70 (3%)	4 (4%)	12 (7%)	\$3 (4%)
Laundry room or area	50 (2%)	4 (4%)	3 (2%)	\$2 (2%)
Other known area of origin	490 (23%)	26 (27%)*	19 (11%)	\$20 (22%)
<b>Total fires</b>	<b>2,110 (100%)</b>	<b>96 (100%)</b>	<b>171 (100%)</b>	<b>\$91 (100%)</b>

\* “Other known” includes office (13% of deaths) and dining room (10%).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Permanent Power Cords, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Bedroom	140 (28%)	0 (0%)	15 (75%)	\$3 (26%)
Living room, family room or den	70 (15%)	4 (16%)	0 (0%)	\$3 (22%)
Kitchen	70 (14%)	4 (16%)	5 (25%)	\$2 (16%)
Laundry room or area	60 (11%)	0 (0%)	0 (0%)	\$1 (7%)
Other known area of origin	160 (31%)	17 (68%)*	0 (0%)	\$3 (29%)
<b>Total fires</b>	<b>510 (100%)</b>	<b>25 (100%)</b>	<b>20 (100%)</b>	<b>\$12 (100%)</b>

\* “Other known” includes unclassified function area (33% of deaths), storage room, area, or tank (19%), and wall assembly or concealed space (16%).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



**Home Fires Involving Detachable Power Cords, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Bedroom	130 (37%)	4 (100%)	7 (34%)	\$3 (22%)
Living room, family room, or den	60 (16%)	0 (0%)	5 (23%)	\$1 (9%)
Other known area of origin	170 (46%)	0 (0%)	9 (44%)	\$9 (69%)
Total fires	360 (100%)	4 (100%)	21 (100%)	\$13 (100%)

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

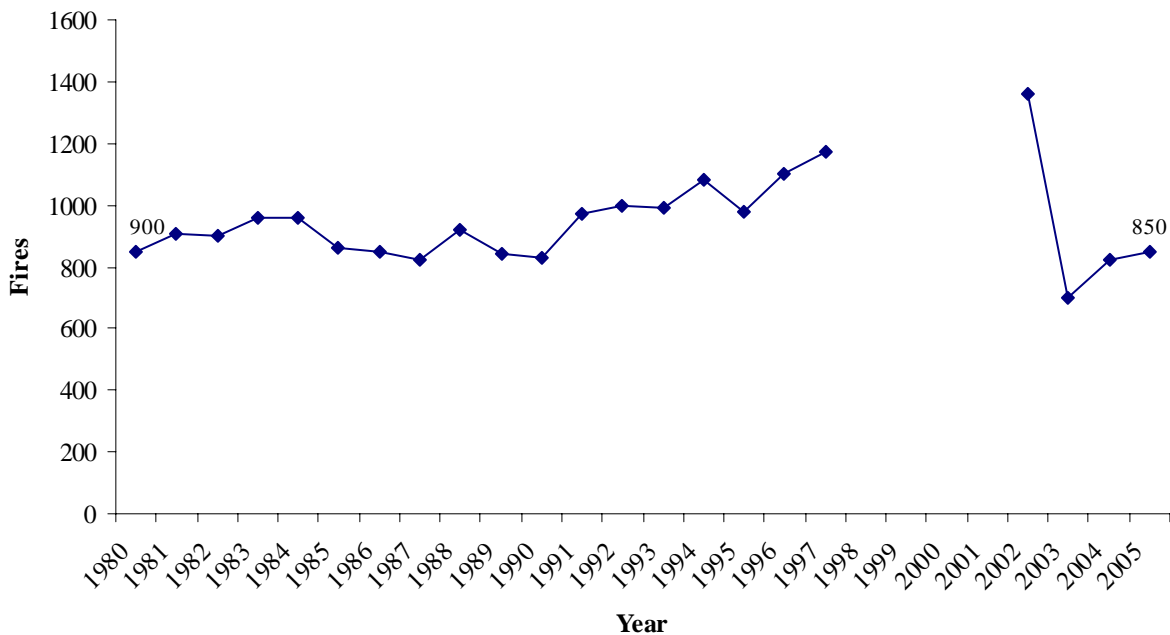


## Meters and Meter Boxes

**In 2005, an estimated 850 reported U.S. non-confined home structure fires involving meters or meter boxes resulted in 17 civilian deaths, 26 civilian injuries, and \$42 million in direct property damage.**

Fires increased slightly from 1980 to 1998. After the transition period of 1999-2001, when NFIRS Version 5.0 was being phased in, the estimates for 2003-2005 have been as low as or lower than the estimates for the early 1980s. This is lower than what would have been projected from the trend of the late 1990s.

**Home Fires Involving Meters or Meter Boxes, by Year  
Structure Fires Reported to U.S. Fire Departments**



Source: Data from NFIRS Version 5.0 and NFPA survey.

Version 5.0 of NFIRS changed the wording and the requirements for the Equipment Involved in Ignition field, which identify electrical distribution or lighting equipment. These changes resulted in a sharp increase in non-reporting of the field, resulting in more unknowns and more volatile estimates. These changes also resulted in a sharp increase in the use of the “no equipment” entry, resulting in a sharp decline in estimates of fires involving all types of equipment. We have tried to compensate for the latter change in the analysis rules, but we remain skeptical of the sharp declines in estimated fires involving electrical distribution of lighting equipment after 1998.

The change to Version 5.0 of NFIRS also introduced six types of “confined fires” – fires confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. In our reports, we analyze confined fires separately from non-confined fires, and for fires involving electrical distribution or lighting equipment, none of the six types of confined fires appear to be relevant. Therefore, all estimates in this report specify that they are estimates of non-confined fires, even though we know from our analysis that fires reported as confined fires would not add significantly to the estimates of total electrical distribution or lighting equipment fires.

Meters and meter boxes accounted for 4% of 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment, as well as 1% of associated civilian deaths, 2% of associated civilian injuries, and 5% of associated direct property damage.

**Three-fifths (60%) of 2002-2005 non-confined home structure fires involving meters or meter boxes cited unspecified short circuit arc (31%) or unclassified electrical failure or malfunction (29%) as factor contributing to ignition.**

The leading factors contributing to ignition with details on the nature of the failure were short circuit arc from mechanical damage (8%) and arc from faulty contact or broken conductor (8%).

**Half (51%) of 2002-2005 non-confined home structure fires involving meters or meter boxes began with ignition of wire or cable insulation.**

Other leading items first ignited were exterior wall covering (24%) and structural member or framing (7%).

**One-quarter (27%) of 2002-2005 non-confined home structure fires involving meters or meter boxes began on exterior wall surface.**

The other leading areas of origin also were concealed or exterior spaces – wall assembly or concealed space (10%) and conduit, pipe, utility, or ventilation shaft (7%).

### **Safety Tips:**

- Home electrical safety begins with NFPA 70, *National Electrical Code*®, and related documents with special relevance to homes, notably NFPA 73, *Electrical Inspection Code for Existing Dwellings*. However, work on home electrical distribution or lighting equipment should only be conducted by someone qualified as an electrician.
- Call a qualified electrician or landlord if you have
  - recurring problems with blowing fuses or tripping circuit breakers.
  - a tingling feeling when you touch an electrical appliance.
  - discolored or warm wall outlets.
  - a burning smell or rubbery odor coming from an appliance.
  - flickering lights.
  - sparks from an outlet.

**Home Fires Involving Meters or Meter Boxes, by Year**  
**Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	
				As Reported	In 2005 Dollars
1980	850	0	5	\$6	\$14
1981	910	7	21	\$6	\$12
1982	900	0	3	\$5	\$10
1983	960	0	3	\$4	\$8
1984	960	0	2	\$6	\$11
1985	860	0	16	\$5	\$9
1986	850	17	5	\$5	\$9
1987	820	0	8	\$4	\$6
1988	920	0	8	\$5	\$8
1989	840	12	2	\$6	\$9
1990	830	0	8	\$6	\$9
1991	970	0	8	\$11*	\$16*
1992	1,000	4	5	\$9	\$13
1993	980	4	6	\$6	\$8
1994	1,080	4	3	\$6	\$9
1995	1,000	0	2	\$10	\$13
1996	1,100	0	8	\$12	\$15
1997	1,170	0	10	\$14	\$18
1998	1,130	0	10	\$17	\$20
1999	1,320	0	0	\$10	\$12
2000	420	2	49	\$10	\$11
2001	950	0	0	\$23	\$26
2002	1,360	0	0	\$32	\$35
2003	700	0	0	\$42	\$44
2004	820	0	42	\$13	\$13
2005	850	17	26	\$42	\$42

\* 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, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and civilian injuries are expressed to the nearest one, 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 reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. *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 2005 dollars is done using the consumer price index.

Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2005) and from NFPA survey.

**Home Fires Involving Meters or Meter Boxes, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Unspecified short circuit arc	290 (31%)	0 (0%)	9 (51%)	\$13 (42%)
Unclassified electrical failure or malfunction	270 (29%)	4 (100%)	0 (0%)	\$10 (31%)
Short circuit arc from mechanical damage	80 (8%)	0 (0%)	4 (24%)	\$0 (1%)
Arc from faulty contact or broken calculator	70 (8%)	0 (0%)	4 (25%)	\$4 (12%)
Other known factor contributing to ignition	310 (34%)	0 (0%)	0 (0%)	\$9 (28%)
<b>Total fires</b>	<b>940 (100%)</b>	<b>4 (100%)</b>	<b>17 (100%)</b>	<b>\$32 (100%)</b>
<b>Total factor entries</b>	<b>1,030 (110%)</b>	<b>4 (100%)</b>	<b>17 (100%)</b>	<b>\$37 (114%)</b>

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Meters or Meter Boxes, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

<b>Item First Ignited</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>
Wire or cable insulation	470 (51%)	0 (0%)	8 (49%)	\$5 (14%)
Exterior wall covering	220 (24%)	0 (0%)	0 (0%)	\$6 (18%)
Structural member or framing	70 (7%)	4 (100%)	0 (0%)	\$13 (39%)
Other known item first ignited	170 (18%)	0 (0%)	9 (51%)	\$9 (29%)
<b>Total fires</b>	<b>940 (100%)</b>	<b>4 (100%)</b>	<b>17 (100%)</b>	<b>\$32 (100%)</b>

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as "no equipment" but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Meters or Meter Boxes, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Exterior wall surface	260 (27%)	0 (0%)	0 (0%)	\$4 (13%)
Wall assembly or concealed space	100 (10%)	0 (0%)	3 (19%)	\$8 (24%)
Conduit, pipe, utility, or ventilation shaft	60 (7%)	0 (0%)	0 (0%)	\$0 (1%)
Other known area of origin	520 (56%)	4 (100%)*	14 (81%)	\$20 (62%)
<b>Total fires</b>	<b>940 (100%)</b>	<b>4 (100%)</b>	<b>17 (100%)</b>	<b>\$32 (100%)</b>

\* “Other known” includes ceiling/floor assembly or concealed space (100% of deaths).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.



## Power Sources

**In 2005, an estimated 620 reported U.S. non-confined home structure fires involving power sources resulted in 93 civilian injuries and \$50 million in direct property damage. There were no reported civilian deaths.**

Power sources include the following specific types of equipment:

- Generator
- Battery charger or rectifier
- Uninterrupted power supply
- Battery
- Inverter

It is possible that some fires involving a battery are coded in terms of the appliance or equipment powered by the battery.

Several of these types of equipment were not identified separately prior to the advent of NFIRS Version 5.0. Generators were grouped with separate motors. Rectifiers, chargers, and batteries were reported together. Because of the change in groupings, it is not possible to show a relevant timeline of power source fires prior to 1999.

**Home Fires Involving Power Source Equipment, by Year  
Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions) As Reported	In 2005 Dollars
1999	660	0	108	\$22	\$25
2000	180	0	0	\$3	\$3
2001	330	0	0	\$19	\$21
2002	420	0	38	\$14	\$15
2003	440	0	9	\$38	\$40
2004	320	0	9	\$15	\$16
2005	620	0	93	\$50	\$50

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries to the nearest one, and 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. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. *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 2005 dollars is done using the consumer price index.

Source: Data from NFIRS Version 5.0 and NFPA survey.

Power sources accounted for 2% of 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment, as well as no associated civilian deaths, 5% of associated civilian injuries, and 4% of associated direct property damage.

**Generators (51%) accounted for half of 2002-2005 non-confined home structure fires involving power source equipment.**

Battery chargers and rectifiers accounted for one-third (33%) of these fires.

**Home Fires Involving Power Source Equipment, by Specific Type of Equipment  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Type of Equipment	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Generator	230 (51%)	0 (NA)	30 (80%)	\$19 (68%)
Battery charger or rectifier	150 (33%)	0 (NA)	7 (20%)	\$7 (25%)
Battery	60 (13%)	0 (NA)	0 (0%)	\$2 (7%)
Inverter	10 (2%)	0 (NA)	0 (0%)	\$0 (0%)
Uninterrupted power supply	0 (1%)	0 (NA)	0 (0%)	\$0 (0%)
Total	450	0 (NA)	37 (100%)	\$29 (100%)

NA – Not applicable because total is zero.

Source: Data from NFIRS and NFPA survey.

Note: See Note on year table.

**In 2006, 65 people died of injuries from unvented carbon monoxide from generators.\***

Fueled equipment to generate electricity is the only type of electrical distribution or lighting equipment that can produce carbon monoxide.

The death toll from carbon monoxide produced by generators has increased sharply in recent years, from less than 10 per year on average in 1999 and prior years to 19 per year in 2000-2001, to 47 per year in 2002-2004, to 75 per year in 2005-2006.

The large jump in deaths involving generators in 2000 may reflect the fact that roughly half the total generators in use in 2000 had been purchased in 1999 because of concerns over Y2K (year 2000) problems with the nation’s power grid.\* This meant a large number of generator users had no experience in safe generator use. Disasters like Hurricane Katrina have added to the demand for generators and probably added to the number of inexperienced users.

The U.S. Consumer Product Safety Commission examined the circumstances of the 334 non-fire carbon monoxide deaths in 1999-2006. Nearly one-sixth (51 deaths) occurred in temporary shelters. For two-fifths (39%) of the 288 deaths where it was known why generators were in use, the reason for use was power outage due to weather or problem with power distribution. Further investigation showed that nearly all of these deaths specifically involved weather (93% of the 39% involving weather or power distribution, or 36% of all generator deaths where reason for using a generator was known). The types of weather were hurricanes or tropical storms (46% of carbon monoxide deaths involving generators used because of a weather related power outage), snow or ice storms (44%), wind storms (6%) and thunderstorms (5%). The second leading

\* Matthew V. Hnatov, “Incidents, deaths and in-depth investigations associated with non-fire carbon monoxide from engine-driven generators and other engine-driven tools 1999-2006,” memorandum, U.S. Consumer Product Safety Commission, October 10, 2007, accessed at [www.cpsc.gov](http://www.cpsc.gov).

reason for use was providing power to a storage shed, trailer, boat, camper, cabin, or campsite (20% of deaths where a reason was reported), all types of properties where connection to area electrical service is often impractical. Other leading reasons for use were power shutoff by electric company due to bill dispute or non-payment (18% of deaths where a reason was reported), new home or homeowner with power not yet turned on or main power turned off for construction or renovation (12%), and providing power to a home that normally does not have electricity (7%).

**In 2006, an estimated 14,680 injuries involving power sources were reported to hospital emergency rooms.\***

These consisted of 11,620 injuries involving batteries, 2,700 injuries involving generators or power plants, and 360 injuries involving battery chargers. The largest share of injuries involving batteries involved ingested object (3,740 injuries), which occur when the battery is swallowed.

**One-fifth (21%) of 2002-2005 non-confined home structure fires involving power sources cited heat source too close to combustibles as a factor contributing to ignition.**

This factor was cited in 33% of the fires involving generators.

**One-fifth (20%) of 2002-2005 non-confined home structure fires involving power sources began with ignition of flammable or combustible gas or liquid.**

This was the first item ignited for 30% of the fires involving generators.

**Nearly one-third (30%) of 2002-2005 non-confined home structure fires involving power sources began in a garage.**

This was the area of origin for 26% of the fires involving generators. A garage is not a sufficiently well-ventilated area in which to operate a generator, for the same reason you should not let an automobile idle inside a garage, even if the doors are open. This is apart from any fire hazard that may exist.

**Safety Tips:**

- Use generators only in well-ventilated areas outdoors, away from all doors, windows, and vent openings. This is to avoid serious danger of carbon monoxide poisoning from exhaust fumes.
- Generators should be operated and refueled in accordance with manufacturer's instructions.
- Do not use a generator that is in poor condition.
- Make sure the equipment is not overloaded.
- Carefully follow manufacturer's instructions when using any of these devices.

\* Statistics from National Electronic Injury Surveillance System (NEISS) data obtained from the U.S. Consumer Product Safety Commission (CPSC) website, [www.cpsc.gov](http://www.cpsc.gov).

- Install carbon monoxide alarms, powered by batteries or with battery back-up to a line voltage connection by hard-wiring or plug-in, in accordance with manufacturer's instructions.

**Home Fires Involving Power Source Equipment, by Factor Contributing to Ignition**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Heat source too close to combustibles	90 (21%)	0 (NA)	2 (6%)	\$9 (32%)
Unclassified electrical failure or malfunction	70 (16%)	0 (NA)	2 (6%)	\$3 (10%)
Other known factor contributing to ignition	360 (80%)	0 (NA)	43 (116%)	\$21 (72%)
Total fires	450 (100%)	0 (NA)	37 (100%)	\$29 (100%)
Total factor entries	530 (117%)	0 (NA)	48 (128%)	\$33 (114%)

NA – Not applicable because total is zero.

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Generators, by Factor Contributing to Ignition**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Heat source too close to combustibles	80 (33%)	0 (NA)	2 (8%)	\$9 (46%)
Other known factor contributing to ignition	200 (86%)	0 (NA)	38 (128%)	\$14 (71%)
Total fires	230 (100%)	0 (NA)	30 (100%)	\$19 (100%)
Total factor entries	270 (120%)	0 (NA)	41 (136%)	\$22 (117%)

NA – Not applicable because total is zero.

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Power Source Equipment, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

<b>Item First Ignited</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>
Flammable or combustible gas or liquid	90 (20%)	0 (NA)	30 (80%)	\$6 (21%)
Wire or cable insulation	70 (15%)	0 (NA)	0 (0%)	\$5 (16%)
Other known item first ignited	290 (65%)	0 (NA)	8 (20%)	\$18 (63%)
<b>Total fires</b>	<b>450 (100%)</b>	<b>0 (NA)</b>	<b>37 (100%)</b>	<b>\$29 (100%)</b>

NA – Not applicable because total is zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Generators, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Item First Ignited	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Flammable or combustible gas or liquid	70 (30%)	0 (NA)	27 (91%)	\$4 (20%)
Other known item first ignited	160 (70%)	0 (NA)	3 (9%)	\$15 (80%)
Total fires	230 (100%)	0 (NA)	30 (100%)	\$19 (100%)

NA – Not applicable because total is zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5. and NFPA survey.



**Home Fires Involving Power Source Equipment, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Garage	140 (30%)	0 (NA)	7 (19%)	\$14 (46%)
Other known area of origin	310 (70%)	0 (NA)	30 (81%)	\$16 (54%)
Total fires	450 (100%)	0 (NA)	37 (100%)	\$29 (100%)

NA – Not applicable because total is zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Generators, by Area of Origin**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Area of Origin	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Garage	60 (26%)	0 (NA)	5 (15%)	\$8 (39%)
Other known area of origin	170 (74%)	0 (NA)	25 (85%)	\$12 (61%)
Total fires excluding confined fires	230 (100%)	0 (NA)	30 (100%)	\$19 (100%)

NA – Not applicable because total is zero.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and area of origin unknown have also been allocated proportionally. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

## Transformers

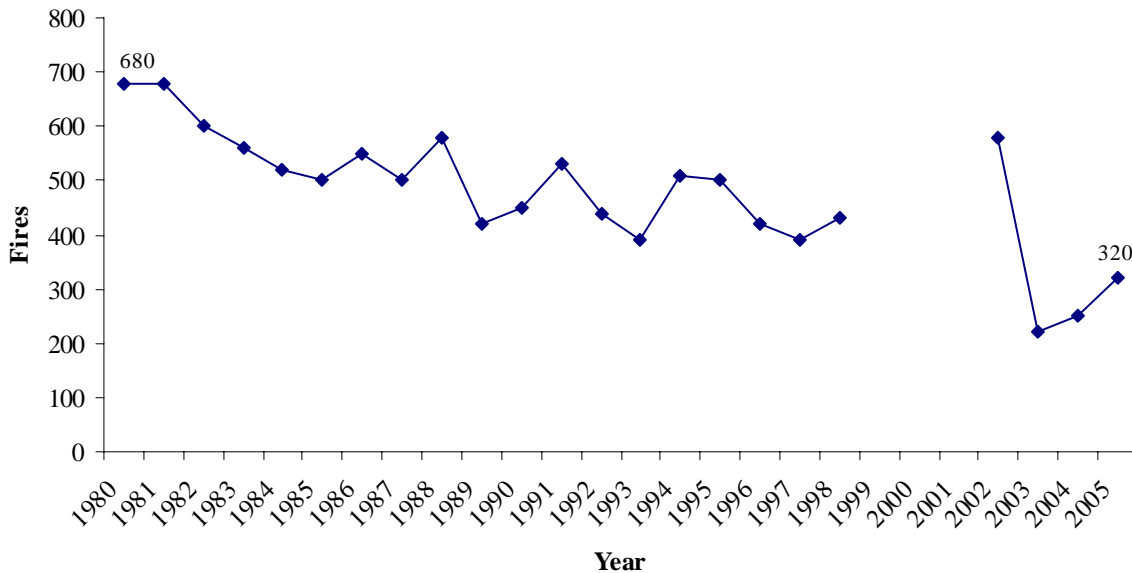
**In 2005, an estimated 320 reported U.S. non-confined home structure fires involving transformers (or associated overcurrent or disconnect equipment) resulted in 16 civilian injuries and \$8 million in direct property damage. There were no reported civilian deaths.**

The transformer group includes the following specific types of equipment:

- Low voltage transformers
- Distribution type transformers
- Overcurrent or disconnect equipment associated with transformers

Fires declined by about one-third from 1980 to 1998. After the transition period of 1999-2001, when NFIRS Version 5.0 was being phased in, the estimates for 2003-2005 were lower by more than one-third compared to the levels of the late 1990s. This is a larger decline than would have been projected from the trend of the late 1990s, which was close to flat.

**Home Fires Involving Transformers, by Year  
Structure Fires Reported to U.S. Fire Departments**



Source: Data from NFIRS Version 5.0 and NFPA survey.

Note: See Note in year table.

Version 5.0 of NFIRS changed the wording and the requirements for the Equipment Involved in Ignition field, which identify electrical distribution or lighting equipment. These changes resulted in a sharp increase in non-reporting of the field, resulting in more unknowns and more volatile estimates. These changes also resulted in a sharp increase in the use of the “no equipment” entry, resulting in a sharp decline in estimates of fires involving all types of equipment. We have tried to compensate for the latter change in the analysis rules, but we remain skeptical of the sharp declines in estimated fires involving electrical distribution or lighting equipment after 1998.

The change to Version 5.0 of NFIRS also introduced six types of “confined fires” – fires confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. In our reports, we analyze confined fires separately from non-confined fires, and for fires involving electrical distribution or lighting equipment, none of the six types of confined fires appear to be relevant. Therefore, all estimates in this report specify that they are estimates of non-confined fires, even though we know from our analysis that fires reported as confined fires would not add significantly to the estimates of total electrical distribution or lighting equipment fires.

Transformers accounted for 1% of 2002-2005 non-confined home structure fires involving electrical distribution or lighting equipment, as well as 2% of associated civilian deaths, 2% of associated civilian injuries, and 1% of associated direct property damage.

**Low voltage transformer fires outnumber fires involving distribution type transformers by about 2-to-1, among 2002-2005 non-confined home structure fires.**

Distribution type transformers also had no reported civilian deaths or injuries, and the ratio for direct property damage was 20-to-1.

**Home Fires Involving Transformers, by Specific Type of Equipment  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined fires)**

Type of Equipment	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Low voltage transformer	160 (46%)	4 (51%)	8 (65%)	\$3 (43%)
Overcurrent or disconnect equipment associated with transformer	110 (32%)	4 (49%)	5 (35%)	\$4 (57%)
Distribution type transformer	70 (22%)	0 (0%)	0 (0%)	\$0 (0%)
Total	340 (100%)	8 (100%)	13 (100%)	\$7 (100%)

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest hundred, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Three-fifths (61%) of 2002-2005 non-confined home structure fires involving transformers cited unclassified electrical failure or malfunction or unspecified short circuit arc as factor contributing to ignition.**

These factors lack details on the nature of the failure.

**One-third (33%) of 2002-2005 non-confined home structure fires involving transformers began with ignition of wire or cable insulation.**

No area of origin accounted for more than 9% of transformer fires in the home, and none averaged 50 or more fires a year (required to round to 100 fires per year), which is why no table is provided on area of origin.

**Home Fires Involving Transformers, by Year  
Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	
				As Reported	In 2005 Dollars
1980	680	16	5	\$2	\$5
1981	680	0	0	\$1	\$3
1982	600	0	12	\$3	\$7
1983	560	0	14	\$3	\$6
1984	520	0	2	\$5	\$10
1985	550	0	8	\$4	\$7
1986	500	0	0	\$6	\$10
1987	580	4	19	\$3	\$5
1988	560	0	8	\$5	\$8
1989	420	0	14	\$12	\$18
1990	450	0	6	\$2	\$3
1991	530	4	11	\$5*	\$8*
1992	440	0	16	\$4	\$5
1993	390	0	21	\$8	\$11
1994	510	0	26	\$6	\$8
1995	500	0	8	\$5	\$7
1996	420	19	8	\$5	\$7
1997	390	0	13	\$5	\$7
1998	430	0	0	\$8	\$10
1999	220	0	0	\$14	\$16
2000	340	0	0	\$5	\$6
2001	280	132	16	\$7	\$8
2002	580	15	0	\$5	\$5
2003	220	0	9	\$6	\$7
2004	250	15	26	\$9	\$10
2005	320	0	16	\$8	\$8

\* 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, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and civilian injuries are expressed to the nearest one, 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 reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. *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 2005 dollars is done using the consumer price index.

Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2005) and from NFPA survey.

**Home Fires Involving Transformers, by Factor Contributing to Ignition  
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments  
(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Unclassified electrical failure or malfunction	150 (43%)	0 (0%)	10 (75%)	\$4 (49%)
Unspecified short circuit arc	60 (18%)	8 (100%)	0 (0%)	\$2 (22%)
Other known factor contributing to ignition	160 (47%)	0 (0%)	3 (25%)	\$2 (34%)
Total fires	340 (100%)	8 (100%)	13 (100%)	\$7 (100%)
Total factor entries	370 (108%)	8 (100%)	13 (100%)	\$8 (105%)

Note: Multiple entries are allowed, resulting in more factor entries than fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and factor contributing to ignition listed as unknown, unreported, none, or blank have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Home Fires Involving Transformers, by Item First Ignited**  
**Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**  
**(Excluding Fires Reported as Confined Fires)**

Factor	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Wire or cable insulation	110 (33%)	0 (0%)	3 (26%)	\$0 (4%)
Other known item first ignited	230 (67%)	8 (100%)*	10 (74%)	\$7 (96%)
Total fires	340 (100%)	8 (100%)	13 (100%)	\$7 (100%)

\* “Other known” includes upholstered furniture (53% of deaths) and structural member or framing (47%).

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to furnace or boiler, chimney, cooking vessel, trash container, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to 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 one unusually serious fire. Fires are rounded to the nearest ten, civilian deaths and injuries 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 home fires with equipment involved in ignition unknown or recorded as electrical distribution or lighting equipment of undetermined type. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Home structure fires with this equipment and item first ignited unknown have also been allocated proportionally. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA 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.

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/download/nfirspaperforms2007.pdf>.

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; and (3) 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.

Analysts at the NFPA, the USFA and the Consumer Product Safety Commission have developed the specific 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.

**Figure 1.**

### Fires Originally Collected in NFIRS 5.0 by Year

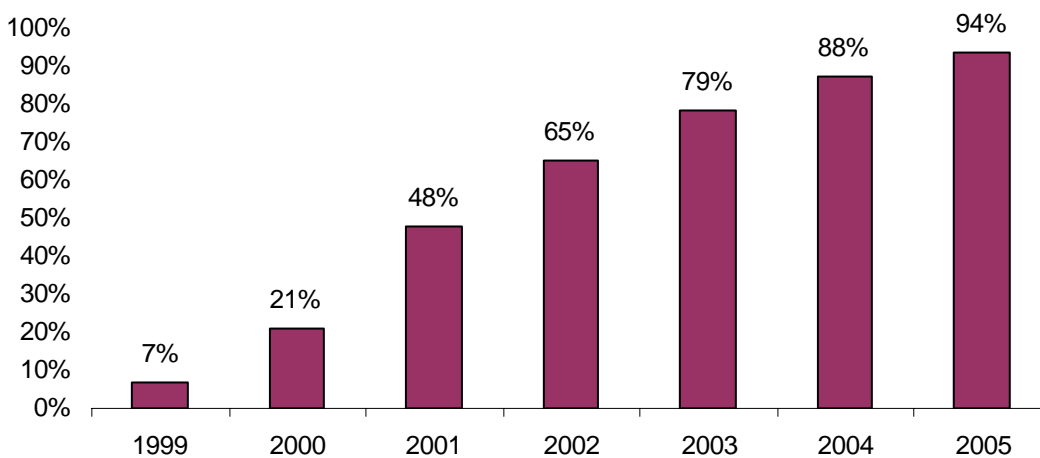


Figure 1 shows the percentage of fires originally collected in the NFIRS 5.0 system. Each year's release version of NFIRS data also includes data collected in older versions of NFIRS that were converted to NFIRS 5.0 codes.

For 2002 data on, analyses are based on scaling ratios using only data originally collected in NFIRS 5.0:

$$\frac{\text{NFPA survey projections}}{\text{NFIRS totals (Version 5.0)}}$$

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.

A second option is to omit year estimates for 1999-2001 from year tables.

NFIRS 5.0 has 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.

Although causal and other detailed information is typically not required for these incidents, it is provided in some cases. In order for that limited detail to be used to characterize the confined fires, they must be analyzed separately from non-confined fires. Otherwise, the patterns in a

factor for the more numerous non-confined fires with factor known will dominate the allocation of the unknown factor fires for both non-confined and confined fires. If the pattern is different for confined fires, which is often the case, that fact will be lost unless analysis is done separately.

For most fields other than Property Use, 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.

For Factor Contributing to Ignition, 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%. Groupings for this field show all category headings and specific factors if they account for a rounded value of at least 1%.

**Type of Material First Ignited (TMI).** This field is required only if the Item First Ignited falls within the code range of 00-69. NFPA has created a new code “not required” for this field that is applied when Item First Ignited is in code 70-99 (organic materials, including cooking materials and vegetation, and general materials, such as electrical wire, cable insulation, transformers, tires, books, newspaper, dust, rubbish, etc..) and TMI is blank. The ratio for allocation of unknown data is:

$$\frac{(\text{All fires} - \text{TMI Not required})}{(\text{All fires} - \text{TMI Not Required} - \text{Undetermined} - \text{Blank})}$$

**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, fusee,
68. Backfire from internal combustion engine. Excludes flames and sparks from an exhaust system,
- (11)
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, the 2006 data is not yet available and a large portion of the fires coded as no equipment involved (NNN) have heat sources in the operating equipment category. 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

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

Additional allocations may be used in specific analyses. For example, NFPA’s report about home heating fires treats Equipment Involved in Ignition Code 120, fireplace, chimney, other” as a partial unknown (like Heat Source 60) and allocates it over its related decade of 121-127, which includes codes for fireplaces (121-122) and chimneys (126-127) but also includes codes for fireplace insert or stove, heating stove, and chimney or vent connector. More general analyses of specific occupancies may not perform as many allocations of partial allocations. Notes at the end of each table describe what was allocated.

**Rounding and percentages.** The data shown are estimates and generally rounded. An entry of zero may be a true zero or it may mean that the value rounds to zero. Percentages are calculated from unrounded values. It is quite possible to have a percentage entry of up to 100%, even if the rounded number entry is zero. Values that appear identical may be associated with different percentages, and identical percentages may be associated with slightly different values.