Home ELECTRICAL FIRES

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April 2013

National Fire Protection Association
Fire Analysis and Research Division

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Abstract

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In 2011, an estimated 47,700 home structure fires reported to U.S. fire departments involved some type of electrical failure or malfunction as a factor contributing to ignition. These fires resulted in 418 civilian deaths, 1,570 civilian injuries, and $1.4 billion in direct property damage. Non-home electrical fires in 2011 were estimated at 16,400, with associated losses of 13 civilian deaths, 243 civilian injuries, and $501 million in direct property damage.

Home electrical distribution or lighting equipment fires
In 2011, an estimated 21,300 reported U.S. non-confined home structure fires involving electrical distribution or lighting equipment resulted in 295 civilian deaths, 840 civilian injuries, and $822 million in direct property damage.

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

The National Fire Protection Association thanks all the fire departments and state fire authorities who participate in the National Fire Incident Reporting System (NFIRS) and the annual NFPA fire experience survey. These firefighters are the original sources of the detailed data that make this analysis possible. Their contributions allow us to estimate the size of the fire problem.

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

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NFPA No. USS37

Executive Summary

Electrical fires

The most inclusive and direct interpretation of "electrical fire" is a fire involving some type of electrical failure or malfunction. Any equipment powered by electricity can have such a failure.

In 2011, an estimated 47,700 home structure fires reported to U.S. fire departments involved some type of electrical failure or malfunction as a factor contributing to ignition. These fires resulted in 418 civilian deaths, 1,570 civilian injuries, and $1.4 billion in direct property damage. In 2007-2011, home electrical fires represented 13% of total home structure fires, 18% of associated civilian deaths, 11% of associated civilian injuries, and 20% of associated direct property damage.

In 2011, an estimated 16,400 non-home structure fires reported to U.S. fire departments involved some type of electrical failure or malfunction as a factor contributing to ignition. These fires resulted in 13 civilian deaths, 243 civilian injuries, and $501 million in direct property damage. In 2007-2011, non-home electrical fires represented 13% of total non-home structure fires, 5% of associated civilian deaths, 13% of associated civilian injuries, and 21% of associated direct property damage.

The national estimates in this report are derived from data reported to the U.S. Fire Administration's National Fire Incident Reporting System (NFIRS). These statistics include fires reported as "confined fires," for which detailed reporting is not required. Estimates of detailed characteristics for confined fires require statistical allocation of a large share of unknowns and so involve less confidence.

Half (48%) of 2007-2011 reported non-confined U.S. home structure fires involving electrical failure or malfunction had some type of electrical distribution or lighting equipment as equipment involved in ignition. The leading other types of equipment involved in ignition were fan (6%), washer or dryer (6%), space heater (4%), air conditioning equipment (4%), water heater (3%), and range (3%).

Home electrical distribution or lighting equipment fires

In 2011, an estimated 21,300 reported U.S. non-confined home structure fires involving electrical distribution or lighting equipment resulted in 295 civilian deaths, 840 civilian injuries, and $822 million in direct property damage. Fires reported as confined fires would add only 2.1% to the estimated non-confined fires and less than 2% to associated losses. Therefore, they are not included in this analysis.

Home electrical distribution or lighting equipment fires declined by about one-third from 1980 to 1998. Version 5.0 of NFIRS, introduced in 1999, contained numerous changes in data categories, definitions, and rules. 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.

As with other types of equipment cited as equipment involved in ignition, all that we know from this designation is that the equipment provided the heat leading to ignition. That does not mean that there was electrical or any other type of failure or malfunction. For example, a hot light bulb

might have been too close to combustibles. Such a fire would not be included in the estimates of home electrical fires but would be included in the estimates of home electrical distribution or lighting equipment fires.

Electrical distribution or lighting equipment accounted for 6% of 2007-2011 home structure fires, ranking fourth among major causes behind cooking equipment, heating equipment, and intentional. Electrical distribution or lighting equipment also accounted for 13% of associated civilian deaths (ranking behind smoking materials, heating equipment, and cooking equipment, and tied with intentional), 7% of associated civilian injuries (ranking fourth), and 11% of associated direct property damage (ranking fourth).

Wiring and related equipment accounted for the largest share (63%) of 2007-2011 home structure fires involving electrical distribution or lighting equipment, followed by lamps, light fixtures, and light bulbs (20%), cords and plugs (11%), and transformers and power supplies (6%). Cords and plugs accounted for larger shares of civilian deaths (30%) and injuries (21%) than of fire incidents (11%) associated with home electrical distribution or lighting equipment fires.

Three-fourths (74%) of 2007-2011 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 2007-2011 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 (32%), structural member or framing (16%), insulation within structural area (6%), and exterior wall covering (5%).

Nearly half (44%) of deaths in 2007-2011 home structure fires involving electrical distribution or lighting equipment resulted from fires that began in a living room, family room, or den (23%) or bedroom (21%).

Nearly two-thirds (64%) of deaths in 2007-2011 home structure fires involving electrical distribution or lighting equipment involved victims who were outside the area of origin when injured. By comparison 47% of fatal victims for all home structure fires were outside the area of origin when injured.

Home structure fires involving electrical distribution or lighting equipment, in 2007-2011, show a winter peak similar to that for heating equipment but less pronounced. Based on special reports by the U.S. Consumer Product Safety Commission, analyzing data from the death certificate data base, in 1999 to 2011, 58 people died per year of injuries from unvented carbon monoxide from generators. Generators are the only electrical distribution or lighting equipment that burn fuel, which makes them the only electrical distribution or lighting equipment that generates carbon monoxide.

Halogen lights have a higher risk of fire than incandescent lights, which have a higher risk than fluorescent lights. Compact fluorescent lights now account for more than two-thirds of all fluorescent lights in residential usage. Incandescent lights are due to be phased out in favor of fluorescent lights, but as of 2010, incandescent lights still outnumbered fluorescent lights by nearly 2-to-1 in residential usage.

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. When

you are buying, selling or remodeling a home, have it inspected by a professional 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.
- cracked or broken outlets

Arc fault circuit interrupters (AFCIs) are a type of circuit breaker that shuts off electricity when a dangerous arcing condition occurs. Consider having them installed in your home. Use a qualified electrician.

Use extension cords for temporary wiring only. Consider having additional circuits or outlets added by a qualified electrician.

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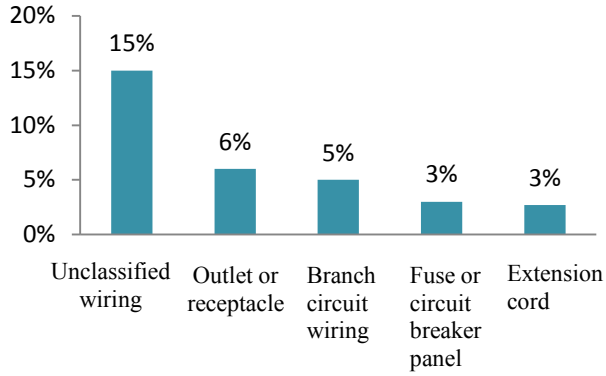
NFPA Fire Analysis &Research

Home Electrical Fires Fact Sheet

U.S. fire departments responded to an estimated average of 47,820 reported U.S. home[1] structure fires involving electrical failure or malfunction in 2007-2011. These fires resulted in 455 civilian deaths, 1,518 civilian injuries and $1.48 billion in direct property damage.

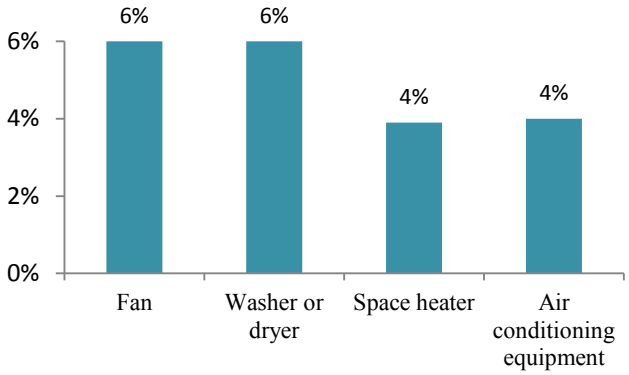
Roughly half of home electrical fires involved electrical distribution or lighting equipment in 2007-2011.

Leading Types of Electrical Distribution or Lighting Equipment Involved in Home Electrical Fires, 2007-2011



Nearly half of home electrical fires involved other known types of equipment in 2007-2011.

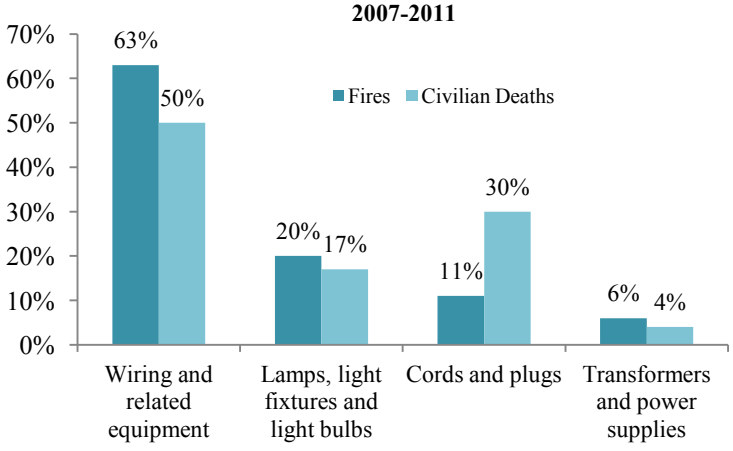
Leading Other Types of Equipment Involved in Home Electrical Fires, 2007-2011



Home Fires Involving Electrical Distribution or Lighting Equipment

U.S. fire departments responded to an estimated average of 22,410 reported U.S. non-confined home structure fires involving electrical distribution or lighting equipment in 2007-2011. These fires resulted in 325 civilian fire deaths, 950 civilian fire injuries, and $817 million in direct damage.

Home Fires Involving Electrical Distribution or Lighting Equipment, by Major Equipment Group 2007-2011



In 2007-2011:

Some type of electrical failure or malfunction was cited as factor contributing to ignition for 74% of electrical distribution or lighting equipment home structure fires.

Nearly half (44%) of civilian deaths in these incidents began in the living room, family room or den, or bedroom.

Wire or cable insulation is what ignited first in 32% of electrical distribution or lighting equipment home structure fires.

[1]Homes are dwellings, duplexes, manufactured homes, apartments, townhouses, and rowhouses.

NFPA's Fire Safety Resources

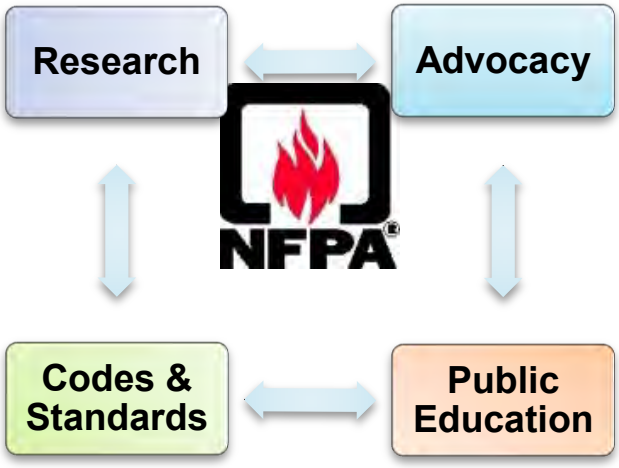
NFPA´s wealth of fire-related research includes investigations of technically significant fire incidents, fire data analysis, and the Charles S. Morgan Technical Library, one of the most comprehensive fire literature collections in the world. In addition, NFPA´s Fire Protection Research Foundation is a source of independent fire test data. Find out more at:

www.nfpa.org/research

Properly installed and maintained smoke alarms are necessary to provide a warning of any fire to all occupants. You can find out more information about smoke alarms here: NFPA Smoke Alarm Information

Home fire sprinkler systems provide even greater protection. These systems respond quickly to reduce the heat, flames, and smoke from a fire until help arrives. More information about home fire sprinklers may be found at www.firesprinklerinitiative.org

Simply put, smoke alarms and fire sprinklers save lives.



NFPA also develops, publishes, and disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks. Among these are:

NFPA1: Fire Code:

NFPA 101: Life Safety Code®:

NFPA 72, National Fire Alarm Code®

For consumers: NFPA has consumer safety information regarding causes, escape planning, fire & safety equipment, and many other topics.

Sparky.org has important For Kids for kids delivered via fun games, activities, and cartoons.

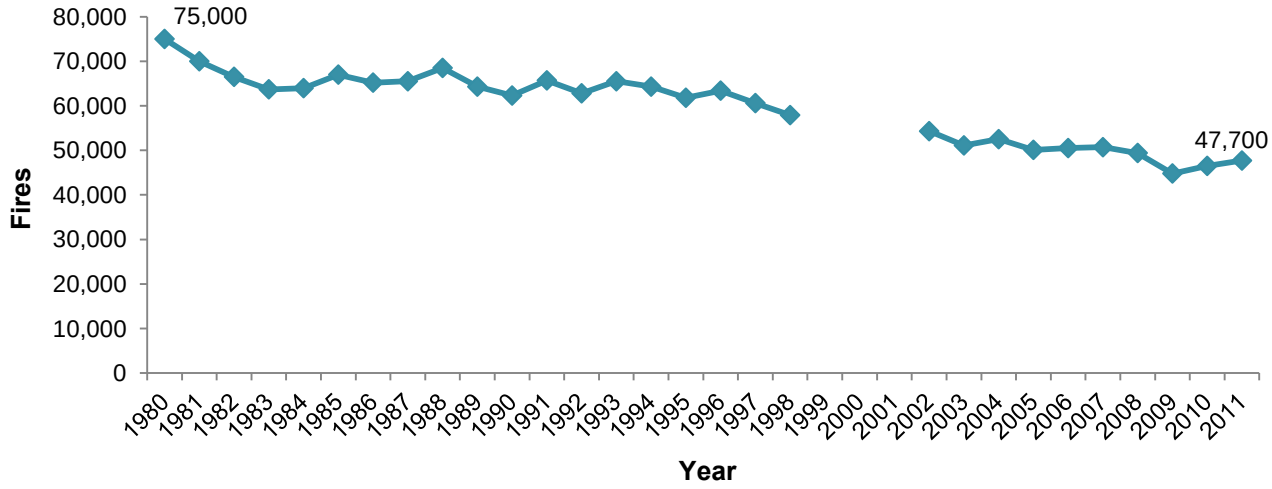
For public educators: Resources on fire safety education programs, educational messaging, grants & awards, and many other topics.

Section 1. Home Electrical Fires

In 2011, an estimated 47,700 home electrical fires were reported to U.S. fire departments. "Electrical fire" is defined as structure fire that involved some type of electrical failure or malfunction as a factor contributing to ignition.
These fires resulted in 418 civilian deaths, 1,570 civilian injuries, and $1.4 billion in direct property damage.

Home electrical fires represented 13% of total 2007-2011 home structure fires, 18% of associated civilian deaths, 11% of associated civilian injuries, and 20% of associated direct property damage.

Figure 1.1. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition, by Year Structure Fires Reported to U.S. Fire Departments



Source: Data from NFIRS (Version 5.0 after 1998) and NFPA survey. Note: See Note in Table 1.1.

Figure 1.1 and Table 1.1 show that there has been a fairly steady and substantial downward trend, with the 2011 total being roughly one-third less than the size of the 1980 estimated total of 75,000 fires. However, most of that decline occurred between 1980 and 1998, with long periods of slow or no decline after the introduction of NFIRS Version 5.0 in 1999. Civilian deaths had not shown a consistent decline since 1980 until 2010-2011. Direct property damage (adjusted for inflation) has generally trended upward.

These statistics *include* fires reported as "confined fires," for which detailed reporting is not required. Estimates of detailed characteristics for confined fires require statistical allocation of a large share of unknowns and so involve less confidence. In this analysis, fires reported as confined fires added an average of 10% to the non-confined fire estimates in 2007-2011. They added at most 1% to civilian deaths and injuries and to direct property damage.

Data Sources, Definitions and Conventions Used in this Report

Unless otherwise specified, the statistics in this analysis 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. The 2007-2011 estimates are projections based on the detailed information collected in Version 5.0 of the U.S. Fire Administration's National Fire Incident Reporting System (NFIRS 5.0) and the National Fire Protection Association's (NFPA's) annual fire department experience survey. Except for property use and incident type, fires with unknown or unreported data were allocated proportionally in calculations of national estimates.

What is included in NFPA's definition of "home?"

- detached dwellings, duplexes, and manufactured housing, and
- apartments, tenements, and flats, townhouses, rowhouses, and other multi-family housing, regardless of ownership.

In general, any fire that occurs in or on a structure is considered a structure fire, even if the fire was limited to contents and the building itself was not damaged.

What are" confined" and "non-confined" fires?

NFIRS 5.0 includes a category of structure fires collectively referred to as "confined fires," identified by incident type. These include confined cooking fires, confined chimney or flue fires, confined trash fires, confined fuel burner or boiler fires, confined commercial compactor fires, and confined incinerator fires (incident type 113-118). Losses are generally minimal in these fires, which by definition, are assumed to have been limited to the object of origin. Although causal data is not required for these fires, it is sometimes present. Confined and non-confined fires are analyzed separately and then summed in any analysis where both types of fires are included in the estimates.

Additional information

Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Except for trend tables, property damage has not been adjusted for inflation. Fires are rounded to the nearest hundred, civilian deaths and injuries are generally rounded to the nearest one and direct property damage is rounded to the nearest million dollars. Additional details on the methodology may be found in Appendix A.

Most (76%) reported home structure fires involving electrical failure or malfunction were reported with few or no details on failure mode.

Table 1.A shows the estimates for different types of electrical failure or malfunction. The two leading types were unclassified electrical failure or malfunction (50%) and unspecified short circuit arc (26%). The leading factor with specific details was short circuit arc from defective or worn insulation (12%).

Table 1.A. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition, by Factor Contributing to Ignition
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Type of Electrical Failure or Malfunction	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	23,760	(50%)	245	(54%)	751	(49%)	$810	(55%)
Unspecified short circuit arc	12,260	(26%)	117	(26%)	461	(30%)	$422	(29%)
Short circuit art from defective or worn insulation	5,550	(12%)	44	(10%)	137	(9%)	$135	(9%)
Arc or spark from operating equipment	2,510	(5%)	29	(6%)	99	(6%)	$59	(4%)
Arc from faulty contact or broken conductor	2,160	(5%)	22	(5%)	48	(3%)	$49	(3%)
Short circuit arc from mechanical damage	1,920	(4%)	20	(4%)	49	(3%)	$45	(3%)
Water caused short circuit arc	660	(1%)	0	(0%)	17	(1%)	$9	(1%)
Fluorescent light bulb	160	(0%)	0	(0%)	5	(0%)	$4	(0%)
Total fires	47,820	(100%)	454	(100%)	1,518	(100%)	$1,477	(100%)
Total factors	48,990	(102%)	476	(105%)	1,566	(103%)	$1,533	(104%)

Note: Figures *include* confined fires, which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 ten, civilian deaths and civilian injuries are expressed to the nearest one, and property damage is rounded to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of home fires with factor contributing to ignition listed as unknown, unreported, none, or blank, with allocations done separately for non-confined and confined fires. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

Arcing appears to account for most home electrical fires, as compared with overheating due to overcurrent.

It is useful to estimate the relative frequency of arcing vs. overheating as the mechanism of ignition, because different fire prevention devices (e.g., arc-fault circuit interrupter) or strategies may be more effective on one ignition mechanism than the other.

If electrical failure or malfunction is defined by Factor Contributing to Ignition (in NFIRS), then the relative roles of arcing and overheating can be examined using Heat Source (also in NFIRS). Arcing should be the mode of ignition if Heat Source refers to arcing or sparks. Overheating should be the mode of ignition if Heat Source refers to radiated or conducted heat or to molten or hot material. Here are the leading Heat Source entries and their respective shares of fires with known Heat Source, from all home fires involving electrical failure or malfunction:

- Arcing – 65%, definitely arcing;
- Unclassified heat from powered equipment – 13%, could be either;
- Unclassified heat source – 6%, could be either;
- Radiated or conducted heat from operating equipment – 5%; should be overheating;

- Spark, ember or flame from operating equipment – 4%, could be either;
- Unclassified hot or smoldering object – 4%, probably overheating;
- Heat or spark from friction – 1%, could be either;
- Molten or hot material – 1%, very probably overheating.

These statistics suggest a 6- or 7-to-1 ratio of arcing fires to overheating fires based on heat sources that appear likely to be one or the other. If everything that is not specifically arcing is overheating, then the ratio is still 2-to-1 arcing versus overheating.

Fires due to overheating caused by overcurrent can be prevented by overcurrent protection devices, principally circuit breakers and fuses, while fires due to arcing can be prevented by arc fault circuit interrupters (AFCIs). The former has been present in all, or nearly all, homes with electrical service since electrical service has been available. The latter is a technology developed more recently and is still in very limited use.

A 1983 special study by the National Institute of Standards and Technology (then still called the National Bureau of Standards) examined 80 cases of one- and two-family dwelling electrical distribution or lighting equipment fires for which the type and performance of overcurrent protection was known and reported.[1] None of the 43 cases with circuit breakers and 11% of the cases with fuses were deemed to involve circumstances where the overcurrent protection device should have operated to prevent ignition.

The U.S. Consumer Product Safety Commission which had arranged and sponsored the collection of the data analyzed by NIST, arranged and sponsored a second phase of data collection in the late 1980s and performed the analysis themselves. One finding was a strong relationship between age of dwelling and the rate of electrical distribution and lighting equipment fires per million dwellings, as shown in Table 1.B.

The two analyses identified three primary factors in relationship between age of dwelling and risk.

- In the 1990 CPSC analysis, no dwelling built later than 1965 used fuses rather than circuit breakers, whereas about half the dwellings built before 1965 used fuses. As of 2011, roughly 41% of the nation's occupied detached single-family dwellings had been built before 1965, which suggests dwellings with fuses now account for at most one-fifth of total dwellings. [2]
- In the 1983 NIST analysis, no dwelling built later than 1950 used knob and tube wiring whereas about one-third of dwellings built before 1950 used knob and tube wiring. As of 2011, 22% of the nation's occupied detached single-family dwellings were built before 1950, which suggests dwellings with knob and tube wiring now account for less than one-tenth of total dwellings.

[1] CPSC analysis of 141 fires, as reported in Linda E. Smith and Dennis McCoskrie, "What Causes Wiring Fires in Residences?," *Fire Journal*, January/February 1990, pp. 19-24, 69; NIST analysis of 101 fires, as reported in John R. Hall, Jr., Richard Bukowski, and Alan Gomberg, *Analysis of Electrical Fire Investigations in Ten Cities*, NBSIR 83-2803, National Bureau of Standards, December 1983.

[2] *American Housing Survey 2011*, U.S. Department of Commerce and U.S. Department of Housing and Urban Development, 2012, Table C-12-AO, accessed at http://www.census.gov/housing/ahs/data/national.html.

- In the 1983 NIST analysis, 63% of fire cases involving dwellings built before 1960 found electrical systems in need of repair, compared to only 27% of fire cases involving dwellings built after 1960 (at most 20 years old).

Table 1.B. Risk Ratios for Rate of Electrical Distribution or Lighting Equipment per Million Dwellings, by Age of Dwelling

Age of Dwelling	Risk Ratio	
	1990 CPSC Study	1983 NIST Study
0-10 years	0.3	0.3
11-20 years	0.5	0.3
21-40 years	1.0	1.1
More than 40 years	1.6	1.9
All ages	1.0	1.0

Note: The risk ratio is defined as the ratio of the fire rate for dwellings of that age to the fire rate for all dwellings.

Source: CPSC analysis of 141 fires, as reported in Linda E. Smith and Dennis McCoskrie, "What Causes Wiring Fires in Residences?," *Fire Journal*, January/February 1990, pp. 19-24, 69; NIST analysis of 101 fires, as reported in John R. Hall, Jr., Richard Bukowski, and Alan Gomberg, *Analysis of Electrical Fire Investigations in Ten Cities*, NBSIR 83-2803, National Bureau of Standards, December 1983.

Of these three factors, the first two – use of fuses and use of knob and tube wiring – are clearly much less common today than they were at the time of the NIST and CPSC studies. However, age may still be a factor in the risk of home electrical fires. In the CPSC study, one-sixth (17%) of the fires were in dwellings that showed equipment deterioration due to aging.

The Fire Protection Research Foundation sponsored a project in 2002-2008 to take an updated look at the issue of aging electrical distribution and lighting equipment in dwellings.[3] The methodology consisted of a detailed examination of 30 homes that were 30 to 110 years old. They identified a number of system problems, which may correlate with system age for different reasons. Here are some examples:

(1) Physical deterioration due to age alone.
Pre-1950 wiring often used conductors with thermoset rubber insulation, and rubber is known to become brittle with age. This general potential was confirmed to have occurred in some of the sample homes. Ground fault circuit interrupters (GFCIs) were cited as an example of an electrical product that in several cases were left in place past their design product life. Like non-operational smoke alarms, these products include test features and/or external indicators of non-operationality but may still be left in place without needed maintenance or replacements.

(2) Deterioration as a possible or likely cumulative result of repeated impacts in normal use.
Receptacle outlets receive repeated impacts from the insertion and removal of plugs. Some of these insertions or removals are rough enough to constitute abuse, but even normal use creates the potential for product deterioration over time.

[3] David A. Dini, *Residential Electrical System Aging Research Project*, Fire Protection Research Foundation, Quincy, MA, July 1, 2008.

(3) Products that, even though they may not deteriorate with age, no longer provide as much fire protection as alternative products now widely used. Age is indirectly related because it correlates with the degree of usage of these alternative products.
Circuit breakers and fuses are always cited as an example, but the FPRF study, like the NIST and CPSC studies, did not find a clear difference in performance between fuses and circuit breakers. All those studies tend to indicate that old fuses and old circuit breakers work well if not abused or misused. Fuses are easier to defeat through tampering, and this appears to be the key to any statistical difference in performance.

(4) Misuse of products, often products used because appropriate equipment is considered too costly, do not provide as much fire protection as appropriate products. Age is indirectly related because poor and other high-risk households are more likely to live in older homes.[4]
The principal example was the use of extension cords as permanent wiring instead of adding more outlets. There was also a general reference to the failure to replace worn-out electrical devices. At the same time, some problems – such as improper installation, poor product choices, and inadequate electrical capacity – can arise in new homes as easily as in older homes. For example, in 2009, the American Housing Survey asked whether fuses or circuit breakers had "blown" in the previous three months.[5] The overall average was 9% of households said yes. The response was the same for new construction (housing units no more than four years old) as for older housing.

The American Housing survey provides information on some electrical-related deficiencies in the U.S. housing stock (including multi-unit housing and manufactured homes).[6] In 2009, 0.1% of occupied year-round housing units had no electrical wiring, 0.3% had exposed wiring, and 1.1% had rooms with no electrical outlets. (In 2007, 0.0% had no electrical wiring, 1.0% had exposed wiring, and 1.3% had rooms with no electrical outlets.)

Focusing on newly constructed housing (built in the previous four years), one might expect to see fewer deficiencies, but the truth is just the opposite for two of the three deficiencies. In 2009, 0.3% of occupied year-round housing units built in the previous four years had no electrical wiring, 0.5% had exposed wiring, and 1.1% had rooms with no electrical outlets. (In 2007, 0.4% had no electrical wiring, 0.7% had exposed wiring, and 1.5% had rooms with no electrical outlets.)

For all manufactured housing in 2009, 0.4% had no electrical wiring, 0.8% had exposed wiring, and 2.0% had rooms with no electrical outlets. (In 2007, 0.3% had no electrical wiring, 0.7% had exposed wiring, and 1.5% had rooms with no electrical outlets.)

Half (48%) of 2007-2011 reported U.S. home structure fires involving electrical failure or malfunction had some type of electrical distribution or lighting equipment as equipment involved in ignition.

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[4] For example, in 2007, 50% of poor households lived in a housing unit built before 1970 compared to 44% of all households, and 37% of poor households lived in a housing unit built before 1960 compared to 32% of all households. (*American Housing Survey 2007*, U.S. Department of Commerce and U.S. Department of Housing and Urban Development, September 2008, Table 2-25.) The 2009 survey report did not include an update of this table.

[5] *American Housing Survey 2009*, U.S. Department of Commerce and U.S. Department of Housing and Urban Development, March 2011, Table 2-6.

[6] *American Housing Survey for the United States – 2009* and *2007*, U.S. Department of Housing and Urban Development and U.S. Census Bureau, Current Housing Reports, 2011 and 2009.

The leading other types of equipment involved in ignition were fan (6%), washer or dryer (6%), portable or stationary space heater (4%), air conditioning equipment (4%), water heater (4%), and range (3%). See Table 1.2, which does not include confined fires. If confined fires were included, the share for ranges would be considerably larger.

Lamps, light bulbs, and light fixtures rank lower in Table 1.2 than they do on any list of all home fires by equipment involved in ignition. This is because the percentage of lamp, light fixture, or light bulb non-confined fires involving electrical failure or malfunction (36%) is much lower than the corresponding percentages for transformers and power supplies (62%), for cords and plugs (74%), and for wiring and related equipment (87%). (These percentages are shown in tables in Sections 4-7 of this report.) For lamp, light fixture, or light bulb fires, the leading factor contributing to ignition is not a type of electrical failure but is heat source too close to combustible.

Tables 1.3 to 1.8 also exclude confined fires.

Nearly half (46%) of 2007-2011 home electrical fires (structure fires involving electrical failure or malfunction) began with ignition of products often found in concealed spaces – wire or cable insulation (30%) or structural member or framing (16%).
Other leading items first ignited were insulation within structural areas (7%), interior wall covering (6%), appliance housing or casing (5%), and exterior wall covering (5%). Leading items first ignited for fire deaths were wire or cable insulation (25%), structural member or framing (18%), upholstered furniture (8%), and floor covering (8%). (See Table 1.3.)

Half (56%) of 2007-2011 home electrical fire deaths resulted from fires that began in the principal occupiable spaces of the home – bedroom (22%), living room, family room, or den (20%), or kitchen (14%).
Leading areas of origin for fire incidents were bedroom (14%), attic or ceiling/roof assembly or concealed space (12%), kitchen (11%), wall assembly or concealed space (8%), living room, family room or den (6%), and laundry room (5%). (See Table 1.4.)

Most fatal victims (60%) of home electrical fires were not in the area of fire origin when injured.
The share outside the area of origin is higher than for fatal home fires in general (47%). (See Table 1.5 for victim location when fire began.)

Most (77%) fatal victims of home electrical fires were attempting to escape (39%) or sleeping (38%) when fatally injured.
Fatal victims of home electrical fires were more likely than victims of home fires in general to be attempting escape (39% vs. 36%) or sleeping (38% vs. 34%) and less likely to be acting irrationally (1% vs. 5%) or to have activity unclassified (1% vs. 5%). (See Table 1.6.)

Home electrical fire deaths show a peak in the early morning hours (42% in midnight to 6 am) and in winter (46% in December through March). (See Tables 1.7 and 1.8.)

Other reports provide statistics on non-fire incidents and harm due to electricity.
See the following reports:

- Jennifer D. Flynn, *Non-Fire Electrical Wiring and Equipment Problem Incidents Reported to U.S. Fire Departments,* NFPA Fire Analysis and Research Division, Quincy, MA, August 2007 – Analyzes 316,000 reported 2003 incidents, such as power line down, that did not involve fire or rescue.
- Jennifer D. Flynn, *Non-Fire Electrical Rescue Incidents Reported to Fire Departments in 2003,* NFPA Fire Analysis and Research Division, Quincy, MA, August 2007 – Analyzes 2,800 reported incidents, including electrocutions and people trapped by power lines.
- John R. Hall, Jr., *Deaths and Injuries Due to Non-Fire Burns*, NFPA Fire Analysis and Research Division, Quincy, MA, April 2009 – Estimates 1991-2007 electrical burn injuries reported to U.S. hospital emergency rooms and 1980-2005 unintentional-injury deaths by electrical current, including deaths specifically attributable to electric transmission lines or to lightning.

Also of interest is the following:

- Robert Garrett and Susan B. Kyle, *An Evaluation of the U.S. Consumer Product Safety Commission's Electrocution Reduction Program*, CPSC Office of Planning and Evaluation, Bethesda, MD, November 2002.

Safety Tips

- Home electrical safety begins with NFPA 70, *National Electrical Code*® and related documents with special relevance to homes, notable 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. When you are buying, selling or remodeling a home, have it inspected by a professional 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,
  - cracked or broken outlets.

- Arc fault circuit interrupters (AFCIs) are a type of circuit breaker that shuts off electricity when a dangerous arcing condition occurs. Consider having them installed in your home. Use a qualified electrician.

More of NFPA's electrical safety information is available on our website at www.nfpa.org/electricalfires.

Table 1.1. Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition, by Year
Structure Fires Reported to U.S. Fire Departments

Year	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions) As Reported		In 2011 Dollars	
1980	75,000		471		1,500		$426		$1,164	
1981	70,000		477		1,670		$409		$1,009	
1982	66,500		405		1,760		$450		$1,047	
1983	63,700		463		1,750		$530		$1,194	
1984	63,960		328		1,440		$551		$1,191	
1985	67,000		451		1,600		$603		$1,258	
1986	65,200		639		1,640		$600		$1,230	
1987	65,500		562		1,880		$616		$1,219	
1988	68,500		545		2,190		$745		$1,416	
1989	64,300		590		2,000		$693		$1,257	
1990	62,300		435		2,000		$737		$1,269	
1991	65,700		393		2,370		$981		$1,618	
1992	62,800		486		2,270		$727		$1,165	
1993	65,500		485		2,540		$936		$1,456	
1994	64,300		518		2,160		$835		$1,267	
1995	61,800		582		2,110		$867		$1,278	
1996	63,400		593		2,070		$1,031		$1,479	
1997	60,600		380		1,790		$980		$1,372	
1998	57,900		479		1,820		$943		$1,299	
1999	46,000	(44,300)	387	(387)	1,620	(1,620)	$917	($917)	$1,237	($1,236)
2000	49,200	(46,400)	348	(348)	1,670	(1,670)	$1,085	($1,082)	$1,417	($1,413)
2001	53,600	(49,200)	548	(548)	1,680	(1,630)	$1,237	($1,235)	$1,571	($1,568)
2002	54,300	(49,300)	278	(278)	1,290	(1,290)	$1,183	($1,181)	$1,478	($1,476)
2003	51,100	(45,200)	639	(639)	1,350	(1,350)	$1,283	($1,281)	$1,565	($1,563)
2004	52,500	(46,400)	614	(614)	1,500	(1,490)	$1,360	($1,357)	$1,616	($1,613)
2005	50,100	(44,500)	438	(438)	1,360	(1,340)	$1,530	($1,522)	$1,761	($1,751)
2006	50,500	(45,100)	333	(333)	1,370	(1,360)	$1,390	($1,389)	$1,550	($1,549)
2007	50,700	(45,500)	451	(451)	1,640	(1,630)	$1,228	($1,227)	$1,331	($1,330)
2008	49,400	(44,800)	519	(519)	1,350	(1,320)	$1,633	($1,632)	$1,703	($1,702)
2009	44,800	(39,500)	472	(472)	1,500	(1,470)	$1,644	($1,643)	$1,721	($1,721)
2010	46,500	(42,000)	419	(419)	1,520	(1,510)	$1,507	($1,506)	$1,555	($1,553)
2011	47,700	(42,600)	418	(418)	1,570	(1,570)	$1,434	($1,432)	$1,434	($1,432)

Note: Figures in parentheses *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Figures for 1980-1998 are based on ignition factor 54-55 and reflect a proportional share of home fires with ignition factor unknown, unreported, or blank. Figures for 1999 and later years reflect a proportional share of home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. *Because of low participation in NFIRS Version 5.0 during 1999-2001, estimates for these years are highly uncertain and must be used with caution*. Inflation adjustment to 2011 dollars is done using the consumer price index. 1991 home fire property damage figures are inflated by estimation problems related to the Oakland fire storm.
Source: Data from NFIRS (Version 5.0 after 1998) and NFPA survey.

Table 1.2. Home Fires Involving Electrical Failure or Malfunction, by Equipment Involved in Ignition
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Equipment Involved in Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical distribution or lighting equipment	**20,700**	**(48%)**	**304**	**(67%)**	**676**	**(45%)**	**$825**	**(56%)**
Unclassified wiring	6,590	(15%)	99	(22%)	173	(12%)	$242	(16%)
Outlet or receptacle	2,590	(6%)	22	(5%)	78	(5%)	$94	(6%)
Branch circuit wiring	2,200	(5%)	28	(6%)	41	(3%)	$108	(7%)
Fuse or circuit breaker panel	1,350	(3%)	18	(4%)	36	(2%)	$41	(3%)
Extension cord	1,330	(3%)	76	(17%)	104	(7%)	$61	(4%)
Service supply wiring from utility	690	(2%)	4	(1%)	15	(1%)	$25	(2%)
Meter or meter box	610	(1%)	0	(0%)	7	(0%)	$15	(1%)
Unclassified lamp, light fixture or sign	560	(1%)	3	(1%)	11	(1%)	$18	(1%)
Incandescent light fixture	560	(1%)	4	(1%)	24	(2%)	$20	(1%)
Wiring from meter box to circuit breaker	530	(1%)	4	(1%)	5	(0%)	$28	(2%)
Surge protector	480	(1%)	7	(1%)	14	(1%)	$28	(2%)
Unclassified cord or plug	430	(1%)	14	(3%)	23	(2%)	$21	(1%)
Power (utility) line	380	(1%)	4	(1%)	14	(1%)	$16	(1%)
Table or floor lamp	360	(1%)	0	(0%)	21	(1%)	$20	(1%)
Detachable power cord or plug	290	(1%)	7	(2%)	20	(1%)	$11	(1%)
Fluorescent light fixture or ballast	250	(1%)	4	(1%)	20	(1%)	$11	(1%)
Other known electrical distribution or lighting equipment	1,120	(3%)	8	(2%)	60	(4%)	$54	(4%)
Equipment other than electrical distribution or lighting equipment	**19,750**	**(46%)**	**147**	**(32%)**	**755**	**(50%)**	**$543**	**(37%)**
Fan	2,770	(6%)	16	(3%)	104	(7%)	$68	(5%)
Dryer or washer	2,730	(6%)	0	(0%)	63	(4%)	$55	(4%)
Portable or stationary space heater	1,760	(4%)	51	(11%)	81	(5%)	$57	(4%)
Air conditioner	1,640	(4%)	11	(2%)	76	(5%)	$44	(3%)
Water heater	1,500	(4%)	0	(0%)	24	(2%)	$20	(1%)
Range	1,400	(3%)	16	(4%)	44	(3%)	$26	(2%)
Refrigerator, freezer or icemaker	1,060	(2%)	4	(1%)	35	(2%)	$37	(3%)
Microwave oven	660	(2%)	0	(0%)	38	(2%)	$20	(1%)
Dishwasher	660	(2%)	4	(1%)	18	(1%)	$17	(1%)
Television	590	(1%)	3	(1%)	28	(2%)	$22	(1%)
Furnace or other central heating unit	580	(1%)	0	(0%)	18	(1%)	$8	(1%)
Entertainment equipment other than television	540	(1%)	2	(1%)	37	(2%)	$21	(1%)
Computer or other office equipment	480	(1%)	2	(0%)	41	(3%)	$25	(2%)
Portable cooking or warming device	360	(1%)	8	(2%)	23	(2%)	$15	(1%)
Oven or rotisserie	360	(1%)	0	(0%)	7	(0%)	$4	(0%)
Heat tape	220	(1%)	0	(0%)	6	(0%)	$5	(0%)

Table 1.2. Home Fires Involving Electrical Failure or Malfunction, by Equipment Involve in Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Equipment Involved in Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Other known equipment other than electrical distribution or lighting equipment	2,410	(6%)	31	(7%)	112	(7%)	$100	(7%)
No equipment involved	**2,010**	**(5%)**	**0**	**(0%)**	**49**	**(3%)**	**$86**	**(6%)**
Unclassified equipment involved in ignition	420	(1%)	4	(1%)	24	(2%)	$22	(1%)
Total	**42,880**	**(100%)**	**455**	**(100%)**	**1,504**	**(100%)**	**$1,476**	**(100%)**

Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. 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 factor contributing to ignition listed as unknown, unreported, none, or blank. Figures reflect a proportional share of home fires with factor contributing to ignition coded as electrical failure or malfunction and equipment involved with ignition shown as unknown or blank or as "no equipment" without a confirming heat source (codes 40-99 under heat source), with allocations done separately for non-confined and confined fires. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

Table 1.3. Home Fires Involving Electrical Failure or Malfunction, by Item First Ignited
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	12,990	(30%)	112	(25%)	373	(25%)	$370	(25%)
Structural member or framing	6,950	(16%)	82	(18%)	176	(12%)	$307	(21%)
Insulation within structural area	2,880	(7%)	9	(2%)	34	(2%)	$72	(5%)
Interior wall covering	2,610	(6%)	33	(7%)	91	(6%)	$104	(7%)
Appliance housing or casing	2,100	(5%)	16	(3%)	86	(6%)	$44	(3%)
Exterior wall covering	1,950	(5%)	8	(2%)	40	(3%)	$61	(4%)
Unclassified structural component or finish	1,670	(4%)	10	(2%)	55	(4%)	$77	(5%)
Unclassified item	1,650	(4%)	4	(1%)	48	(3%)	$43	(3%)
Interior ceiling covering	1,140	(3%)	12	(3%)	18	(1%)	$40	(3%)
Mattress or bedding	1,130	(3%)	18	(4%)	117	(8%)	$42	(3%)
Floor covering	940	(2%)	34	(8%)	60	(4%)	$35	(2%)
Unclassified furniture or utensil	770	(2%)	20	(4%)	36	(2%)	$34	(2%)
Clothing	720	(2%)	1	(0%)	34	(2%)	$22	(1%)
Cabinetry	700	(2%)	16	(4%)	32	(2%)	$29	(2%)
Upholstered furniture	700	(2%)	34	(8%)	85	(6%)	$44	(3%)
Multiple items first ignited	560	(1%)	12	(3%)	35	(2%)	$40	(3%)
Unclassified soft goods or clothing	400	(1%)	4	(1%)	21	(1%)	$15	(1%)
Curtain or drape	260	(1%)	3	(1%)	36	(2%)	$10	(1%)
Exterior roof covering	240	(1%)	0	(0%)	3	(0%)	$11	(1%)
Wire or cable insulation	12,990	(30%)	112	(25%)	373	(25%)	$370	(25%)
Other known item first ignited	2,520	(6%)	26	(6%)	123	(8%)	$75	(5%)
Total fires	42,880	(100%)	455	(100%)	1,504	(100%)	$1,476	(100%)

Note: Figures exclude confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. 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 factor contributing to ignition listed as unknown, unreported, none, or blank. Figures reflect a proportional share of home fires with factor contributing to ignition coded as electrical failure or malfunction and item first ignited shown as unknown or blank, with allocations done separately for non-confined and confined fires. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

Table 1.4. Home Fires Involving Electrical Failure or Malfunction, by Area of Origin
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	5,970	(14%)	100	(22%)	404	(27%)	$227	(15%)
Attic or ceiling/roof assembly or concealed space	5,020	(12%)	10	(2%)	59	(4%)	$176	(12%)
Kitchen	4,700	(11%)	63	(14%)	179	(12%)	$128	(9%)
Wall assembly or concealed space	3,220	(8%)	25	(6%)	66	(4%)	$102	(7%)
Living room, family room, or den	2,620	(6%)	92	(20%)	188	(12%)	$119	(8%)
Laundry room	2,330	(5%)	14	(3%)	65	(4%)	$61	(4%)
Bathroom	1,960	(5%)	6	(1%)	45	(3%)	$41	(3%)
Unclassified function area	1,760	(4%)	37	(8%)	110	(7%)	$73	(5%)
Exterior wall surface	1,630	(4%)	6	(1%)	29	(2%)	$35	(2%)
Garage*	1,630	(4%)	5	(1%)	73	(5%)	$108	(7%)
Crawl space or substructure space	1,610	(4%)	16	(4%)	46	(3%)	$50	(3%)
Ceiling/floor assembly or concealed space	1,520	(4%)	29	(6%)	42	(3%)	$60	(4%)
Heating equipment room	840	(2%)	0	(0%)	17	(1%)	$20	(1%)
Unclassified structural area	820	(2%)	8	(2%)	18	(1%)	$40	(3%)
Unclassified area of origin	810	(2%)	2	(0%)	8	(1%)	$25	(2%)
Closet	750	(2%)	2	(0%)	18	(1%)	$25	(2%)
Unclassified storage area	550	(1%)	1	(0%)	12	(1%)	$18	(1%)
Duct for HVAC, cable, or exhaust	460	(1%)	0	(0%)	11	(1%)	$8	(1%)
Exterior balcony or unenclosed porch	410	(1%)	7	(2%)	15	(1%)	$22	(1%)
Unclassified equipment or service area	400	(1%)	0	(0%)	4	(0%)	$10	(1%)
Unclassified outside area	390	(1%)	0	(0%)	5	(0%)	$7	(0%)
Conduit, pipe, utility, or ventilation shaft	300	(1%)	0	(0%)	1	(0%)	$6	(0%)
Dining room	280	(1%)	9	(2%)	8	(1%)	$10	(1%)
Lobby or entrance way	270	(1%)	8	(2%)	8	(1%)	$8	(1%)
Storage room or area	270	(1%)	0	(0%)	7	(0%)	$8	(1%)
Hallway or corridor	230	(1%)	3	(1%)	13	(1%)	$6	(0%)
Storage of supplies or tools	220	(1%)	0	(0%)	4	(0%)	$7	(1%)
Exterior roof surface	220	(1%)	0	(0%)	0	(0%)	$6	(0%)
Other known area of origin	1,700	(4%)	10	(2%)	49	(3%)	$70	(5%)
Total fires	42,880	(100%)	455	(100%)	1,504	(100%)	$1,476	(100%)

* Excludes garage reported as separate property.

Table 1.4. Home Fires Involving Electrical Failure or Malfunction, by Area of Origin
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments (Continued)

Note: Figures exclude confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. 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 factor contributing to ignition listed as unknown, unreported, none, or blank. Figures reflect a proportional share of home fires with factor contributing to ignition coded as electrical failure or malfunction and area of origin shown as unknown or blank, with allocations done separately for non-confined and confined fires Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

Table 1.5. Civilian Deaths and Injuries in Home Fires Involving Electrical Failure or Malfunction, vs. All Home Fires, by Victim Location
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

	Home Electrical Fires		All Home Fires	
A. Victim Location When Injured	**Civilian Deaths**	**Civilian Injuries**	**Civilian Deaths**	**Civilian Injuries**
In area of origin	181 (40%)	800 (53%)	53%	63%
Not in area of origin but in building of origin	269 (59%)	573 (38%)	47%	31%
Not in building of origin	4 (1%)	130 (9%)	1%	6%
Total	455 (100%)	1,504 (100%)	100%	100%

	Home Electrical Fires		All Home Fires	
B. Victim Location at Ignition	**Civilian Deaths**	**Civilian Injuries**	**Civilian Deaths**	**Civilian Injuries**
In area of origin and not involved	71 (16%)	423 (28%)	12%	23%
Not in area of origin and not involved	162 (36%)	470 (31%)	24%	26%
Not in area of origin but involved	122 (27%)	281 (19%)	24%	16%
In area of origin and involved	99 (22%)	330 (22%)	39%	35%
In area of origin	170 (37%)	753 (50%)	41%	26%
Not in area of origin	284 (63%)	751 (50%)	59%	74%
Involved in ignition	221 (49%)	611 (41%)	79%	64%
Not involved in ignition	234 (51%)	893 (59%)	21%	36%
Total	455 (100%)	1,504 (100%)	100%	100%

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

Source: Data from NFIRS Version 5.0 and NFPA survey.

Table 1.6. Civilian Deaths and Injuries in Home Fires Involving Electrical Failure or Malfunction, vs. All Home Fires, by Victim Activity When Injured
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Activity	Home Electrical Fires				All Home Fires	
	Civilian Deaths		Civilian Injuries		Civilian Deaths	Civilian Injuries
Escaping	179	(39%)	547	(36%)	36%	28%
Sleeping	172	(38%)	196	(13%)	34%	12%
Unable to act	49	(11%)	25	(2%)	11%	3%
Fire control	22	(5%)	370	(25%)	3%	32%
Returning to vicinity of fire	13	(3%)	140	(9%)	3%	7%
Rescue attempt	10	(2%)	120	(8%)	2%	8%
Irrational act	5	(1%)	11	(1%)	5%	3%
Unclassified activity	5	(1%)	94	(6%)	5%	7%
Total	455	(100%)	1,504	(100%)	100%	100%

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

Source: Data from NFIRS Version 5.0 and NFPA survey.

Table 1.7. Home Fires Involving Electrical Failure or Malfunction, by Time of Day
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Time		Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Midnight –	1:59 am	2,910	(7%)	75	(16%)	141	(9%)	$117	(8%)
2:00 –	3:59 am	2,450	(6%)	49	(11%)	137	(9%)	$118	(8%)
4:00 –	5:59 am	2,260	(5%)	66	(15%)	150	(10%)	$97	(7%)
6:00 –	7:59 am	2,670	(6%)	55	(12%)	125	(8%)	$89	(6%)
8:00 –	9:59 am	3,300	(8%)	34	(7%)	113	(8%)	$112	(8%)
10:00 –	11:59 am	3,820	(9%)	18	(4%)	133	(9%)	$127	(9%)
Noon –	1:59 am	4,160	(10%)	28	(6%)	128	(9%)	$146	(10%)
2:00 –	3:59 pm	4,320	(10%)	20	(4%)	110	(7%)	$143	(10%)
4:00 –	5:59 pm	4,580	(11%)	17	(4%)	101	(7%)	$151	(10%)
6:00 –	7:59 pm	4,630	(11%)	25	(5%)	126	(8%)	$141	(10%)
8:00 –	9:59 pm	4,280	(10%)	25	(5%)	113	(8%)	$128	(9%)
10:00 –	11:59 pm	3,500	(8%)	43	(9%)	125	(8%)	$108	(7%)
Total		42,880	(100%)	455	(100%)	1,504	(100%)	$1,476	(100%)

Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. 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 factor contributing to ignition listed as unknown, unreported, none, or blank, with allocations done separately for non-confined and confined fires. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

Table 1.8. Home Fires Involving Electrical Failure or Malfunction, by Month
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	4,760	(11%)	64	(14%)	185	(12%)	$163	(11%)
February	3,810	(9%)	41	(9%)	151	(10%)	$127	(9%)
March	3,600	(8%)	52	(12%)	143	(10%)	$137	(9%)
April	3,200	(7%)	27	(6%)	130	(9%)	$118	(8%)
May	3,030	(7%)	43	(9%)	101	(7%)	$108	(7%)
June	3,380	(8%)	20	(4%)	105	(7%)	$120	(8%)
July	3,530	(8%)	26	(6%)	126	(8%)	$122	(8%)
August	3,320	(8%)	29	(6%)	112	(7%)	$102	(7%)
September	2,900	(7%)	23	(5%)	83	(5%)	$95	(6%)
October	3,110	(7%)	35	(8%)	106	(7%)	$101	(7%)
November	3,460	(8%)	45	(10%)	103	(7%)	$111	(7%)
December	4,790	(11%)	49	(11%)	159	(11%)	$174	(12%)
Total	42,880	(100%)	455	(100%)	1,504	(100%)	$1,476	(100%)

Note: Figures exclude confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. 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 factor contributing to ignition listed as unknown, unreported, none, or blank, with allocations done separately for non-confined and confined fires. Totals may not equal sums because of rounding error.

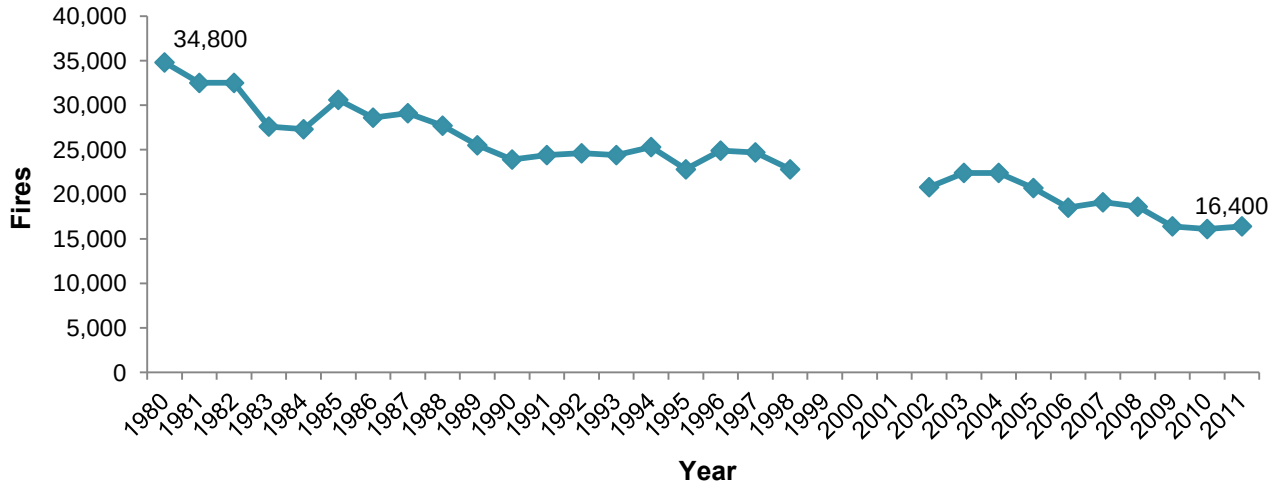
Source: Data from NFIRS Version 5.0 and NFPA survey.

Section 2. Non-Home Electrical Fires

In 2011, an estimated 16,400 home electrical fires were reported to U.S. fire departments. "Electrical fire" is defined as structure fire that involved some type of electrical failure or malfunction as a factor contributing to ignition.
These fires resulted in 13 civilian deaths, 243 civilian injuries, and $501 million in direct property damage.

Non-home electrical fires represented 13% of total 2007-2011 non-home structure fires, 5% of associated civilian deaths, 13% of associated civilian injuries, and 21% of associated direct property damage.

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



Source: Data from NFIRS (Version 5.0 after 1998) and NFPA survey. Note: See Note in Table 2.1.

Figure 2.1 and Table 2.1 show that there has been a fairly steady and substantial downward trend, with the 2011 total being roughly one-half of the size of the 1980 estimated total of 34,800 fires. Direct property damage (adjusted for inflation) had not shown a consistent decline from 1980 to the present until the most recent two years, 2010 and 2011.

These statistics *include* fires reported as "confined fires," for which detailed reporting is not required. Estimates of detailed characteristics for confined fires require statistical allocation of a large share of unknowns and so involve less confidence. In this analysis, fires reported as confined fires added an average of 10% to the non-confined fire estimates in 2007-2011. They added at most 2% to civilian deaths and injuries and to direct property damage.

Most (74%) reported non-home structure fires involving electrical failure or malfunction were reported with few or no details on failure mode.

Table 2.A shows the estimates for different types of electrical failure or malfunction. The two leading types were unclassified electrical failure or malfunction (52%) and unspecified short circuit arc (22%). The leading factor with specific details was short circuit arc from defective or worn insulation (9%).

Table 2.A. Non-Home Fires Involving Electrical Failure or Malfunction as Factor Contributing to Ignition, by Factor Contributing to Ignition
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Type of Electrical Failure or Malfunction	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	9,000	(52%)	9	(76%)	101	(39%)	$425	(58%)
Unspecified short circuit arc	3,870	(22%)	1	(11%)	72	(28%)	$177	(24%)
Short circuit art from defective or worn insulation	1,560	(9%)	0	(0%)	17	(6%)	$50	(7%)
Arc or spark from operating equipment	1,270	(7%)	1	(6%)	33	(13%)	$52	(7%)
Arc from faulty contact or broken conductor	620	(4%)	0	(0%)	14	(6%)	$22	(3%)
Short circuit arc from mechanical damage	610	(4%)	1	(6%)	15	(6%)	$21	(3%)
Water caused short circuit arc	410	(2%)	0	(0%)	4	(1%)	$5	(1%)
Fluorescent light bulb	360	(2%)	0	(0%)	9	(3%)	$9	(0%)
Total fires	17,310	(100%)	12	(100%)	259	(100%)	$736	(100%)
Total factors	17,690	(102%)	12	(100%)	264	(102%)	$761	(104%)

Note: Figures *include* confined fires, which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 ten, civilian deaths and civilian injuries are expressed to the nearest one, and property damage is rounded to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank, with allocations done separately for non-confined and confined fires. Totals may not equal sums because of rounding.

Source: Data from NFIRS Version 5.0 and NFPA survey.

Arcing appears to account for most home electrical fires, as compared with overheating due to overcurrent.

It is useful to estimate the relative frequency of arcing vs. overheating as the mechanism of ignition, because different fire prevention devices (e.g., arc-fault circuit interrupter) or strategies may be more effective on one ignition mechanism than the other.

If electrical failure or malfunction is defined by Factor Contributing to Ignition, then the relative roles of arcing and overheating can be examined using Heat Source. Arcing should be the mode of ignition if Heat Source refers to arcing or sparks. Overheating should be the mode of ignition

if Heat Source refers to radiated or conducted heat or to molten or hot material. Here are the leading Heat Source entries and their respective shares of fires with known Heat Source, from all non-home fires involving electrical failure or malfunction:

- Arcing – 60%, definitely arcing;
- Unclassified heat from powered equipment – 16%, could be either;
- Unclassified heat source – 6%, could be either;
- Spark, ember or flame from operating equipment – 5%, could be either;
- Radiated or conducted heat from operating equipment – 5%; should be overheating;
- Unclassified hot or smoldering object – 4%, probably overheating;
- Heat or spark from friction – 1%, could be either;
- Molten or hot material – 1%, very probably overheating.

These statistics suggest a 6-to-1 ratio of arcing fires to overheating fires based on heat sources that appear likely to be one or the other. If everything that is not specifically arcing is overheating, then the ratio is still 2-to-1 arcing versus overheating.

Fires due to overheating caused by overcurrent can be prevented by overcurrent protection devices, principally circuit breakers and fuses, while fires due to arcing can be prevented by arc fault circuit interrupters (AFCIs). The former has been present in all, or nearly all, homes with electrical service since electrical service has been available. The latter is a technology developed more recently and is still in very limited use.

Half (52%) of 2007-2011 reported U.S. non-home structure fires involving electrical failure or malfunction had some type of electrical distribution or lighting equipment as equipment involved in ignition.
The leading other types of equipment involved in ignition were fan (8%), refrigerator, freezer or icemaker (4%), washer or dryer (2%), and computer or other office equipment (2%). See Table 2.2, which does not include confined fires.

Tables 2.3 to 2.6 also exclude confined fires.

Nearly half (47%) of 2007-2011 non-home electrical fires (structure fires involving electrical failure or malfunction) began with ignition of products often found in concealed spaces – wire or cable insulation (36%) or structural member or framing (11%).
Other leading items first ignited were unclassified item (6%), exterior wall covering (4%), interior wall covering (4%), unclassified structural component or finish (4%), insulation within structural area (4%), and appliance housing or casing (4%). (See Table 2.3.)

Leading areas of origin for 2007-2011 non-home fire incidents were kitchen (5%), unclassified storage area (5%), wall assembly or concealed space (5%), garage (5%), and attic or ceiling/roof assembly or concealed space (5%). (See Table 2.4.)

Non-home electrical fires are less common between midnight and 6:00 a.m., but are slightly more common in winter (37% of fires in December through March). (See Tables 2.5 and 2.6.)

Other reports provide statistics on non-fire incidents and harm due to electricity.
See the following reports:

- Jennifer D. Flynn, *Non-Fire Electrical Wiring and Equipment Problem Incidents Reported to U.S. Fire Departments,* NFPA Fire Analysis and Research Division, Quincy, MA, August 2007 – Analyzes 316,000 reported 2003 incidents, such as power line down, that did not involve fire or rescue.
- Jennifer D. Flynn, *Non-Fire Electrical Rescue Incidents Reported to Fire Departments in 2003,* NFPA Fire Analysis and Research Division, Quincy, MA, August 2007 – Analyzes 2,800 reported incidents, including electrocutions and people trapped by power lines.
- John R. Hall, Jr., *Deaths and Injuries Due to Non-Fire Burns*, NFPA Fire Analysis and Research Division, Quincy, MA, March 2009 – Estimates 1991-2007 electrical burn injuries reported to U.S. hospital emergency rooms and 1980-2005 unintentional-injury deaths by electrical current, including deaths specifically attributable to electric transmission lines or to lightning.

Safety Tips

- Electrical safety begins with NFPA 70, *National Electrical Code*®, and NFPA 70E, *Standard for Electrical Safety in the Workplace*®. However, work on electrical distribution or lighting equipment should only be conducted by someone qualified as an electrician. When you are buying, selling or remodeling a building, have it inspected by a professional 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,
  - cracked or broken outlets.

- Arc fault circuit interrupters (AFCIs) are a type of circuit breaker that shuts off electricity when a dangerous arcing condition occurs. Consider having them installed in your building. Use a qualified electrician.

More of NFPA's electrical safety information is available on our website at www.nfpa.org/electricalfires.

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

Year	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions) As Reported		In 2011 Dollars	
1980	34,800		25		329		$311		$849	
1981	32,500		24		507		$373		$921	
1982	32,500		39		491		$333		$775	
1983	27,600		10		480		$491		$1,106	
1984	27,300		14		507		$329		$711	
1985	30,600		34		406		$426		$889	
1986	28,600		18		460		$375		$770	
1987	29,100		45		451		$414		$818	
1988	27,700		32		491		$585		$1,112	
1989	25,500		12		375		$371		$673	
1990	23,900		17		533		$578		$994	
1991	24,400		12		322		$551		$909	
1992	24,600		27		477		$410		$657	
1993	24,400		20		613		$436		$677	
1994	25,300		15		460		$489		$741	
1995	22,800		28		382		$553		$815	
1996	24,900		12		467		$638		$915	
1997	24,700		27		399		$497		$696	
1998	22,800		41		317		$545		$751	
1999	15,500	(14,400)	0	(0)	352	(352)	$540	($531)	$728	($715)
2000	18,300	(16,600)	11	(11)	236	(236)	$737	($736)	$962	($961)
2001	22,300	(20,100)	16	(16)	243	(243)	$629	($628)	$799	($798)
2002	20,800	(19,200)	25	(25)	266	(266)	$757	($748)	$945	($934)
2003	22,400	(20,200)	8	(8)	298	(298)	$721	($719)	$879	($878)
2004	22,400	(20,400)	22	(22)	220	(220)	$704	($703)	$836	($836)
2005	20,700	(18,800)	44	(44)	336	(328)	$660	($659)	$760	($758)
2006	18,500	(16,700)	22	(22)	256	(238)	$601	($601)	$670	($669)
2007	19,100	(16,800)	14	(14)	252	(246)	$768	($767)	$832	($831)
2008	18,600	(16,800)	17	(17)	242	(242)	$993	($992)	$1,035	($1,034)
2009	16,400	(15,000)	11	(11)	309	(309)	$821	($820)	$860	($859)
2010	16,100	(14,700)	4	(4)	253	(235)	$619	($617)	$638	($637)
2011	16,400	(14,900)	13	(13)	243	(239)	$501	($501)	$501	($501)

Note: Figures in parentheses exclude confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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. Figures for 1980-1998 are based on ignition factor 54-55 and reflect a proportional share of non-home fires with ignition factor unknown, unreported, or blank. Figures for 1999 and later years reflect a proportional share of non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. *Because of low participation in NFIRS Version 5.0 during 1999-2001, estimates for these years are highly uncertain and must be used with caution*. Inflation adjustment to 2011 dollars is done using the consumer price index.
Source: Data from NFIRS (Version 5.0 after 1998) and NFPA survey.

Table 2.2. Non-Home Fires Involving Electrical Failure or Malfunction, by Equipment Involved in Ignition
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Equipment Involved in Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Electrical distribution or lighting equipment	**8,040**	**(52%)**	**12**	**(100%)**	**96**	**(38%)**	**$429**	**(58%)**
Unclassified wiring	2,100	(13%)	9	(73%)	20	(8%)	$138	(19%)
Fluorescent light fixture or ballast	640	(4%)	0	(0%)	5	(2%)	$17	(2%)
Outlet or receptacle	550	(4%)	0	(0%)	11	(4%)	$28	(4%)
Fuse or circuit breaker panel	550	(3%)	0	(0%)	22	(9%)	$39	(5%)
Branch circuit wiring	430	(3%)	0	(0%)	7	(3%)	$17	(2%)
Power (utility) line	420	(3%)	3	(27%)	0	(0%)	$6	(1%)
Extension cord	360	(2%)	0	(0%)	4	(1%)	$39	(5%)
Service supply wiring from utility	330	(2%)	0	(0%)	5	(2%)	$9	(1%)
Distribution type transformer	320	(2%)	0	(0%)	0	(0%)	$16	(2%)
Sign	320	(2%)	0	(0%)	0	(0%)	$6	(1%)
Unclassified lamp, light fixture or sign	280	(2%)	0	(0%)	0	(0%)	$5	(1%)
Meter or meter box	190	(1%)	0	(0%)	3	(1%)	$7	(1%)
Battery charger or rectifier	130	(1%)	0	(0%)	4	(1%)	$12	(2%)
Wiring from meter box to circuit breaker	130	(1%)	0	(0%)	0	(0%)	$5	(1%)
Incandescent light fixture	130	(1%)	0	(0%)	0	(0%)	$2	(0%)
Decorative lights on line voltage	120	(1%)	0	(0%)	0	(0%)	$2	(0%)
Permanently attached power cord or plug	110	(1%)	0	(0%)	0	(0%)	$4	(1%)
Unclassified cord or plug	100	(1%)	0	(0%)	0	(0%)	$14	(2%)
Surge protector	100	(1%)	0	(0%)	2	(1%)	$3	(0%)
Low voltage transformer	100	(1%)	0	(0%)	0	(0%)	$2	(0%)
Detachable power cord or plug	80	(1%)	0	(0%)	0	(0%)	$4	(1%)
Other known electrical distribution or lighting equipment	550	(4%)	0	(0%)	14	(5%)	$55	(7%)
Equipment other than electrical distribution or lighting equipment	**6,580**	**(42%)**	**0**	**(0%)**	**132**	**(52%)**	**$259**	**(35%)**
Fan	1,190	(8%)	0	(0%)	23	(9%)	$15	(2%)
Refrigerator, freezer, or icemaker	670	(4%)	0	(0%)	14	(5%)	$33	(4%)
Air conditioner	590	(4%)	0	(0%)	18	(7%)	$30	(4%)
Portable or stationary space heater	440	(3%)	0	(0%)	26	(10%)	$17	(2%)
Dryer or washer	360	(2%)	0	(0%)	3	(1%)	$6	(1%)
Computer or other office equipment	310	(2%)	0	(0%)	0	(0%)	$18	(2%)
Water heater	220	(1%)	0	(0%)	2	(1%)	$2	(0%)
Entertainment equipment other than television	190	(1%)	0	(0%)	9	(4%)	$18	(2%)
Furnace or other central heating unit	150	(1%)	0	(0%)	2	(1%)	$2	(0%)

Table 2.2. Home Fires Involving Electrical Failure or Malfunction, by Equipment Involved in Ignition
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments (Continued)

Equipment Involved in Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Portable cooking or warming device	120	(1%)	0	(0%)	1	(1%)	$14	(2%)
Air compressor	110	(1%)	0	(0%)	2	(1%)	$10	(1%)
Microwave oven	110	(1%)	0	(0%)	3	(1%)	$2	(0%)
Heat tape	110	(1%)	0	(0%)	0	(0%)	$3	(0%)
Deep fryer	90	(1%)	0	(0%)	2	(1%)	$10	(1%)
Range	90	(1%)	0	(0%)	1	(0%)	$1	(0%)
Television	90	(1%)	0	(0%)	0	(0%)	$2	(0%)
Lawn mower	80	(1%)	0	(0%)	0	(0%)	$5	(1%)
Other known equipment other than electrical distribution or lighting equipment	1,650	(11%)	0	(0%)	27	(11%)	$71	(10%)
No equipment involved	**710**	**(5%)**	**0**	**(0%)**	**14**	**(6%)**	**$31**	**(4%)**
Unclassified equipment	280	(2%)	0	(0%)	12	(5%)	$15	(2%)
Total	**15,610**	**(100%)**	**12**	**(100%)**	**254**	**(100%)**	**$735**	**(100%)**

Table 2.3. Non-Home Fires Involving Electrical Failure or Malfunction, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	5,610	(36%)	1	(13%)	85	(34%)	$242	(33%)
Structural member or framing	1,730	(11%)	0	(0%)	12	(5%)	$106	(14%)
Unclassified item	980	(6%)	3	(26%)	14	(5%)	$25	(3%)
Exterior wall covering	660	(4%)	1	(10%)	8	(3%)	$18	(2%)
Interior wall covering	650	(4%)	2	(14%)	12	(5%)	$51	(7%)
Unclassified structural component or finish	610	(4%)	0	(0%)	6	(2%)	$29	(4%)
Insulation within structural area	580	(4%)	0	(0%)	3	(1%)	$14	(2%)
Appliance housing or casing	560	(4%)	0	(0%)	16	(6%)	$22	(3%)
Interior ceiling covering	440	(3%)	0	(0%)	3	(1%)	$23	(3%)
Exterior roof covering	320	(2%)	1	(11%)	2	(1%)	$15	(2%)
Transformer or transformer fluid	240	(2%)	0	(0%)	2	(1%)	$12	(2%)
Multiple items first ignited	240	(2%)	2	(14%)	5	(2%)	$23	(3%)
Flammable or combustible gas or liquid	190	(1%)	0	(0%)	25	(10%)	22	(3%)
Dust, fiber, or lint	170	(1%)	0	(0%)	10	(4%)	$17	(2%)
Cabinetry	160	(1%)	0	(0%)	5	(2%)	$10	(1%)
Box or bag	160	(1%)	0	(0%)	2	(1%)	$9	(1%)
Sign	150	(1%0	0	(0%)	0	(0%)	$1	(0%)
Floor covering	140	(1%)	0	(0%)	4	(1%)	$6	(1%)
Unclassified furniture or utensil	140	(1%)	0	(0%)	3	(1%)	$7	(1%)
Unclassified storage supplies	120	(1%)	0	(0%)	2	(1%)	$6	(1%)
Light vegetation including grass	120	(1%)	0	(0%)	2	(1%)	$2	(0%)
Pipe, duct, conduit, or hose covering	120	(1%)	0	(0%)	5	(2%)	$5	(1%)
Mattress or bedding	110	(1%)	0	(0%)	7	(3%)	$3	(0%)
Pipe, duct, conduit or hose	100	(1%)	0	(0%)	1	(0%)	$2	(0%)
Unclassified organic material	100	(1%)	0	(0%)	0	(0%)	$3	(0%)
Exterior trim including doors	100	(1%)	0	(0%)	0	(0%)	$4	(1%)
Upholstered furniture	90	(1%)	1	(12%)	3	(1%)	$6	(1%)
Agricultural crop including fruits and vegetables	80	(1%)	0	(0%)	1	(0%)	$2	(0%)
Other known item first ignited	940	(6%)	0	(0%)	18	(7%)	$47	(6%)
Total	15,610	(100%)	12	(100%)	254	(100%)	$735	(100%)

Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. 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 non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Figures reflect a proportional share of non-home fires with factor contributing to ignition coded as electrical failure or malfunction and item first ignited and unknown or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

Table 2.4. Non-Home Fires Involving Electrical Failure or Malfunction, by Area of Origin
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Kitchen	850	(5%)	0	(0%)	11	(5%)	$38	(5%)
Unclassified storage area	800	(5%)	0	(0%)	10	(4%)	$38	(5%)
Wall assembly or concealed space	780	(5%)	0	(0%)	8	(3%)	$33	(4%)
Garage*	750	(5%)	0	(0%)	15	(6%)	$36	(5%)
Attic or ceiling/roof assembly or concealed space	740	(5%)	0	(0%)	2	(1%)	$51	(7%)
Unclassified equipment or service area	650	(4%)	1	(7%)	11	(4%)	$46	(6%)
Exterior wall surface	650	(4%)	0	(0%)	6	(2%)	$15	(2%)
Bathroom	640	(4%)	0	(0%)	7	(3%)	$8	(1%)
Bedroom	520	(3%)	1	(10%)	44	(17%)	$16	(2%)
Unclassified area of origin	510	(3%)	2	(18%)	3	(1%)	$9	(1%)
Office	490	(3%)	0	(0%)	7	(3%)	$40	(5%)
Unclassified structural area	480	(3%)	1	(10%)	4	(2%)	$20	(3%)
Ceiling/floor assembly or concealed space	450	(3%)	0	(0%)	7	(3%)	$23	(3%)
Storage of supplies or tools	450	(3%)	0	(0%)	3	(1%)	$20	(3%)
Switchgear area or transformer vault	440	(3%)	1	(7%)	13	(5%)	$35	(5%)
Exterior roof surface	420	(3%)	1	(8%)	2	(1%)	$12	(2%)
Unclassified outside area	410	(3%)	1	(8%)	1	(0%)	$4	(1%)
Unclassified function area	370	(2%)	0	(0%)	5	(2%)	$12	(2%)
Storage room or area	320	(2%)	0	(0%)	6	(3%)	$15	(2%)
Conduit, pipe, utility, or ventilation shaft	320	(2%)	0	(0%)	2	(1%)	$8	(1%)
Laundry room	270	(2%)	0	(0%)	4	(2%)	$6	(1%)
Crawl space or substructure space	230	(1%)	0	(0%)	5	(2%)	$7	(1%)
Heating equipment room	230	(1%)	0	(0%)	2	(1%)	$8	(1%)
Processing or manufacturing area or workroom	230	(1%)	0	(0%)	13	(5%)	$22	(3%)
Machinery room or area	230	(1%)	0	(0%)	4	(1%)	$24	(3%)
Duct for HVAC, cable, or exhaust	230	(1%)	0	(0%)	3	(1%)	$4	(1%)
Maintenance or paint shop or area	210	(1%)	0	(0%)	10	(4%)	$19	(3%)
Common room or lounge	180	(1%)	2	(21%)	9	(4%)	$12	(2%)
Unclassified service facility	160	(1%)	0	(0%)	2	(1%)	$9	(1%)
Unclassified assembly or sales area	140	(1%)	0	(0%)	3	(1%)	$10	(1%)
Lobby or entrance way	140	(1%)	0	(0%)	1	(0%)	$8	(1%)

Table 2.4. Non-Home Fires Involving Electrical Failure or Malfunction, by Area of Origin
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments (Continued)

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Small assembly area with less than 100 person capacity	140	(1%)	1	(7%)	4	(2%)	$8	(1%)
Engine or wheel area of vehicle	140	(1%)	0	(0%)	1	(0%)	$9	(1%)
Closet	120	(1%)	0	(0%)	0	(0%)	$4	(1%)
Awning	110	(1%)	0	(0%)	1	(0%)	$2	(0%)
Hallway, corridor, or mall	100	(1%)	0	(0%)	1	(0%)	$2	(0%)
Unclassified vehicle area	100	(1%)	0	(0%)	0	(0%)	$6	(1%)
Dining room, bar or cafeteria	90	(1%)	0	(0%)	0	(0%)	$5	(1%)
Computer room or control room	90	(1%)	0	(0%)	3	(1%)	$8	(1%)
On or near highway, public way or street	90	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified means of egress	80	(1%)	0	(0%)	1	(0%)	$2	(0%)
Shipping, receiving, or loading area	80	(1%)	0	(0%)	5	(2%)	$9	(1%)
Other known area of origin	880	(6%)	1	(5%)	13	(5%)	$49	(7%)
Total fires	15,610	(100%)	12	(100%)	254	(100%)	$735	(100%)

* Excludes garage reported as separate property.

Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. 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 non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Figures reflect a proportional share of non-home fires with factor contributing to ignition coded as electrical failure or malfunction and area of origin shown as unknown or blank, with allocations done separately for non-confined and confined fires. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

Table 2.5. Non-Home Fires Involving Electrical Failure or Malfunction, by Time of Day
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Midnight – 1:59 am	930	(6%)	2	(15%)	11	(4%)	$84	(11%)
2:00 – 3:59 am	820	(5%)	3	(24%)	14	(6%)	$68	(9%)
4:00 – 5:59 am	800	(5%)	2	(13%)	16	(6%)	$63	(9%)
6:00 – 7:59 am	1,150	(7%)	2	(15%)	24	(9%)	$59	(8%)
8:00 – 9:59 am	1,410	(9%)	1	(6%)	44	(17%)	$59	(8%)
10:00 – 11:59 am	1,600	(10%)	1	(7%)	27	(11%)	$53	(7%)
Noon – 1:59 am	1,600	(10%)	0	(0%)	27	(11%)	$52	(7%)
2:00 – 3:59 pm	1,630	(10%)	1	(11%)	26	(10%)	$53	(7%)
4:00 – 5:59 pm	1,600	(10%)	1	(8%)	19	(7%)	$57	(8%)
6:00 – 7:59 pm	1,500	(10%)	0	(0%)	19	(8%)	$60	(8%)
8:00 – 9:59 pm	1,410	(9%)	0	(0%)	11	(4%)	$69	(9%)
10:00 – 11:59 pm	1,150	(7%)	0	(0%)	16	(6%)	$58	(8%)
Total	15,610	(100%)	12	(100%)	254	(100%)	$735	(100%)

* Excludes garage reported as separate property.

Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. 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 non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

Table 2.6. Non-Home Fires Involving Electrical Failure or Malfunction, by Month
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	1,590	(10%)	2	(18%)	26	(10%)	$72	(10%)
February	1,360	(9%)	0	(4%)	21	(8%)	$52	(7%)
March	1,390	(9%)	1	(11%)	26	(10%)	$52	(7%)
April	1,240	(8%)	0	(0%)	23	(9%)	$65	(9%)
May	1,250	(8%)	1	(8%)	21	(8%)	$56	(8%)
June	1,270	(8%)	1	(7%)	16	(6%)	$65	(9%)
July	1,220	(8%)	0	(0%)	24	(9%)	$62	(8%)
August	1,280	(8%)	1	(11%)	18	(7%)	$59	(8%)
September	1,150	(7%)	1	(11%)	18	(7%)	$67	(9%)
October	1,190	(8%)	1	(6%)	12	(5%)	$50	(7%)
November	1,200	(8%)	3	(24%)	17	(7%)	$59	(8%)
December	1,460	(9%)	0	(0%)	32	(12%)	$76	(10%)
Total	15,610	(100%)	12	(100%)	254	(100%)	$735	(100%)

Note: Figures *exclude* confined fires which are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. 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 non-home fires with factor contributing to ignition listed as unknown, unreported, none, or blank. Totals may not equal sums because of rounding error.

Source: Data from NFIRS Version 5.0 and NFPA survey.

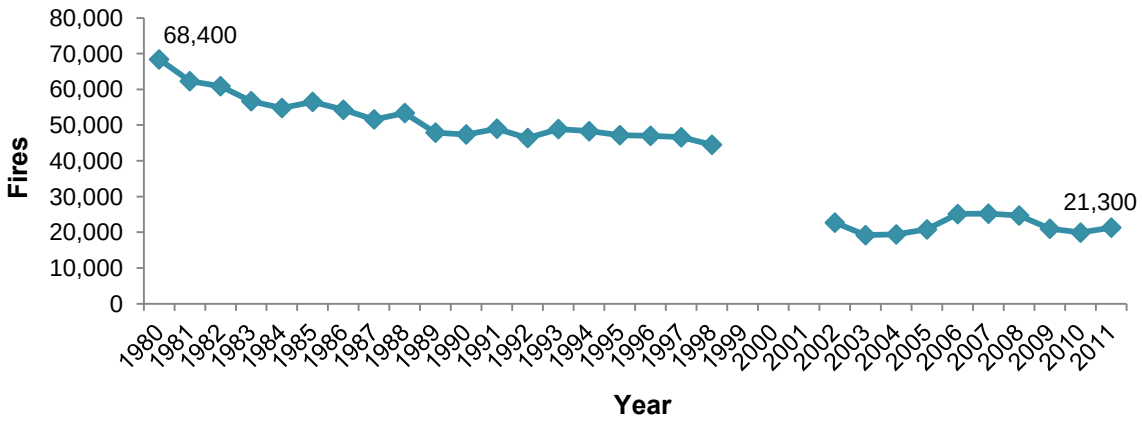
Section 3. Home Electrical Distribution or Lighting Equipment

In 2011, an estimated 21,300 reported U.S. home structure fires involving electrical distribution or lighting equipment resulted in 295 civilian deaths, 840 civilian injuries, and $822 million in direct property damage.

As with other types of equipment cited as equipment involved in ignition, all that we know from this designation is that the equipment provided the heat leading to ignition. That does not mean that there was an electrical or any other type of failure or malfunction. For example, a hot light bulb might have been too close to combustibles.

Electrical distribution or lighting equipment accounted for 6% of 2007-2011 home structure fires, ranking fourth among major causes behind cooking equipment, heating equipment, and intentional. Electrical distribution or lighting equipment also accounted for 13% of associated civilian deaths (ranking behind smoking materials, heating equipment, and cooking equipment, and tied with intentional), 7% of associated civilian injuries (ranking fourth), and 11% of associated direct property damage (ranking fourth).

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



Source: Data from NFIRS (Version 5.0 after 1998) and NFPA survey. Note: See Note in Table 3.1.

The national estimates in this report are derived from data reported to the U.S. Fire Administration's National Fire Incident Reporting System (NFIRS) and the NFPA annual fire experience survey. Fires declined by about one-third from 1980 to 1998. (See Figure 3.1 and Table 3.1.) Version 5.0 of NFIRS, introduced in 1999, contained numerous changes in data categories, definitions, and rules. After the transition period of 1999-2001, when NFIRS 5.0 was being phased in, the estimates settled into a level about one-half lower than the levels of the late 1990s, a 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.

NFIRS Version 5.0 introduced six types of "confined fires" – fires confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor – for which detailed reporting is not required. Estimates of detailed characteristics for confined fires involve

a large share of unknowns and so involve less confidence. In 2007-2011, an average of 460 home structure confined fires per year involved electrical distribution or lightning equipment. They add only 2.1% to non-confined fires, 1.2% to associated civilian injuries, and 0.0% to associated civilian deaths and direct property damage. Therefore, no analyses in this section include confined fires.

The report is organized around four major sub-groups of electrical distribution or lighting equipment:

- Wiring and related equipment from power supply to outlet or switch. The following types of equipment are included:
  - Wiring
  - Meters and meter boxes
  - Overcurrent protection equipment
  - Outlets, receptacles, and switches
- Lamps, light fixtures, light bulbs, and signs
- Cords and plugs
- Transformers and power supplies, including surge protectors

There are also two minor equipment groups, which account for too few fires to support more detailed analysis:

- Electric fences
- Lightning rods and lightning arresters (normally called surge arresters)

Table 3.A. Home Fires Involving Electrical Distribution or Lighting Equipment, by Major Equipment Group
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Major Equipment Group	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wiring and related equipment	14,050	(63%)	162	(50%)	413	(43%)	$474	(58%)
Lamps, light fixtures, and light bulbs	4,490	(20%)	54	(17%)	260	(27%)	$180	(22%)
Cords and plugs	2,530	(11%)	98	(30%)	203	(21%)	$97	(12%)
Transformers and power supplies	1,310	(6%)	11	(4%)	75	(8%)	$64	(8%)
Electric fences	20	(0%)	0	(0%)	0	(0%)	$1	(0%)
Lightning rods and arresters	10	(0%)	0	(0%)	0	(0%)	$0	(0%)
Total	22,410	(100%)	325	(100%)	950	(100%)	$817	(100%)

Note: Figures *exclude* fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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.

Another way to think about different types of wiring-related equipment is to track electricity from an electric generating facility to a powered electric appliance. (See Table 3.B.)

Table 3.B. Electrical Distribution Equipment by Location in Path of Electricity from Power Source to End Use in Home

Type of Equipment	Conveys Electricity From	Conveys Electricity To
Power (utility) line	Electric generating plant	Utility pole
Service supply wiring	Utility pole	Meter
Wiring from meter box to	Meter	Panelboard (fuses or circuit breakers)
Electric branch circuit	Panelboard	Outlet, receptacle, light fixture, or other installed device
Power cord or extension cord	Outlet or receptacle	Lamp or other plug-in lighting or other electrical device

Note: This table does not show where electricity from a generator, battery, or uninterrupted power supply is connected. This table shows panelboards but does not show other devices installed to interrupt the flow of electricity, including wall switches, surge protectors, GFCIs, and AFCIs. This table does not show the location of transformers or other separate devices designed to change voltages.

Wiring and related equipment accounted for most (63%) 2007-2011 home structure fires involving electrical distribution or lighting equipment.
See Table 3.A. Lamps, light fixtures, and signs accounted for 20% of these fires. Cords and plugs accounted for only 11% of the fires but for 30% of associated deaths (and 21% of injuries), compared to 50% of deaths associated with wiring and related equipment.

Nearly three-fourths (74%) of 2007-2011 home structure fires involving electrical distribution or lighting equipment cited factors contributing to ignition that are electrical failures or malfunctions.
Leading electrical factors with specific detail include short circuit arc from defective or worn insulation (10% of fires), arc from faulty contact or broken conductor (4%), and short circuit arc from mechanical damage (3%). (See Table 3.2.)

The majority of 2007-2011 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 (32%), structural member or framing (16%), insulation within structural area (6%), and exterior wall covering (5%).
Leading items first ignited for fire deaths involving these types of equipment were wire or cable insulation (25%), structural member or framing (14%), mattress or bedding (12%), upholstered furniture (10%), and floor covering (6%). (See Table 3.3.)

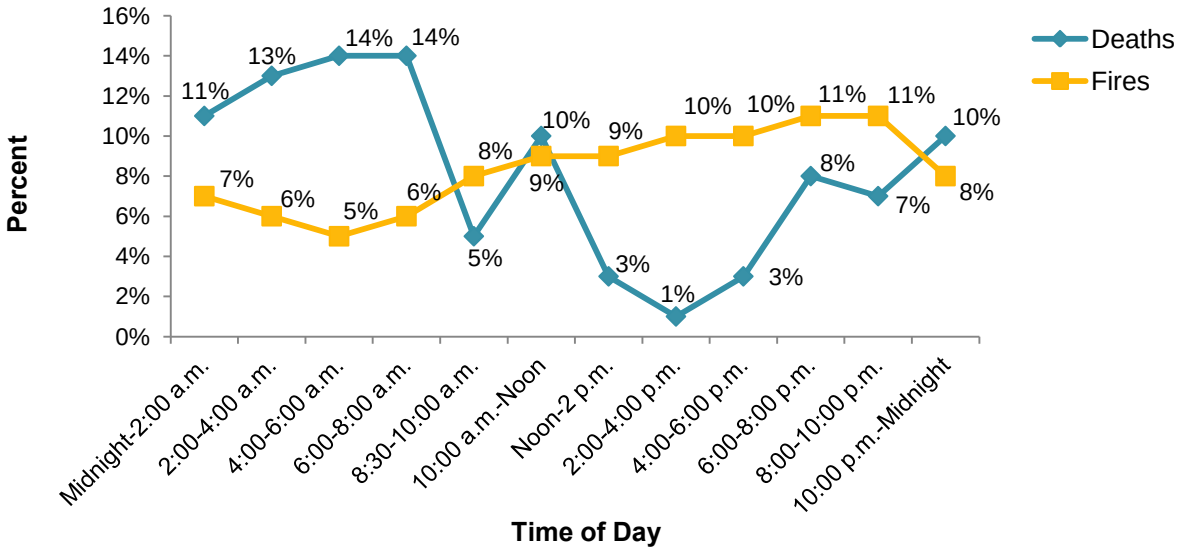
Nearly half (44%) of deaths in 2007-2011 home structure fires involving electrical distribution or lighting equipment resulted from fires that began in a living room, family room, or den (23%) or bedroom (21%).
Leading areas of origin for fire incidents include both those identified with specific living areas – e.g., bedroom (18%), living room, family room, or den (8%), kitchen (6%), and unclassified

function area (4%) – and those identified as structural or exterior areas – e.g., attic or ceiling/roof assembly or concealed space (11%), wall assembly or concealed space (8%), exterior wall surface (5%), ceiling/floor assembly or concealed space (4%), crawl space or substructure space (4%), and garage (4%). (See Table 3.4.)

Nearly two-thirds (64%) of deaths in 2007-2011 home structure fires involving electrical distribution or lighting equipment involved victims who were outside the area of origin when injured.
This compares to 47% of the fatal victims being outside the area of origin when injured for all home structure fire deaths. Table 3.5 provides details on victim location when injured and when fire began.[7]

Table 3.6 provides an overview of victim activity when injured. Relative to all 2007-2011 home structure fire deaths, the fatal victims of 2007-2011 home structure fires involving electrical distribution or lighting equipment were more likely to be attempting to escape (46% vs. 36%) and less likely to have been sleeping (29% vs. 34%).

Figure 3.2. Non-Confined Home Fires and Deaths Involving Electrical Distribution or Lighting Equipment, by Time of Day, 2007-2011

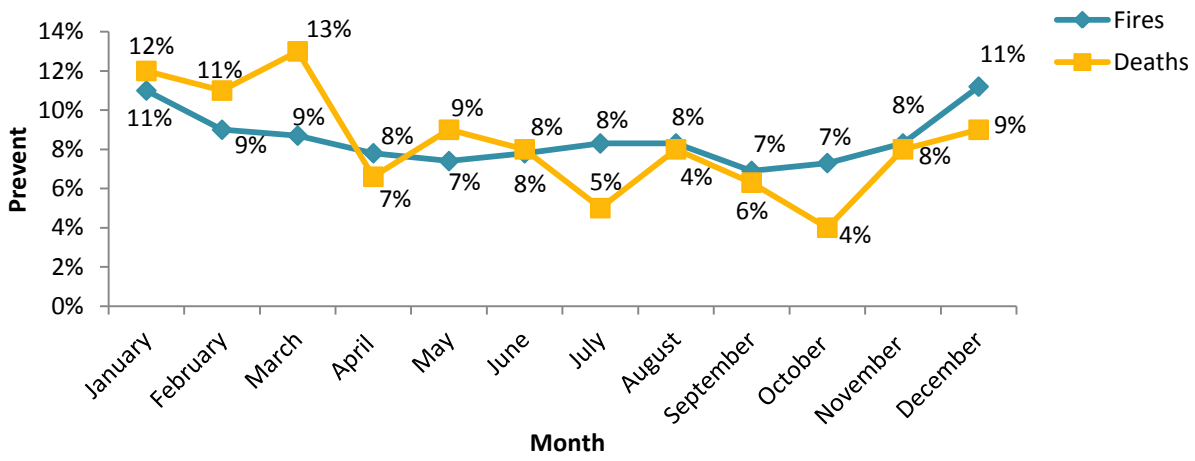


Source: Data from NFIRS Version 5.0 and NFPA survey. Note: See Note on Table 3.8.

This is despite the fact that 2007-2011 home structure fire deaths involving electrical distribution or lighting equipment show the same kind of night time peak as do 2007-2011 home structure fire deaths of all causes. (See Figure 3.2 and Table 3.7.)

[7] For more information on victim characteristics for home fires in general, see Jennifer D. Flynn, *Characteristics of Home Fire Victims*, NFPA Fire Analysis and Research Division, March 2010.

Figure 3.3. Non-Confined Home Fires and Deaths Involving Electrical Distribution or Lighting Equipment, by Month, 2007-2011



Source: Data from NFIRS Version 5.0 and NFPA survey. Note: See Note on Table 3.9.

Home structure fires involving electrical distribution or lighting equipment, in 2007-2011, showed a winter peak similar to that for heating equipment but less pronounced.
Figure 3.3 and Table 3.8 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.

Electrical distribution and lighting equipment dwelling fires have been shown to increase in frequency with increasing dwelling age.[8]
The statistical relationship between electrical distribution and lighting equipment fires and age of dwelling is not an artifact of correlations with other factors, which is not true for correlations between dwelling age and home fires in general or home fires of other causes. 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.[9] This is because several states (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. See a more extended and detailed discussion about the age of home and its electrical system vs. fire risks in the electrical failure or malfunction section of this report.

[8] 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.
[9] John R. Hall, Jr., *U.S. Unintentional Fire Death Rates, by State*, NFPA Fire Analysis and Research Division, Quincy, MA, October 2012.

In 1999 to 2011, 695 people died of non-fire injuries from unvented carbon monoxide from generators, or 58 deaths per year.[10]
Generators are the only electrical distribution or lighting equipment that burn fuel, which makes them the only electrical distribution or lighting equipment that generates 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 until 2007, 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, peaking at 92 per year in 2005-2006, then falling to 72 per year in 2007-2009, down to 39 in 2010, and back up to 73 in 2011.

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.[11] This meant a large number of generator users had no experience in safe generator use. Disasters like Hurricane Katrina and a series of Florida hurricanes 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 695 non-fire carbon monoxide generator deaths in 1999-2011. One-eighth (84 deaths) of the 687 deaths in known locations occurred in temporary shelters.

Of the 755 deaths where the reason for generator use was known:

- 30% involved generator usage because of a weather-related power outage (29%) or because of preparation for a coming storm (1%),
- 30% involved generator usage because power had been shut off because of non-payment (19%) or because power had not been turned on in a building still under construction (11%),
- 22% involved generator use in either a building that does normally have power (7%) or a property separate from the main housing unit (15%), such as a storage shed, trailer, boat, camper, cabin, or campsite, and
- 19% involved generator use in a power outage due to unknown reasons (16%) or for miscellaneous other reasons (3%).

CPSC analyzed the 310 deaths in incidents where it was known whether a carbon monoxide detector was present. Of these deaths, 287 (93%) were in locations with no CO detector and 23 (7%) were in locations with a CO detector. Of the 18 deaths in locations with CO detectors and where it was known whether the CO detector alarmed, 14 did not alarm because of no power (7 plug-in types that were not connected to power and 7 battery-powered types with batteries removed or incorrectly inserted), 2 did not alarm for unknown reasons, and 2 alarmed.

[10] Matthew V. Hnatov, *Incidents, deaths and in-depth investigations associated with non-fire carbon monoxide from engine-driven generators and other engine-driven tools, 1999-2011*, U.S. Consumer Product Safety Commission, July 2012, accessed at www.cpsc.gov.
[11] *Portable Generators*, U.S. Consumer Product Safety Commission, May 20, 2004, accessed at www.cpsc.gov.

In 2002-2009, eight types of electrical distribution or lighting equipment accounted for an average of 12.9 electrocution deaths per year.[12]
Two types of lighting equipment together averaged 4.3 electrocution deaths. Three types of wiring together averaged 3.9 electrocution deaths per year. Two types of cords together averaged 3.4 electrocution deaths. Electric fences averaged 1.4 deaths.

In 2011, an estimated 82,530 injuries involving electrical distribution or lighting equipment were reported to hospital emergency rooms.[13]
Half of these injuries involved lamps, light fixtures, or light bulbs. See Table 3.C. Note that thermal burns can result from contact with hot objects as well as from fires.

Table 3.C. Injuries Involving Electrical Distribution or Lighting Equipment, Reported to Hospital Emergency Rooms, 2011

Equipment	Type of Injury							
	Total		Laceration		Contusion or abrasion		Shock or thermal or electrical burn	
Lamps, light fixtures, and light bulbs	40,530	(49%)	18,680	(75%)	4,020	(39%)	3,600	(36%)
Transformers and power supplies	16,050	(19%)	1,180	(5%)	1,570	(15%)	510	(5%)
Cords and plugs	14,260	(17%)	1,770	(7%)	3,550	(35%)	740	(7%)
Wiring and related equipment	11,600	(14%)	3,200	(13%)	1,070	(10%)	5,120	(51%)
Lightning rods and arresters	90	(0%)	80	(0%)	0	(0%)	0	(0%)
Total electrical distribution and lighting equipment	82,530	(100%)	24,910	(100%)	10,210	(100%)	9,970	(100%)

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. The injuries reported under the transformer and power supplies category specifically involved batteries (77%), generators (16%), and battery chargers (7%). Nearly half of the battery injuries involved ingestion.

Also power cord injuries are to be recorded under the appliances they support and so may not be fully reflected in the cord and plug injuries.

[12] Matthew V. Hnatov, 2009 *Electrocutions Associated with Consumer Products*, U.S. Consumer Product Safety Commission, November 2012, accessed at www.cpsc.gov.
[13] "Statistics from National Electronic Injury Surveillance System (NEISS) data obtained from the U.S. Consumer Product Safety Commission (CPSC) website, www.cpsc.gov.

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. When you are buying, selling or remodeling a home, have it inspected by a professional 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,
  - cracked or broken outlets.

- 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.
- Use light bulbs that match the recommended wattage on the lamp or fixture.

- If a fuse blows or a circuit breaker trips often, find out why and correct the problem.
- Replace fuses with the proper 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 electrical cords. If you have older cords with cloth covering, check for fraying as well, and replace any frayed 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.
- Receptacle outlets and switches should have wall plates to prevent shocks.
- Homes with young children should have tamper-resistant electrical receptacles.

- 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 type of circuit breaker that shuts off electricity when a dangerous arcing condition occurs. Consider having them installed in your home. Use a qualified electrician.
- Ground fault circuit interrupters (GFCIs) reduce the risk of shock.
- Test AFCIs and GFCIs once a month to make sure they are working properly.

- Keep ladders at least 10 feet 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 utility before digging.

More of NFPA's electrical safety information is available on our website at www.nfpa.org/electricalfires.

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

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions) As Reported	In 2011 Dollars
1980	68,400	523	1,650	$493	$1,347
1981	62,300	553	1,500	$459	$1,133
1982	60,900	408	1,820	$519	$1,208
1983	56,700	500	1,570	$548	$1,236
1984	54,800	445	1,520	$549	$1,186
1985	56,500	470	1,400	$720	$1,502
1986	54,300	717	1,420	$597	$1,225
1987	51,600	522	1,580	$512	$1,012
1988	53,400	439	1,720	$715	$1,359
1989	47,900	610	1,500	$642	$1,165
1990	47,400	438	1,540	$683	$1,176
1991	49,000	354	1,890	$958*	$1,580*
1992	46,400	403	1,770	$617	$989
1993	48,900	418	1,900	$818	$1,273
1994	48,300	464	1,640	$714	$1,083
1995	47,200	489	1,650	$775	$1,143
1996	47,000	470	1,560	$839	$1,203
1997	46,600	352	1,580	$865	$1,211
1998	44,500	363	1,370	$843	$1,163
1999	34,800	183	530	$806	$1,087
2000	26,600	122	1,130	$631	$823
2001	26,200	436	1,030	$717	$910
2002	22,700	166	700	$593	$741
2003	19,200	320	600	$698	$853
2004	19,400	292	840	$623	$742
2005	20,800	498	1,060	$858	$988
2006	25,100	366	840	$776	$865
2007	25,200	274	1,050	$663	$718
2008	24,700	515	880	$964	$1,005
2009	21,000	318	1,000	$935	$979
2010	19,900	242	980	$774	$799
2011	21,300	295	840	$822	$822

* 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 fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 are expressed to the nearest one, 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 2011 dollars is done using the consumer price index.
Source: Data from NFIRS (Version 5.0 after 1998) and NFPA survey.

Table 3.2. Home Fires Involving Electrical Distribution or Lighting Equipment, by Factor Contributing to Ignition
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	6,820	(30%)	96	(30%)	292	(31%)	$314	(38%)
Unspecified short circuit arc	5,580	(25%)	90	(28%)	201	(21%)	$202	(25%)
Short circuit arc from defective or worn insulation	2,220	(10%)	34	(11%)	53	(6%)	$49	(6%)
Heat source too close to combustibles	1,910	(9%)	29	(9%)	135	(14%)	$76	(9%)
Arc from faulty contact or broken conductor	1,000	(4%)	19	(6%)	34	(4%)	$24	(3%)
Equipment overloaded	820	(4%)	28	(9%)	74	(8%)	$30	(4%)
Unclassified mechanical failure or malfunction	710	(3%)	0	(0%)	32	(3%)	$18	(2%)
Short circuit arc from mechanical damage	700	(3%)	23	(7%)	13	(1%)	$22	(3%)
Arc or spark from operating equipment	520	(2%)	6	(2%)	24	(3%)	$29	(3%)
Unclassified misuse of material	420	(2%)	12	(4%)	36	(4%)	$16	(2%)
Installation deficiency	360	(2%)	15	(5%)	6	(1%)	$21	(3%)
Worn out	340	(2%)	11	(3%)	16	(2%)	$7	(1%)
Storm	280	(1%)	6	(2%)	5	(0%)	$12	(1%)
Unclassified factor contributed to ignition	260	(1%)	6	(2%)	6	(1%)	$13	(2%)
Equipment unattended	260	(1%)	0	(0%)	17	(2%)	$14	(2%)
Water caused short circuit arc	250	(1%)	0	(0%)	3	(0%)	$5	(1%)
Unintentionally turned on or not turned off	180	(1%)	0	(0%)	3	(0%)	$7	(1%)
Collision, knock down, or turn over	170	(1%)	0	(0%)	24	(2%)	$4	(1%)
Animal	160	(1%)	0	(0%)	2	(0%)	$3	(0%)
Equipment not being operated properly	140	(1%)	0	(0%)	12	(1%)	$5	(1%)
High wind	120	(1%)	0	(0%)	2	(0%)	$10	(1%)
Fluorescent light ballast	120	(1%)	0	(0%)	8	(1%)	$4	(0%)
Other known factor contributing to ignition	1,010	(5%)	12	(4%)	65	(7%)	$38	(5%)
Total fires	22,410	(100%)	325	(100%)	950	(100%)	$817	(100%)
Total factor entries	24,340	(109%)	386	(119%)	1060	(112%)	$920	(113%)
All electrical failures or malfunctions	16,640	(74%)	254	(78%)	599	(63%)	$620	(76%)

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 fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 3.3. Home Fires Involving Electrical Distribution or Lighting Equipment, by Item First Ignited
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	7,060	(32%)	82	(25%)	258	(27%)	$195	(24%)
Structural member or framing	3,610	(16%)	46	(14%)	82	(9%)	$178	(22%)
Insulation within structural area	1,410	(6%)	3	(1%)	11	(1%)	$31	(4%)
Exterior wall covering	1,170	(5%)	6	(2%)	26	(3%)	$63	(8%)
Interior wall covering	970	(4%)	8	(2%)	36	(4%)	$33	(4%)
Mattress or bedding	870	(4%)	39	(12%)	75	(8%)	$34	(4%)
Unclassified structural component or finish	740	(3%)	6	(2%)	14	(1%)	$23	(3%)
Unclassified item	670	(3%)	8	(2%)	21	(2%)	$23	(3%)
Clothing	630	(3%)	0	(0%)	33	(3%)	$19	(2%)
Floor covering	590	(3%)	21	(6%)	38	(4%)	$22	(3%)
Upholstered furniture	460	(2%)	31	(10%)	70	(7%)	$27	(3%)
Interior ceiling covering	430	(2%)	8	(2%)	13	(1%)	$13	(2%)
Unclassified furniture or utensil	390	(2%)	14	(4%)	35	(4%)	$15	(2%)
Appliance housing or casing	370	(2%)	0	(0%)	9	(1%)	$11	(1%)
Multiple items first ignited	290	(1%)	3	(1%)	22	(2%)	$24	(3%)
Cabinetry	270	(1%)	3	(1%)	11	(1%)	$12	(1%)
Unclassified soft goods or clothing	270	(1%)	2	(1%)	37	(4%)	$13	(2%)
Curtain or drape	220	(1%)	8	(2%)	20	(2%)	$9	(1%)
Light vegetation including grass	180	(1%)	0	(0%)	1	(0%)	$8	(1%)
Linen other than bedding	170	(1%)	0	(0%)	11	(1%)	$2	(0%)
Flammable or combustible gas or liquid	160	(1%)	13	(4%)	38	(4%)	$9	(1%)
Box or bag	160	(1%)	0	(0%)	17	(2%)	$10	(1%)
Exterior roof covering	140	(1%)	0	(0%)	0	(0%)	$6	(1%)
Papers	130	(1%)	5	(2%)	15	(2%)	$7	(1%)
Unclassified organic material	120	(1%)	0	(0%)	1	(0%)	$3	(0%)
Other known item	920	(4%)	19	(6%)	57	(6%)	$30	(4%)
Total fires	22,410	(100%)	325	(100%)	950	(100%)	$817	(100%)

Note: Figures *exclude* confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 3.4. Home Fires Involving Electrical Distribution or Lighting Equipment, by Area of Origin
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	3,950	(18%)	69	(21%)	265	(28%)	$148	(18%)
Attic or ceiling/roof assembly or concealed space	2,400	(11%)	8	(2%)	24	(2%)	$92	(11%)
Living room, family room, or den	1,830	(8%)	73	(23%)	164	(17%)	$78	(9%)
Wall assembly or concealed space	1,810	(8%)	20	(6%)	40	(4%)	$48	(6%)
Kitchen	1,340	(6%)	14	(4%)	62	(7%)	$41	(5%)
Exterior wall surface	1,220	(5%)	4	(1%)	23	(2%)	$26	(3%)
Ceiling/floor assembly or concealed space	950	(4%)	15	(4%)	16	(2%)	$35	(4%)
Crawl space or substructure space	940	(4%)	15	(5%)	38	(4%)	$36	(4%)
Garage*	930	(4%)	6	(2%)	49	(5%)	$79	(10%)
Unclassified function area	870	(4%)	31	(10%)	60	(6%)	$33	(4%)
Laundry room	750	(3%)	11	(3%)	33	(4%)	$19	(2%)
Bathroom	700	(3%)	2	(1%)	34	(4%)	$13	(2%)
Closet	570	(3%)	17	(5%)	26	(3%)	$21	(3%)
Unclassified structural area	370	(2%)	6	(2%)	4	(0%)	$17	(2%)
Exterior balcony or unenclosed porch	350	(2%)	10	(3%)	7	(1%)	$18	(2%)
Unclassified storage area	320	(1%)	0	(0%)	13	(1%)	$13	(2%)
Unclassified outside area	260	(1%)	2	(1%)	2	(0%)	$8	(1%)
Unclassified equipment or service area	250	(1%)	0	(0%)	1	(0%)	$10	(1%)
Conduit, pipe, utility, or ventilation shaft	230	(1%)	0	(0%)	0	(0%)	$4	(1%)
Unclassified area of origin	220	(1%)	2	(1%)	4	(0%)	$4	(1%)
Heating equipment room	200	(1%)	0	(0%)	3	(0%)	$5	(1%)
Courtyard, terrace or patio	180	(1%)	2	(1%)	11	(1%)	$11	(1%)
Storage room or area	170	(1%)	0	(0%)	16	(2%)	$4	(1%)
Dining room	140	(1%)	2	(1%)	1	(0%)	$5	(1%)
Storage of supplies or tools	140	(1%)	0	(0%)	1	(0%)	$5	(1%)
Lobby or entrance way	130	(1%)	2	(1%)	5	(0%)	$4	(1%)
Exterior roof surface	130	(1%)	0	(0%)	1	(0%)	$3	(0%)
Hallway or corridor	120	(1%)	2	(1%)	6	(1%)	$3	(0%)
Other known area of origin	960	(4%)	11	(3%)	40	(4%)	$32	(4%)
Total fires	22,410	(100%)	325	(100%)	950	(100%)	$817	(100%)

* Excludes garage reported as separate property.

Note: Figures *exclude* confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 3.5. Civilian Deaths and Injuries in Home Fires Involving Electrical Distribution or Lighting Equipment, vs. All Home Fires by Victim Location
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. Victim Location When Injured

Victim Location When Injured	Home Electrical Distribution or Lighting Equipment Fires				All Home Fires	
	Civilian Deaths		Civilian Injuries		Civilian Deaths	Civilian Injuries
In area of origin	118	(36%)	515	(54%)	53%	63%
Outside area of origin but in building of origin	204	(63%)	359	(38%)	47%	31%
Outside building of origin	3	(1%)	77	(8%)	1%	6%
Total	325	(100%)	950	(100%)	100%	100%

B. Victim Location at Ignition

Victim Location When Injured	Home Electrical Distribution or Lighting Equipment Fires				All Home Fires	
	Civilian Deaths		Civilian Injuries		Civilian Deaths	Civilian Injuries
In area of origin and not involved	30	(9%)	209	(22%)	1%	2%
Not in area of origin and not involved	131	(40%)	309	(33%)	19%	34%
Not in area of origin but involved	97	(30%)	178	(19%)	39%	40%
In area of origin and involved	67	(21%)	254	(27%)	40%	24%
In area of origin	98	(30%)	463	(49%)	41%	26%
Not in area of origin	228	(70%)	487	(51%)	59%	74%
Involved in ignition	164	(50%)	432	(46%)	79%	64%
Not involved in ignition	161	(50%)	518	(54%)	21%	36%
Total	325	(100%)	950	(100%)	100%	100%

Note: Figures *exclude* confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 off rounding error. Civilian deaths and injuries are estimated to the nearest one.

Source: Data from NFIRS Version 5.0 and NFPA survey.

Table 3.6. Civilian Deaths and Injuries in Home Fires Involving Electrical Distribution or Lighting Equipment, vs. All Home Fires, by Victim Activity When Injured
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Victim Location When Injured	Home Electrical Distribution or Lighting Equipment Fires				All Home Fires	
	Civilian Deaths		Civilian Injuries		Civilian Deaths	Civilian Injuries
Attempting to escape	149	(46%)	344	(36%)	36%	28%
Sleeping	93	(29%)	128	(13%)	34%	12%
Unable to act	37	(11%)	12	(1%)	11%	3%
Attempting rescue	16	(5%)	65	(7%)	2%	8%
Attempting to fight fire	10	(3%)	263	(28%)	3%	32%
Returning to vicinity of fire	10	(3%)	74	(8%)	3%	7%
Irrational act	10	(3%)	12	(1%)	5%	3%
Unclassified activity	0	(0%)	53	(6%)	5%	7%
Total	325	(100%)	950	(100%)	100%	100%

Note: Figures *exclude* confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 3.7. Home Fires Involving Electrical Distribution or Lighting Equipment, by Time of Day
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Midnight – 1:59 am	1,470	(7%)	35	(11%)	101	(11%)	$60	(7%)
2:00 – 3:59 am	1,290	(6%)	42	(13%)	101	(11%)	$60	(8%)
4:00 – 5:59 am	1,170	(5%)	47	(14%)	85	(9%)	$60	(7%)
6:00 – 7:59 am	1,400	(6%)	45	(14%)	69	(7%)	$60	(7%)
8:00 – 9:59 am	1,680	(8%)	15	(5%)	74	(8%)	$80	(10%)
10:00 – 11:59 am	1,990	(9%)	31	(10%)	74	(8%)	$70	(8%)
Noon – 1:59 pm	2,050	(9%)	10	(3%)	64	(7%)	$60	(7%)
2:00 – 3:59 pm	2,260	(10%)	4	(1%)	49	(5%)	$80	(10%)
4:00 – 5:59 pm	2,350	(10%)	11	(3%)	62	(7%)	$70	(9%)
6:00 – 7:59 pm	2,420	(11%)	28	(8%)	95	(10%)	$70	(9%)
8:00 – 9:59 pm	2,420	(11%)	23	(7%)	87	(9%)	$90	(11%)
10:00 – 11:59 pm	1,900	(8%)	34	(10%)	90	(10%)	$70	(8%)
Total	22,410	(100%)	325	(100%)	950	(100%)	$817	(100%)

Note: Figures *exclude* combined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 5.0 and NFPA survey.

Table 3.8. Home Fires Involving Electrical Distribution or Lighting Equipment, by Month
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	2,360	(11%)	38	(12%)	123	(13%)	$83	(10%)
February	1,990	(9%)	36	(11%)	82	(9%)	$77	(9%)
March	1,940	(9%)	42	(13%)	91	(10%)	$62	(8%)
April	1,800	(8%)	21	(7%)	74	(8%)	$71	(9%)
May	1,670	(7%)	28	(9%)	53	(6%)	$54	(7%)
June	1,760	(8%)	28	(8%)	60	(6%)	$60	(7%)
July	1,890	(8%)	17	(5%)	64	(7%)	$66	(8%)
August	1,790	(8%)	25	(8%)	69	(7%)	$57	(7%)
September	1,530	(7%)	19	(6%)	63	(7%)	$54	(7%)
October	1,540	(7%)	15	(4%)	91	(10%)	$70	(9%)
November	1,700	(8%)	27	(8%)	78	(8%)	$62	(8%)
December	2,430	(11%)	29	(9%)	103	(11%)	$101	(12%)
Total	22,410	(100%)	325	(100%)	950	(100%)	$817	(100%)

Note: Figures *exclude* combined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 5.0 and NFPA survey.

Section 4. Home Wiring and Related Equipment

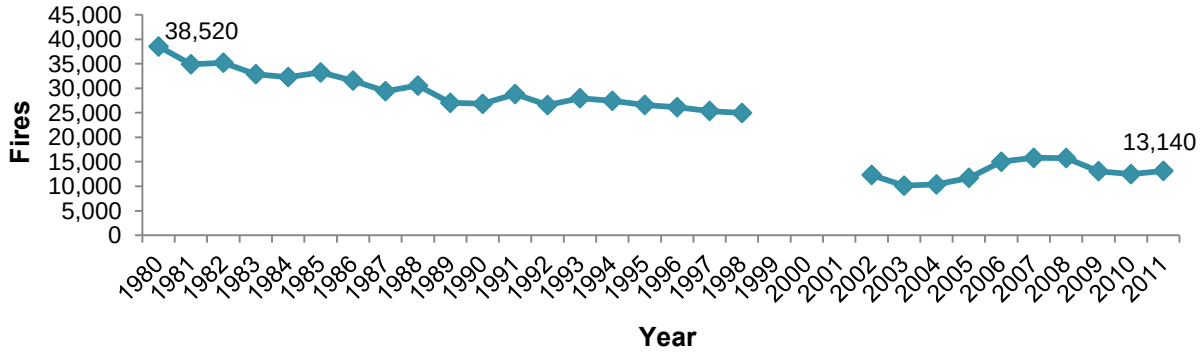
In 2011, an estimated 13,140 reported U.S. home structure fires* involving wiring and related equipment resulted in 112 civilian deaths, 450 civilian injuries, and $501 million in direct property damage.

Wiring and related equipment include the following groups and types of electrical distribution equipment located after power supplies through the outlet, receptacle or switch that channels power to an appliance or other powered device:

- Wiring
  - Branch circuit wiring
  - Power (utility) wiring
  - Electrical service supply wiring
  - Wiring from meter box to service
- Outlets, receptacles, and switches
  - Outlet or receptacle
  - Wall switch
- Panelboard or switchboard for circuit breakers or fuses
- Meter or meter box
- Ground fault circuit interruptor (GFCI)

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

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



Source: Data from NFIRS Version 5.0 and NFPA survey. Note: See Note on Table 4.1.

* These estimates all *exclude* fires reported as confined fires, which do not require detailed reporting and rarely involve electrical distribution or lighting equipment.

Fires involving wiring and related equipment 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 settled into a range roughly 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. Some of the sharp decline after 1998 may be due to the changes in data categories, definitions, and rules introduced in NFIRS Version 5.0 rather than a decline in the real size of this fire problem. (See Figure 4.1 and Table 4.1.)

Wiring and related equipment accounted for 63% of 2007-2011 structure fires involving electrical distribution or lighting equipment, as well as 50% of associated civilian deaths, 43% of associated civilian injuries, and 58% of associated direct property damage.

Two-fifths (42%) of the 2007-2011 reported home structure fires involving wiring and related equipment involved unclassified wiring.
Because such a large share of these fires and associated losses involved unclassified wiring, the numbers and percentages for every specific type of equipment are probably severely understated. Comparisons within a group are not a problem. For example, note that the number of fires declines for wiring as one moves from inside the house along the wiring network toward the connections to the utility poles outside the house.

Table 4.A. Home Fires Involving Wiring and Related Equipment, by Specific Type of Equipment
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified wiring	5,870	(42%)	87	(54%)	186	(45%)	$195	(41%)
Outlet or receptacle	2,510	(18%)	16	(10%)	84	(20%)	$71	(15%)
Branch circuit wiring	1,960	(14%)	30	(18%)	37	(9%)	$80	(17%)
Panelboard or switchboard for fuses or circuit breakers	1,270	(9%)	17	(10%)	34	(8%)	$33	(7%)
Electrical service supply wiring	670	(5%)	5	(3%)	12	(3%)	$30	(6%)
Meter or meter box	590	(4%)	0	(0%)	21	(5%)	$13	(3%)
Wiring from meter box to service	510	(4%)	5	(3%)	14	(3%)	$29	(6%)
Power (utility) line	450	(3%)	2	(1%)	16	(4%)	$15	(3%)
Wall switch	180	(1%)	0	(0%)	5	(1%)	$4	(1%)
Ground fault circuit interrupter (GFCI)	40	(0%)	0	(0%)	5	(1%)	$3	(1%)
Total	14,050	(100%)	162	(100%)	413	(100%)	$474	(100%)

Note: Figures *exclude* confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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. Damage has not been adjusted for inflation. 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 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.

Six of seven (87%) of 2007-2011 home structure fires involving wiring and related equipment involved electrical failures or malfunctions as a factor contributing to ignition.
The two leading specific factors contributing to ignition were unclassified electrical failure or malfunction (34%) and unspecified short circuit arc (30%). These two leading factors lack details on the nature of the failure. The leading mechanical or electrical factors contributing to ignition with details were short circuit arc from defective or worn insulation (12%), arc from faulty contact or broken conductor (6%), and short circuit arc from mechanical damage (4%). Factors contributing to ignition are shown in the tables for all wiring and related equipment and for leading specific types of equipment. (See Table 4.2.)

More than one-third (36%) of 2007-2011 home structure fires involving wiring and related equipment began with ignition of wire or cable insulation.
Other leading items first ignited were structural member or framing (22%), insulation within structural area (8%), exterior wall covering (6%), and interior wall covering (5%). (See Table 4.3.)

The areas of origin for 2007-2011 home structure fires involving wiring and related equipment are fairly evenly divided between concealed or exterior spaces and normally occupied spaces.
The leading areas of origin that are concealed or exterior spaces were attic or ceiling/roof assembly or concealed space (14%), wall assembly or concealed space (12%), exterior wall surface (6%), crawl space or substructure space (5%), and ceiling/floor assembly or concealed space (5%). The leading areas of origin that are normally occupied spaces were bedroom (13%), kitchen (7%), living room, family room, or den (6%), and laundry room or area (4%). (See Table 4.4.)

In 2011, an estimated 11,600 injuries involving wiring and related equipment were reported to hospital emergency rooms.[14]
This group of equipment specifically accounted for 5,120 electric shock or electrical burn injuries and 3,200 laceration injuries. (See Table 4.B.)

Table 4.B. Injuries Involving Wiring and Related Equipment Reported to Hospital Emergency Rooms, 2011

Equipment	Type of Injury		
	Total	Shock or thermal or electric burn	Laceration
Wiring (including switches)	5,530	1,530	2,270
Outlet or receptacle	4,420	3,290	390
Panelboard or switchboard for circuit breakers or fuses	1,650	300	550
Total	11,600	5,120	3,200

Source: CPSC's National Electronic Injury Surveillance System.

In 2002-2009, three types of wiring averaged 3.9 electrocution deaths per year.[15]
The three types were household wiring, outdoor wiring, and miscellaneous wiring.

[14] Statistics from National Electronic Injury Surveillance System (NEISS) data obtained from the U.S. Consumer Product Safety Commission (CPSC) website, www.cpsc.gov.
[15] Matthew V. Hnatov, 2009 *Electrocutions Associated with Consumer Products*, U.S. Consumer Product Safety Commission, November 2012, accessed at www.cpsc.gov.

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. When you are buying, selling, or remodeling a home, have it inspected by a professional electrician.
- Call a qualified electrician or your 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,
  - cracked or broken outlets.

Outlets, Receptacles, and Switches

- Consider having additional circuits or receptacles added by a qualified electrician.
- Receptacle outlets and switches should have wall plates to prevent shocks.
- Homes with young children should have tamper-resistant electrical receptacles.

Circuit Breakers, Fuses, Overcurrent Protection, GFCIs, AFCIs

- Replace fuses with the proper rating for the circuit they protect.
- Never replace a fuse with a higher rated fuse.
- 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 type of circuit breaker that shuts off electricity when a dangerous arcing condition occurs. Consider having them installed in your home. Use a qualified electrician.
- Ground fault circuit interrupters (GFCIs) reduce the risk of shock.
- Test AFCIs and GFCIs once a month to make sure they are working properly.

Power Lines

- Keep ladders at least 10 feet 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 utility before digging.

More of NFPA's electrical safety information is available on our website at www.nfpa.org/electricalfires.

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

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions) As Reported	In 2011 Dollars
1980	38,520	265	670	$307	$839
1981	34,900	317	670	$261	$644
1982	35,220	161	720	$316	$735
1983	32,880	268	680	$330	$743
1984	32,300	173	660	$338	$729
1985	33,230	272	600	$385	$804
1986	31,570	325	550	$365	$750
1987	29,410	296	730	$295	$583
1988	30,550	257	720	$439	$835
1989	27,030	343	560	$393	$712
1990	26,820	149	590	$391	$673
1991	28,820	130	700	$568*	$936*
1992	26,580	205	760	$363	$581
1993	27,970	138	730	$402	$625
1994	27,440	255	650	$409	$621
1995	26,600	301	680	$449	$661
1996	26,150	206	630	$495	$709
1997	25,380	177	710	$484	$678
1998	24,960	190	580	$485	$669
1999	18,950	61	110	$416	$562
2000	14,260	41	240	$308	$403
2001	14,750	174	510	$411	$522
2002	12,310	45	250	$314	$392
2003	10,120	124	180	$354	$433
2004	10,380	117	360	$331	$394
2005	11,730	190	380	$452	$520
2006	15,000	135	390	$448	$499
2007	15,790	143	450	$328	$356
2008	15,760	390	290	$595	$620
2009	13,080	113	440	$558	$584
2010	12,480	81	440	$462	$477
2011	13,140	112	450	$501	$501

* 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 fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 ten, civilian deaths are expressed to the nearest one, civilian injuries are expressed to the nearest ten, and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires 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 2011 dollars is done using the consumer price index.
Source: Data from NFIRS (Version 5.0 after 1998) and NFPA survey.

Table 4.2. Home Fires Involving Wiring and Related Equipment, by Factor Contributing to Ignition
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Wiring and Related Equipment

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	4,790	(34%)	56	(34%)	167	(41%)	$196	(41%)
Unspecified short circuit arc	4,260	(30%)	51	(31%)	117	(28%)	$148	(31%)
Short circuit arc from defective or worn insulation	1,700	(12%)	22	(13%)	34	(8%)	$32	(7%)
Arc from faulty contact or broken conductor	840	(6%)	9	(5%)	28	(7%)	$18	(4%)
Short circuit arc from mechanical damage	500	(4%)	19	(12%)	2	(0%)	$14	(3%)
Unclassified mechanical failure or malfunction	410	(3%)	0	(0%)	19	(5%)	$9	(2%)
Arc or spark from operating equipment	310	(2%)	0	(0%)	8	(2%)	$20	(4%)
Equipment overloaded	310	(2%)	3	(2%)	16	(4%)	$9	(2%)
Storm	240	(2%)	3	(2%)	5	(1%)	$11	(2%)
Worn out	230	(2%)	3	(2%)	6	(2%)	$3	(1%)
Installation deficiency	230	(2%)	12	(8%)	7	(2%)	$14	(3%)
Water caused short circuit arc	200	(1%)	0	(0%)	3	(1%)	$3	(1%)
Heat source too close to combustibles	150	(1%)	0	(0%)	6	(1%)	$8	(2%)
Unclassified misuse of material	140	(1%)	0	(0%)	2	(0%)	$7	(1%)
Unclassified factor contributed to ignition	130	(1%)	0	(0%)	2	(0%)	$8	(2%)
High wind	110	(1%)	0	(0%)	2	(0%)	$9	(2%)
Leak or break	90	(1%)	0	(0%)	8	(2%)	$2	(0%)
Other known factor contributing to ignition	460	(3%)	6	(4%)	25	(6%)	$16	(3%)
Total fires	14,050	(100%)	162	(100%)	413	(100%)	$474	(100%)
Total factor entries	15,090	(107%)	183	(113%)	455	(110%)	$525	(111%)
All electrical failures or malfunctions	12,200	(87%)	149	(92%)	342	(83%)	$412	(87%)

* The leading factor contributing to ignition for fire deaths not shown above is construction deficiency (15% of deaths).

Note: See detailed notes and source information at end of table.

Table 4.2. Home Fires Involving Wiring and Related Equipment, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Unclassified Wiring

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	2,380	(41%)	35	(41%)	87	(47%)	$96	(49%)
Unspecified short circuit arc	1,550	(26%)	14	(16%)	41	(22%)	$50	(26%)
Short circuit arc from defective or worn insulation	820	(14%)	9	(10%)	21	(11%)	$18	(9%)
Arc from faulty contact or broken conductor	220	(4%)	6	(6%)	8	(4%)	$4	(2%)
Unclassified mechanical failure or malfunction	200	(3%)	0	(0%)	3	(2%)	$6	(3%)
Short circuit arc from mechanical damage	180	(3%)	15	(17%)	0	(0%)	$5	(3%)
Arc or spark from operating equipment	110	(2%)	0	(0%)	5	(2%)	$2	(1%)
Worn out	100	(2%)	3	(3%)	0	(0%)	$2	(1%)
Equipment overloaded	90	(2%)	0	(0%)	3	(2%)	$2	(1%)
Installation deficiency	90	(1%)	6	(7%)	0	(0%)	$3	(2%)
Heat source too close to combustibles	80	(1%)	0	(0%)	6	(3%)	$2	(1%)
Storm	70	(1%)	0	(0%)	3	(2%)	$3	(1%)
Unclassified misuse of material or product	60	(1%)	0	(0%)	2	(1%)	$4	(2%)
Unclassified factor contributed to ignition	50	(1%)	0	(0%)	2	(1%)	$4	(2%)
Water caused short circuit arc	50	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known factor contributing to ignition	220	(4%)	3	(4%)	20	(11%)	$10	(5%)
Total fires	5,870	(100%)	87	(100%)	186	(100%)	$195	(100%)
Total factor entries	6,270	(107%)	90	(104%)	200	(107%)	$211	(108%)
All electrical failures or malfunctions	5,140	(87%)	78	(90%)	156	(84%)	$171	(87%)

* The leading factor contributing to ignition for fire deaths not shown above is construction deficiency (26% of deaths).

Note: See detailed notes and source information at end of table.

Table 4.2. Home Fires Involving Wiring and Related Equipment, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Outlet or Receptacle

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unspecified short circuit arc	860	(34%)	14	(85%)	25	(30%)	$0	(0%)
Unclassified electrical failure or malfunction	790	(31%)	3	(16%)	39	(46%)	$22	(31%)
Short circuit arc from defective or worn insulation	210	(8%)	2	(15%)	4	(4%)	$25	(35%)
Arc from faulty contact or broken conductor	190	(8%)	0	(0%)	5	(6%)	$3	(4%)
Equipment overloaded	100	(4%)	0	(0%)	4	(4%)	$2	(2%)
Arc or spark from operating equipment	70	(3%)	0	(0%)	0	(0%)	$2	(3%)
Short circuit arc from mechanical damage	60	(2%)	0	(0%)	2	(2%)	$1	(1%)
Water caused short circuit arc	60	(2%)	0	(0%)	0	(0%)	$1	(2%)
Unclassified mechanical failure or malfunction	60	(2%)	0	(0%)	5	(6%)	$1	(1%)
Worn out	40	(2%)	0	(0%)	0	(0%)	$1	(1%)
Heat source too close to combustibles	40	(2%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified misuse of material	30	(1%)	0	(0%)	0	(0%)	$3	(4%)
Storm	30	(1%)	0	(0%)	0	(0%)	$1	(2%)
Installation deficiency	30	(1%)	0	(0%)	0	(0%)	$1	(1%)
Leak or break	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Other known factor contributing to ignition	100	(4%)	0	(0%)	2	(2%)	$2	(3%)
Total fires	2,510	(100%)	16	(100%)	84	(100%)	$71	(100%)
Total factor entries	2,680	(107%)	19	(116%)	85	(102%)	$64	(90%)
All electrical failures or malfunctions	2,180	(87%)	16	(100%)	75	(89%)	$51	(72%)

Note: See detailed notes and source information at end of table.

Table 4.2. Home Fires Involving Wiring and Related Equipment, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

D. Branch Circuit Wiring

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unspecified short circuit arc	780	(40%)	18	(62%)	19	(51%)	$32	(40%)
Unclassified electrical failure or malfunction	400	(20%)	0	(0%)	11	(29%)	$24	(31%)
Short circuit arc from defective or worn insulation	340	(17%)	8	(26%)	3	(8%)	$6	(7%)
Arc from faulty contact or broken conductor	140	(7%)	4	(12%)	12	(32%)	$6	(7%)
Short circuit arc from mechanical damage	80	(4%)	4	(12%)	0	(0%)	$3	(4%)
Installation deficiency	70	(3%)	8	(26%)	5	(12%)	$3	(3%)
Equipment overloaded	60	(3%)	0	(0%)	0	(0%)	$2	(3%)
Arc or spark from operating equipment	40	(2%)	0	(0%)	0	(0%)	$5	(6%)
Unclassified mechanical failure or malfunction	30	(2%)	0	(0%)	0	(0%)	$1	(1%)
Worn out	30	(1%)	0	(0%)	0	(0%)	$0	(0%)
Storm	20	(1%)	0	(0%)	0	(0%)	$1	(1%)
Water caused short circuit arc	20	(1%)	0	(0%)	0	(0%)	$0	(1%)
Heat source too close to combustibles	10	(1%)	0	(0%)	0	(0%)	$1	(1%)
Construction deficiency	10	(1%)	4	(13%)	0	(0%)	$0	(1%)
Other known factor contributing to ignition	70	(4%)	0	(0%)	2	(5%)	$3	(4%)
Total fires	1,960	(100%)	30	(100%)	37	(100%)	$80	(100%)
Total factor entries	2,110	(108%)	45	(152%)	51	(137%)	$86	(108%)
All electrical failures or malfunctions	1,760	(90%)	30	(100%)	36	(96%)	$73	(92%)

Note: See detailed notes and source information at end of table.

Table 4.2. Home Fires Involving Wiring and Related Equipment, by Factor Contributing to Ignition
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

E. Panelboard or Switchboard for Fuses or Circuit Breakers

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	490	(38%)	13	(79%)	13	(40%)	$15	(44%)
Unspecified short circuit arc	440	(34%)	3	(21%)	19	(55%)	$15	(44%)
Arc from faulty contact or broken conductor	100	(8%)	0	(0%)	0	(0%)	$1	(3%)
Short circuit arc from defective or worn insulation	70	(5%)	0	(0%)	0	(0%)	$1	(2%)
Unclassified mechanical failure or malfunction	50	(4%)	0	(0%)	2	(5%)	$1	(2%)
Arc or spark from operating equipment	30	(2%)	0	(0%)	0	(0%)	$1	(4%)
Water caused short circuit arc	30	(2%)	0	(0%)	0	(0%)	$1	(2%)
Equipment overloaded	30	(2%)	3	(21%)	2	(5%)	$2	(5%)
Short circuit arc from mechanical damage	20	(2%)	0	(0%)	0	(0%)	$1	(2%)
Installation deficiency	20	(2%)	0	(0%)	0	(0%)	$0	(1%)
Storm	20	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified factor contributed to ignition	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Leak or break	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
High wind	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified misuse of material	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known factor contributing to ignition	30	(2%)	0	(0%)	0	(0%)	$2	(5%)
Total fires	1,270	(100%)	17	(100%)	34	(100%)	$33	(100%)
Total factor entries	1,360	(107%)	20	(121%)	35	(105%)	$40	(118%)
All electrical failures or malfunctions	1,140	(89%)	17	(100%)	32	(95%)	$32	(95%)

Note: See detailed notes and source information at end of table.

Table 4.2. Home Fires Involving Wiring and Related Equipment, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

F. Electrical Service Supply Wiring

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unspecified short circuit arc	170	(24%)	0	(0%)	6	(50%)	$7	(23%)
Unclassified electrical failure or malfunction	160	(24%)	0	(0%)	1	(12%)	$7	(24%)
Short circuit arc from defective or worn insulation	80	(12%)	3	(51%)	3	(27%)	$2	(5%)
Arc from faulty contact or broken conductor	70	(11%)	0	(0%)	1	(12%)	$2	(6%)
Short circuit arc from mechanical damage	50	(8%)	0	(0%)	0	(0%)	$2	(6%)
Storm	40	(5%)	2	(49%)	1	(12%)	$3	(11%)
High wind	20	(3%)	0	(0%)	1	(12%)	$2	(7%)
Installation deficiency	20	(3%)	0	(0%)	0	(0%)	$7	(23%)
Unclassified factor contributed to ignition	20	(2%)	0	(0%)	0	(0%)	$0	(2%)
Exposure fire	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Arc or spark from operating equipment	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Leak or break	10	(2%)	0	(0%)	1	(11%)	$0	(1%)
Worn out	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Equipment overloaded	10	(2%)	0	(0%)	0	(0%)	$1	(2%)
Water caused short circuit arc	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified mechanical failure or malfunction	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Collision, knock down, or turn over	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified misuse of material	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified natural condition	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Other known factor contributing to ignition	20	(2%)	0	(0%)	0	(0%)	$0	(1%)
Total fires	670	(100%)	5	(100%)	12	(100%)	$30	(100%)
Total factor entries	740	(110%)	5	(100%)	16	(135%)	$35	(116%)
All electrical failures or malfunctions	530	(79%)	3	(51%)	12	(100%)	$18	(61%)

Note: See detailed notes and source information at end of table.

Table 4.2. Home Fires Involving Wiring and Related Equipment, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

G. Meter or Meter Box

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	210	(36%)	0	(NA)	0	(0%)	$6	(43%)
Unspecified short circuit arc	180	(30%)	0	(NA)	5	(25%)	$5	(35%)
Short circuit arc from defective or worn insulation	50	(8%)	0	(NA)	0	(0%)	$0	(1%)
Short circuit arc from mechanical damage	30	(6%)	0	(NA)	0	(0%)	$0	(2%)
Arc from faulty contact or broken conductor	30	(6%)	0	(NA)	2	(8%)	$1	(5%)
Unclassified mechanical failure or malfunction	30	(6%)	0	(NA)	9	(45%)	$0	(3%)
Arc or spark from operating equipment	10	(2%)	0	(NA)	0	(0%)	$0	(1%)
Unclassified factor contributed to ignition	10	(2%)	0	(NA)	0	(0%)	$2	(14%)
Water caused short circuit arc	10	(1%)	0	(NA)	0	(0%)	$0	(4%)
Equipment not being operated properly	10	(1%)	0	(NA)	2	(8%)	$0	(0%)
Leak or break	10	(1%)	0	(NA)	0	(0%)	$0	(0%)
Equipment overloaded	10	(1%)	0	(NA)	3	(15%)	$0	(1%)
Storm	10	(1%)	0	(NA)	0	(0%)	$0	(2%)
Worn out	10	(1%)	0	(NA)	0	(0%)	$0	(0%)
High wind	10	(1%)	0	(NA)	0	(0%)	$1	(5%)
Other known factor contributing to ignition	20	(4%)	0	(NA)	0	(0%)	$0	(3%)
Total fires	590	(100%)	0	(NA)	21	(100%)	$13	(100%)
Total factor entries	640	(108%)	0	(NA)	21	(100%)	$16	(119%)
All electrical failures or malfunctions	510	(86%)	0	(NA)	7	(32%)	$10	(78%)

Note: See detailed notes and source information at end of table.

NA – Not applicable because total is zero.

Table 4.2. Home Fires Involving Wiring and Related Equipment, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

H. Wiring From Meter Box

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unspecified short circuit arc	150	(30%)	5	(100%)	4	(28%)	$6	(21%)
Unclassified electrical failure or malfunction	150	(30%)	0	(0%)	0	(0%)	$5	(16%)
Short circuit arc from defective or worn insulation	70	(13%)	0	(0%)	2	(16%)	$2	(6%)
Arc from faulty contact or broken conductor	40	(7%)	0	(0%)	0	(0%)	$0	(2%)
Short circuit arc from mechanical damage	20	(4%)	0	(0%)	0	(0%)	$0	(1%)
Arc or spark from operating equipment	10	(3%)	0	(0%)	0	(0%)	$13	(44%)
Storm	10	(3%)	0	(0%)	0	(0%)	$3	(9%)
Worn out	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified misuse of material	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified mechanical failure or malfunction	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Water caused short circuit arc	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
High wind	10	(2%)	0	(0%)	0	(0%)	$2	(6%)
Installation deficiency	10	(1%)	0	(0%)	2	(16%)	$0	(0%)
Unclassified natural condition	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Leak or break	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Equipment overloaded	10	(1%)	0	(0%)	6	(40%)	$0	(0%)
Other known factor contributing to ignition	20	(4%)	0	(0%)	0	(0%)	$1	(4%)
Total fires	510	(100%)	5	(100%)	14	(100%)	$29	(100%)
Total factor entries	560	(109%)	5	(100%)	14	(100%)	$32	(111%)
All electrical failures or malfunctions	440	(87%)	5	(100%)	6	(44%)	$26	(89%)

Note: See detailed notes and source information at end of table.

Table 4.2. Home Fires Involving Wiring and Related Equipment, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

I. Power (Utility) Line Wiring

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	110	(25%)	2	(100%)	7	(47%)	$5	(33%)
Unspecified short circuit arc	90	(19%)	0	(0%)	0	(0%)	$5	(33%)
Arc from faulty contact or broken conductor	40	(10%)	0	(0%)	0	(0%)	$2	(11%)
Storm	40	(9%)	0	(0%)	0	(0%)	$1	(5%)
High wind	40	(9%)	0	(0%)	0	(0%)	$2	(14%)
Short circuit arc from defective or worn insulation	40	(9%)	0	(0%)	0	(0%)	$1	(3%)
Short circuit arc from mechanical damage	30	(8%)	0	(0%)	0	(0%)	$0	(2%)
Arc or spark from operating equipment	20	(4%)	0	(0%)	0	(0%)	$0	(1%)
Worn out	10	(2%)	0	(0%)	5	(31%)	$0	(0%)
Unclassified factor contributed to ignition	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Unclassified natural condition	10	(2%)	0	(0%)	2	(15%)	$0	(2%)
Heat source too close to combustibles	10	(2%)	0	(0%)	0	(0%)	$1	(4%)
Unclassified mechanical failure or malfunction	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Exposure fire	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Leak or break	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified misuse of material	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Collision, knock down, or turn over	10	(1%)	0	(0%)	1	(7%)	$0	(1%)
Water caused short circuit arc	10	(1%)	0	(0%)	2	(15%)	$0	(0%)
Other known factor contributing to ignition	20	(4%)	0	(0%)	0	(0%)	$0	(3%)
Total fires	450	(100%)	2	(100%)	16	(100%)	$15	(100%)
Total factor entries	510	(112%)	2	(100%)	18	(115%)	$17	(116%)
All electrical failures or malfunctions	310	(70%)	2	(100%)	10	(62%)	$10	(72%)

Note: See detailed notes and source information at end of table.

Table 4.2. Home Fires Involving Wiring and Related Equipment, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

J. Wall Switch

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	60	(35%)	0	(NA)	3	(54%)	$3	(68%)
Unspecified short circuit arc	60	(34%)	0	(NA)	0	(0%)	$1	(17%)
Short circuit arc from defective or worn insulation	20	(10%)	0	(NA)	1	(23%)	$0	(3%)
Worn out	10	(5%)	0	(NA)	0	(0%)	$0	(1%)
Arc from faulty contact or broken conductor	10	(5%)	0	(NA)	0	(0%)	$0	(2%)
Arc or spark from operating equipment	10	(4%)	0	(NA)	3	(54%)	$0	(4%)
Water caused short circuit arc	10	(4%)	0	(NA)	0	(0%)	$0	(6%)
Short circuit arc from mechanical damage	10	(3%)	0	(NA)	0	(0%)	$0	(1%)
Unclassified mechanical failure or malfunction	10	(3%)	0	(NA)	0	(0%)	$0	(0%)
Other known factor contributing to ignition	10	(3%)	0	(NA)	1	(24%)	$0	(5%)
Total fires	180	(100%)	0	(NA)	5	(100%)	$4	(100%)
Total factor entries	190	(107%)	0	(NA)	8	(154%)	$5	(105%)
All electrical failures or malfunctions	160	(90%)	0	(NA)	4	(76%)	$4	(94%)

NA – Not applicable because total is zero.

Note: Multiple entries are allowed, resulting in more factor entries than fires. "All electrical failures and malfunctions" is a multi-factor group that has been analyzed to eliminate double-counting of fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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.

Table 4.3. Home Fires Involving Wiring and Related Equipment, by Item First Ignited
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Wiring and Related Equipment

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	5,090	(36%)	49	(30%)	118	(29%)	$130	(27%)
Structural member or framing	3,120	(22%)	40	(25%)	63	(15%)	$157	(33%)
Insulation within structural area	1,110	(8%)	3	(2%)	9	(2%)	$23	(5%)
Exterior wall covering or finish	780	(6%)	6	(4%)	14	(3%)	$27	(6%)
Interior wall covering excluding drapes	710	(5%)	3	(2%)	21	(5%)	$23	(5%)
Unclassified structural component or finish	550	(4%)	6	(4%)	9	(2%)	$16	(3%)
Unclassified item	370	(3%)	6	(4%)	4	(1%)	$9	(2%)
Mattress or bedding	270	(2%)	16	(10%)	41	(10%)	$11	(2%)
Interior ceiling covering	250	(2%)	0	(0%)	3	(1%)	$6	(1%)
Upholstered furniture	190	(1%)	3	(2%)	24	(6%)	$10	(2%)
Floor covering	160	(1%)	6	(4%)	8	(2%)	$5	(1%)
Unclassified furniture or utensil	150	(1%)	6	(4%)	3	(1%)	$7	(1%)
Appliance housing or casing	140	(1%)	0	(0%)	4	(1%)	$3	(1%)
Clothing	140	(1%)	0	(0%)	7	(2%)	$6	(1%)
Multiple items first ignited	130	(1%)	0	(0%)	13	(3%)	$8	(2%)
Cabinetry	110	(1%)	0	(0%)	4	(1%)	$5	(1%)
Exterior roof covering	100	(1%)	0	(0%)	0	(0%)	$5	(1%)
Unclassified soft goods or clothing	80	(1%)	0	(0%)	3	(1%)	$7	(1%)
Other known item first ignited	600	(4%)	17	(11%)	64	(15%)	$17	(4%)
Total fires	14,050	(100%)	162	(100%)	413	(100%)	$474	(100%)

Note: See detailed notes and source information at end of table.

Table 4.3. Home Fires Involving Wiring and Related Equipment, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Unclassified Wiring

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	1,820	(31%)	24	(28%)	50	(27%)	$52	(27%)
Structural member or framing	1,480	(25%)	25	(29%)	28	(15%)	$61	(31%)
Insulation within structural area	560	(10%)	0	(0%)	3	(2%)	$12	(6%)
Unclassified structural component or finish	320	(5%)	0	(0%)	2	(1%)	$7	(4%)
Interior wall covering	250	(4%)	3	(3%)	10	(6%)	$8	(4%)
Interior ceiling covering	160	(3%)	0	(0%)	2	(1%)	$4	(2%)
Exterior wall covering	150	(3%)	0	(0%)	2	(1%)	$4	(2%)
Unclassified item	140	(2%)	5	(6%)	2	(1%)	$5	(2%)
Mattress or bedding	120	(2%)	12	(14%)	19	(10%)	$5	(2%)
Floor covering	100	(2%)	3	(3%)	4	(2%)	$4	(2%)
Unclassified furniture or utensil	90	(2%)	6	(7%)	3	(2%)	$4	(2%)
Upholstered furniture	80	(1%)	3	(3%)	6	(3%)	$3	(1%)
Appliance housing or casing	80	(1%)	0	(0%)	1	(1%)	$1	(1%)
Multiple items first ignited	70	(1%)	0	(0%)	11	(6%)	$3	(2%)
Cabinetry	70	(1%)	0	(0%)	4	(2%)	$4	(2%)
Clothing	70	(1%)	0	(0%)	3	(2%)	$2	(1%)
Unclassified soft goods or clothing	40	(1%)	0	(0%)	3	(2%)	$6	(3%)
Other known item	260	(4%)	5	(6%)	34	(18%)	$9	(5%)
Total fires	5,870	(100%)	87	(100%)	186	(100%)	$195	(100%)

* The leading item first ignited for fire deaths not shown above is trash or waste (6% of deaths).

Note: See detailed notes and source information at end of table.

Table 4.3. Home Fires Involving Wiring and Related Equipment, by Item First Ignited (Continued)
Annual Average of 2007-2011 Fires Reported to U.S. Fire Departments

C. Outlet or Receptacle

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	1,020	(41%)	8	(51%)	23	(28%)	$21	(29%)
Structural member or framing	290	(12%)	3	(16%)	4	(5%)	$11	(15%)
Interior wall covering	260	(10%)	0	(0%)	3	(3%)	$7	(9%)
Mattress or bedding	130	(5%)	3	(18%)	17	(20%)	$6	(8%)
Exterior wall covering	110	(4%)	0	(0%)	3	(3%)	$4	(6%)
Insulation within structural area	100	(4%)	0	(0%)	0	(0%)	$2	(2%)
Upholstered furniture	90	(3%)	0	(0%)	7	(8%)	$6	(8%)
Unclassified structural component or finish	80	(3%)	0	(0%)	1	(2%)	$3	(4%)
Unclassified item	80	(3%)	0	(0%)	1	(2%)	$1	(1%)
Unclassified furniture or utensil	50	(2%)	0	(0%)	0	(0%)	$2	(3%)
Clothing	40	(1%)	0	(0%)	1	(2%)	$1	(2%)
Appliance housing or casing	30	(1%)	0	(0%)	3	(3%)	$2	(2%)
Curtain or drape	30	(1%)	0	(0%)	7	(8%)	$1	(1%)
Floor covering	30	(1%)	2	(15%)	0	(0%)	$1	(2%)
Cabinetry	30	(1%)	0	(0%)	0	(0%)	$1	(1%)
Multiple items first ignited	20	(1%)	0	(0%)	3	(3%)	$1	(1%)
Unclassified soft goods or clothing	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Interior ceiling covering	20	(1%)	0	(0%)	1	(2%)	$0	(1%)
Box or bag	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known item first ignited	70	(3%)	0	(0%)	9	(10%)	$3	(4%)
Total fires	2,510	(100%)	16	(100%)	84	(100%)	$71	(100%)

Table 4.3. Home Fires Involving Wiring and Related Equipment, by Item First Ignited (Continued)
Annual Average of 2007-2011 Fires Reported to U.S. Fire Departments

D. Branch Circuit Wiring

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Structural member or framing	760	(39%)	15	(49%)	14	(37%)	$35	(44%)
Wire or cable insulation	560	(29%)	4	(12%)	7	(19%)	$21	(27%)
Insulation within structural area	310	(16%)	0	(0%)	4	(11%)	$8	(10%)
Unclassified structural component or finish	60	(3%)	0	(0%)	0	(0%)	$3	(4%)
Interior wall covering	50	(3%)	0	(0%)	1	(4%)	$3	(4%)
Interior ceiling covering	40	(2%)	0	(0%)	0	(0%)	$1	(1%)
Exterior wall covering	40	(2%)	4	(14%)	1	(3%)	$2	(3%)
Unclassified item	20	(1%)	0	(0%)	0	(0%)	$0	(1%)
Floor covering	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known item first ignited	100	(5%)	7	(25%)	10	(26%)	$6	(7%)
Total fires	1,960	(100%)	30	(100%)	37	(100%)	$80	(100%)

*The leading items first ignited for fire deaths not shown above are unclassified storage supplies (13% of deaths) and flammable or combustible gas or liquid (12%).

Note: See detailed notes and source information at end of table.

Table 4.3. Home Fires Involving Wiring and Related Equipment, by Item First Ignited (Continued)
Annual Average of 2007-2011 Fires Reported to U.S. Fire Departments

E. Panelboard or Switchboard for Fuses or Circuit Breakers

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	780	(62%)	11	(66%)	13	(37%)	$17	(49%)
Structural member or framing	160	(13%)	0	(0%)	1	(3%)	$6	(19%)
Interior wall covering	70	(5%)	0	(0%)	6	(19%)	$2	(5%)
Exterior wall covering	50	(4%)	0	(0%)	2	(7%)	$1	(3%)
Unclassified item	50	(4%)	0	(0%)	0	(0%)	$1	(3%)
Unclassified structural component or finish	40	(3%)	6	(34%)	3	(8%)	$2	(5%)
Insulation within structural area	20	(2%)	0	(0%)	1	(4%)	$1	(3%)
Clothing	20	(2%)	0	(0%)	2	(7%)	$1	(2%)
Interior ceiling covering	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Multiple items first ignited	10	(1%)	0	(0%)	0	(0%)	$2	(6%)
Box or bag	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known item first ignited	40	(4%)	0	(0%)	5	(14%)	$1	(2%)
Total fires	1,270	(100%)	17	(100%)	34	(100%)	$33	(100%)

F. Electrical Service Supply Wiring

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	210	(31%)	0	(0%)	4	(33%)	$6	(21%)
Exterior wall covering	130	(20%)	3	(51%)	3	(24%)	$6	(19%)
Structural member or framing	130	(19%)	0	(0%)	0	(0%)	$14	(45%)
Insulation within structural area	40	(6%)	0	(0%)	0	(0%)	$1	(2%)
Exterior roof covering	30	(4%)	0	(0%)	0	(0%)	$1	(4%)
Unclassified item	20	(3%)	0	(0%)	1	(10%)	$0	(1%)
Unclassified structural component or finish	20	(2%)	0	(0%)	0	(0%)	$0	(1%)
Interior wall covering	20	(2%)	0	(0%)	0	(0%)	$0	(1%)
Interior ceiling covering	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Light vegetation including grass	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Exterior trim including doors	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Multiple items first ignited	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Flammable or combustible gas or liquid	10	(1%)	0	(0%)	1	(11%)	$0	(1%)
Other known item first ignited	40	(7%)	2	(49%)	3	(22%)	$1	(2%)
Total fires	670	(100%)	5	(100%)	12	(100%)	$30	(100%)

* The leading item first ignited for fire deaths not shown above is fence or pole (49% of deaths).
Note: See detailed notes and source information at end of table.

Table 4.3. Home Fires Involving Wiring and Related Equipment, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

G. Meter or Meter Box

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	260	(44%)	0	(NA)	12	(57%)	$3	(24%)
Exterior wall covering	140	(24%)	0	(NA)	3	(14%)	$6	(45%)
Structural member or framing	60	(11%)	0	(NA)	5	(22%)	$2	(18%)
Unclassified item	30	(4%)	0	(NA)	0	(0%)	$1	(5%)
Interior wall covering	20	(4%)	0	(NA)	0	(0%)	$0	(2%)
Insulation within structural area	10	(2%)	0	(NA)	0	(0%)	$0	(1%)
Unclassified structural component or finish	10	(2%)	0	(NA)	0	(0%)	$0	(0%)
Pipe, duct, conduit, or hose covering	10	(2%)	0	(NA)	0	(0%)	$0	(0%)
Pipe, duct, conduit or hose	10	(1%)	0	(NA)	0	(0%)	$0	(0%)
Other known item first ignited	30	(6%)	0	(NA)	1	(7%)	$1	(4%)
Total fires	590	(100%)	0	(NA)	21	(100%)	$13	(100%)

H. Wiring From Meter Box

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	210	(41%)	0	(0%)	7	(50%)	$3	(12%)
Structural member or framing	130	(26%)	0	(0%)	7	(50%)	$22	(77%)
Exterior wall covering	50	(10%)	0	(0%)	0	(0%)	$1	(2%)
Insulation within structural area	30	(6%)	5	(100%)	0	(0%)	$1	(3%)
Unclassified structural component or finish	20	(4%)	0	(0%)	0	(0%)	$0	(1%)
Interior wall covering	20	(3%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified item	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Interior ceiling covering	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Other known item first ignited	30	(6%)	0	(0%)	0	(0%)	$1	(3%)
Total fires	510	(100%)	5	(100%)	14	(100%)	$29	(100%)

Note: See detailed notes and source information at end of table.

Table 4.3. Home Fires Involving Wiring and Related Equipment, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

I. Power (Utility) Line Wiring

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	120	(27%)	0	(0%)	0	(0%)	$3	(22%)
Exterior wall covering	110	(23%)	0	(0%)	0	(0%)	$2	(15%)
Structural member or framing	60	(13%)	0	(0%)	4	(25%)	$3	(18%)
Exterior roof covering	40	(9%)	0	(0%)	0	(0%)	$2	(13%)
Unclassified structural component or finish	10	(3%)	0	(0%)	4	(24%)	$0	(1%)
Unclassified item	10	(3%)	0	(0%)	0	(0%)	$1	(4%)
Insulation within structural area	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Light vegetation including grass	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Multiple items first ignited	10	(2%)	0	(0%)	0	(0%)	$1	(6%)
Fence or pole	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Exterior trim including doors	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Interior wall covering	10	(2%)	0	(0%)	0	(0%)	$1	(7%)
Flammable or combustible gas or liquid	10	(1%)	2	(100%)	0	(0%)	$0	(3%)
Trash or waste	10	(1%)	0	(0%)	0	(0%)	$0	(2%)
Other known item first ignited	30	(8%)	0	(0%)	8	(51%)	$1	(7%)
Total fires	450	(100%)	2	(100%)	16	(100%)	$15	(100%)

J. Wall Switch

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	90	(50%)	0	(NA)	0	(0%)	$1	(13%)
Structural member or framing	40	(22%)	0	(NA)	1	(23%)	$3	(71%)
Interior wall covering	20	(10%)	0	(NA)	0	(0%)	$0	(6%)
Insulation within structural area	10	(8%)	0	(NA)	0	(0%)	$0	(1%)
Unclassified item	10	(5%)	0	(NA)	0	(0%)	$0	(1%)
Other known item first ignited	10	(5%)	0	(NA)	4	(77%)	$0	(8%)
Total fires	180	(100%)	0	(NA)	5	(100%)	$4	(100%)

NA – Not applicable because total is zero.

Table 4.3. Home Fires Involving Wiring and Related Equipment, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 4.4. Home Fires Involving Wiring and Related Equipment, by Area of Origin
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Wiring and Related Equipment

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Attic or ceiling/roof assembly or concealed space	2,020	(14%)	7	(4%)	19	(5%)	$75	(16%)
Bedroom	1,760	(13%)	29	(18%)	100	(24%)	$70	(15%)
Wall assembly or concealed space	1,660	(12%)	19	(12%)	24	(6%)	$45	(9%)
Kitchen	940	(7%)	11	(7%)	38	(9%)	$28	(6%)
Living room, family room, or den	830	(6%)	24	(15%)	55	(13%)	$32	(7%)
Exterior wall surface	830	(6%)	5	(3%)	20	(5%)	$19	(4%)
Crawl space or substructure space	710	(5%)	9	(5%)	20	(5%)	$32	(7%)
Ceiling/floor assembly or concealed space	710	(5%)	14	(8%)	10	(3%)	$27	(6%)
Laundry room or area	530	(4%)	12	(7%)	23	(6%)	$13	(3%)
Unclassified function area	450	(3%)	5	(3%)	25	(6%)	$15	(3%)
Garage*	440	(3%)	0	(0%)	14	(3%)	$24	(5%)
Bathroom	370	(3%)	2	(1%)	2	(1%)	$8	(2%)
Closet	290	(2%)	7	(4%)	10	(2%)	$9	(2%)
Unclassified structural area	260	(2%)	2	(1%)	1	(0%)	$10	(2%)
Unclassified storage area	200	(1%)	0	(0%)	5	(1%)	$7	(1%)
Unclassified equipment or service area	200	(1%)	0	(0%)	1	(0%)	$3	(1%)
Conduit, pipe, utility, or ventilation shaft	200	(1%)	0	(0%)	0	(0%)	$4	(1%)
Heating equipment room	170	(1%)	0	(0%)	3	(1%)	$4	(1%)
Unclassified outside area	140	(1%)	2	(1%)	2	(1%)	$4	(1%)
Unclassified area of origin	130	(1%)	0	(0%)	0	(0%)	$3	(1%)
Exterior balcony or unenclosed porch	120	(1%)	2	(1%)	0	(0%)	$5	(1%)
Storage room or area	100	(1%)	0	(0%)	7	(2%)	$3	(1%)
Exterior roof surface	100	(1%)	0	(0%)	1	(0%)	$3	(1%)
Storage of supplies or tools	90	(1%)	0	(0%)	0	(0%)	$3	(1%)
Unclassified service facility	80	(1%)	0	(0%)	0	(0%)	$1	(0%)
Hallway or corridor	70	(1%)	0	(0%)	0	(0%)	$2	(0%)
Other known area of origin	650	(5%)	11	(7%)	30	(7%)	$25	(5%)
Total fires	14,050	(100%)	162	(100%)	413	(100%)	$474	(100%)

* Does not include garage coded as separate property.

Note: See detailed notes and source information at end of table.

Table 4.4. Home Fires Involving Wiring and Related Equipment, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Unclassified Wiring

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Attic or ceiling/roof assembly or concealed space	1,140	(19%)	2	(2%)	11	(6%)	$39	(20%)
Bedroom	770	(13%)	22	(26%)	47	(25%)	$32	(16%)
Wall assembly or concealed space	580	(10%)	5	(6%)	6	(3%)	$16	(8%)
Kitchen	400	(7%)	6	(7%)	21	(11%)	$12	(6%)
Ceiling/floor assembly or concealed space	390	(7%)	9	(10%)	3	(1%)	$14	(7%)
Living room, family room, or den	370	(6%)	10	(11%)	35	(19%)	$16	(8%)
Crawl space or substructure space	300	(5%)	2	(3%)	7	(4%)	$7	(4%)
Bathroom	220	(4%)	0	(0%)	1	(1%)	$4	(2%)
Unclassified function area	210	(4%)	5	(6%)	8	(4%)	$10	(5%)
Laundry room	160	(3%)	12	(14%)	8	(5%)	$3	(2%)
Garage**	160	(3%)	0	(0%)	8	(4%)	$7	(4%)
Exterior wall surface	150	(3%)	2	(2%)	0	(0%)	$3	(1%)
Unclassified structural area	140	(2%)	2	(2%)	1	(1%)	$6	(3%)
Unclassified storage area	90	(2%)	0	(0%)	0	(0%)	$4	(2%)
Closet	90	(2%)	0	(0%)	5	(3%)	$3	(2%)
Heating equipment room	70	(1%)	0	(0%)	1	(1%)	$1	(0%)
Unclassified area of origin	50	(1%)	0	(0%)	0	(0%)	$2	(1%)
Exterior balcony or unenclosed porch	50	(1%)	0	(0%)	0	(0%)	$2	(1%)
Unclassified equipment or service area	40	(1%)	0	(0%)	0	(0%)	$1	(0%)
Hallway or corridor	40	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified outside area	40	(1%)	0	(0%)	1	(1%)	$0	(0%)
Interior stairway	30	(1%)	5	(6%)	0	(0%)	$2	(1%)
Storage room or area	30	(1%)	0	(0%)	0	(0%)	$1	(1%)
Duct for HVAC, cable, or exhaust	30	(1%)	0	(0%)	1	(1%)	$0	(0%)
Other known area of origin	310	(5%)	5	(5%)*	21	(11%)	$12	(6%)
Total fires	5,870	(100%)	87	(100%)	186	(100%)	$195	(100%)

Note: See detailed notes and source information at end of table.

* Leading area of origin for fire deaths not shown above is multiple areas of origin (5% of fire deaths).
** Does not include garage coded as separate property.

Table 4.4. Home Fires Involving Wiring and Related Equipment, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Outlet or Receptacle

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	660	(26%)	5	(28%)	33	(39%)	$21	(29%)
Wall assembly or concealed space	400	(16%)	0	(0%)	3	(3%)	$9	(13%)
Living room, family room, or den	310	(13%)	7	(43%)	15	(18%)	$12	(16%)
Kitchen	310	(12%)	2	(15%)	12	(14%)	$9	(13%)
Unclassified function area	110	(4%)	0	(0%)	6	(7%)	$2	(3%)
Laundry room	110	(4%)	0	(0%)	1	(1%)	$3	(4%)
Exterior wall surface	100	(4%)	0	(0%)	4	(4%)	$2	(2%)
Bathroom	70	(3%)	0	(0%)	0	(0%)	$0	(1%)
Garage*	60	(2%)	0	(0%)	3	(3%)	$5	(6%)
Crawl space or substructure space	40	(2%)	0	(0%)	0	(0%)	$0	(1%)
Closet	30	(1%)	0	(0%)	0	(0%)	$1	(1%)
Exterior balcony or unenclosed porch	30	(1%)	2	(14%)	0	(0%)	$1	(2%)
Attic or ceiling/roof assembly or concealed space	30	(1%)	0	(0%)	0	(0%)	$1	(1%)
Unclassified area of origin	30	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified structural area	30	(1%)	0	(0%)	0	(0%)	$1	(1%)
Ceiling/floor assembly or concealed space	20	(1%)	0	(0%)	0	(0%)	$0	(1%)
Dining room	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Lobby or entrance way	20	(1%)	0	(0%)	0	(0%)	$1	(1%)
Unclassified storage area	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Other known area of origin	100	(4%)	0	(0%)	7	(9%)	$3	(4%)
Total fires	2,510	(100%)	16	(100%)	84	(100%)	$71	(100%)

* Does not include garage coded as separate property.

Table 4.4. Home Fires Involving Wiring and Related Equipment, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

D. Branch Circuit Wiring

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Attic or ceiling/roof assembly or concealed space	640	(33%)	4	(15%)	1	(3%)	$27	(34%)
Wall assembly or concealed space	280	(14%)	9	(32%)	5	(13%)	$11	(13%)
Ceiling/floor assembly or concealed space	240	(12%)	5	(16%)	8	(21%)	$10	(12%)
Bedroom	150	(8%)	2	(8%)	3	(7%)	$6	(7%)
Crawl space or substructure space	120	(6%)	2	(7%)	5	(13%)	$4	(5%)
Kitchen	90	(5%)	2	(8%)	1	(3%)	$3	(4%)
Living room, family room, or den	60	(3%)	0	(0%)	0	(0%)	$1	(2%)
Laundry room	40	(2%)	0	(0%)	0	(0%)	$1	(2%)
Exterior wall surface	40	(2%)	0	(0%)	1	(3%)	$4	(6%)
Bathroom	40	(2%)	2	(7%)	0	(0%)	$1	(1%)
Closet	40	(2%)	0	(0%)	1	(3%)	$1	(1%)
Garage**	30	(2%)	0	(0%)	1	(3%)	$2	(2%)
Heating equipment room	30	(2%)	0	(0%)	1	(4%)	$1	(1%)
Unclassified function area	30	(1%)	0	(0%)	7	(20%)	$1	(2%)
Unclassified structural area	20	(1%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified storage area	20	(1%)	0	(0%)	0	(0%)	$1	(1%)
Exterior balcony or unenclosed porch	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Storage of supplies or tools	10	(1%)	0	(0%)	0	(0%)	$1	(1%)
Storage room or area	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Interior stairway	10	(1%)	0	(0%)	1	(3%)	$1	(1%)
Duct for HVAC, cable or exhaust	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	60	(3%)	2	(7%)*	1	(3%)	$3	(4%)
Total fires	1,960	(100%)	30	(100%)	37	(100%)	$80	(100%)

* Leading area of origin for fire deaths not shown above is multiple areas of origin (7% of fire deaths).
** Does not include garage coded as separate property.

Note: See detailed notes and source information at end of table.

Table 4.4. Home Fires Involving Wiring and Related Equipment, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

E. Panelboard or Switchboard for Fuses or Circuit Breakers

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wall assembly or concealed space	130	(10%)	3	(15%)	2	(7%)	$4	(11%)
Laundry room	130	(10%)	0	(0%)	5	(15%)	$4	(12%)
Crawl space or substructure space	130	(10%)	5	(27%)	5	(15%)	$3	(10%)
Closet	100	(8%)	7	(43%)	4	(11%)	$3	(8%)
Garage*	90	(7%)	0	(0%)	1	(4%)	$4	(11%)
Bedroom	80	(6%)	0	(0%)	6	(18%)	$2	(7%)
Unclassified equipment or service area	70	(6%)	0	(0%)	1	(4%)	$0	(1%)
Exterior wall surface	70	(5%)	0	(0%)	2	(7%)	$1	(3%)
Kitchen	60	(4%)	0	(0%)	3	(8%)	$1	(3%)
Unclassified function area	40	(3%)	0	(0%)	0	(0%)	$1	(2%)
Heating equipment room	40	(3%)	0	(0%)	0	(0%)	$1	(4%)
Storage room or area	30	(3%)	0	(0%)	0	(0%)	$1	(2%)
Living room, family room, or den	30	(3%)	2	(15%)	0	(0%)	$1	(3%)
Unclassified storage area	30	(2%)	0	(0%)	0	(0%)	$1	(2%)
Conduit, pipe, utility, or ventilation shaft	30	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified service facility	30	(2%)	0	(0%)	0	(0%)	$0	(1%)
Storage of supplies or tools	20	(2%)	0	(0%)	0	(0%)	$2	(5%)
Attic or ceiling/roof assembly or concealed space	20	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified structural area	20	(2%)	0	(0%)	0	(0%)	$1	(2%)
Switchgear area or transformer vault	20	(2%)	0	(0%)	0	(0%)	$1	(2%)
Unclassified area of origin	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Interior stairway	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Hallway or corridor	10	(1%)	0	(0%)	0	(0%)	$1	(3%)
Ceiling/floor assembly or concealed space	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Machinery room or area	10	(1%)	0	(0%)	2	(7%)	$0	(0%)
Bathroom	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Duct for HVAC, cable, or exhaust	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Exterior balcony or unenclosed porch	10	(1%)	0	(0%)	0	(0%)	$1	(2%)
Dining room	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	20	(2%)	0	(0%)	1	(4%)	$1	(3%)
Total fires	1,270	(100%)	17	(100%)	34	(100%)	$33	(100%)

* Excludes garage reported as separate property.
Note: See detailed notes and source information at end of table.

Table 4.4. Home Fires Involving Wiring and Related Equipment, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

F. Electrical Service Supply Wiring

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Exterior wall surface	130	(19%)	3	(51%)	5	(45%)	$3	(11%)
Attic or ceiling/roof assembly or concealed space	80	(12%)	0	(0%)	0	(0%)	$4	(15%)
Wall assembly or concealed space	60	(8%)	0	(0%)	2	(20%)	$1	(4%)
Conduit, pipe, utility, or ventilation shaft	40	(7%)	0	(0%)	0	(0%)	$1	(2%)
Crawl space or substructure space	40	(6%)	0	(0%)	0	(0%)	$6	(21%)
Exterior roof surface	30	(5%)	0	(0%)	1	(11%)	$0	(1%)
Ceiling/floor assembly or concealed space	30	(4%)	0	(0%)	0	(0%)	$2	(6%)
Unclassified outside area	30	(4%)	2	(49%)	0	(0%)	$2	(5%)
Bedroom	20	(4%)	0	(0%)	1	(12%)	$1	(3%)
Garage*	20	(4%)	0	(0%)	0	(0%)	$3	(9%)
Unclassified equipment or service area	20	(3%)	0	(0%)	0	(0%)	$1	(2%)
Kitchen	20	(3%)	0	(0%)	0	(0%)	$1	(2%)
Laundry room	20	(2%)	0	(0%)	0	(0%)	$1	(2%)
Unclassified storage area	10	(2%)	0	(0%)	0	(0%)	$1	(4%)
Unclassified structural area	10	(2%)	0	(0%)	0	(0%)	$1	(2%)
Living room, family room, or den	10	(2%)	0	(0%)	0	(0%)	$1	(2%)
Unclassified function area	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Switchgear area or transformer vault	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Heating equipment room	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified area of origin	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified service facility	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Exterior surface of vehicle	10	(1%)	0	(0%)	1	(12%)	$0	(1%)
Exterior balcony or unenclosed porch	10	(1%)	0	(0%)	0	(0%)	$1	(2%)
Multiple areas of origin	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Other known area of origin	30	(5%)	0	(0%)	0	(0%)	$1	(3%)
Total fires	670	(100%)	5	(100%)	12	(100%)	$30	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Table 4.4. Home Fires Involving Wiring and Related Equipment, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

G. Meter or Meter Box

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Exterior wall surface	180	(31%)	0	(NA)	6	(30%)	$4	(32%)
Wall assembly or concealed space	50	(9%)	0	(NA)	0	(0%)	$1	(10%)
Conduit, pipe, utility, or ventilation shaft	40	(7%)	0	(NA)	0	(0%)	$1	(10%)
Unclassified equipment or service area	30	(5%)	0	(NA)	0	(0%)	$0	(2%)
Crawl space or substructure space	30	(5%)	0	(NA)	0	(0%)	$0	(4%)
Garage*	20	(4%)	0	(NA)	0	(0%)	$1	(9%)
Unclassified outside area	20	(4%)	0	(NA)	0	(0%)	$1	(7%)
Unclassified storage area	20	(3%)	0	(NA)	5	(24%)	$0	(2%)
Bedroom	20	(3%)	0	(NA)	0	(0%)	$1	(4%)
Laundry room	20	(3%)	0	(NA)	7	(34%)	$0	(2%)
Unclassified service facility	20	(3%)	0	(NA)	0	(0%)	$0	(3%)
Unclassified structural area	10	(2%)	0	(NA)	0	(0%)	$0	(4%)
Unclassified area of origin	10	(2%)	0	(NA)	0	(0%)	$0	(1%)
Exterior surface of vehicle	10	(2%)	0	(NA)	0	(0%)	$0	(2%)
Closet	10	(2%)	0	(NA)	0	(0%)	$0	(2%)
Attic or ceiling/roof assembly or concealed space	10	(2%)	0	(NA)	0	(0%)	$0	(3%)
Kitchen	10	(2%)	0	(NA)	0	(0%)	$0	(1%)
Unclassified function area	10	(2%)	0	(NA)	0	(0%)	$0	(0%)
Exterior balcony or unenclosed porch	10	(1%)	0	(NA)	0	(0%)	$0	(0%)
Living room, family room, or den	10	(1%)	0	(NA)	1	(6%)	$0	(1%)
Storage room or area	10	(1%)	0	(NA)	0	(0%)	$0	(0%)
Bathroom	10	(1%)	0	(NA)	1	(6%)	$0	(0%)
Other known area of origin	30	(5%)	0	(NA)	0	(0%)	$0	(2%)
Total fires	590	(100%)	0	(NA)	21	(100%)	$13	(100%)

* Does not include garage coded as separate property.

Note: See detailed notes and source information at end of table.

Table 4.4. Home Fires Involving Wiring and Related Equipment, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

H. Wiring From Meter Box

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wall assembly or concealed space	80	(16%)	3	(50%)	1	(10%)	$1	(5%)
Exterior wall surface	60	(13%)	0	(0%)	1	(10%)	$1	(2%)
Crawl space or substructure space	50	(10%)	0	(0%)	1	(9%)	$10	(34%)
Attic or ceiling/roof assembly or concealed space	40	(7%)	0	(0%)	5	(35%)	$2	(7%)
Laundry room or area	40	(7%)	0	(0%)	1	(10%)	$1	(4%)
Conduit, pipe, utility, or ventilation shaft	20	(4%)	0	(0%)	0	(0%)	$1	(3%)
Bedroom	20	(4%)	0	(0%)	0	(0%)	$8	(27%)
Garage*	20	(4%)	0	(0%)	0	(0%)	$1	(2%)
Unclassified equipment or service area	20	(3%)	0	(0%)	0	(0%)	$0	(1%)
Ceiling/floor assembly or concealed space	20	(3%)	0	(0%)	0	(0%)	$0	(2%)
Kitchen	20	(3%)	0	(0%)	0	(0%)	$0	(1%)
Storage of supplies or tools	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Closet	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified structural area	10	(2%)	0	(0%)	0	(0%)	$1	(3%)
Heating equipment room	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified service facility	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified outside area	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified function area	10	(2%)	0	(0%)	4	(26%)	$0	(1%)
Unclassified area of origin	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Living room, family room, or den	10	(1%)	3	(50%)	0	(0%)	$0	(1%)
Switchgear area or transformer vault	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified storage area	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Bathroom	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	20	(4%)	0	(0%)	0	(0%)	$1	(3%)
Total fires	510	(100%)	5	(100%)	14	(100%)	$29	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Table 4.4. Home Fires Involving Wiring and Related Equipment, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

I. Power (Utility) Line Wiring

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Exterior wall surface	80	(19%)	0	(0%)	0	(0%)	$1	(7%)
Attic or ceiling/roof assembly or concealed space	50	(10%)	0	(0%)	2	(15%)	$2	(14%)
Exterior roof surface	30	(8%)	0	(0%)	0	(0%)	$2	(12%)
Unclassified outside area	30	(7%)	0	(0%)	1	(8%)	$1	(5%)
Garage*	20	(5%)	0	(0%)	0	(0%)	$1	(9%)
Wall assembly or concealed space	20	(5%)	0	(0%)	0	(0%)	$1	(4%)
Bedroom	20	(5%)	0	(0%)	11	(70%)	$1	(7%)
Conduit, pipe, utility, or ventilation shaft	20	(4%)	0	(0%)	0	(0%)	$0	(1%)
Living room, family room, or den	20	(4%)	2	(100%)	0	(0%)	$0	(3%)
Crawl space or substructure space	10	(3%)	0	(0%)	1	(8%)	$0	(2%)
Laundry room	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Exterior surface of vehicle	10	(2%)	0	(0%)	0	(0%)	$1	(4%)
Kitchen	10	(2%)	0	(0%)	0	(0%)	$2	(13%)
Unclassified structural area	10	(2%)	0	(0%)	0	(0%)	$1	(4%)
Unclassified area of origin	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified function area	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Storage of supplies or tools	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Switchgear area or transformer vault	10	(1%)	0	(0%)	0	(0%)	$1	(4%)
Ceiling/floor assembly or concealed space	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified equipment or service area	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	50	(10%)	0	(0%)	0	(0%)	$1	(9%)
Total fires	450	(100%)	2	(100%)	16	(100%)	$15	(100%)

* Does not include garage coded as separate property.

Note: See detailed notes and source information at end of table.

Table 4.4. Home Fires Involving Wiring and Related Equipment, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

J. Wall Switch

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wall assembly or concealed space	50	(28%)	0	(NA)	4	(76%)	$1	(27%)
Kitchen	30	(15%)	0	(NA)	1	(24%)	$0	(11%)
Bedroom	20	(10%)	0	(NA)	0	(0%)	$0	(3%)
Living room, family room, or den	10	(8%)	0	(NA)	0	(0%)	$2	(35%)
Bathroom	10	(7%)	0	(NA)	0	(0%)	$0	(2%)
Unclassified function area	10	(5%)	0	(NA)	0	(0%)	$0	(4%)
Laundry room	10	(3%)	0	(NA)	0	(0%)	$0	(6%)
Garage*	10	(3%)	0	(NA)	0	(0%)	$0	(0%)
Dining room	10	(3%)	0	(NA)	0	(0%)	$0	(0%)
Other known area of origin	30	(18%)	0	(NA)	0	(0%)	$1	(12%)
Total fires	180	(100%)	0	(NA)	5	(100%)	$4	(100%)

NA – Not applicable because total is zero.

* Does not include garage coded as separate property.

Note: Figures *exclude* confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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.

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

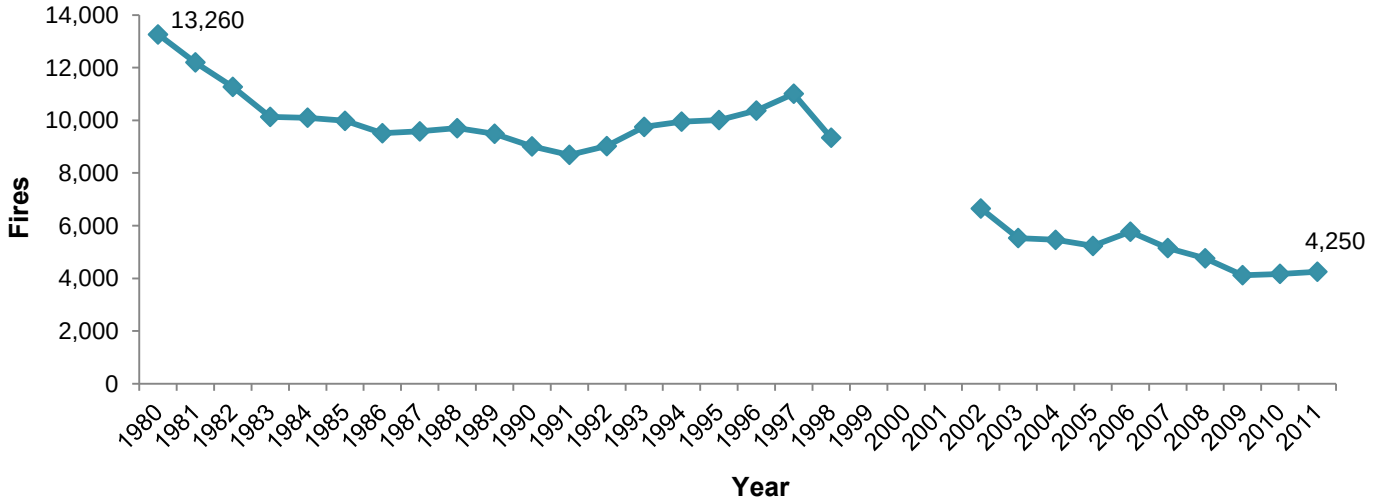
In 2011, an estimated 4,250 reported U.S. home structure fires* involving lamps, *light fixtures, or light bulbs resulted in 61 civilian deaths, 190 civilian injuries, and $136 million in direct property damage.

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

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

Fires involving lamps, light fixtures, or light bulbs 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 since 2009 have been less than half 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. Some of the decline after 1998 may be due to the changes in data categories, definitions, and rules introduced in NFIRS Version 5.0 rather than a decline in the real size of this fire problem. (See Figure 5.1 and Table 5.1.)

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



Source: Data from NFIRS Version 5.0 and NFPA survey. Note: See Note on Table 5.1.

* These estimates all *exclude* fires reported as confined fires, which do not require detailed reporting and rarely involve electrical distribution on lighting equipment.

Lamps, light fixtures, and light bulbs accounted for 20% of 2007-2011 home structure fires involving electrical distribution or lighting equipment, as well as 17% of associated civilian deaths, 27% of associated civilian injuries, and 22% of associated direct property damage.

Table and floor lamps (20%) and incandescent light fixtures (20%) accounted for the largest shares of the 2007-2011 home structure fires involving lamps, light fixtures, and light bulbs of detailed types. (See Table 5.A.)

Because of the large share (28%) coded as unclassified light fixture, lamp, or light bulb, it is likely that the numbers and percentages are substantially understated for all of the specific types of equipment. Also, there is no category identified for compact fluorescent light bulbs, which might be recorded as fluorescent light fixture, light bulb, or unclassified light fixture, lamp, or light bulb. The U.S. Consumer Product Safety Commission (CPSC) analyzed 402 of their in-depth investigations of lighting-product-related incidents from 2002-2004. That report provides examples of fires, burns, and electric shock involving several types of specialty lighting products that are not specifically identified in the NFIRS categories, including clip-on lamps, lava lamps, rope lights, ceiling-hanging lights, and furniture- or cabinet-mounted light fixtures.[16]

Table 5.A. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Specific Type of Equipment
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified light fixture, lamp or light bulb	1,260	(28%)	9	(16%)	54	(21%)	$51	(28%)
Table or floor lamp	900	(20%)	11	(21%)	73	(28%)	$48	(27%)
Incandescent light fixture	890	(20%)	2	(4%)	36	(14%)	$24	(14%)
Light bulb	360	(8%)	13	(24%)	18	(7%)	$7	(4%)
Halogen light fixture or lamp	340	(8%)	3	(5%)	12	(4%)	$13	(7%)
Fluorescent light fixture	260	(6%)	5	(9%)	26	(10%)	$14	(8%)
Work light or trouble light	170	(4%)	0	(0%)	11	(4%)	$9	(5%)
Decorative light on line voltage	150	(3%)	9	(18%)	16	(6%)	$8	(5%)
Decorative or landscape light	50	(1%)	0	(0%)	0	(0%)	$2	(1%)
Nightlight	40	(1%)	0	(0%)	6	(2%)	$1	(1%)
Lantern or flashlight	30	(1%)	2	(4%)	5	(2%)	$1	(1%)
Sodium or mercury vapor light	20	(1%)	0	(0%)	1	(2%)	$1	(0%)
Sign	0	(0%)	0	(0%)	0	(0%)	$0	(0%)
Total	4,490	(100%)	54	(100%)	260	(100%)	$180	(100%)

Note: Figures *exclude* confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compacter. 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.

[16] Anna Luo, *Evaluation of Electric Lighting Products*, U.S. Consumer Product Safety Commission, Division of Electrical Engineering, Bethesda, MD, December 2007.

Halogen lights have a higher risk of fire than regular incandescent lights, which have a higher risk than 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 2007-2011 non-confined home structure fires than halogen light fixtures (by a factor of 2.6-to-1) and fluorescent light fixtures (by a factor of 3.4-to-1). If the fires attributed to table or floor lamps and to 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 6.3-to-1 for halogen lights and 8.2-to-1 for fluorescent lights. Even if all the fires attributed to unclassified light fixture, lamp, or light bulb are also assigned to incandescent lighting equipment, the ratio of incandescent to halogen lighting equipment would only rise to 10.0-to-1.

Usage estimates are available for 2010[17]. The usage ratio for incandescent vs. halogen lights was 14.0-to-1. The usage ratio is higher than the highest incandescent vs. halogen fire incident ratio of 10.0-to-1. Therefore, the fire incident risk with halogen lights is estimated to be higher than the fire incident risk with incandescent lights.

The usage ratio for incandescent vs. fluorescent lights was 1.9-to-1, with compact fluorescent bulbs now accounting for more than two-thirds of all fluorescent lights in residential usage. This usage ratio is lower than the ratio of fire incidents. Therefore, the fire incident risk with incandescent lights is estimated to be higher than the fire incident risk with fluorescent lights. It is worth noting that incandescent light bulbs are being phased out over the next few years in favor of energy-saving alternatives such as compact fluorescent light bulbs.

More than one-third (37%) of 2007-2011 home structure fires involving lamps, light fixtures, or light bulbs cited heat source too close to combustibles as a factor contributing to ignition.
This is a much higher percentage share for heat source too close to combustibles than is seen with wiring and related equipment (1%) and cords and plugs (3%). See Table 5.2. The percentage share for heat source too close to combustibles was:

- 33% for unclassified light fixture, lamp, or light bulb fires,
- 44% for table or floor lamp fires,
- 23% for incandescent light fixture fires,
- 59% for light bulb fires,
- 49% for halogen light fixture fires,
- 6% for fluorescent light fixture fires,
- 62% for work lights and trouble light fires, and
- 19% for decorative lights on line voltage fires.

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

[17] Navigant Consulting, Inc., *2010 U.S. Lighting Market Characterization*, U.S. Department of Energy, January 2012, Table 4.1.

incandescent lights.[18] 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 (49%) of civilian fire deaths in 2007-2011 home structure fires involving lamps, light fixtures, or light bulbs resulted from fires that started with ignition of mattress or bedding (26%) or upholstered furniture (23%).
See Table 5.3. Ceiling covering accounted for 9% of the deaths.

One-third (35%) of 2007-2011 home structure fires involving lamps, light fixtures, or light bulbs began in a bedroom (25%) or a living room, family room, or den (10%).
See Table 5.4. These two areas of origin combined also accounted for:

- 32% for unclassified light fixture, lamp, or light bulb fires,
- 76% for table or floor lamp fires,
- 13% for incandescent light fixture fires,
- 21% for light bulb fires,
- 28% for halogen light fixture fires,
- 19% for fluorescent light fixture fires,
- 13% for work light or trouble light fires, and
- 39% for decorative light (on line voltage) fires,

The leading area of origin for light bulb was closet (18% of fires). The 2008 and later editions of the *National Electrical Code* do not allow "open or partially open incandescent type light fixtures" in closets. In this context, "open" would mean an exposed, unenclosed light bulb.

In 2002-2009, two types of lamp, light fixture, or light bulb accounted for an average of 4.3 electrocution deaths per year.[19]

In 2011, an estimated 40,530 injuries involving lamps, light fixtures, or light bulbs were reported to hospital emergency rooms.[20]
See Table 5.B. Note that thermal burns can result from contact with a hot object as well as from fires.

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. NFPA publishes a separate study of fires involving Christmas trees and related decorative lights and decorations.[21]

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[18] "FAQs – Halogen," accessed at http://gelighting.com/na/business.lighting/faqs.

[19] Matthew V. Hnatov, *2007 Electrocutions Associated with Consumer Products*, U.S. Consumer Product Safety Commission, November 2010, accessed at www.cpsc.gov.

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

[21] Marty Ahrens, *Home Christmas Tree and Holiday Light Fires*, NFPA Fire Analysis and Research Division, November 2011.

Table 5.B. Injuries Involving Lamps, Light Fixtures, and Light Bulbs Reported to Hospital Emergency Rooms, 2011

	Type of Injury			
	Total	Laceration	Contusion or abrasion	Shock or thermal or thermal burn
Light bulb	14,400	6,170	1,220	2,310
Table or floor lamp, excluding halogen	10,860	5,910	1,090	1,120
Light fixture	6,890	4,150	770	0
Christmas tree lights	3,530	870	460	20
Other or unknown electric lighting equipment	1,670	690	70	20
Flashlight or lantern	1,660	360	220	10
Outdoor electric lighting equipment	710	320	0	20
Nightlight	600	210	130	100
Trouble light or work light	130	0	0	0
Halogen floor or table lamp	80	10	60	10
Total	40,530	18,680	4,020	3,600

Source: CPSC's National Electronic Injury Surveillance System

The injuries shown above do not include 4,120 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 nearly all 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 30% of the 2007-2011 non-confined home structure fires involving decorative lights on line voltage, 54% of associated civilian deaths, and 54% of the associated civilian injuries.

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.

- When you are buying, selling, or remodeling a home, have it inspected by a professional 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.

More of NFPA's electrical safety information is available on our website at www.nfpa.org/electricalfires.

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

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions) As Reported	In 2011 Dollars
1980	13,260	48	450	$71	$195
1981	12,200	81	350	$70	$173
1982	11,270	69	370	$77	$180
1983	10,130	73	320	$79	$177
1984	10,100	96	260	$78	$167
1985	9,980	48	280	$88	$183
1986	9,510	126	240	$80	$163
1987	9,580	36	280	$69	$136
1988	9,700	56	310	$90	$170
1989	9,490	36	270	$88	$159
1990	9,010	87	290	$126	$216
1991	8,690	59	300	$139*	$229*
1992	9,020	39	320	$89	$142
1993	9,750	88	370	$109	$170
1994	9,950	70	340	$123	$187
1995	10,010	61	350	$146	$215
1996	10,370	80	360	$135	$194
1997	11,010	43	390	$179	$250
1998	9,340	89	270	$134	$185
1999	9,510	61	210	$228	$307
2000	7,610	41	240	$208	$272
2001	7,050	87	330	$177	$225
2002	6,650	30	220	$159	$199
2003	5,530	124	210	$136	$166
2004	5,460	15	270	$154	$183
2005	5,230	59	240	$210	$242
2006	5,770	87	190	$181	$202
2007	5,150	36	325	$214	$231
2008	4,760	28	270	$191	$199
2009	4,120	61	240	$192	$201
2010	4,170	81	270	$144	$149
2011	4,250	61	190	$136	$136

* 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 fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 are expressed to the nearest one, civilian injuries are expressed to the nearest ten, and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires 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 2011 dollars is done using the consumer price index.
Source: Data from NFIRS (Version 5.0 after 1998) and NFPA survey.

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Lamps, Light Fixtures, and Light Bulbs

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat source too close to combustibles	1,650	(37%)	41	(76%)	120	(46%)	$74	(41%)
Unclassified electrical failure or malfunction	670	(15%)	0	(0%)	46	(18%)	$36	(20%)
Unspecified short circuit arc	480	(11%)	0	(0%)	16	(6%)	$17	(9%)
Equipment unattended	200	(4%)	0	(0%)	11	(4%)	$10	(6%)
Short circuit arc from defective or worn insulation	190	(4%)	4	(7%)	4	(2%)	$5	(3%)
Unintentionally turned on or not turned off	170	(4%)	0	(0%)	2	(1%)	$8	(4%)
Collision, knock down, or turn over	150	(3%)	0	(0%)	26	(10%)	$5	(3%)
Animal	150	(3%)	0	(0%)	2	(1%)	$3	(2%)
Unclassified misuse of material	130	(3%)	0	(0%)	13	(5%)	$4	(2%)
Fluorescent light ballast	120	(3%)	0	(0%)	9	(4%)	$5	(3%)
Unclassified mechanical failure or malfunction	120	(3%)	0	(0%)	4	(1%)	$3	(1%)
Unclassified factor contributed to ignition	90	(2%)	0	(0%)	5	(2%)	$2	(1%)
Arc or spark from operating equipment	90	(2%)	9	(16%)	6	(2%)	$3	(2%)
Installation deficiency	90	(2%)	0	(0%)	0	(0%)	$5	(3%)
Short circuit arc from mechanical damage	60	(1%)	0	(0%)	2	(1%)	$4	(2%)
Worn out	60	(1%)	0	(0%)	8	(3%)	$1	(1%)
Equipment not being operated properly	60	(1%)	0	(0%)	6	(2%)	$1	(1%)
Arc from faulty contact or broken conductor	60	(1%)	0	(0%)	4	(1%)	$3	(1%)
Abandoned or discarded material	60	(1%)	0	(0%)	2	(1%)	$1	(1%)
Failure to clean	50	(1%)	0	(0%)	0	(0%)	$0	(0%)
Equipment overloaded	40	(1%)	0	(0%)	0	(0%)	$2	(1%)
Unclassified design, manufacturing, or installation deficiency	40	(1%)	0	(0%)	4	(1%)	$1	(0%)
Equipment used for not intended purpose	40	(1%)	0	(0%)	2	(1%)	$2	(1%)
Unclassified operational deficiency	40	(1%)	0	(0%)	0	(0%)	$0	(0%)
Flammable liquid or gas spilled	30	(1%)	0	(0%)	7	(3%)	$4	(2%)
Improper container or storage	20	(1%)	0	(0%)	3	(1%)	$2	(1%)

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments (Continued)

A. All Lamps, Light Fixtures, and Light Bulbs

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Other known factor contributing to ignition	100	(2%)	4	(7%)	4	(1%)	$5	(3%)
Total fires	4,490	(100%)	54	(100%)	260	(100%)	$180	(100%)
Total factor entries	4,950	(110%)	58	(107%)	307	(118%)	$207	(115%)
All electrical failures or malfunctions	1,630	(36%)	13	(24%)	87	(34%)	$70	(39%)

* The leading factor contributing to ignition for fire deaths not shown above is storm (7% of deaths).

Note: See detailed notes and source information at end of table.

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Unclassified Lamp, Light Fixture, or Light Bulb

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat source too close to combustibles	420	(33%)	6	(75%)	26	(48%)	$26	(50%)
Unclassified electrical failure or malfunction	220	(17%)	0	(0%)	3	(6%)	$7	(14%)
Unspecified short circuit arc	130	(10%)	0	(0%)	5	(9%)	$3	(6%)
Equipment unattended	70	(5%)	0	(0%)	2	(3%)	$3	(6%)
Unclassified mechanical failure or malfunction	60	(5%)	0	(0%)	2	(3%)	$1	(3%)
Short circuit arc from defective or worn insulation	40	(4%)	2	(25%)	0	(0%)	$0	(1%)
Unclassified misuse of material	40	(3%)	0	(0%)	0	(0%)	$2	(5%)
Collision, knock down, or turn over	40	(3%)	0	(0%)	7	(12%)	$2	(5%)
Unintentionally turned on or not turned off	30	(3%)	0	(0%)	0	(0%)	$1	(3%)
Animal	30	(3%)	0	(0%)	0	(0%)	$0	(0%)
Short circuit arc from mechanical damage	30	(2%)	0	(0%)	0	(0%)	$1	(3%)
Unclassified factor contributed to ignition	30	(2%)	0	(0%)	3	(6%)	$0	(0%)
Arc or spark from operating equipment	30	(2%)	0	(0%)	0	(0%)	$1	(1%)
Worn out	30	(2%)	0	(0%)	0	(0%)	$0	(0%)
Installation deficiency	20	(2%)	0	(0%)	0	(0%)	$3	(6%)
Arc from faulty contact or broken conductor	20	(2%)	0	(0%)	2	(3%)	$2	(3%)
Abandoned or discarded material	20	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified design, manufacturing, or installation deficiency	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Equipment overloaded	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Equipment not being operated properly	10	(1%)	0	(0%)	2	(3%)	$0	(1%)
Unclassified operational deficiency	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Flammable liquid or gas spilled	10	(1%)	0	(0%)	5	(9%)	$1	(3%)
Equipment used for not intended purpose	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Fluorescent light ballast	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Failure to clean	10	(1%)	0	(0%)	0	(0%)	$0	(0%)

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments (Continued)

B. Unclassified Lamp, Light Fixture, or Light Bulb

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Other known factor contributing to ignition	40	(3%)	2	(25%)	2	(3%)	$0	(1%)
Total fires	1,260	(100%)	9	(100%)	54	(100%)	$51	(100%)
Total factor entries	1,380	(109%)	11	(124%)	57	(106%)	$58	(113%)
All electrical failures or malfunctions	460	(37%)	2	(25%)	10	(18%)	$14	(28%)

* The leading factor contributing to ignition for fire deaths not shown above is storm (25% of deaths).

NA -- Not available because all fire deaths are coded as factor contributing to ignition unknown.

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Table or Floor Lamp

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat source too close to combustibles	400	(44%)	NA	(NA)	21	(29%)	$11	(24%)
Unclassified electrical failure or malfunction	100	(11%)	NA	(NA)	9	(12%)	$15	(32%)
Unspecified short circuit arc	90	(10%)	NA	(NA)	9	(12%)	$6	(12%)
Collision, knock down, or turn over	70	(8%)	NA	(NA)	14	(20%)	$2	(4%)
Short circuit arc from defective or worn insulation	50	(6%)	NA	(NA)	0	(0%)	$3	(6%)
Equipment unattended	40	(5%)	NA	(NA)	9	(12%)	$3	(7%)
Unintentionally turned on or not turned off	30	(3%)	NA	(NA)	2	(2%)	$1	(2%)
Unclassified misuse of material	20	(3%)	NA	(NA)	6	(8%)	$1	(1%)
Arc or spark from operating equipment	20	(2%)	NA	(NA)	2	(2%)	$0	(1%)
Abandoned or discarded material	20	(2%)	NA	(NA)	0	(0%)	$1	(1%)
Equipment not being operated properly	20	(2%)	NA	(NA)	2	(2%)	$0	(1%)
Arc from faulty contact or broken conductor	20	(2%)	NA	(NA)	2	(2%)	$1	(1%)
Unclassified factor contributed to ignition	20	(2%)	NA	(NA)	0	(0%)	$0	(1%)
Short circuit arc from mechanical damage	20	(2%)	NA	(NA)	0	(0%)	$2	(5%)
Unclassified mechanical failure or malfunction	10	(1%)	NA	(NA)	0	(0%)	$0	(0%)
Worn out	10	(1%)	NA	(NA)	3	(5%)	$1	(1%)
Unclassified operational deficiency	10	(1%)	NA	(NA)	0	(0%)	$0	(0%)
Playing with heat source	10	(1%)	NA	(NA)	0	(0%)	$0	(0%)
Equipment overloaded	10	(1%)	NA	(NA)	0	(0%)	$1	(2%)
Equipment used for not intended purpose	10	(1%)	NA	(NA)	0	(0%)	$0	(1%)
Animal	10	(1%)	NA	(NA)	0	(0%)	$0	(0%)
Unclassified design, manufacturing, or installation deficiency	10	(1%)	NA	(NA)	2	(2%)	$1	(1%)

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Table or Floor Lamp

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Other known factor contributing to ignition	20	(2%)	NA	(NA)	0	(0%)	$2	(4%)
Total fires	900	(100%)	11	(NA)	73	(100%)	$48	(100%)
Total factor entries	1,000	(111%)	NA	(NA)	80	(110%)	$52	(107%)
All electrical failures or malfunctions	290	(32%)	NA	(NA)	21	(29%)	$28	(57%)

NA – Not available because all fire deaths are coded as factor contributing to ignition unknown.

Note: See detailed notes and source information at end of table.

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

D. Incandescent Light Fixture

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat source too close to combustibles	220	(25%)	0	(0%)	29	(80%)	$6	(23%)
Unclassified electrical failure or malfunction	180	(21%)	0	(0%)	15	(41%)	$9	(37%)
Unspecified short circuit arc	180	(20%)	0	(0%)	1	(4%)	$4	(18%)
Animal	60	(6%)	0	(0%)	0	(0%)	$2	(8%)
Short circuit arc from defective or worn insulation	50	(6%)	0	(0%)	3	(9%)	$2	(7%)
Unintentionally turned on or not turned off	40	(4%)	0	(0%)	0	(0%)	$2	(7%)
Arc or spark from operating equipment	30	(3%)	2	(100%)	0	(0%)	$2	(7%)
Installation deficiency	30	(3%)	0	(0%)	0	(0%)	$1	(3%)
Failure to clean	30	(3%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified factor contributed to ignition	20	(3%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified misuse of material	20	(2%)	0	(0%)	3	(8%)	$0	(2%)
Equipment unattended	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Arc from faulty contact or broken conductor	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified mechanical failure or malfunction	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Equipment overloaded	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Worn out	10	(1%)	0	(0%)	3	(9%)	$0	(1%)
Collision, knock down, or turn over	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Improper container or storage	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified operational deficiency	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Storm	10	(1%)	0	(0%)	0	(0%)	$1	(3%)
Water caused short circuit arc	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Equipment used for not intended purpose	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Other known factor contributing to ignition	20	(2%)	0	(0%)	1	(4%)	$0	(1%)
Total fires	890	(100%)	2	(100%)	36	(100%)	$24	(100%)
Total factor entries	970	(108%)	2	(100%)	55	(153%)	$30	(122%)
All electrical failures or malfunctions	450	(51%)	2	(100%)	19	(53%)	$15	(64%)

Note: See detailed notes and source information at end of table.

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

E. Light Bulb

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat source too close to combustibles	210	(59%)	13	(100%)	13	(74%)	$6	(75%)
Animal	30	(9%)	0	(0%)	0	(0%)	$0	(5%)
Unintentionally turned on or not turned off	30	(7%)	0	(0%)	0	(0%)	$1	(10%)
Unclassified electrical failure or malfunction	20	(5%)	0	(0%)	2	(14%)	$0	(6%)
Unclassified misuse of material	20	(5%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified factor contributed to ignition	10	(4%)	0	(0%)	0	(0%)	$0	(6%)
Collision, knock down, or turn over	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Installation deficiency	10	(3%)	0	(0%)	0	(0%)	$0	(2%)
Equipment unattended	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Unspecified short circuit arc	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Failure to clean	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified mechanical failure or malfunction	10	(2%)	0	(0%)	2	(12%)	$0	(0%)
Other known factor contributing to ignition	20	(6%)	0	(0%)	0	(0%)	$0	(3%)
Total fires	360	(100%)	13	(100%)	18	(100%)	$7	(100%)
Total factor entries	390	(108%)	13	(100%)	18	(100%)	$8	(109%)
All electrical failures or malfunctions	20	(7%)	0	(0%)	2	(14%)	$0	(6%)

Note: See detailed notes and source information at end of table.

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

F. Halogen Light Fixture or Lamp

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat source too close to combustibles	170	(49%)	0	(*)	8	(71%)	$8	(61%)
Unclassified electrical failure or malfunction	30	(10%)	0	(*)	0	(0%)	$1	(9%)
Equipment unattended	30	(7%)	0	(*)	0	(0%)	$1	(7%)
Unspecified short circuit arc	20	(6%)	0	(*)	0	(0%)	$0	(4%)
Unintentionally turned on or not turned off	20	(5%)	0	(*)	0	(0%)	$0	(3%)
Installation deficiency	10	(4%)	0	(*)	0	(0%)	$0	(0%)
Unclassified misuse of material	10	(3%)	0	(*)	2	(16%)	$0	(1%)
Short circuit arc from defective or worn insulation	10	(3%)	0	(*)	0	(0%)	$0	(2%)
Equipment not being operated properly	10	(3%)	0	(*)	0	(0%)	$0	(2%)
Unclassified mechanical failure or malfunction	10	(3%)	0	(*)	0	(0%)	$0	(2%)
Animal	10	(3%)	0	(*)	2	(16%)	$0	(0%)
Unclassified design, manufacturing, or installation deficiency	10	(2%)	0	(*)	2	(13%)	$0	(1%)
Exposure fire	10	(2%)	0	(*)	0	(0%)	$0	(1%)
Equipment used for not intended purpose	10	(2%)	0	(*)	0	(0%)	$1	(4%)
Collision, knock down, or turn over	10	(2%)	0	(*)	2	(16%)	$0	(2%)
Failure to clean	10	(1%)	0	(*)	0	(0%)	$0	(0%)
Other known factor contributing to ignition	40	(11%)	0	(*)	3	(29%)	$2	(18%)
Total fires	340	(100%)	3	(100%)	12	(100%)	$13	(100%)
Total factor entries	400	(116%)	3	(100%)	19	(160%)	$15	(117%)
All electrical failures or malfunctions	70	(21%)	0	(*)	0	(0%)	$2	(15%)

* Cannot be calculated because all deaths are coded with factor contributing to ignition unknown.

Note: See detailed notes and source information at end of table.

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

G. Fluorescent Light Fixture

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Fluorescent light ballast	100	(37%)	0	(0%)	11	(41%)	$5	(35%)
Unclassified electrical failure or malfunction	60	(24%)	0	(0%)	6	(24%)	$3	(22%)
Unspecified short circuit arc	30	(13%)	0	(0%)	0	(0%)	$3	(19%)
Short circuit arc from defective or worn insulation	20	(7%)	0	(0%)	0	(0%)	$1	(4%)
Heat source too close to combustibles	10	(6%)	0	(0%)	0	(0%)	$1	(10%)
Unclassified mechanical failure or malfunction	10	(5%)	0	(0%)	0	(0%)	$0	(1%)
Worn out	10	(3%)	0	(0%)	0	(0%)	$0	(0%)
Installation deficiency	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Short circuit arc from mechanical damage	10	(2%)	0	(0%)	2	(8%)	$0	(2%)
Arc or spark from operating equipment	10	(2%)	5	(100%)	4	(17%)	$0	(2%)
Other known factor contributing to ignition	30	(10%)	0	(0%)	2	(9%)	$2	(11%)
Total fires	260	(100%)	5	(100%)	26	(100%)	$14	(100%)
Total factor entries	290	(111%)	5	(100%)	26	(100%)	$15	(107%)
All electrical failures or malfunctions	210	(79%)	5	(100%)	23	(91%)	$11	(80%)

Note: See detailed notes and source information at end of table.

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

H. Work Light or Trouble Light

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat source too close to combustibles	110	(62%)	0	(NA)	6	(55%)	$5	(63%)
Equipment unattended	20	(12%)	0	(NA)	0	(0%)	$2	(22%)
Unintentionally turned on or not turned off	10	(8%)	0	(NA)	0	(0%)	$2	(19%)
Unclassified electrical failure or malfunction	10	(5%)	0	(NA)	2	(21%)	$0	(1%)
Unclassified misuse of material	10	(5%)	0	(NA)	1	(12%)	$0	(3%)
Flammable liquid or gas spilled	10	(3%)	0	(NA)	1	(12%)	$1	(6%)
Abandoned or discarded material	10	(3%)	0	(NA)	0	(0%)	$0	(0%)
Unspecified short circuit arc	10	(3%)	0	(NA)	0	(0%)	$0	(3%)
Other known factor contributing to ignition	20	(11%)	0	(NA)	2	(21%)	$2	(17%)
Total fires	170	(100%)	0	(NA)	11	(100%)	$9	(100%)
Total factor entries	190	(112%)	0	(NA)	14	(121%)	$12	(135%)
All electrical failures or malfunctions	20	(10%)	0	(NA)	2	(21%)	$0	(5%)

NA – Not applicable because total is zero.

Note: See detailed notes and source information at end of table.

Table 5.2. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

I. Decorative Light on Line Voltage

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	40	(26%)	3	(27%)	3	(19%)	$3	(34%)
Unspecified short circuit arc	30	(20%)	3	(27%)	9	(55%)	$3	(31%)
Heat source too close to combustibles	30	(19%)	0	(0%)	1	(9%)	$1	(14%)
Short circuit arc from defective or worn insulation	10	(8%)	0	(0%)	0	(0%)	$0	(4%)
Equipment unattended	10	(4%)	0	(0%)	3	(17%)	$0	(4%)
Other known factor contributing to ignition	50	(30%)	4	(46%)	0	(0%)	$1	(16%)
Total fires	150	(100%)	9	(100%)	16	(100%)	$8	(100%)
Total factor entries	160	(108%)	9	(100%)	16	(100%)	$9	(103%)
All electrical failures or malfunctions	90	(59%)	5	(54%)	12	(74%)	$6	(71%)

* Leading cause of fire deaths not shown above is worn out (46% of deaths).

Note: Multiple entries are allowed, resulting in more factor entries than fires. "All electrical failures and malfunctions" is a multi-factor group that has been analyzed to eliminate double-counting of fires. Figures exclude confined fires which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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.

Table 5.3. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Item First Ignited
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Lamps, Light Fixtures, and Light Bulbs

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	540	(12%)	2	(4%)	36	(14%)	$12	(6%)
Mattress or bedding	380	(8%)	14	(26%)	23	(9%)	$13	(7%)
Clothing	370	(8%)	0	(0%)	17	(7%)	$8	(4%)
Structural member or framing	350	(8%)	0	(0%)	9	(3%)	$15	(8%)
Insulation within structural area	280	(6%)	0	(0%)	0	(0%)	$8	(4%)
Exterior wall covering	230	(5%)	0	(0%)	5	(2%)	$31	(17%)
Interior ceiling covering	170	(4%)	5	(9%)	9	(3%)	$6	(4%)
Floor covering	150	(3%)	0	(0%)	9	(3%)	$7	(4%)
Unclassified item	150	(3%)	0	(0%)	11	(4%)	$7	(4%)
Upholstered furniture	140	(3%)	12	(23%)	31	(12%)	$7	(4%)
Linen other than bedding	140	(3%)	0	(0%)	10	(4%)	$2	(1%)
Unclassified furniture or utensil	140	(3%)	2	(5%)	20	(8%)	$5	(3%)
Unclassified soft goods or clothing	140	(3%)	2	(4%)	21	(8%)	$3	(2%)
Light vegetation including grass	130	(3%)	0	(0%)	0	(0%)	$7	(4%)
Curtain or drape	120	(3%)	2	(4%)	8	(3%)	$4	(2%)
Appliance housing or casing	110	(3%)	0	(0%)	3	(1%)	$2	(1%)
Unclassified structural component or finish	100	(2%)	0	(0%)	3	(1%)	$3	(2%)
Interior wall covering	90	(2%)	2	(5%)	6	(2%)	$5	(3%)
Cabinetry	90	(2%)	0	(0%)	3	(1%)	$3	(2%)
Unclassified organic material	80	(2%)	0	(0%)	0	(0%)	$2	(1%)
Multiple items first ignited	60	(1%)	2	(5%)	1	(1%)	$5	(3%)
Papers	60	(1%)	3	(5%)	1	(1%)	$3	(1%)
Box or bag	50	(1%)	0	(0%)	8	(3%)	$6	(3%)
Decoration	50	(1%)	3	(5%)	3	(1%)	$2	(1%)
Flammable or combustible gas or liquid	40	(1%)	0	(0%)	13	(5%)	$4	(2%)
Christmas tree	30	(1%)	3	(5%)	6	(2%)	$6	(3%)
Exterior trim including doors	30	(1%)	0	(0%)	0	(0%)	$0	(0%)
Transformer or transformer fluid	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known item first ignited	250	(6%)	0	(0%)	3	(1%)	$4	(2%)
Total fires	4,490	(100%)	54	(100%)	260	(100%)	$180	(100%)

Note: See detailed notes and source information at end of table.

Table 5.3. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Unclassified Lamp, Light Fixture, or Light Bulb

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	170	(13%)	2	(25%)	4	(8%)	$4	(7%)
Mattress or bedding	110	(8%)	2	(25%)	5	(10%)	$4	(7%)
Clothing	90	(7%)	0	(0%)	4	(8%)	$3	(5%)
Insulation within structural area	80	(7%)	0	(0%)	0	(0%)	$2	(4%)
Structural member or framing	80	(7%)	0	(0%)	0	(0%)	$5	(10%)
Exterior wall covering	60	(5%)	0	(0%)	0	(0%)	$2	(3%)
Unclassified item	50	(4%)	0	(0%)	1	(3%)	$1	(3%)
Unclassified soft goods or clothing	50	(4%)	0	(0%)	12	(22%)	$1	(2%)
Unclassified furniture or utensil	50	(4%)	2	(26%)	10	(19%)	$2	(4%)
Interior ceiling covering	50	(4%)	0	(0%)	0	(0%)	$1	(2%)
Unclassified structural component or finish	40	(4%)	0	(0%)	3	(5%)	$2	(4%)
Floor covering	40	(3%)	0	(0%)	1	(2%)	$1	(2%)
Appliance housing or casing	40	(3%)	0	(0%)	0	(0%)	$1	(1%)
Interior wall covering	30	(3%)	0	(0%)	0	(0%)	$2	(3%)
Linen other than bedding	30	(3%)	0	(0%)	1	(2%)	$0	(1%)
Upholstered furniture	30	(2%)	0	(0%)	1	(2%)	$2	(4%)
Curtain or drape	30	(2%)	2	(25%)	1	(2%)	$2	(3%)
Cabinetry	30	(2%)	0	(0%)	0	(0%)	$2	(3%)
Unclassified organic material	20	(2%)	0	(0%)	0	(0%)	$2	(4%)
Box or bag	20	(2%)	0	(0%)	1	(3%)	$5	(10%)
Multiple items first ignited	20	(2%)	0	(0%)	0	(0%)	$2	(3%)
Light vegetation including grass	20	(1%)	0	(0%)	0	(0%)	$4	(7%)
Papers	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Flammable or combustible gas or liquid	10	(1%)	0	(0%)	5	(10%)	$1	(1%)
Decoration	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Dust, fiber, or lint	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified storage supplies	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Other known item first ignited	60	(5%)	0	(0%)	2	(3%)	$3	(5%)
Total fires	1,260	(100%)	9	(100%)	54	(100%)	$51	(100%)

Note: See detailed notes and source information at end of table.

Table 5.3. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Table or Floor Lamp

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Mattress or bedding	160	(18%)	0	(0%)	11	(15%)	$5	(11%)
Clothing	140	(15%)	0	(0%)	4	(6%)	$2	(3%)
Wire or cable insulation	90	(10%)	0	(0%)	4	(6%)	$2	(4%)
Upholstered furniture	70	(8%)	11	(100%)	24	(33%)	$3	(6%)
Floor covering	60	(7%)	0	(0%)	7	(10%)	$3	(6%)
Unclassified furniture or utensil	60	(7%)	0	(0%)	5	(7%)	$2	(4%)
Curtain or drape	50	(6%)	0	(0%)	0	(0%)	$1	(2%)
Linen other than bedding	40	(5%)	0	(0%)	1	(2%)	$1	(2%)
Unclassified soft goods or clothing	30	(4%)	0	(0%)	1	(2%)	$0	(0%)
Appliance housing or casing	30	(3%)	0	(0%)	2	(2%)	$1	(2%)
Cabinetry	20	(2%)	0	(0%)	0	(0%)	$1	(1%)
Papers	20	(2%)	0	(0%)	1	(2%)	$1	(2%)
Interior wall covering	20	(2%)	0	(0%)	1	(2%)	$1	(1%)
Unclassified item	10	(2%)	0	(0%)	3	(4%)	$0	(0%)
Multiple items first ignited	10	(2%)	0	(0%)	1	(2%)	$1	(2%)
Decoration	10	(1%)	0	(0%)	2	(2%)	$1	(2%)
Toy or game	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Box or bag	10	(1%)	0	(0%)	3	(4%)	$0	(1%)
Structural member or framing	10	(1%)	0	(0%)	1	(2%)	$0	(1%)
Household utensil	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Interior ceiling covering	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Fabric or other goods not made up	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known item first ignited	30	(4%)	0	(0%)	0	(0%)	$24	(50%)
Total fires	900	(100%)	11	(100%)	73	(100%)	$48	(100%)

Note: See detailed notes and source information at end of table.

Table 5.3. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

D. Incandescent Light Fixture

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Structural member or framing	150	(17%)	0	(0%)	2	(4%)	$5	(19%)
Wire or cable insulation	120	(14%)	0	(0%)	13	(36%)	$1	(5%)
Insulation within structural area	100	(11%)	0	(0%)	0	(0%)	$4	(17%)
Exterior wall covering	60	(7%)	0	(0%)	1	(4%)	$2	(7%)
Interior ceiling covering	60	(7%)	0	(0%)	0	(0%)	$2	(9%)
Light vegetation including grass	50	(6%)	0	(0%)	0	(0%)	$1	(6%)
Clothing	40	(5%)	0	(0%)	0	(0%)	$1	(4%)
Unclassified organic material	30	(3%)	0	(0%)	0	(0%)	$0	(0%)
Linen other than bedding	30	(3%)	0	(0%)	2	(5%)	$0	(0%)
Mattress or bedding	30	(3%)	0	(0%)	3	(8%)	$1	(4%)
Unclassified item	20	(3%)	0	(0%)	3	(8%)	$0	(2%)
Unclassified structural component or finish	20	(3%)	0	(0%)	0	(0%)	$0	(1%)
Appliance housing or casing	20	(3%)	0	(0%)	0	(0%)	$0	(2%)
Upholstered furniture	20	(2%)	0	(0%)	3	(9%)	$0	(2%)
Unclassified soft goods or clothing	10	(2%)	0	(0%)	4	(12%)	$1	(6%)
Exterior trim including doors	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified furniture or utensil	10	(1%)	0	(0%)	1	(4%)	$1	(2%)
Interior wall covering	10	(1%)	0	(0%)	2	(4%)	$1	(4%)
Floor covering	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Curtain or drape	10	(1%)	0	(0%)	0	(0%)	$0	(2%)
Feathers or fur not on bird or animal	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Box or bag	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Papers	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Dust, fiber, or lint	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Cabinetry	10	(1%)	0	(0%)	0	(0%)	$0	(2%)
Multiple items first ignited	10	(1%)	2	(100%)	0	(0%)	$0	(2%)
Rolled or wound material	10	(1%)	0	(0%)	0	(0%)	$0	(2%)
Other known item first ignited	20	(2%)	0	(0%)	1	(4%)	$0	(1%)
Total fires	890	(100%)	2	(100%)	36	(100%)	$24	(100%)

Note: See detailed notes and source information at end of table.

Table 5.3. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

E. Light Bulb

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Clothing	50	(14%)	0	(0%)	8	(45%)	$2	(21%)
Mattress or bedding	50	(13%)	11	(84%)	0	(0%)	$1	(10%)
Light vegetation including grass	30	(7%)	0	(0%)	0	(0%)	$1	(8%)
Exterior wall covering	20	(6%)	0	(0%)	0	(0%)	$0	(2%)
Unclassified soft goods or clothing	20	(5%)	2	(16%)	0	(0%)	$1	(8%)
Unclassified organic material	20	(5%)	0	(0%)	0	(0%)	$0	(2%)
Insulation within structural area	20	(4%)	0	(0%)	0	(0%)	$0	(4%)
Structural member or framing	10	(4%)	0	(0%)	0	(0%)	$1	(13%)
Wire or cable insulation	10	(4%)	0	(0%)	2	(11%)	$0	(0%)
Linen other than bedding	10	(3%)	0	(0%)	0	(0%)	$0	(2%)
Unclassified item	10	(3%)	0	(0%)	4	(21%)	$0	(2%)
Floor covering	10	(3%)	0	(0%)	0	(0%)	$1	(10%)
Cabinetry	10	(3%)	0	(0%)	0	(0%)	$0	(0%)
Interior ceiling covering	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Papers	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Box or bag	10	(2%)	0	(0%)	2	(11%)	$0	(3%)
Rolled or wound material	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Other known item first ignited	60	(16%)	0	(0%)	2	(12%)	$1	(12%)
Total fires	360	(100%)	13	(100%)	18	(100%)	$7	(100%)

Note: See detailed notes and source information at end of table.

Table 5.3. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

F. Halogen Light Fixture or Lamp

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Exterior wall covering	40	(13%)	0	(0%)	0	(0%)	$2	(12%)
Structural member or framing	30	(10%)	0	(0%)	0	(0%)	$1	(7%)
Clothing	30	(8%)	0	(0%)	1	(12%)	$0	(3%)
Insulation within structural area	30	(7%)	0	(0%)	0	(0%)	$1	(9%)
Wire or cable insulation	20	(6%)	0	(0%)	0	(0%)	$0	(4%)
Curtain or drape	20	(5%)	0	(0%)	1	(10%)	$0	(3%)
Linen other than bedding	20	(5%)	0	(0%)	0	(0%)	$0	(0%)
Interior wall covering	10	(4%)	0	(0%)	3	(24%)	$1	(4%)
Floor covering	10	(4%)	0	(0%)	0	(0%)	$1	(6%)
Interior ceiling covering	10	(3%)	0	(0%)	0	(0%)	$1	(5%)
Light vegetation including grass	10	(3%)	0	(0%)	0	(0%)	$1	(6%)
Multiple items first ignited	10	(3%)	0	(0%)	0	(0%)	$1	(9%)
Unclassified item	10	(3%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified soft goods or clothing	10	(3%)	0	(0%)	1	(10%)	$0	(1%)
Upholstered furniture	10	(2%)	0	(0%)	1	(12%)	$0	(1%)
Cabinetry	10	(2%)	0	(0%)	1	(10%)	$0	(2%)
Other known item first ignited	60	(17%)	3	(100%)	3	(22%)	$4	(29%)
Total fires	340	(100%)	3	(100%)	12	(100%)	$13	(100%)

* The leading item first ignited for fire deaths not shown above is papers (100% of deaths).

Note: See detailed notes and source information at end of table.

Table 5.3. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

G. Fluorescent Light Fixture

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	90	(33%)	0	(0%)	6	(24%)	$3	(21%)
Structural member or framing	30	(13%)	0	(0%)	7	(26%)	$2	(12%)
Interior ceiling covering	30	(11%)	0	(0%)	10	(37%)	$3	(18%)
Unclassified item	20	(8%)	0	(0%)	0	(0%)	$4	(30%)
Appliance housing or casing	20	(7%)	0	(0%)	2	(7%)	$0	(4%)
Transformer or transformer fluid	20	(6%)	0	(0%)	0	(0%)	$0	(1%)
Cabinetry	10	(5%)	0	(0%)	2	(7%)	$0	(1%)
Insulation within structural area	10	(4%)	0	(0%)	0	(0%)	$0	(0%)
Other known item first ignited	40	(13%)	5	(100%)	0	(0%)	$2	(12%)
Total fires	260	(100%)	5	(100%)	26	(100%)	$14	(100%)

* The leading item first ignited for fire deaths not shown above is interior wall covering (100% of deaths).

H. Work Light or Trouble Light

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Insulation within structural area	40	(23%)	0	(NA)	0	(0%)	$0	(4%)
Flammable or combustible gas or liquid	10	(7%)	0	(NA)	5	(45%)	$2	(26%)
Structural member or framing	10	(6%)	0	(NA)	0	(0%)	$1	(7%)
Mattress or bedding	10	(6%)	0	(NA)	0	(0%)	$1	(8%)
Clothing	10	(5%)	0	(NA)	0	(0%)	$0	(1%)
Wire or cable insulation	10	(5%)	0	(NA)	0	(0%)	$0	(4%)
Floor covering	10	(5%)	0	(NA)	0	(0%)	$1	(7%)
Exterior wall covering	10	(5%)	0	(NA)	0	(0%)	$0	(5%)
Unclassified item	10	(4%)	0	(NA)	0	(0%)	$0	(3%)
Linen other than bedding	10	(4%)	0	(NA)	4	(33%)	$0	(4%)
Unclassified structural component or finish	10	(4%)	0	(NA)	0	(0%)	$0	(1%)
Box or bag	10	(3%)	0	(NA)	2	(21%)	$1	(10%)
Unclassified storage supplies	10	(3%)	0	(NA)	0	(0%)	$0	(5%)
Other known item first ignited	30	(20%)	0	(NA)	0	(0%)	$1	(14%)
Total fires	170	(100%)	0	(NA)	11	(100%)	$9	(100%)

NA – Not applicable because total is zero.
Note: See detailed notes and source information at end of table.

Table 5.3. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

I. Decorative Light on Line Voltage

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Christmas tree	20	(15%)	3	(27%)	5	(33%)	$3	(40%)
Wire or cable insulation	20	(13%)	0	(0%)	3	(16%)	$1	(9%)
Decoration	20	(11%)	3	(27%)	1	(9%)	$0	(4%)
Exterior wall covering	10	(6%)	0	(0%)	3	(18%)	$0	(4%)
Structural member or framing	10	(6%)	0	(0%)	0	(0%)	$0	(5%)
Light vegetation including grass	10	(5%)	0	(0%)	0	(0%)	$0	(1%)
Curtain or drape	10	(5%)	0	(0%)	4	(24%)	$1	(7%)
Mattress or bedding	10	(4%)	0	(0%)	0	(0%)	$0	(1%)
Upholstered furniture	10	(4%)	0	(0%)	0	(0%)	$1	(7%)
Other known item first ignited	50	(32%)	4	(46%)*	0	(0%)	$2	(22%)
Total fires	150	(100%)	9	(100%)	16	(100%)	$8	(100%)

* The leading item first ignited for fire deaths not shown above is interior wall covering (46% 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 fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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.

Table 5.4. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Area of Origin
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Lamps, Light Fixtures, and Light Bulbs

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	1,100	(25%)	14	(26%)	87	(34%)	$34	(19%)
Living room, family room, or den	450	(10%)	17	(32%)	47	(18%)	$18	(10%)
Attic or ceiling/roof assembly or concealed space	370	(8%)	0	(0%)	4	(1%)	$15	(8%)
Bathroom	280	(6%)	0	(0%)	25	(10%)	$5	(3%)
Exterior wall surface	250	(6%)	0	(0%)	1	(1%)	$4	(2%)
Closet	230	(5%)	11	(21%)	14	(5%)	$9	(5%)
Ceiling/floor assembly or concealed space	210	(5%)	0	(0%)	4	(2%)	$7	(4%)
Kitchen	190	(4%)	3	(5%)	14	(5%)	$8	(4%)
Unclassified function area	180	(4%)	3	(5%)	10	(4%)	$8	(5%)
Exterior balcony or unenclosed porch	170	(4%)	5	(8%)	6	(2%)	$7	(4%)
Garage*	150	(3%)	0	(0%)	13	(5%)	$30	(17%)
Courtyard, terrace or patio	90	(2%)	0	(0%)	2	(1%)	$3	(2%)
Laundry room	80	(2%)	0	(0%)	2	(1%)	$1	(1%)
Crawl space or substructure space	80	(2%)	0	(0%)	4	(1%)	$3	(2%)
Wall assembly or concealed space	70	(2%)	0	(0%)	12	(5%)	$3	(1%)
Unclassified structural area	70	(2%)	0	(0%)	1	(0%)	$5	(3%)
Unclassified outside area	60	(1%)	0	(0%)	0	(0%)	$3	(2%)
Lobby or entrance way	50	(1%)	0	(0%)	1	(0%)	$1	(1%)
Unclassified storage area	40	(1%)	0	(0%)	0	(0%)	$3	(2%)
Dining room	40	(1%)	2	(4%)	1	(0%)	$2	(1%)
Unclassified area of origin	30	(1%)	0	(0%)	1	(1%)	$0	(0%)
Exterior surface of vehicle	30	(1%)	0	(0%)	0	(0%)	$1	(0%)
Unclassified means of egress	30	(1%)	0	(0%)	0	(0%)	$0	(0%)
Exterior stairway or fire escape	30	(1%)	0	(0%)	3	(1%)	$1	(0%)
Storage room or area	30	(1%)	0	(0%)	2	(1%)	$1	(1%)
Interior stairway	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	150	(3%)	0	(0%)	2	(1%)	$4	(2%)
Total fires	4,490	(100%)	54	(100%)	260	(100%)	$180	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Table 5.4. Home Fires Involving Lamps, Light Fixture, and Light Bulbs, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Unclassified Lamp, Light Fixture, or Light Bulb

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	280	(22%)	4	(51%)	17	(32%)	$9	(17%)
Living room, family room, or den	130	(10%)	2	(25%)	8	(14%)	$4	(9%)
Attic or ceiling/roof assembly or concealed space	100	(8%)	0	(0%)	0	(0%)	$5	(10%)
Bathroom	100	(8%)	0	(0%)	13	(24%)	$2	(4%)
Exterior wall surface	60	(5%)	0	(0%)	0	(0%)	$1	(2%)
Closet	60	(5%)	0	(0%)	0	(0%)	$3	(5%)
Exterior balcony or unenclosed porch	60	(5%)	0	(0%)	2	(4%)	$4	(7%)
Ceiling/floor assembly or concealed space	60	(5%)	0	(0%)	0	(0%)	$2	(4%)
Unclassified function area	60	(4%)	0	(0%)	3	(5%)	$2	(3%)
Kitchen	50	(4%)	0	(0%)	2	(5%)	$1	(1%)
Garage*	40	(3%)	0	(0%)	3	(5%)	$3	(5%)
Courtyard, terrace or patio	30	(2%)	0	(0%)	2	(5%)	$3	(5%)
Unclassified structural area	30	(2%)	0	(0%)	0	(0%)	$4	(8%)
Crawl space or substructure space	20	(2%)	0	(0%)	2	(4%)	$1	(1%)
Lobby or entrance way	20	(2%)	0	(0%)	0	(0%)	$0	(0%)
Wall assembly or concealed space	20	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified outside area	20	(2%)	0	(0%)	0	(0%)	$3	(5%)
Unclassified storage area	20	(2%)	0	(0%)	0	(0%)	$3	(5%)
Laundry room	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Dining room	10	(1%)	2	(25%)	0	(0%)	$1	(1%)
Unclassified area of origin	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Exterior surface of vehicle	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified means of egress	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Exterior stairway or fire escape	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Storage room or area	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Other known area of origin	30	(3%)	0	(0%)	1	(2%)	$0	(1%)
Total fires	1,260	(100%)	9	(100%)	54	(100%)	$51	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Table 5.4. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Table or Floor Lamp

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	530	(60%)	7	(60%)	39	(54%)	$15	(30%)
Living room, family room, or den	140	(16%)	2	(19%)	23	(32%)	$4	(8%)
Unclassified function area	50	(6%)	2	(21%)	1	(2%)	$4	(8%)
Closet	20	(2%)	0	(0%)	5	(7%)	$0	(0%)
Bathroom	20	(2%)	0	(0%)	0	(0%)	$0	(0%)
Laundry room	20	(2%)	0	(0%)	0	(0%)	$0	(0%)
Wall assembly or concealed space	10	(1%)	0	(0%)	1	(2%)	$1	(1%)
Kitchen	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Attic or ceiling/roof assembly or concealed space	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Dining room	10	(1%)	0	(0%)	0	(0%)	$1	(2%)
Office	10	(1%)	0	(0%)	1	(2%)	$0	(0%)
Garage*	10	(1%)	0	(0%)	0	(0%)	$22	(46%)
Crawl space or substructure space	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified structural area	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	30	(4%)	0	(0%)	1	(2%)	$1	(2%)
Total fires	900	(100%)	11	(100%)	73	(100%)	$48	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Table 5.4. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

D. Incandescent Light Fixture

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Attic or ceiling/roof assembly or concealed space	120	(13%)	0	(0%)	0	(0%)	$4	(15%)
Bathroom	110	(13%)	0	(0%)	1	(4%)	$1	(6%)
Ceiling/floor assembly or concealed space	100	(11%)	0	(0%)	1	(4%)	$3	(12%)
Bedroom	80	(9%)	0	(0%)	8	(23%)	$3	(11%)
Exterior wall surface	80	(9%)	0	(0%)	0	(0%)	$1	(3%)
Exterior balcony or unenclosed porch	60	(7%)	0	(0%)	4	(11%)	$3	(11%)
Closet	60	(6%)	0	(0%)	1	(3%)	$3	(12%)
Kitchen	50	(6%)	0	(0%)	3	(7%)	$2	(7%)
Living room, family room, or den	40	(4%)	2	(100%)	3	(8%)	$1	(4%)
Courtyard, terrace or patio	20	(3%)	0	(0%)	0	(0%)	$0	(2%)
Unclassified function area	20	(2%)	0	(0%)	1	(4%)	$0	(1%)
Laundry room	20	(2%)	0	(0%)	0	(0%)	$0	(2%)
Lobby or entrance way	20	(2%)	0	(0%)	0	(0%)	$1	(3%)
Garage*	10	(2%)	0	(0%)	1	(3%)	$0	(1%)
Wall assembly or concealed space	10	(1%)	0	(0%)	11	(29%)	$1	(4%)
Exterior stairway or fire escape	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Interior stairway	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Crawl space or substructure space	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified means of egress	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified outside area	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Hallway or corridor	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified storage area	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified area of origin	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	30	(3%)	0	(0%)	1	(3%)	$1	(24%)
Total fires	890	(100%)	2	(100%)	36	(100%)	$24	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Table 5.4. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

E. Light Bulb

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Closet	70	(18%)	11	(84%)	5	(29%)	$3	(37%)
Bedroom	60	(16%)	2	(16%)	8	(43%)	$1	(9%)
Exterior wall surface	30	(8%)	0	(0%)	0	(0%)	$0	(2%)
Attic or ceiling/roof assembly or concealed space	30	(7%)	0	(0%)	2	(13%)	$1	(9%)
Bathroom	20	(6%)	0	(0%)	0	(0%)	$0	(1%)
Exterior balcony or unenclosed porch	20	(6%)	0	(0%)	0	(0%)	$0	(0%)
Living room, family room, or den	20	(5%)	0	(0%)	1	(7%)	$1	(13%)
Garage*	10	(4%)	0	(0%)	1	(8%)	$0	(5%)
Kitchen	10	(3%)	0	(0%)	0	(0%)	$0	(0%)
Exterior surface of vehicle	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Courtyard, terrace or patio	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified structural area	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Wall assembly or concealed space	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Unclassified function area	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Exterior stairway or fire escape	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Ceiling/floor assembly or concealed space	10	(2%)	0	(0%)	0	(0%)	$0	(7%)
Crawl space or substructure space	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Laundry room	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	40	(10%)	0	(0%)	0	(0%)	$1	(10%)
Total fires	360	(100%)	13	(100%)	18	(100%)	$7	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Table 5.4. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

F. Halogen Light Fixture or Lamp

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	70	(20%)	0	(0%)	7	(56%)	$3	(26%)
Exterior wall surface	40	(11%)	0	(0%)	0	(0%)	$1	(9%)
Attic or ceiling/roof assembly or concealed space	40	(11%)	0	(0%)	0	(0%)	$1	(10%)
Living room, family room, or den	30	(8%)	3	(100%)	3	(24%)	$1	(10%)
Closet	20	(6%)	0	(0%)	1	(10%)	$0	(4%)
Garage*	20	(5%)	0	(0%)	0	(0%)	$1	(6%)
Crawl space or substructure space	10	(4%)	0	(0%)	0	(0%)	$1	(5%)
Ceiling/floor assembly or concealed space	10	(4%)	0	(0%)	0	(0%)	$0	(3%)
Kitchen	10	(4%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified function area	10	(3%)	0	(0%)	0	(0%)	$1	(11%)
Wall assembly or concealed space	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Bathroom	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Unclassified structural area	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Exterior roof surface	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified storage area	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Exterior balcony or unenclosed porch	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Laundry room	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Dining room	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Other known area of origin	30	(10%)	0	(0%)	1	(10%)	$0	(4%)
Total fires	340	(100%)	3	(100%)	12	(100%)	$13	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Table 5.4. Home Fires Involving Lamps, Light Fixtures, and Light Bulbs, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

G. Fluorescent Light Fixture

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Kitchen	40	(16%)	2	(52%)	8	(30%)	$5	(37%)
Living room, family room, or den	30	(11%)	2	(48%)	1	(5%)	$1	(9%)
Bedroom	20	(8%)	0	(0%)	1	(5%)	$1	(5%)
Ceiling/floor assembly or concealed space	20	(8%)	0	(0%)	3	(11%)	$1	(4%)
Unclassified function area	20	(7%)	0	(0%)	2	(9%)	$1	(5%)
Attic or ceiling/roof assembly or concealed space	20	(6%)	0	(0%)	0	(0%)	$1	(11%)
Bathroom	10	(5%)	0	(0%)	8	(30%)	$1	(4%)
Garage*	10	(5%)	0	(0%)	0	(0%)	$0	(3%)
Closet	10	(5%)	0	(0%)	1	(5%)	$0	(3%)
Laundry room	10	(4%)	0	(0%)	0	(0%)	$0	(3%)
Crawl space or substructure space	10	(4%)	0	(0%)	1	(5%)	$0	(3%)
Interior stairway	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Hallway or corridor	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Storage room or area	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Exterior balcony or unenclosed porch	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	30	(11%)	0	(0%)	0	(0%)	$2	(13%)
Total fires	260	(100%)	5	(100%)	26	(100%)	$14	(100%)

* Excludes garage reported as separate property.

NA – Not applicable because total is zero.

Note: See detailed notes and source information at end of table.

Table 5.4. Home Fires Involving Lamps Light Fixtures, and Light Bulbs, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

H. Work Light or Trouble Light

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Attic or ceiling/roof assembly or concealed space	50	(26%)	0	(NA)	0	(0%)	$1	(15%)
Garage*	30	(20%)	0	(NA)	5	(45%)	$3	(32%)
Bedroom	20	(10%)	0	(NA)	1	(12%)	$1	(12%)
Exterior wall surface	10	(6%)	0	(NA)	0	(0%)	$1	(6%)
Laundry room	10	(5%)	0	(NA)	0	(0%)	$0	(0%)
Crawl space or substructure space	10	(5%)	0	(NA)	0	(0%)	$0	(3%)
Storage room or area	10	(4%)	0	(NA)	2	(21%)	$0	(2%)
Living room, family room, or den	10	(3%)	0	(NA)	0	(0%)	$0	(1%)
Other known area of origin	40	(22%)	0	(NA)	2	(21%)	$3	(29%)
Total fires	170	(100%)	0	(NA)	11	(100%)	$9	(100%)

* Excludes garage reported as separate property.
NA – Not applicable because total is zero.
Note: See detailed notes and source information at end of table.

Table 5.4. Home Fires Involving Lamps Light Fixtures, and Light Bulbs, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

I. Decorative Light on Line Voltage

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Living room, family room, or den	50	(31%)	5	(54%)	8	(46%)	$4	(51%)
Bedroom	10	(8%)	0	(0%)	2	(15%)	$1	(8%)
Exterior balcony or unenclosed porch	10	(8%)	4	(46%)	0	(0%)	$0	(3%)
Unclassified function area	10	(6%)	0	(0%)	1	(7%)	$0	(2%)
Unclassified structural area	10	(5%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified outside area	10	(5%)	0	(0%)	0	(0%)	$0	(1%)
Courtyard, terrace or patio	10	(4%)	0	(0%)	0	(0%)	$0	(1%)
Exterior wall surface	10	(4%)	0	(0%)	0	(0%)	$0	(3%)
Attic or ceiling/roof assembly or concealed space	10	(4%)	0	(0%)	0	(0%)	$1	(13%)
Bathroom	10	(4%)	0	(0%)	0	(0%)	$0	(2%)
Wall assembly or concealed space	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Garage*	10	(3%)	0	(0%)	0	(0%)	$0	(5%)
Other known area of origin	20	(14%)	0	(0%)	5	(32%)	$1	(10%)
Total fires	150	(100%)	9	(100%)	16	(100%)	$8	(100%)

* Excludes garage coded as separate property.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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.

Section 6. Home Cords and Plugs

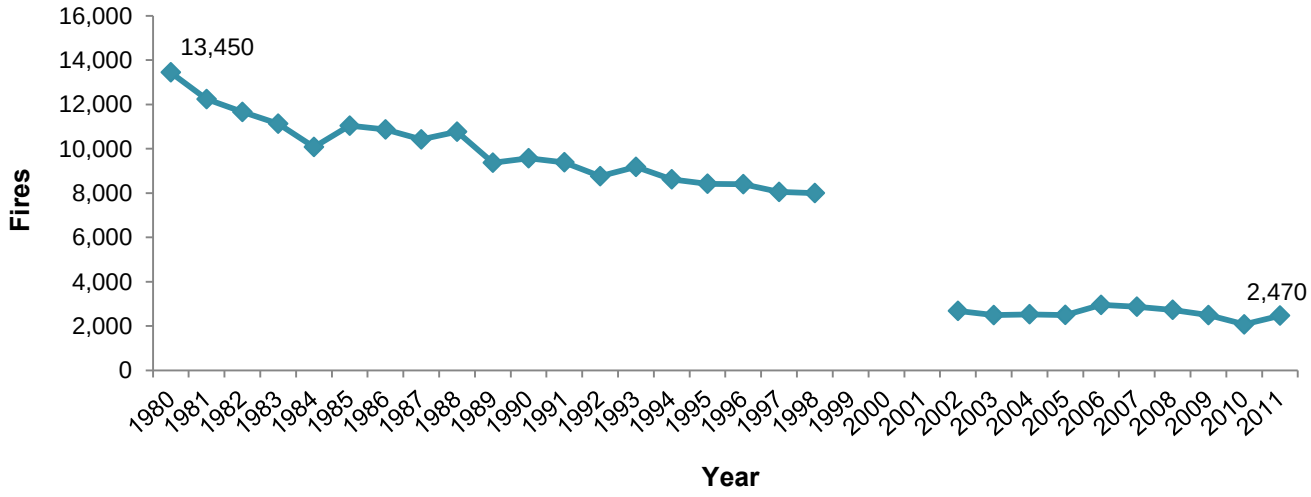
In 2011, an estimated 2,470 reported U.S. home structure fires* involving cords or plugs resulted in 102 civilian deaths, 150 civilian injuries, and $103 million in direct property damage.
Cords and plugs include the following specific types of equipment:

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

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

Fires involving cords or plugs 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 since then are about one-third the level 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. Some of the sharp decline after 1998 may be due to the changes in data categories, definitions, and rules introduced in NFIRS Version 5.0 rather than a decline in the real size of this fire problem. (See Table 6.1 and Figure 6.1.)

Figure 6.1. Home Fires Involving Cords and 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 Table 6.1.

Cords and plugs accounted for 11% of 2007-2011 home structure fires involving electrical distribution or lighting equipment, as well as 30% of associated civilian deaths, 21% of associated civilian injuries, and 12% of associated direct property damage.

* These estimates all *exclude* fires reported as confined fires, which do not require detailed reporting and rarely involve electrical distribution on lighting equipment.

Extension cords accounted for more than half (54%) of the 2007-2011 non-confined home structure fires involving cords or plugs.
Permanent and detachable power cords are the other well-defined types of cords distinguishable in the fire incident data. Because one-sixth of cord and plug fires are coded as unclassified cord or plug, the numbers and percentages for the other, more specifically defined types are probably understated. (See Table 6.A.)

Table 6.A. Home Fires Involving Cords and Plugs, by Specific Type of Equipment
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Extension cord	1,370	(54%)	64	(65%)	143	(71%)	$56	(58%)
Unclassified cord or plug	440	(17%)	23	(23%)	29	(14%)	$16	(17%)
Permanent power cord or plug	420	(16%)	4	(5%)	12	(6%)	$12	(13%)
Detachable power cord or plug	310	(12%)	7	(7%)	19	(9%)	$13	(13%)
Total	2,530	(100%)	98	(100%)	203	(100%)	$97	(100%)

Note: Figures *exclude* confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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.

Three out of four (74%) 2007-2011 home structure fires involving cords or plugs cited some type of electrical failure or malfunction as a factor contributing to ignition.
See Table 6.2. Leading electrical factors with details on the nature of the failure were short circuit arc from defective or worn insulation (12%), short circuit arc from mechanical damage (4%), and arc from faulty contact or broken conductor (3%).

Nearly two of five (38%) of 2007-2011 home structure fires involving cords or plugs began with ignition of wire or cable insulation.
See Table 6.3. Other leading items first ignited – which suggest unsafe locations for cords and plugs – include floor covering, where cords might run under rugs or through high traffic areas (8%), mattress or bedding (8%), interior wall covering (5%), clothing (5%), and upholstered furniture (4%).

Half (50%) of 2007-2011 home structure fires involving cords or plugs began in a bedroom (34%) or a living room, family room or den (16%).
See Table 6.4. Other leading areas of origin were kitchen (7%), unclassified function area (7%), garage (5%), laundry room (4%), and crawl space or substructure space (4%). The shares are larger for kitchen (13%) and laundry room (9%) for fires involving permanent power cords.

In 2011, an estimated 14,260 injuries involving electrical cords were reported to hospital emergency rooms.[22]
These consisted of 3,330 extension cord injuries and 10,930 injuries involving other or unknown-type electrical cords. The largest shares of the 14,260 injuries were 3,550 contusion or abrasion injuries and 3,300 fracture injuries.

In 2002-2009, two types of cords and plugs accounted for an average of 3.4 electrocution deaths per year.[23]

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. When you are buying, selling, or remodeling a home, have it inspected by a professional electrician.

- Never plug a major appliance into an extension cord.

- Buy only appliances that have the label of a recognized testing laboratory.

- Replace cracked electrical cords. If you have older cords with cloth covering, check for and replace frayed 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 outlets added by a qualified electrician.

More of NFPA's electrical safety information is available on our website at www.nfpa.org/electricalfires.

[22] Statistics from National Electronic Injury Surveillance System (NEISS) data obtained from the U.S. Consumer Product Safety Commission (CPSC) website, www.cpsc.gov.
[23] Matthew V. Hnatov, 2009 *Electrocutions Associated with Consumer Products*, U.S. Consumer Product Safety Commission, November 2012, accessed at www.cpsc.gov.

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

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions) As Reported	In 2011 Dollars
1980	13,450	193	500	$98	$267
1981	12,240	155	450	$113	$278
1982	11,660	172	670	$108	$252
1983	11,130	133	470	$114	$258
1984	10,080	172	570	$106	$228
1985	11,040	151	470	$228	$475
1986	10,870	258	580	$120	$247
1987	10,420	168	510	$104	$206
1988	10,770	117	640	$147	$279
1989	9,370	211	600	$121	$219
1990	9,570	198	610	$142	$244
1991	9,390	148	790	$207*	$341*
1992	8,760	155	610	$141	$226
1993	9,180	175	720	$154	$239
1994	8,620	134	540	$143	$217
1995	8,420	117	550	$142	$209
1996	8,400	160	520	$165	$237
1997	8,050	132	420	$152	$213
1998	8,000	78	480	$178	$246
1999	4,980	61	110	$115	$155
2000	3,660	41	650	$96	$125
2001	3,380	44	140	$89	$113
2002	2,680	76	180	$89	$111
2003	2,490	71	190	$156	$190
2004	2,530	131	150	$96	$114
2005	2,500	220	300	$121	$139
2006	2,950	135	190	$98	$109
2007	2,870	83	250	$61	$66
2008	2,730	83	190	$111	$116
2009	2,490	133	200	$134	$141
2010	2,070	81	220	$97	$100
2011	2,470	102	150	$103	$103

* 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 fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 are expressed to the nearest one, civilian injuries are expressed to the nearest ten, and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires 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 2011 dollars is done using the consumer price index.
Source: Data from NFIRS (Version 5.0 after 1998) and NFPA survey.

Table 6.2. Home Fires Involving Cords and Plugs, by Factor Contributing to Ignition
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Cords and Plugs

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	800	(32%)	28	(28%)	59	(29%)	$35	(35%)
Unspecified short circuit arc	580	(23%)	34	(35%)	45	(22%)	$26	(26%)
Equipment overloaded	370	(15%)	21	(22%)	50	(25%)	$17	(17%)
Short circuit arc from defective or worn insulation	300	(12%)	8	(8%)	15	(7%)	$8	(9%)
Unclassified misuse of material	120	(5%)	11	(12%)	17	(8%)	$4	(4%)
Short circuit arc from mechanical damage	100	(4%)	5	(5%)	9	(4%)	$3	(3%)
Heat source too close to combustibles	90	(3%)	3	(3%)	12	(6%)	$7	(7%)
Arc from faulty contact or broken conductor	80	(3%)	5	(5%)	3	(1%)	$2	(2%)
Unclassified mechanical failure or malfunction	70	(3%)	0	(0%)	0	(0%)	$2	(2%)
Arc or spark from operating equipment	50	(2%)	0	(0%)	4	(2%)	$1	(1%)
Equipment not being operated properly	40	(2%)	0	(0%)	3	(1%)	$2	(2%)
Worn out	40	(2%)	3	(3%)	3	(1%)	$1	(1%)
Unclassified factor contributed to ignition	30	(1%)	5	(5%)	0	(0%)	$1	(1%)
Equipment used for not intended purpose	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Installation deficiency	20	(1%)	3	(3%)	0	(0%)	$0	(0%)
Water caused short circuit arc	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Equipment unattended	20	(1%)	0	(0%)	1	(1%)	$1	(1%)
Unclassified operational deficiency	10	(1%)	0	(0%)	1	(1%)	$0	(0%)
Other known factor contributing to ignition	70	(3%)	3	(3%)	3	(1%)	$2	(3%)
Total fires	2,530	(100%)	98	(100%)	203	(100%)	$97	(100%)
Total factor entries	2,830	(112%)	128	(131%)	226	(111%)	$112	(115%)
All electrical failures or malfunctions	1,870	(74%)	75	(76%)	127	(62%)	$71	(72%)

Note: See detailed notes and source information at end of table.

Table 6.2. Home Fires Involving Cords and Plugs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Extension Cord

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	410	(30%)	23	(36%)	38	(26%)	$20	(36%)
Unspecified short circuit arc	320	(23%)	20	(31%)	32	(23%)	$15	(26%)
Equipment overloaded	250	(18%)	17	(26%)	41	(29%)	$11	(20%)
Short circuit arc from defective or worn insulation	170	(12%)	5	(8%)	10	(7%)	$4	(7%)
Unclassified misuse of material	80	(6%)	5	(9%)	11	(8%)	$2	(4%)
Heat source too close to combustibles	40	(3%)	2	(4%)	10	(7%)	$5	(8%)
Short circuit arc from mechanical damage	40	(3%)	2	(4%)	6	(4%)	$1	(2%)
Arc from faulty contact or broken conductor	30	(2%)	5	(7%)	3	(2%)	$0	(1%)
Equipment not being operated properly	30	(2%)	0	(0%)	3	(2%)	$2	(3%)
Arc or spark from operating equipment	30	(2%)	0	(0%)	3	(2%)	$0	(0%)
Unclassified mechanical failure or malfunction	20	(2%)	0	(0%)	0	(0%)	$1	(1%)
Worn out	20	(2%)	2	(4%)	3	(2%)	$1	(2%)
Equipment used for not intended purpose	20	(1%)	0	(0%)	0	(0%)	$0	(1%)
Installation deficiency	10	(1%)	3	(4%)	0	(0%)	$0	(1%)
Water caused short circuit arc	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified factor contributed to ignition	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Equipment unattended	10	(1%)	0	(0%)	2	(1%)	$0	(1%)
Unclassified operational deficiency	10	(1%)	0	(0%)	1	(1%)	$0	(0%)
Other known factor contributing to ignition	30	(2%)	2	(4%)	0	(0%)	$1	(2%)
Total fires	1,370	(100%)	64	(100%)	143	(100%)	$56	(100%)
Total factor entries	1,550	(114%)	86	(136%)	164	(114%)	$65	(115%)
All electrical failures or malfunctions	990	(72%)	52	(82%)	85	(59%)	$39	(70%)

Note: See detailed notes and source information at end of table.

Table 6.2. Home Fires Involving Cords and Plugs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Unclassified Cord or Plug

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	180	(41%)	3	(15%)	12	(42%)	$8	(49%)
Unspecified short circuit arc	90	(20%)	10	(42%)	0	(0%)	$5	(30%)
Equipment overloaded	60	(14%)	0	(0%)	8	(28%)	$2	(15%)
Short circuit arc from defective or worn insulation	40	(9%)	3	(15%)	1	(5%)	$1	(9%)
Arc from faulty contact or broken conductor	20	(4%)	0	(0%)	0	(0%)	$0	(3%)
Heat source too close to combustibles	10	(3%)	0	(0%)	0	(0%)	$1	(4%)
Short circuit arc from mechanical damage	10	(3%)	0	(0%)	3	(10%)	$0	(0%)
Unclassified misuse of material	10	(3%)	3	(14%)	2	(5%)	$0	(1%)
Unclassified mechanical failure or malfunction	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified factor contributed to ignition	10	(3%)	7	(29%)	0	(0%)	$0	(2%)
Equipment unattended	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Arc or spark from operating equipment	10	(1%)	0	(0%)	2	(5%)	$0	(1%)
Other known factor contributing to ignition	20	(5%)	0	(0%)	3	(9%)	$1	(4%)
Total fires	440	(100%)	23	(100%)	29	(100%)	$16	(100%)
Total factor entries	480	(110%)	26	(115%)	30	(105%)	$19	(118%)
All electrical failures or malfunctions	330	(76%)	13	(57%)	18	(62%)	$13	(82%)

Note: See detailed notes and source information at end of table.

Table 6.2. Home Fires Involving Cords and Plugs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

D. Permanent Cord or Plug

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	110	(27%)	0	(0%)	2	(16%)	$3	(24%)
Unspecified short circuit arc	100	(24%)	4	(100%)	7	(58%)	$4	(30%)
Short circuit arc from defective or worn insulation	60	(15%)	0	(0%)	0	(0%)	$2	(15%)
Arc from faulty contact or broken conductor	30	(7%)	0	(0%)	0	(0%)	$2	(14%)
Unclassified mechanical failure or malfunction	30	(6%)	0	(0%)	0	(0%)	$1	(5%)
Short circuit arc from mechanical damage	20	(6%)	0	(0%)	0	(0%)	$1	(10%)
Heat source too close to combustibles	20	(5%)	0	(0%)	2	(14%)	$1	(8%)
Worn out	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Equipment overloaded	10	(3%)	0	(0%)	2	(13%)	$1	(5%)
Unclassified misuse of material	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Arc or spark from operating equipment	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Installation deficiency	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Water caused short circuit arc	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified factor contributed to ignition	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known factor contributing to ignition	20	(5%)	0	(0%)	0	(0%)	$1	(5%)
Total fires	420	(100%)	4	(100%)	12	(100%)	$12	(100%)
Total factor entries	450	(107%)	4	(100%)	12	(100%)	$15	(120%)
All electrical failures or malfunctions	320	(77%)	4	(100%)	8	(73%)	$9	(75%)

Note: See detailed notes and source information at end of table.

Table 6.2. Home Fires Involving Cords and Plugs, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

E. Detachable Power Cord or Plug

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	100	(32%)	0	(0%)	7	(36%)	$3	(26%)
Unspecified short circuit arc	70	(25%)	2	(32%)	7	(36%)	$2	(19%)
Equipment overloaded	40	(13%)	2	(34%)	0	(0%)	$2	(19%)
Short circuit arc from defective or worn insulation	30	(11%)	0	(0%)	3	(15%)	$1	(10%)
Short circuit arc from mechanical damage	20	(6%)	2	(34%)	0	(0%)	$1	(8%)
Unclassified misuse of material	10	(5%)	2	(34%)	4	(21%)	$1	(12%)
Arc or spark from operating equipment	10	(4%)	0	(0%)	0	(0%)	$1	(5%)
Unclassified mechanical failure or malfunction	10	(3%)	0	(0%)	0	(0%)	$0	(4%)
Heat source too close to combustibles	10	(3%)	0	(0%)	0	(0%)	$0	(3%)
Equipment not being operated properly	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Worn out	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Other known factor contributing to ignition	30	(9%)	0	(0%)	0	(0%)	$1	(6%)
Total fires	310	(100%)	7	(100%)	19	(100%)	$13	(100%)
Total factor entries	350	(113%)	10	(134%)	20	(107%)	$14	(111%)
All electrical failures or malfunctions	230	(75%)	5	(66%)	15	(79%)	$8	(66%)

Note: Multiple entries are allowed, resulting in more factor entries than fires. "All electrical failures and malfunctions" is a multi-factor group that has been analyzed to eliminate double-counting of fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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.

Table 6.3. Home Fires Involving Cords and Plugs, by Item First Ignited
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Cords and Plugs

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	950	(38%)	32	(33%)	71	(35%)	$32	(33%)
Floor covering	210	(8%)	16	(17%)	16	(8%)	$9	(9%)
Mattress or bedding	210	(8%)	8	(8%)	13	(6%)	$8	(8%)
Interior wall covering	130	(5%)	0	(0%)	7	(4%)	$3	(3%)
Clothing	120	(5%)	0	(0%)	8	(4%)	$5	(6%)
Upholstered furniture	110	(4%)	16	(17%)	14	(7%)	$8	(8%)
Unclassified furniture or utensil	80	(3%)	6	(6%)	8	(4%)	$2	(3%)
Structural member or framing	80	(3%)	5	(5%)	10	(5%)	$3	(3%)
Unclassified item	70	(3%)	3	(3%)	4	(2%)	$2	(3%)
Appliance housing or casing	70	(3%)	0	(0%)	1	(1%)	$3	(3%)
Multiple items first ignited	60	(2%)	0	(0%)	7	(3%)	$2	(2%)
Unclassified soft goods or clothing	50	(2%)	0	(0%)	15	(7%)	$3	(3%)
Cabinetry	40	(2%)	3	(3%)	0	(0%)	$2	(2%)
Unclassified structural component or finish	40	(2%)	0	(0%)	1	(1%)	$1	(1%)
Box or bag	40	(2%)	0	(0%)	6	(3%)	$2	(2%)
Exterior wall covering	40	(2%)	0	(0%)	0	(0%)	$0	(0%)
Papers	40	(1%)	3	(3%)	6	(3%)	$3	(3%)
Insulation within structural area	30	(1%)	0	(0%)	3	(1%)	$0	(0%)
Curtain or drape	30	(1%)	3	(3%)	3	(1%)	$3	(3%)
Other known item first ignited	140	(6%)	3	(3%)	10	(5%)	$5	(5%)
Total fires	2,530	(100%)	98	(100%)	203	(100%)	$97	(100%)

Note: See detailed notes and source information at end of table.

Table 6.3. Home Fires Involving Cords and Plugs, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Extension Cord

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	520	(38%)	23	(36%)	42	(30%)	$19	(33%)
Floor covering	130	(10%)	5	(8%)	15	(10%)	$5	(8%)
Mattress or bedding	100	(7%)	8	(12%)	12	(8%)	$4	(7%)
Clothing	90	(6%)	0	(0%)	8	(6%)	$5	(8%)
Interior wall covering	60	(4%)	0	(0%)	4	(3%)	$2	(3%)
Upholstered furniture	60	(4%)	11	(17%)	8	(5%)	$5	(9%)
Structural member or framing	40	(3%)	0	(0%)	7	(5%)	$2	(3%)
Unclassified soft goods or clothing	40	(3%)	0	(0%)	12	(9%)	$2	(3%)
Multiple items first ignited	30	(3%)	0	(0%)	5	(4%)	$1	(3%)
Unclassified furniture or utensil	30	(3%)	6	(9%)	1	(1%)	$1	(1%)
Exterior wall covering	30	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified item	30	(2%)	0	(0%)	3	(2%)	$1	(1%)
Box or bag	30	(2%)	0	(0%)	5	(3%)	$1	(2%)
Cabinetry	20	(2%)	3	(4%)	0	(0%)	$1	(2%)
Papers	20	(2%)	3	(4%)	4	(3%)	$2	(3%)
Unclassified structural component or finish	20	(1%)	0	(0%)	1	(1%)	$1	(2%)
Curtain or drape	20	(1%)	3	(5%)	3	(2%)	$3	(5%)
Appliance housing or casing	10	(1%)	0	(0%)	1	(1%)	$0	(1%)
Insulation within structural area	10	(1%)	0	(0%)	3	(2%)	$0	(0%)
Light vegetation including grass	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Linen other than bedding	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Decoration	10	(1%)	0	(0%)	3	(2%)	$0	(0%)
Other known item first ignited	50	(4%)	3	(4%)	5	(4%)	$3	(5%)
Total fires	1,370	(100%)	64	(100%)	143	(100%)	$56	(100%)

Note: See detailed notes and source information at end of table.

Table 6.3. Home Fires Involving Cords and Plugs, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Unclassified Power Cord or Plug

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	150	(35%)	3	(13%)	16	(56%)	$4	(27%)
Mattress or bedding	50	(10%)	0	(0%)	0	(0%)	$2	(11%)
Unclassified item	30	(7%)	3	(12%)	1	(4%)	$2	(10%)
Floor covering	30	(6%)	12	(51%)	0	(0%)	$1	(7%)
Unclassified furniture or utensil	30	(6%)	0	(0%)	5	(18%)	$1	(7%)
Upholstered furniture	20	(4%)	0	(0%)	3	(9%)	$1	(7%)
Interior wall covering	20	(4%)	0	(0%)	0	(0%)	$1	(3%)
Unclassified structural component or finish	10	(3%)	0	(0%)	0	(0%)	$0	(0%)
Multiple items first ignited	10	(3%)	0	(0%)	1	(5%)	$0	(2%)
Appliance housing or casing	10	(3%)	0	(0%)	0	(0%)	$1	(6%)
Structural member or framing	10	(3%)	5	(24%)	0	(0%)	$1	(4%)
Unclassified soft goods or clothing	10	(2%)	0	(0%)	1	(4%)	$0	(2%)
Cabinetry	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Clothing	10	(1%)	0	(0%)	0	(0%)	$0	(3%)
Other known item first ignited	40	(10%)	0	(0%)	1	(4%)	$2	(11%)
Total fires	440	(100%)	23	(100%)	29	(100%)	$16	(100%)

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported to confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 6.3. Home Fires Involving Cords and Plugs, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

D. Permanent Cord or Plug

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	160	(38%)	4	(100%)	5	(44%)	$4	(30%)
Mattress or bedding	30	(8%)	0	(0%)	1	(10%)	$1	(10%)
Floor covering	30	(8%)	0	(0%)	0	(0%)	$2	(17%)
Interior wall covering	30	(7%)	0	(0%)	3	(23%)	$1	(7%)
Appliance housing or casing	20	(5%)	0	(0%)	0	(0%)	$0	(3%)
Clothing	20	(5%)	0	(0%)	0	(0%)	$0	(3%)
Structural member or framing	10	(3%)	0	(0%)	0	(0%)	$1	(6%)
Unclassified furniture or utensil	10	(3%)	0	(0%)	0	(0%)	$0	(3%)
Upholstered furniture	10	(3%)	0	(0%)	0	(0%)	$0	(2%)
Unclassified item	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Insulation within structural area	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Multiple items first ignited	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Papers	10	(1%)	0	(0%)	0	(0%)	$0	(2%)
Exterior wall covering	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Curtain or drape	10	(1%)	0	(0%)	0	(0%)	$0	(2%)
Other known item first ignited	40	(11%)	0	(0%)	3	(22%)	$2	(13%)
Total fires	420	(100%)	4	(100%)	12	(100%)	$12	(100%)

Note: See detailed notes and source information at end of table.

Table 6.3. Home Fires Involving Cords and Plugs, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

E. Detachable Power Cord or Plug

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	130	(41%)	2	(34%)	7	(34%)	$6	(46%)
Mattress or bedding	20	(8%)	0	(0%)	0	(0%)	$1	(6%)
Upholstered furniture	20	(7%)	5	(66%)	4	(20%)	$2	(12%)
Floor covering	20	(6%)	0	(0%)	1	(7%)	$1	(5%)
Appliance housing or casing	20	(6%)	0	(0%)	0	(0%)	$1	(8%)
Interior wall covering	20	(5%)	0	(0%)	0	(0%)	$0	(1%)
Structural member or framing	10	(4%)	0	(0%)	4	(19%)	$0	(2%)
Cabinetry	10	(3%)	0	(0%)	0	(0%)	$1	(5%)
Unclassified furniture or utensil	10	(3%)	0	(0%)	1	(6%)	$0	(1%)
Clothing	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Papers	10	(2%)	0	(0%)	1	(7%)	$0	(0%)
Unclassified soft goods or clothing	10	(2%)	0	(0%)	1	(6%)	$0	(3%)
Other known item first ignited	30	(10%)	0	(0%)	0	(0%)	$1	(8%)
Total fires	310	(100%)	7	(100%)	19	(100%)	$13	(100%)

Note: See detailed notes and source information at end of table.

Table 6.4. Home Fires Involving Cords and Plugs, by Area of Origin
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Cords and Plugs

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	860	(34%)	23	(23%)	62	(31%)	$33	(34%)
Living room, family room, or den	390	(16%)	27	(28%)	49	(24%)	$21	(21%)
Kitchen	180	(7%)	2	(2%)	12	(6%)	$4	(4%)
Unclassified function area	170	(7%)	19	(20%)	23	(12%)	$6	(6%)
Garage*	120	(5%)	7	(7%)	17	(8%)	$8	(8%)
Laundry room	110	(4%)	0	(0%)	8	(4%)	$4	(4%)
Crawl space or substructure space	100	(4%)	0	(0%)	5	(3%)	$1	(1%)
Exterior wall surface	50	(2%)	0	(0%)	0	(0%)	$0	(0%)
Wall assembly or concealed space	40	(2%)	2	(2%)	4	(2%)	$1	(1%)
Bathroom	40	(2%)	0	(0%)	3	(1%)	$1	(1%)
Ceiling/floor assembly or concealed space	40	(2%)	2	(2%)	0	(0%)	$1	(1%)
Attic or ceiling/roof assembly or concealed space	40	(1%)	2	(2%)	1	(1%)	$1	(1%)
Unclassified structural area	40	(1%)	5	(5%)	1	(1%)	$2	(2%)
Unclassified storage area	30	(1%)	0	(0%)	3	(1%)	$2	(2%)
Exterior balcony or unenclosed porch	30	(1%)	2	(2%)	1	(1%)	$2	(2%)
Unclassified area of origin	30	(1%)	2	(2%)	3	(1%)	$0	(0%)
Closet	20	(1%)	0	(0%)	3	(1%)	$2	(2%)
Storage room or area	20	(1%)	0	(0%)	1	(1%)	$0	(0%)
Dining room	20	(1%)	0	(0%)	0	(0%)	$1	(1%)
Courtyard, terrace or patio	20	(1%)	2	(2%)	0	(0%)	$1	(1%)
Office	20	(1%)	0	(0%)	0	(0%)	$1	(1%)
Storage of supplies or tools	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified outside area	20	(1%)	0	(0%)	0	(0%)	$1	(1%)
Lobby or entrance way	20	(1%)	3	(3%)	1	(1%)	$1	(1%)
Hallway or corridor	10	(1%)	0	(0%)	4	(2%)	$0	(0%)
Heating equipment room	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	60	(2%)	0	(0%)	1	(1%)	$2	(2%)
Total fires	2,530	(100%)	98	(100%)	203	(100%)	$97	(100%)

* Excludes garage coded as separate property.

Note: See detailed notes and source information at end of table.

Table 6.4. Home Fires Involving Cords and Plugs, by Area of Origin
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Extension Cord

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	460	(33%)	14	(22%)	44	(31%)	$19	(33%)
Living room, family room, or den	220	(16%)	18	(29%)	36	(25%)	$11	(20%)
Unclassified function area	90	(7%)	7	(11%)	15	(10%)	$3	(6%)
Garage*	80	(6%)	4	(7%)	15	(10%)	$6	(10%)
Crawl space or substructure space	70	(5%)	0	(0%)	5	(4%)	$1	(2%)
Kitchen	60	(5%)	2	(3%)	5	(3%)	$2	(3%)
Laundry room	50	(3%)	0	(0%)	5	(3%)	$2	(3%)
Exterior wall surface	40	(3%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified storage area	20	(2%)	0	(0%)	0	(0%)	$1	(2%)
Exterior balcony or unenclosed porch	20	(2%)	2	(3%)	1	(1%)	$1	(1%)
Attic or ceiling/roof assembly or concealed space	20	(2%)	2	(3%)	1	(1%)	$0	(1%)
Unclassified structural area	20	(1%)	5	(7%)	0	(0%)	$1	(2%)
Storage room or area	20	(1%)	0	(0%)	1	(1%)	$0	(0%)
Ceiling/floor assembly or concealed space	20	(1%)	2	(3%)	0	(0%)	$1	(2%)
Unclassified area of origin	20	(1%)	2	(4%)	1	(1%)	$0	(1%)
Closet	20	(1%)	0	(0%)	3	(2%)	$2	(3%)
Dining room	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Storage of supplies or tools	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Wall assembly or concealed space	10	(1%)	0	(0%)	4	(3%)	$1	(1%)
Lobby or entrance way	10	(1%)	3	(4%)	1	(1%)	$1	(1%)
Courtyard, terrace or patio	10	(1%)	2	(3%)	0	(0%)	$1	(2%)
Bathroom	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Hallway or corridor	10	(1%)	0	(0%)	4	(3%)	$0	(0%)
Heating equipment room	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified means of egress	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified outside area	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Other known area of origin	30	(2%)	0	(0%)	1	(1%)	$1	(1%)
Total fires	1,370	(100%)	64	(100%)	143	(100%)	$56	(100%)

* Excludes garage coded as separate property.

Note: See detailed notes and source information at end of table.

Table 6.4. Home Fires Involving Cords and Plugs, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Unclassified Cord or Plug

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	160	(37%)	4	(19%)	5	(18%)	$5	(33%)
Living room, family room, or den	70	(15%)	9	(39%)	4	(14%)	$4	(24%)
Unclassified function area	30	(7%)	7	(32%)	6	(21%)	$1	(5%)
Kitchen	30	(7%)	0	(0%)	6	(21%)	$1	(4%)
Garage*	20	(4%)	0	(0%)	3	(9%)	$1	(8%)
Unclassified structural area	10	(3%)	0	(0%)	1	(4%)	$0	(0%)
Bathroom	10	(3%)	0	(0%)	1	(5%)	$0	(1%)
Crawl space or substructure space	10	(3%)	0	(0%)	0	(0%)	$0	(0%)
Laundry room	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Wall assembly or concealed space	10	(2%)	2	(9%)	0	(0%)	$0	(2%)
Exterior wall surface	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Office	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified area of origin	10	(2%)	0	(0%)	1	(4%)	$0	(1%)
Unclassified storage area	10	(1%)	0	(0%)	1	(4%)	$0	(0%)
Exterior balcony or unenclosed porch	10	(1%)	0	(0%)	0	(0%)	$1	(4%)
Other known area of origin	40	(8%)	0	(0%)	0	(0%)	$3	(16%)
Total fires	440	(100%)	23	(100%)	29	(100%)	$16	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Table 6.4. Home Fires Involving Cords and Plugs, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

D. Permanent Power Cord or Plug

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	130	(32%)	2	(51%)	6	(56%)	$4	(36%)
Kitchen	50	(13%)	0	(0%)	1	(12%)	$1	(10%)
Living room, family room, or den	50	(12%)	0	(0%)	1	(10%)	$3	(28%)
Laundry room	40	(9%)	0	(0%)	0	(0%)	$0	(3%)
Unclassified function area	20	(5%)	0	(0%)	0	(0%)	$1	(4%)
Ceiling/floor assembly or concealed space	20	(4%)	0	(0%)	0	(0%)	$0	(3%)
Crawl space or substructure space	10	(3%)	0	(0%)	0	(0%)	$0	(0%)
Garage*	10	(3%)	2	(49%)	0	(0%)	$0	(3%)
Wall assembly or concealed space	10	(3%)	0	(0%)	0	(0%)	$0	(0%)
Bathroom	10	(3%)	0	(0%)	1	(11%)	$0	(1%)
Attic or ceiling/roof assembly or concealed space	10	(2%)	0	(0%)	0	(0%)	$1	(4%)
Unclassified storage area	10	(1%)	0	(0%)	1	(11%)	$1	(4%)
Courtyard, terrace or patio	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Other known area of origin	40	(10%)	0	(0%)	0	(0%)	$0	(3%)
Total fires	420	(100%)	4	(100%)	12	(100%)	$12	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Table 6.4. Home Fires Involving Cords and Plugs, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

E. Detachable Power Cord or Plug

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	100	(34%)	2	(34%)	6	(33%)	$4	(33%)
Living room, family room, or den	60	(19%)	0	(0%)	8	(40%)	$2	(18%)
Kitchen	30	(10%)	0	(0%)	0	(0%)	$0	(3%)
Unclassified function area	20	(7%)	5	(66%)	2	(13%)	$1	(8%)
Laundry room	10	(5%)	0	(0%)	3	(15%)	$1	(10%)
Garage*	10	(4%)	0	(0%)	0	(0%)	$1	(5%)
Wall assembly or concealed space	10	(3%)	0	(0%)	0	(0%)	$0	(1%)
Office	10	(2%)	0	(0%)	0	(0%)	$1	(5%)
Crawl space or substructure space	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Closet	10	(2%)	0	(0%)	0	(0%)	$0	(4%)
Exterior wall surface	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	30	(10%)	0	(0%)	0	(0%)	$2	(15%)
Total fires	310	(100%)	7	(100%)	19	(100%)	$13	(100%)

* Excludes garage reported as separate property.

Note: Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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.

Section 7. Home Transformers and Power Supplies

In 2011, an estimated 1,370 reported U.S. home structure fires* involving transformers or power supplies resulted in 20 civilian deaths, 60 civilian injuries, and $82 million in direct property damage.

Transformers include the following specific types of equipment:

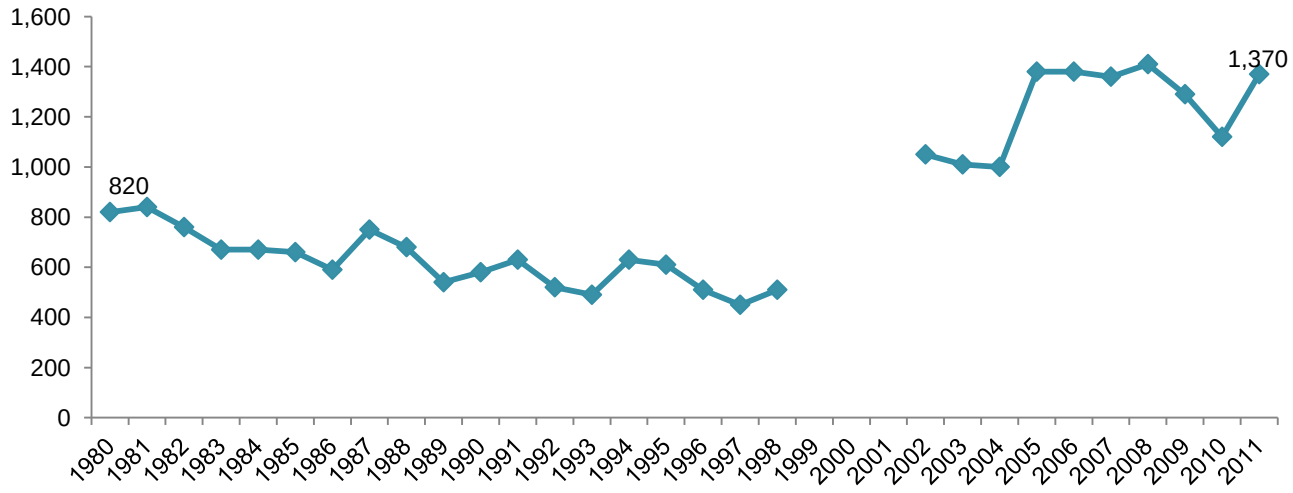
- Low voltage transformers
- Overcurrent or disconnect equipment associated with transformers
- Distribution type transformers

Power supplies (and related equipment) include the following specific types of equipment:

- Surge protectors
- Generators
- Batteries
- Battery chargers and rectifiers
- Inverters
- Uninterrupted power supplies

It is possible that some fires involving a battery are coded in terms of the appliance or equipment powered by the battery. Fires involving transformers, battery chargers, rectifiers, and inverters declined by more than one-third from 1980 to 1998. Fires involving surge protectors, generators, and batteries were given individual incident designations in NFIRS Version 5.0. Fires have continued to trend upwards from 2002 to 2011, perhaps in part because of increased usage of surge protectors and generators. (See Table 7.1 and Figure 7.1.) Also, there may be more battery-powered devices in use, including cell phones and old types of computer and other office equipment.

Figure 7.1 Home Fires Involving Transformers and Power Supplies, by Year
Structure Fires Reported to U.S. Fire Departments



Source: Data from NFIRS Version 5.0 and NFPA survey. Note: See Note on Table 7.1.

Transformers and power supplies accounted for 6% of 2007-2011 non-confined home structure fires involving electrical distribution or lighting equipment, as well as 4% of associated civilian deaths, 8% of associated civilian injuries, and 8% of associated direct property damage.

* These estimates all *exclude* fires reported as confined fires, which do not require detailed reporting and rarely involve electrical distribution on lighting equipment.

Surge protectors (36%) accounted for roughly one-third of all home fires involving transformers or power supplies.
Battery chargers and rectifiers (19%) and generators (18%) each accounted for about one-fifth of these fires. One-fifth (19%) of these fires involved one of three types of transformers. (See Table 7.A.)

Table 7.A. Home Fires Involving Transformers and Power Supplies, by Specific Type of Equipment
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

Type of Equipment	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Surge protector	470	(36%)	4	(37%)	24	(32%)	$21	(33%)
Battery charger or rectifier	240	(19%)	0	(0%)	17	(23%)	$15	(23%)
Generator	240	(18%)	7	(63%)	24	(32%)	$15	(23%)
Low voltage transformer	120	(9%)	0	(0%)	1	(2%)	$6	(10%)
Battery	80	(6%)	0	(0%)	5	(7%)	$4	(6%)
Distribution type transformer	70	(5%)	0	(0%)	0	(0%)	$2	(2%)
Overcurrent or disconnect equipment associated with transformers	70	(5%)	0	(0%)	2	(3%)	$2	(2%)
Uninterrupted power supply	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Inverter	10	(0%)	0	(0%)	1	(2%)	$0	(1%)
Total	1,310	(100%)	11	(100%)	75	(100%)	$64	(100%)

Note: Figures *exclude* confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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.

Three of five (62%) 2007-2011 home structure fires involving transformers or power supplies cited some type of electrical failure or malfunction as a factor contributing to ignition.
One out of eight (12%) home generator fires involved a spill of flammable or combustible gas or liquid. (See Table 7.2.)

One-third (34%) of 2007-2011 home structure fires involving transformers or power supplies began with ignition of wire or cable insulation.
Other leading items first ignited were exterior wall covering (7%), floor covering (6%), flammable or combustible gas or liquid (5%), unclassified item (5%), and structural member or framing (5%). (See Table 7.3.)

More than one-third (37%) of 2007-2011 home structure fires involving transformers or power supplies began in one of the principal types of occupiable rooms – bedroom (20%), living room, family room, or den (14%), and kitchen (3%).
One in six (16%) began in a garage, most of which were battery chargers or rectifiers (43% of these fires began in a garage). (See Table 7.4.)

In 2011, an estimated 14,260 injuries involving transformers or power supplies were reported to hospital emergency rooms.[24]
These consisted of 12,370 battery injuries, 2,560 generator injuries, and 1,120 battery charger injuries. The largest share of the 14,260 injuries was 5,360 injuries due to ingested object, followed by 1,570 contusions and abrasions and 1,180 lacerations.

In 1999 to 2011, 695 people died of non-fire injuries from unvented carbon monoxide from generators, or 58 deaths per year.[25]
Generators are the only electrical distribution or lighting equipment that burn fuel, which makes them the only electrical distribution or lighting equipment that generates 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 until 2007, 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, peaking at 92 per year in 2005-2006, then falling to 72 per year in 2007-2009, down to 39 in 2010, and back up to 73 in 2011.

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.[26] This meant a large number of generator users had no experience in safe generator use. Disasters like Hurricane Katrina and a series of Florida hurricanes 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 695 non-fire carbon monoxide generator deaths in 1999-2011. One-eighth (84 deaths) of the 687 deaths in known locations occurred in temporary shelters.

Of the 755 deaths where the reason for generator use was known:

- 30% involved generator usage because of a weather-related power outage (29%) or because of preparation for a coming storm (1%),
- 30% involved generator usage because power had been shut off because of non-payment (19%) or because power had not been turned on in a building still under construction (11%),

[24] Statistics from National Electronic Injury Surveillance System (NEISS) data obtained from the U.S. Consumer Product Safety Commission (CPSC) website, www.cpsc.gov.
[25] Matthew V. Hnatov, *Incidents, deaths and in-depth investigations associated with non-fire carbon monoxide from engine-driven generators and other engine-driven tools, 1999-2011*, U.S. Consumer Product Safety Commission, July 2011, accessed at www.cpsc.gov.
[26] *Portable Generators*, U.S. Consumer Product Safety Commission, May 20, 2004, accessed at www.cpsc.gov.

- 22% involved generator use in either a building that does normally have power (7%) or a property separate from the main housing unit (15%), such as a storage shed, trailer, boat, camper, cabin, or campsite, and
- 19% involved generator use in a power outage due to unknown reasons (16%) or for miscellaneous other reasons (3%).

Safety Tips

Generators

- 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.
- 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.
- Backfeeding electrical systems can be dangerous. Use a suitable transfer switch that prevents the inadvertent interconnection of the normal and standby sources of supply.

More of NFPA's electrical safety information is available on our website at www.nfpa.org/electricalfires.

Table 7.1. Home Fires Involving Transformers and Power Supplies
Structure Fires Reported to U.S. Fire Departments

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions) As Reported	In 2011 Dollars
1980	820	16	10	$3	$8
1981	840	0	10	$4	$10
1982	760	0	10	$5	$12
1983	670	0	20	$4	$8
1984	670	0	10	$10	$21
1985	660	0	10	$6	$13
1986	590	0	0	$7	$14
1987	750	4	30	$5	$11
1988	680	0	10	$6	$12
1989	540	0	20	$14	$25
1990	580	0	10	$4	$7
1991	630	4	10	$12*	$20*
1992	520	0	20	$4	$7
1993	490	0	20	$10	$16
1994	630	0	40	$9	$13
1995	610	0	10	$7	$11
1996	510	19	10	$10	$14
1997	450	0	10	$10	$14
1998	510	0	0	$10	$14
1999	1,320	0	110	$43	$57
2000	1,100	0	0	$18	$24
2001	980	131	50	$40	$50
2002	1,050	15	40	$31	$39
2003	1,010	0	20	$52	$63
2004	1,000	29	60	$41	$49
2005	1,380	29	130	$75	$86
2006	1,380	10	70	$50	$55
2007	1,360	12	30	$58	$62
2008	1,410	14	130	$64	$67
2009	1,290	10	120	$50	$52
2010	1,120	0	40	$71	$73
2011	1,370	20	60	$82	$82

* 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 fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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, civilian injuries are expressed to the nearest ten, and property damage is rounded to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown or reported as electrical distribution or lighting equipment of undetermined type. Fires 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 2011 dollars is done using the consumer price index.
Source: Data from NFIRS (Version 5.0 after 1998) and NFPA survey.

Table 7.2. Home Fires Involving Transformers and Power Supplies, by Factor Contributing to Ignition
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Transformers and Power Supplies

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	420	(32%)	0	(0%)	14	(18%)	$31	(48%)
Unspecified short circuit arc	250	(19%)	0	(0%)	10	(14%)	$8	(12%)
Heat source too close to combustibles	130	(10%)	0	(0%)	7	(10%)	$5	(8%)
Unclassified mechanical failure or malfunction	110	(8%)	0	(0%)	12	(16%)	$4	(6%)
Equipment overloaded	80	(6%)	4	(31%)	2	(2%)	$2	(3%)
Arc or spark from operating equipment	60	(5%)	0	(0%)	7	(10%)	$2	(3%)
Equipment unattended	40	(3%)	0	(0%)	2	(2%)	$4	(7%)
Short circuit arc from defective or worn insulation	30	(3%)	0	(0%)	2	(2%)	$2	(3%)
Unclassified misuse of material	30	(2%)	0	(0%)	5	(7%)	$2	(3%)
Flammable liquid or gas spilled	30	(2%)	4	(38%)	12	(16%)	$1	(2%)
Short circuit arc from mechanical damage	30	(2%)	0	(0%)	0	(0%)	$2	(2%)
Improper fueling technique	20	(2%)	0	(0%)	4	(5%)	$1	(2%)
Arc from faulty contact or broken conductor	20	(2%)	7	(62%)	0	(0%)	$1	(1%)
Equipment not being operated properly	20	(1%)	0	(0%)	2	(2%)	$1	(2%)
Unclassified factor contributed to ignition	20	(1%)	0	(0%)	0	(0%)	$2	(4%)
Automatic control failure	20	(1%)	0	(0%)	0	(0%)	$1	(2%)
Storm	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Installation deficiency	20	(1%)	0	(0%)	0	(0%)	$0	(1%)
Improper container or storage	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified operational deficiency	10	(1%)	0	(0%)	0	(0%)	$1	(2%)
Worn out	10	(1%)	0	(0%)	0	(0%)	$1	(1%)
Water caused short circuit arc	10	(1%)	0	(0%)	0	(0%)	$1	(1%)
Leak or break	10	(1%)	0	(0%)	2	(2%)	$0	(1%)
Unintentionally turned on or not turned off	10	(1%)	0	(0%)	2	(2%)	$0	(1%)
Unclassified natural condition	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known factor contributing to ignition	40	(3%)	0	(0%)	0	(0%)	$3	(4%)

Table 7.2. Home Fires Involving Transformers and Power Supplies, by Factor Contributing to Ignition Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments (Continued)

A. All Transformers and Power Supplies

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Total fires	1,310	(100%)	11	(100%)	75	(100%)	$64	(100%)
Total factor entries	1,470	(112%)	15	(131%)	82	(109%)	$76	(119%)
All electrical failures or malfunctions	810	(62%)	7	(62%)	31	(42%)	$45	(70%)

Note: See detailed notes and source information at end of table.

Table 7.2. Home Fires Involving Transformers and Power Supplies, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Surge Protector

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	190	(41%)	0	(0%)	9	(36%)	$12	(58%)
Unspecified short circuit arc	100	(21%)	0	(0%)	7	(27%)	$3	(15%)
Equipment overloaded	60	(12%)	2	(50%)	2	(9%)	$1	(5%)
Arc or spark from operating equipment	30	(6%)	0	(0%)	2	(9%)	$0	(2%)
Unclassified misuse of material	20	(4%)	0	(0%)	2	(9%)	$1	(5%)
Short circuit arc from mechanical damage	20	(3%)	0	(0%)	0	(0%)	$1	(4%)
Short circuit arc from defective or worn insulation	10	(3%)	0	(0%)	0	(0%)	$1	(6%)
Unclassified mechanical failure or malfunction	10	(3%)	0	(0%)	0	(0%)	$1	(4%)
Arc from faulty contact or broken conductor	10	(3%)	4	(100%)	0	(0%)	$0	(2%)
Heat source too close to combustibles	10	(3%)	0	(0%)	2	(9%)	$0	(1%)
Water caused short circuit arc	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Unclassified factor contributed to ignition	10	(1%)	0	(0%)	0	(0%)	$1	(7%)
Worn out	10	(1%)	0	(0%)	0	(0%)	$1	(3%)
Automatic control failure	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Storm	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known factor contributing to ignition	20	(5%)	0	(0%)	0	(0%)	$0	(1%)
Total fires	470	(100%)	4	(100%)	24	(100%)	$21	(100%)
Total factor entries	520	(111%)	6	(150%)	24	(100%)	$25	(117%)
All electrical failures or malfunctions	370	(78%)	4	(100%)	17	(72%)	$19	(89%)

Note: See detailed notes and source information at end of table.

Table 7.2. Home Fires Involving Transformers and Power Supplies, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Battery Charger or Rectifier

Factor Fires	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified electrical failure or malfunction	100	(43%)	0	(NA)	6	(33%)	$8	(54%)
Unspecified short circuit arc	40	(15%)	0	(NA)	2	(9%)	$2	(13%)
Unclassified mechanical failure or malfunction	30	(13%)	0	(NA)	9	(50%)	$1	(6%)
Heat source too close to combustibles	20	(9%)	0	(NA)	0	(0%)	$1	(5%)
Arc or spark from operating equipment	10	(6%)	0	(NA)	0	(0%)	$0	(1%)
Short circuit arc from defective or worn insulation	10	(4%)	0	(NA)	1	(8%)	$0	(2%)
Equipment unattended	10	(4%)	0	(NA)	2	(9%)	$1	(7%)
Equipment overloaded	10	(4%)	0	(NA)	0	(0%)	$0	(1%)
Short circuit arc from mechanical damage	10	(2%)	0	(NA)	0	(0%)	$0	(0%)
Other known factor contributing to ignition	20	(7%)	0	(NA)	0	(0%)	$2	(15%)
Total fires	240	(100%)	0	(NA)	17	(100%)	$15	(100%)
Total factor entries	260	(108%)	0	(NA)	18	(108%)	$15	(105%)
All electrical failures or malfunctions	170	(70%)	0	(NA)	7	(41%)	$10	(70%)

NA – Not applicable because total is zero.

Note: Multiple entries are allowed, resulting in more factor entries than fires. "All electrical failures and malfunctions" is a multi-factor group that has been analyzed to eliminate double-counting of fires. Figures exclude confined fires, which are not considered relevant to these types of equipment, because these are fires reported as confined to fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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.

Table 7.2. Home Fires Involving Transformers and Power Supplies, by Factor Contributing to Ignition (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

D. Generator

Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat source too close to combustibles	70	(31%)	0	(0%)	4	(18%)	$5	(31%)
Unclassified mechanical failure or malfunction	30	(14%)	0	(0%)	1	(6%)	$2	(13%)
Flammable liquid or gas spilled	30	(12%)	7	(100%)	10	(41%)	$1	(9%)
Unclassified electrical failure or malfunction	20	(9%)	0	(0%)	0	(0%)	$2	(16%)
Improper fueling technique	20	(7%)	0	(0%)	1	(6%)	$1	(8%)
Equipment unattended	10	(6%)	0	(0%)	0	(0%)	$0	(2%)
Equipment not being operated properly	10	(5%)	0	(0%)	0	(0%)	$1	(6%)
Installation deficiency	10	(5%)	0	(0%)	0	(0%)	$0	(2%)
Arc or spark from operating equipment	10	(4%)	0	(0%)	4	(18%)	$2	(11%)
Unclassified operational deficiency	10	(3%)	0	(0%)	0	(0%)	$1	(4%)
Improper container or storage	10	(3%)	0	(0%)	0	(0%)	$0	(2%)
Unclassified misuse of material	10	(3%)	0	(0%)	3	(11%)	$0	(0%)
Other known factor contributing to ignition	40	(18%)	0	(0%)	3	(12%)	$2	(16%)
Total fires	240	(100%)	7	(100%)	24	(100%)	$15	(100%)
Total factor entries	280	(120%)	7	(100%)	27	(112%)	$18	(122%)
All electrical failures or malfunctions	30	(14%)	0	(0%)	4	(18%)	$4	(27%)

Note: See detailed notes and source information at end of table.

Table 7.3. Home Fires Involving Transformers and Power Supplies, by Item First Ignited
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Transformers and Power Supplies

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	450	(34%)	2	(18%)	25	(33%)	$21	(32%)
Exterior wall covering	90	(7%)	0	(0%)	7	(9%)	$4	(7%)
Floor covering	80	(6%)	0	(0%)	4	(6%)	$3	(4%)
Flammable or combustible gas or liquid	70	(5%)	7	(63%)	15	(20%)	$5	(7%)
Unclassified item	70	(5%)	0	(0%)	0	(0%)	$4	(6%)
Structural member or framing	60	(5%)	0	(0%)	0	(0%)	$4	(6%)
Transformer or transformer fluid	50	(4%)	0	(0%)	3	(4%)	$1	(2%)
Interior wall covering	40	(3%)	0	(0%)	3	(4%)	$2	(3%)
Appliance housing or casing	40	(3%)	0	(0%)	1	(2%)	$0	(1%)
Multiple items first ignited	40	(3%)	0	(0%)	1	(2%)	$5	(8%)
Upholstered furniture	30	(2%)	0	(0%)	3	(4%)	$3	(4%)
Mattress or bedding	30	(2%)	0	(0%)	1	(2%)	$3	(5%)
Cabinetry	30	(2%)	0	(0%)	2	(2%)	$1	(2%)
Unclassified structural component or finish	30	(2%)	0	(0%)	2	(2%)	$1	(2%)
Unclassified furniture or utensil	20	(2%)	0	(0%)	3	(4%)	$1	(1%)
Clothing	20	(2%)	0	(0%)	1	(2%)	$1	(1%)
Box or bag	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Papers	10	(1%)	0	(0%)	1	(2%)	$1	(2%)
Toy or game	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Curtain or drape	10	(1%)	2	(18%)	0	(0%)	$1	(1%)
Insulation within structural area	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Exterior trim including doors	10	(1%)	0	(0%)	0	(0%)	$1	(1%)
Trash or waste	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified soft goods or clothing	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Interior ceiling covering	10	(1%)	0	(0%)	2	(2%)	$0	(0%)
Other known item first ignited	60	(4%)	0	(0%)	1	(2%)	$2	(3%)
Total fires	1,310	(100%)	11	(100%)	75	(100%)	$64	(100%)

Note: See detailed notes and source information at end of table.

Table 7.3. Home Fires Involving Transformers and Power Supplies, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Surge Protector

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	230	(49%)	2	(50%)	11	(44%)	$10	(46%)
Floor covering	60	(12%)	0	(0%)	4	(17%)	$2	(8%)
Interior wall covering	30	(6%)	0	(0%)	1	(5%)	$1	(5%)
Appliance housing or casing	20	(5%)	0	(0%)	0	(0%)	$0	(2%)
Unclassified item	20	(4%)	0	(0%)	0	(0%)	$0	(1%)
Cabinetry	20	(4%)	0	(0%)	1	(6%)	$1	(5%)
Unclassified furniture or utensil	10	(3%)	0	(0%)	3	(11%)	$0	(2%)
Mattress or bedding	10	(2%)	0	(0%)	0	(0%)	$2	(10%)
Upholstered furniture	10	(2%)	0	(0%)	1	(6%)	$1	(6%)
Multiple items first ignited	10	(2%)	0	(0%)	1	(5%)	$1	(3%)
Clothing	10	(2%)	0	(0%)	1	(6%)	$1	(3%)
Curtain or drape	10	(1%)	2	(50%)	0	(0%)	$0	(2%)
Structural member or framing	10	(1%)	0	(0%)	0	(0%)	$1	(3%)
Other known item first ignited	30	(5%)	0	(0%)	0	(0%)	$1	(4%)
Total fires	470	(100%)	4	(100%)	24	(100%)	$21	(100%)

Note: See detailed notes and source information at end of table.

Table 7.3. Home Fires Involving Transformers and Power Supplies, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Battery Charger or Rectifier

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Wire or cable insulation	80	(34%)	0	(NA)	14	(81%)	$8	(54%)
Unclassified item	20	(8%)	0	(NA)	0	(0%)	$0	(2%)
Floor covering	10	(6%)	0	(NA)	0	(0%)	$0	(3%)
Multiple items first ignited	10	(5%)	0	(NA)	0	(0%)	$1	(4%)
Appliance housing or casing	10	(5%)	0	(NA)	0	(0%)	$0	(0%)
Toy or game	10	(4%)	0	(NA)	0	(0%)	$0	(1%)
Mattress or bedding	10	(4%)	0	(NA)	0	(0%)	$1	(4%)
Interior wall covering	10	(4%)	0	(NA)	0	(0%)	$1	(5%)
Upholstered furniture	10	(4%)	0	(NA)	2	(10%)	$1	(8%)
Unclassified furniture or utensil	10	(3%)	0	(NA)	0	(0%)	$0	(2%)
Flammable or combustible gas or liquid	10	(3%)	0	(NA)	0	(0%)	$0	(0%)
Structural member or framing	10	(3%)	0	(NA)	0	(0%)	$0	(1%)
Papers	10	(3%)	0	(NA)	2	(9%)	$0	(1%)
Transformer or transformer fluid	10	(3%)	0	(NA)	0	(0%)	$0	(2%)
Other known item first ignited	30	(12%)	0	(NA)	0	(0%)	$2	(12%)
Total fires	240	(100%)	0	(NA)	17	(100%)	$15	(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 fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 7.3. Home Fires Involving Transformers and Power Supplies, by Item First Ignited (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

D. Generator

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Exterior wall covering	60	(26%)	0	(0%)	7	(27%)	$3	(22%)
Flammable or combustible gas or liquid	60	(25%)	7	(100%)	15	(60%)	$5	(33%)
Structural member or framing	20	(10%)	0	(0%)	0	(0%)	$2	(12%)
Unclassified structural component or finish	20	(8%)	0	(0%)	1	(6%)	$2	(10%)
Wire or cable insulation	10	(5%)	0	(0%)	0	(0%)	$1	(4%)
Unclassified item	10	(4%)	0	(0%)	0	(0%)	$0	(2%)
Exterior trim including doors	10	(3%)	0	(0%)	0	(0%)	$0	(2%)
Multiple items first ignited	10	(3%)	0	(0%)	0	(0%)	$1	(4%)
Interior ceiling covering	10	(2%)	0	(0%)	1	(6%)	$0	(1%)
Other known item first ignited	30	(14%)	0	(0%)	0	(0%)	$2	(11%)
Total fires	240	(100%)	7	(100%)	24	(100%)	$15	(100%)

Note: See detailed notes and source information at end of table.

Table 7.4. Home Fires Involving Transformers and Power Supplies, by Area of Origin
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

A. All Transformers and Power Supplies

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	260	(20%)	0	(0%)	18	(24%)	$12	(18%)
Garage*	210	(16%)	0	(0%)	6	(8%)	$18	(28%)
Living room, family room, or den	190	(14%)	7	(58%)	17	(23%)	$8	(12%)
Unclassified function area	60	(5%)	0	(0%)	4	(5%)	$3	(4%)
Exterior wall surface	50	(4%)	0	(0%)	3	(3%)	$1	(2%)
Wall assembly or concealed space	40	(3%)	0	(0%)	1	(2%)	$1	(2%)
Crawl space or substructure space	40	(3%)	3	(22%)	6	(9%)	$1	(2%)
Kitchen	30	(3%)	0	(0%)	0	(0%)	$1	(1%)
Unclassified storage area	30	(2%)	0	(0%)	1	(2%)	$1	(1%)
Office	30	(2%)	0	(0%)	4	(5%)	$1	(2%)
Exterior balcony or unenclosed porch	30	(2%)	2	(20%)	0	(0%)	$4	(6%)
Unclassified outside area	30	(2%)	0	(0%)	0	(0%)	$0	(1%)
Courtyard, terrace or patio	30	(2%)	0	(0%)	4	(5%)	$4	(7%)
Dining room	20	(2%)	0	(0%)	0	(0%)	$1	(2%)
Attic or ceiling/roof assembly or concealed space	20	(1%)	0	(0%)	0	(0%)	$1	(1%)
Storage of supplies or tools or dead storage	20	(1%)	0	(0%)	1	(2%)	$1	(1%)
Laundry room	20	(1%)	0	(0%)	1	(2%)	$1	(1%)
Unclassified area of origin	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Closet	20	(1%)	0	(0%)	0	(0%)	$0	(0%)
Switchgear area or transformer vault	20	(1%)	0	(0%)	2	(3%)	$0	(0%)
Unclassified equipment or service area	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Bathroom	10	(1%)	0	(0%)	1	(2%)	$0	(1%)
Unclassified structural area	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Ceiling/floor assembly or concealed space	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Conduit, pipe, utility, or ventilation shaft	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Hallway or corridor	10	(1%)	0	(0%)	1	(2%)	$0	(0%)
Heating equipment room	10	(1%)	0	(0%)	0	(0%)	$1	(1%)
Storage room or area	10	(1%)	0	(0%)	1	(2%)	$0	(0%)
Computer room	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Lobby or entrance way	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Lawn, field or open area	10	(1%)	0	(0%)	0	(0%)	$0	(0%)

Table 7.4. Home Fires Involving Transformers and Power Supplies, by Area of Origin
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments (Continued)

A. All Transformers and Power Supplies

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Other known area of origin	50	(4%)	0	(0%)	3	(3%)	$3	(5%)
Total fires	1,310	(100%)	11	(100%)	75	(100%)	$64	(100%)

* Does not include garage coded as separate property.
Note: See detailed notes and source information at end of table.

Table 7.4. Home Fires Involving Transformers and Power Supplies, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

B. Surge Protector

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	170	(37%)	0	(0%)	12	(49%)	$9	(41%)
Living room, family room, or den	130	(28%)	4	(100%)	7	(31%)	$6	(27%)
Unclassified function area	40	(8%)	0	(0%)	2	(10%)	$2	(10%)
Office	30	(5%)	0	(0%)	3	(10%)	$1	(5%)
Garage*	10	(3%)	0	(0%)	0	(0%)	$1	(6%)
Kitchen	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Dining room	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Wall assembly or concealed space	10	(2%)	0	(0%)	0	(0%)	$0	(0%)
Crawl space or substructure space	10	(2%)	0	(0%)	0	(0%)	$0	(2%)
Unclassified storage area	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Computer room	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Bathroom	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Laundry room	10	(1%)	0	(0%)	0	(0%)	$0	(1%)
Closet	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified area of origin	10	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	20	(5%)	0	(0%)	0	(0%)	$1	(4%)
Total fires	470	(100%)	4	(100%)	24	(100%)	$21	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Table 7.4. Home Fires Involving Transformers and Power Supplies, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

C. Battery Charger or Rectifier

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Garage*	100	(43%)	0	(NA)	3	(15%)	$9	(61%)
Bedroom	40	(18%)	0	(NA)	2	(14%)	$2	(11%)
Living room, family room, or den	20	(8%)	0	(NA)	7	(43%)	$0	(3%)
Kitchen	10	(4%)	0	(NA)	0	(0%)	$0	(1%)
Unclassified storage area	10	(3%)	0	(NA)	0	(0%)	$0	(2%)
Unclassified function area	10	(3%)	0	(NA)	1	(7%)	$0	(2%)
Storage of supplies or tools	10	(3%)	0	(NA)	0	(0%)	$0	(0%)
Crawl space or substructure space	10	(2%)	0	(NA)	1	(8%)	$0	(2%)
Dining room	10	(2%)	0	(NA)	0	(0%)	$0	(3%)
Other known area of origin	30	(13%)	0	(NA)	2	(14%)	$2	(14%)
Total fires	240	(100%)	0	(NA)	17	(100%)	$15	(100%)

* Excludes garage reported as separate property.

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 fuel burner or boiler, chimney or flue, cooking vessel, trash, incinerator, or commercial compactor. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported 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 7.4. Home Fires Involving Transformers and Power Supplies, by Area of Origin (Continued)
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments

D. Generator

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Garage*	40	(19%)	0	(0%)	1	(5%)	$5	(34%)
Exterior wall surface	30	(14%)	0	(0%)	3	(10%)	$1	(8%)
Exterior balcony or unenclosed porch	20	(8%)	2	(31%)	0	(0%)	$1	(7%)
Bedroom	10	(6%)	0	(0%)	1	(5%)	$0	(2%)
Unclassified outside area	10	(5%)	0	(0%)	0	(0%)	$0	(1%)
Unclassified storage area	10	(5%)	0	(0%)	1	(5%)	$0	(2%)
Courtyard, terrace or patio	10	(5%)	0	(0%)	4	(15%)	$2	(10%)
Living room, family room, or den	10	(5%)	2	(33%)	2	(10%)	$1	(6%)
Wall assembly or concealed space	10	(4%)	0	(0%)	0	(0%)	$0	(1%)
Crawl space or substructure space	10	(3%)	3	(35%)	5	(22%)	$0	(1%)
Unclassified area of origin	10	(2%)	0	(0%)	0	(0%)	$0	(1%)
Storage of supplies or tools	10	(2%)	0	(0%)	1	(6%)	$0	(2%)
Other known area of origin	50	(21%)	0	(0%)	5	(21%)	$3	(23%)
Total fires	240	(100%)	7	(100%)	24	(100%)	$15	(100%)

* Excludes garage reported as separate property.

Note: See detailed notes and source information at end of table.

Section 8. Non-Home Electrical Distribution or Lighting Equipment

In 2007-2011, an estimated 10,150 reported U.S. non-confined, non-home structure fires per year involving electrical distribution or lighting equipment resulted in 19 civilian deaths, 150 civilian injuries, and $498 million in direct property damage per year.

Another 475 confined fires per year (mostly fires confined to trash) are not included in these statistics.[27]

Electrical distribution or lighting equipment accounted for 8% of 2007-2011 on-home structure fires, 9% of associated civilian deaths, 7% of associated civilian injuries, and 14% of associated direct property damage. If confined fires are included, the share of all non-home fires is still 8%.

Table 8.1 provides estimated fires and associated losses for each type of electrical distribution or lighting equipment and for the major equipment groups. Some types of equipment have much larger shares of non-home electrical distribution or lighting equipment fires than of home electrical distribution or lighting equipment fires, including fluorescent light fixtures and signs. The types of equipment with higher non-home fire shares also tend to have much higher average usage in non-home properties than in homes.

[27] The other estimates in this chapter *exclude* fires reported as confined fires, which do not require detailed reporting and rarely involve electrical distribution or lighting equipment.

Table 8.1 Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Type of Equipment
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments
(Excluding Fires Reported as Confined Fires)

Type of Equipment Involved in Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Fixed wiring and related equipment	5,200	(51%)	10	(54%)	67	(45%)	$207	(42%)
Unclassified electrical wiring	2,230	(22%)	6	(30%)	18	(12%)	$103	(21%)
Panelboard or switchboard	610	(6%)	0	(0%)	22	(15%)	$32	(7%)
Outlet or receptacle	570	(6%)	0	(0%)	11	(8%)	$21	(4%)
Power (utility) line	520	(5%)	2	(11%)	0	(0%)	$13	(3%)
Branch circuit wiring	450	(4%)	2	(13%)	8	(6%)	$13	(3%)
Service supply wiring from utility	380	(4%)	0	(0%)	4	(2%)	$11	(2%)
Meter or meter box	240	(2%)	0	(0%)	2	(2%)	$6	(1%)
Wiring from meter box to circuit breaker	140	(1%)	0	(0%)	0	(0%)	$4	(1%)
Wall switch	60	(1%)	0	(0%)	1	(1%)	$3	(1%)
Ground fault interruptor (GFCI)	10	(0%)	0	(0%)	0	(0%)	$0	(0%)
Lamp, light bulb, or light fixture	2,790	(27%)	4	(22%)	57	(38%)	$105	(21%)
Fluorescent light fixture	710	(7%)	0	(0%)	7	(5%)	$23	(5%)
Unclassified lamp or lighting	590	(6%)	0	(0%)	7	(4%)	$18	(4%)
Sign	310	(3%)	0	(0%)	0	(0%)	$9	(2%)
Incandescent light fixture	270	(3%)	0	(0%)	4	(3%)	$6	(1%)
Light bulb	190	(2%)	2	(12%)	2	(1%)	$6	(1%)
Halogen light fixture or lamp	180	(2%)	0	(0%)	5	(3%)	$11	(2%)
Table, floor, or desktop lamp	150	(1%)	0	(0%)	5	(4%)	$2	(0%)
Decorative light on line voltage	130	(1%)	0	(0%)	0	(0%)	$3	(1%)
Work light or trouble light	130	(1%)	2	(10%)	23	(1%)	$18	(4%)
Sodium or mercury vapor light	90	(1%)	0	(0%)	0	(0%)	$6	(1%)
Decorative or landscape lighting	20	(0%)	0	(0%)	0	(0%)	$3	(1%)
Lantern or flashlight	10	(0%)	0	(0%)	3	(2%)	$0	(0%)
Nightlight	10	(0%)	0	(0%)	0	(0%)	$0	(0%)

Table 8.1 Non-Home Fires Involving Electrical Distribution or Lighting Equipment, by Type of Equipment
Annual Average of 2007-2011 Structure Fires Reported to U.S. Fire Departments
Excluding Fires Reported as Confined Fires (Continued)

Type of Equipment Involved in Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Transformer or power supply	1,400	(14%)	0	(0%)	12	(8%)	$140	(28%)
Distribution type transformer	490	(5%)	0	(0%)	1	(1%)	$51	(10%)
Generator	330	(3%)	0	(0%)	3	(2%)	$58	(12%)
Battery charger or rectifier	160	(2%)	0	(0%)	3	(2%)	$11	(2%)
Low voltage transformer	110	(1%)	0	(0%)	0	(0%)	$2	(0%)
Surge protector	110	(1%)	0	(0%)	1	(1%)	$5	(1%)
Battery	90	(1%)	0	(0%)	1	(1%)	$4	(1%)
Uninterrupted power supply	50	(1%)	0	(0%)	0	(0%)	$0	(0%)
Overcurrent or disconnect equipment	50	(1%)	0	(0%)	4	(2%)	$8	(2%)
Inverter	20	(0%)	0	(0%)	0	(0%)	$0	(0%)
Cord or plug	730	(7%)	5	(24%)	13	(8%)	$45	(9%)
Extension cord	390	(4%)	5	(24%)	11	(9%)	$26	(5%)
Permanent power cord or plug	120	(1%)	0	(0%)	0	(0%)	$3	(1%)
Unclassified cord or plug	110	(1%)	0	(0%)	1	(1%)	$11	(2%)
Detachable power cord or plug	100	(1%)	0	(0%)	0	(0%)	$5	(1%)
Electric fence	20	(0%)	0	(0%)	0	(0%)	$0	(0%)
Lightning rod or arrester	10	(0%)	0	(0%)	0	(0%)	$0	(0%)
Traffic control device	0	(0%)	0	(0%)	0	(0%)	$0	(0%)
Total	**10,150**	**(100%)**	**19**	**(100%)**	**150**	**(100%)**	**$498**	**(100%)**

Notes: 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 rounded to the nearest one, and direct property damage is rounded 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, and partial unknowns have been allocated as indicated below. 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. Equipment involved on Ignition 200 fires are proportionally allocated over the known equipment categories of Equipment Involved in Ignition 210-299.

Source: 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. Fires reported to federal or state fire departments or industrial fire brigades are not included in these estimates.

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

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

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

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

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

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

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

Projecting NFIRS to National Estimates

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

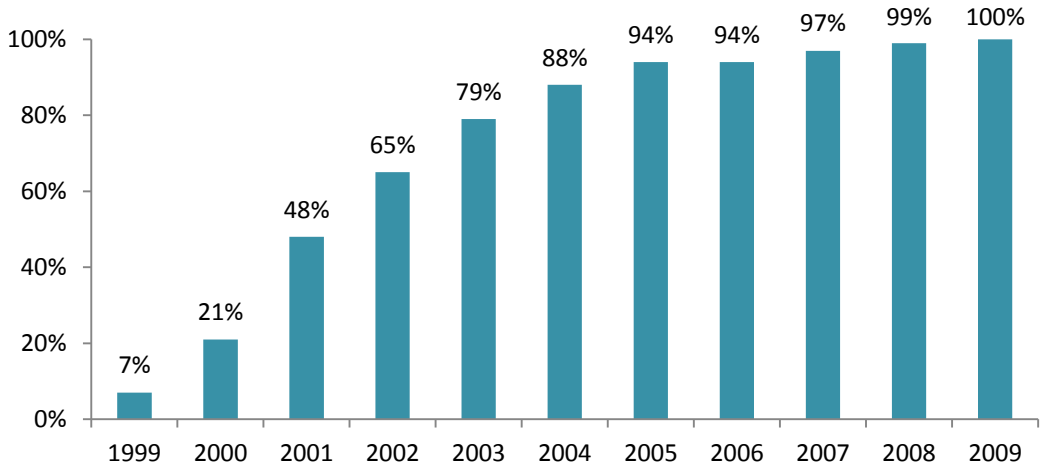
Scaling ratios are obtained by comparing NFPA's projected totals of residential structure fires, non-residential structure fires, vehicle fires, and outside and other fires, and associated civilian deaths, civilian injuries, and direct property damage with comparable totals in NFIRS. Estimates of specific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

Analysts at the NFPA, the USFA and the Consumer Product Safety Commission developed the specific basic analytical rules used for this procedure. "The National Estimates Approach to U.S. Fire Statistics," by John R. Hall, Jr. and Beatrice Harwood, provides a more detailed explanation of national estimates.

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

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

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



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

NFPA survey projections
NFIRS totals (Version 5.0)

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

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

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

Although causal and other detailed information is typically not required for these incidents, it is provided in some cases. Some analyses, particularly those that examine cooking equipment, heating equipment, fires caused by smoking materials, and fires started by playing with fire, may examine the confined fires in greater detail. Because the confined fire incident types describe certain scenarios, the distribution of unknown data differs from that of all fires. Consequently, allocation of unknowns must be done separately.

Some analyses of structure fires show only non-confined fires. In these tables, percentages shown are of non-confined structure fires rather than all structure fires. This approach has the advantage of showing the frequency of specific factors in fire causes, but the disadvantage of possibly overstating the percentage of factors that are seldom seen in the confined fire incident types and of understating the factors specifically associated with the confined fire incident types.

Other analyses include entries for confined fire incident types in the causal tables and show percentages based on total structure fires. In these cases, the confined fire incident type is treated as a general causal factor.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

All fires

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

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

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

Code Grouping	**EII Cod**	**NFIRS definitions**
Central heat	132	Furnace or central heating unit
	133	Boiler (power, process or heating)
Fixed or portable space heater	131	Furnace, local heating unit, built-in
	123	Fireplace with insert or stove
	124	Heating stove
	141	Heater, excluding catalytic and oil-filled
	142	Catalytic heater
	143	Oil-filled heater
Fireplace or chimney	120	Fireplace or chimney
	121	Fireplace, masonry
	122	Fireplace, factory-built
	125	Chimney connector or vent connector
	126	Chimney – brick, stone or masonry
	127	Chimney-metal, including stovepipe or flue
Fixed wiring and related equipment	210	Unclassified electrical wiring
	211	Electrical power or utility line
	212	Electrical service supply wires from utility
	213	Electric meter or meter box
	214	Wiring from meter box to circuit breaker
	215	Panel board, switch board or circuit breaker board
	216	Electrical branch circuit
	217	Outlet or receptacle
	218	Wall switch
	219	Ground fault interrupter
Transformers and power supplies	221	Distribution-type transformer
	222	Overcurrent, disconnect equipment
	223	Low-voltage transformer
	224	Generator
	225	Inverter
	226	Uninterrupted power supply (UPS)
	227	Surge protector
	228	Battery charger or rectifier
	229	Battery (all types)

Lamp, bulb or lighting	230	Unclassified lamp or lighting
	231	Lamp-tabletop, floor or desk
	232	Lantern or flashlight
	233	Incandescent lighting fixture
	234	Fluorescent light fixture or ballast
	235	Halogen light fixture or lamp
	236	Sodium or mercury vapor light fixture or lamp
	237	Work or trouble light
	238	Light bulb
	241	Nightlight
	242	Decorative lights – line voltage
	243	Decorative or landscape lighting – low voltage
	244	Sign
Cord or plug	260	Unclassified cord or plug
	261	Power cord or plug, detachable from appliance
	262	Power cord or plug- permanently attached
	263	Extension cord
Torch, burner or soldering iron	331	Welding torch
	332	Cutting torch
	333	Burner, including Bunsen burners
	334	Soldering equipment
Portable cooking or warming equipment	631	Coffee maker or teapot
	632	Food warmer or hot plate
	633	Kettle
	634	Popcorn popper
	635	Pressure cooker or canner
	636	Slow cooker
	637	Toaster, toaster oven, counter-top broiler
	638	Waffle iron, griddle
	639	Wok, frying pan, skillet
	641	Breadmaking machine

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

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

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

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. The same rounded value may account for a slightly different percentage share.

Because percentages are expressed in integers and not carried out to several decimal places, percentages that appear identical may be associated with slightly different values.

Appendix B – What Is an Electrical Fire?

There are several possible approaches to estimating the electrical part of the home fire problem.

The most direct and inclusive approach is to identify fires that began because of some type of *electrical failure or malfunction*. Version 5.0 of the National Fire Incident Reporting System (NFIRS), first introduced in 1999, introduced many changes in data classifications, definitions, and rules. Among those changes was the creation of an Electrical Failure or Malfunction section in the Factor Contributing to Ignition data element.

Prior to the introduction of NFIRS Version 5.0, there were two fields that could be used to identify electrical failures. One was the Form of Heat of Ignition field, which had 10 categories defined by different failure modes for electrical equipment plus two additional categories for properly or improperly operating electrical equipment and a thirteenth category for electric lamp or light bulb. The other was the Ignition Factor field, which had two relevant categories – short circuit or ground fault, and other electrical failure.

Because the pre-1999 Form of Heat of Ignition also had two categories each for gas-fueled, liquid-fueled, and solid-fueled equipment, the field was primarily used to distinguish equipment fires by type of fuel or power. NFIRS Version 5.0 provides a separate field on Equipment Power, which means it is no longer necessary to use Heat Source codes as a proxy for this purpose. The new Heat Source field has removed the 13 Form of Heat of Ignition categories that had referred to electrical equipment and added one category for electrical arcing. Seven of the 13 categories that used to be in the Electrical Equipment section of Heat Source are now in an Electrical Failure or Malfunction section of the Factor Contributing to Ignition field. Six of the seven (excluding fluorescent light ballast) are defined by some type of arcing. The former Form of Heat of Ignition category of overloaded equipment within the Electrical Equipment section is now an equipment overloaded category applicable to any type of equipment and located within the Operational Deficiency section of Factor Contributing to Ignition. The other five electrical-related categories – electric lamp or light bulb, properly or improperly operating electrical equipment, and unclassified or unknown-type electrical equipment – either no longer exist or are now represented by the "other" (unclassified or unknown-type) electrical failure or malfunction category.

The unclassified and unknown-type electrical equipment categories that were in Form of Heat of Ignition prior to 1999 both referenced "heat from electrical equipment arcing or overloaded." This phrasing provided a subtle reminder that not all electrical ignitions involve arcing. Overloaded circuits can overheat and ignite nearby combustibles without arcing. The new unclassified and unknown-type electrical failure or malfunction includes no such reminder but is not limited to arcing.

Here are some of the estimates of 1980 home electrical failure or malfunction reported structure fires that could be developed from these two data fields:

(1) 202,500, based on all 13 potentially relevant categories in the Form of Heat of Ignition field;

(2) 100,700, based on the Form of Heat of Ignition field but excluding four specific categories that do not mention a type of electrical failure or malfunction in their labels – electric lamp or light bulb, heat from properly operating electrical equipment, heat from improperly operating electrical equipment, and heat from overloaded equipment – while including fluorescent light ballast; this was the formula used in the 2009 report;
(3) 83,700, based on formula (2) with the additional exclusion of heat from unclassified or unknown-type electrical equipment arcing or overloading; and
(4) 71,700, based on the two Ignition Factor codes, which is the formula used in this report.

From 1999 on, the Factor Contributing to Ignition field provides the most comprehensive but focused identification of fires involving electrical failure or malfunction, and pre-1999, the Ignition Factor field is most similar to the current Factor Contributing to Ignition field. The old Form of Heat of Ignition field had too many categories that might have been mostly or partly filled with fires started by heat from electrical equipment but with no electrical failure or malfunction involved.

The new Heat Source field cannot be used to estimate fires involving all forms of electrical failure or malfunction but only electrical arcing. That approach results in an estimate 35% lower than the 2003-2007 non-confined home fires estimate for electrical failure or malfunction. If fires with Heat Source coded as unclassified or unknown-type within the Operating Equipment section of Heat Source, which includes electrical arcing, are proportionally allocated over the section, the adjusted electrical arcing estimate is still 11% lower than the 2003-2007 estimate based on electrical failure or malfunction as a factor contributing to ignition. Because the latter also includes more detail on the failure mode resulting in arcing, this report does not use the electrical arcing category in Heat Source as the basis of estimates of the size of the electrical failure problem.

In previous years, NFPA analysis of home electrical fires focused on fires where some type of electrical distribution or lighting equipment was the equipment involved in ignition. This approach was not so inclusive as direct analysis of all electrical failures but could be executed more cleanly than the more inclusive approach prior to the introduction of Version 5.0 of NFIRS.

Prior to 1999, NFIRS had 10 electrical distribution equipment categories, including separate categories for unclassified and unknown-type equipment. There was also an eleventh category (rectifier, charger, inverter, battery) that was outside the electrical distribution equipment group prior to NFIRS Version 5.0 but moved into that group as part of the Version 5.0 changes.

In NFIRS Version 5.0, there are 40 distinct electrical distribution or lighting equipment categories. One is for unclassified or unknown-type equipment and is normally proportionally distributed over the other categories for analysis purposes, as was done with the unknown-type category (but not the unclassified category) prior to 1999. There are also three categories for unclassified wiring or related equipment, lighting equipment, or cords or plugs, respectively. These three categories had also been proportionally allocated in the 2008 report in this series but are now kept separate.