RESEARCH

FIRES IN VACANT BUILDINGS

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February 2018

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 Index No. 2825

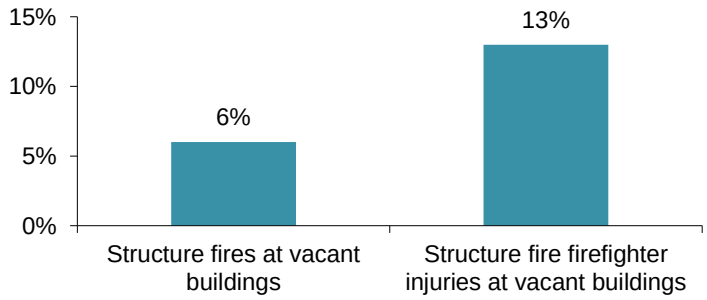
Fires in Vacant Buildings Overview

In 2011-2015, U.S. fire departments responded to an estimated average of 30,200 structure fires per year in vacant properties. These fires resulted in an average of 60 civilian deaths, 160 civilian injuries, and $710 million in direct property damage per year. Many properties are vacant during changes of ownership/occupant and are not abandoned. Fires in vacant buildings are more likely to have been intentionally set and to spread beyond the building than are fires in other structures. They also cause a disproportionate share of firefighter injuries.

Six percent of reported structure fires in 2011-2015 were in vacant properties. Only 2% of civilian structure fire deaths and 1% of civilian structure fire injuries resulted from fires in vacant properties.

During the same period, an estimated average of 3,310 firefighters per year were injured at vacant building fires. Thirteen percent of firefighter injuries at structure fires occurred in or at vacant buildings.

Percent of structure fires and firefighter fireground injuries in or at vacant buildings: 2011-2015



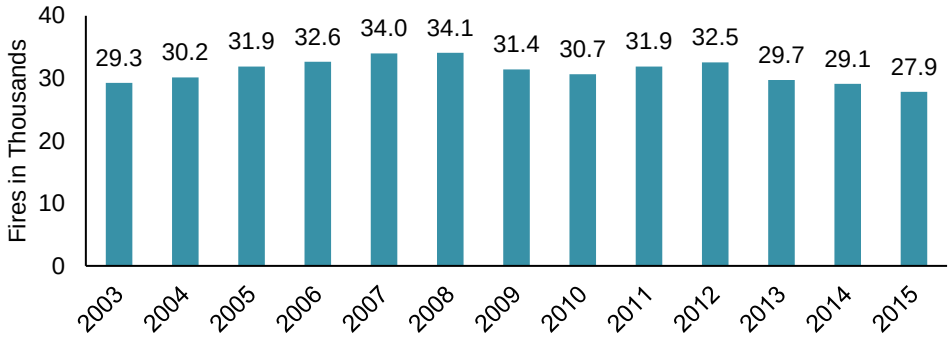
During the ten year period of 2007-2016, a total of 20 firefighters were fatally injured in 17 fires in vacant buildings or buildings under demolition or renovation. [1] None of these occurred in 2016.

In 2011-2015, 43% of vacant building structure fires were in properties that were secured. In the remaining 57% of these fires, the property was unsecured.

Vacant building fires reached a high point in 2007 and 2008 and have declined since 2012. Structure fires in vacant properties steadily increased from 29,300 in 2003 to a high of 34,100 in 2008. Estimates fluctuated for the next three years. Consecutive declines were seen in 2013-2015, with the 27,900 in 2015 the lowest point since 2003.

[1] Rita F. Fahy, Paul R. LeBlanc and Joseph l. Molis, *Firefighter Fatalities in the United States- 2016,* Quincy, MA: NFPA, 2017, p. 10.

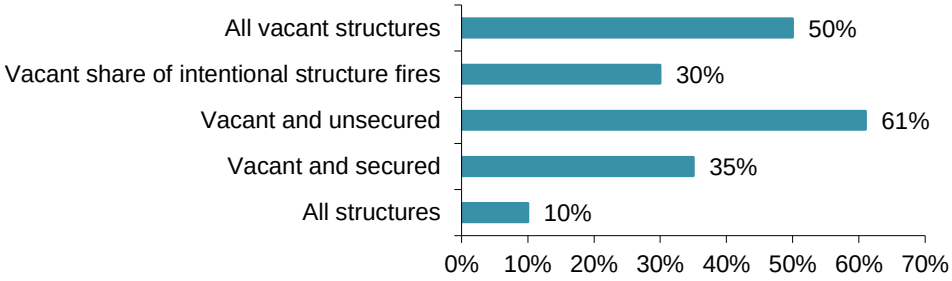
Vacant building fires by year: 2003-2015



Half (50%) percent of vacant building fires were intentionally set compared to 10% of all structure fires. Vacant structures accounted for 30% of intentionally set structure fires.

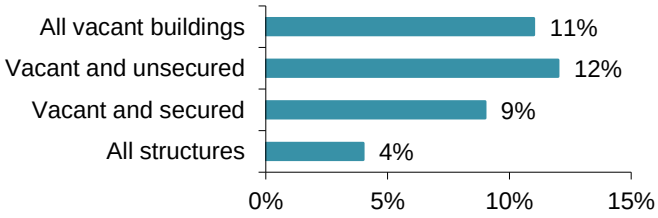
- In unsecured vacant properties, three-fifths (61%) of the fires were intentional.
- One-third (35%) of the fires in secured properties were intentional.

Intentional Vacant Building Fires by Structure Status: 2011-2015



The fire spread beyond the structure in 9% of the fires in secured and 12% of fires in unsecured vacant properties, compared to only 4% of overall structure fires. Larger percentages of fires in vacant buildings spread to nearby structures compared to all structure fires.

Intentional Structure Fires by Structure Status and Fire Spread: 2011-2015



Note: Estimates of fires and firefighter injuries were derived from the U.S. Fire Administration's National Fire Incident Reporting System and NFPA's annual fire department experience survey. Unknowns were allocated proportionally. In this analysis, the terms "building" and "structure" are used interchangeably. Supporting tables follow.

Table 1.
Structure Fires by Structure Status
2011-2015 Annual Averages

Structure Status	Fire		Civilian Deaths		Civilian Injuries		Direct Property Loss (in Millions)	
Occupied and operating	438,100	(89%)	2,600	(96%)	13,760	(97%)	$8,534	(87%)
Non-confined	214,600	(44%)	2,600	(96%)	11,970	(84%)	$8,477	(86%)
Confined	223,500	(46%)	0	(0%)	1,790	(13%)	$56	(1%)
Vacant and unsecured	17,100	(3%)	40	(1%)	80	(1%)	$279	(3%)
Non-confined	15,500	(3%)	40	(1%)	80	(1%)	$279	(3%)
Confined	1,600	(0%)	0	(0%)	0	(0%)	$0	(0%)
Vacant and secured	13,100	(3%)	30	(1%)	80	(1%)	$431	(4%)
Non-confined	11,800	(2%)	30	(1%)	70	(1%)	$431	(4%)
Confined	1,300	(0%)	0	(0%)	0	(0%)	$0	(0%)
Idle or not routinely used	6,100	(1%)	10	(0%)	50	(0%)	$154	(2%)
Non-confined	5,500	(1%)	10	(0%)	50	(0%)	$154	(2%)
Confined	600	(0%)	0	(0%)	0	(0%)	$0	(0%)
Under construction	3,800	(1%)	0	(0%)	50	(0%)	$176	(2%)
Non-confined	2,400	(0%)	0	(0%)	50	(0%)	$176	(2%)
Confined	1,400	(0%)	0	(0%)	0	(0%)	$0	(0%)
Under major renovation	2,500	(1%)	10	(0%)	60	(0%)	$102	(1%)
Non-confined	2,100	(0%)	10	(0%)	60	(0%)	$102	(1%)
Confined	400	(0%)	0	(0%)	0	(0%)	$0	(0%)
Being demolished	2,100	(0%)	10	(0%)	10	(0%)	$32	(0%)
Non-confined	1,800	(0%)	10	(0%)	10	(0%)	$32	(0%)
Confined	200	(0%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified structure status	6,800	(1%)	10	(0%)	80	(1%)	$116	(1%)
Non-confined	2,900	(1%)	10	(0%)	70	(1%)	$116	(1%)
Confined	3,900	(1%)	0	(0%)	10	(0%)	$0	(0%)
Total	489,600	(100%)	2,700	(100%)	14,170	(100%)	$9,824	(100%)
Non-confined	256,600	(52%)	2,700	(100%)	12,360	(87%)	$9,767	(99%)
Confined	233,000	(48%)	0	(0%)	1,810	(13%)	$58	(1%)
Total vacant, including both secured and unsecured	30,200	(6%)	60	(2%)	160	(1%)	$710	(7%)
Non-confined	27,300	(6%)	60	(2%)	150	(1%)	$710	(7%)
Confined	2,900	(1%)	0	(0%)	0	(0%)	$0	(0%)

Note: 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). Structure fires with other incident types are grouped together as "non-confined" regardless of the extent of fire spread. Non-confined and confined fires are analyzed separately. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Unknowns have been allocated proportionally. Fires are rounded to the nearest hundred, casualties are rounded to the nearest ten, and property loss was rounded to the nearest million dollars. Property loss was not adjusted for inflation. Sums may not equal totals due to rounding errors. Percentages were calculated before rounding.
Source: NFIRS and NFPA fire department experience survey.

Table 2.
Firefighter Injuries at Structure Firegrounds by Structure Status
2011-2015 Annual Averages

Structure Status	Firefighter Injuries	
Occupied and operating	21,540	(83%)
Vacant and unsecured	1,680	(6%)
Vacant and secured	1,630	(6%)
Idle, not routinely used	360	(1%)
Under major renovation	360	(1%)
Under construction	240	(1%)
Other	160	(1%)
Being demolished	80	(0%)
Total	26,050	(100%)
Total vacant	3,310	(13%)

Note: Firefighter injuries in which the injury occurred at the scene inside or outside at structure fires are included in this table. National estimates are projections. Unknowns have been allocated proportionally. Injuries are rounded to the nearest ten. Sums may not equal totals due to rounding errors. Percentages were calculated before rounding.

Source: NFIRS and NFPA fire department experience survey.

Table 3
Structure Fires in Vacant Properties, by Year
2003-2015

Year	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions) As Reported		Direct Property Damage (in Millions) in 2015 Dollars
2003	29,300	(26,800)	70	(70)	120	(120)	$585	($584)	$754
2004	30,200	(27,100)	50	(50)	130	(130)	$501	($500)	$629
2005	31,900	(27,900)	30	(30)	190	(190)	$727	($727)	$883
2006	32,600	(30,200)	50	(50)	130	(130)	$755	($755)	$887
2007	34,000	(31,400)	40	(40)	210	(210)	$810	($809)	$925
2008	34,100	(31,100)	40	(40)	140	(140)	$982	($982)	$1,083
2009	31,400	(28,700)	50	(50)	150	(150)	$982	($981)	$1,084
2010	30,700	(28,200)	50	(50)	200	(200)	$743	($743)	$809
2011	31,900	(28,900)	50	(50)	170	(170)	$798	($798)	$842
2012	32,500	(30,000)	70	(70)	170	(160)	$796	($795)	$822
2013	29,700	(26,800)	90	(90)	150	(150)	$697	($697)	$709
2014	29,100	(26,100)	50	(50)	160	(160)	$632	($632)	$632
2015	27,900	(24,600)	50	(50)	130	(130)	$630	($629)	$630

Note: Numbers in parentheses exclude confined fires. 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 (NFIRS incident type 113-118). Non-confined and confined fires are analyzed separately. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Inflation adjustment to 2015 dollars is done using the consumer price index purchasing power of the dollar. Unknowns have been allocated proportionally. Fires are rounded to the nearest hundred, casualties are rounded to the nearest ten, and property loss was rounded to the nearest million dollars.

Source: NFIRS and NFPA fire department experience survey.

Table 4.
Intentionally Set Fires in Vacant Structures and All Structures
2011-2015 Annual Averages

	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Total vacant, including both secured and unsecured, of all causes	**30,200**	**(100%)**	**60**	**(100%)**	**160**	**(100%)**	**$710**	**(100%)**
Secured	13,100	(43%)	30	(40%)	80	(49%)	$431	(61%)
Unsecured	17,100	(57%)	40	(60%)	80	(51%)	$279	(39%)
All intentional vacant fires	15,000	(50%)	20	(37%)	40	(24%)	$305	(43%)
Non-confined	13,600	(45%)	20	(37%)	40	(24%)	$305	(43%)
Confined	1,400	(5%)	0	(0%)	0	(0%)	$0	(0%)
Intentional vacant and secured	4,600	(35%)	10	(28%)	20	(21%)	$123	(28%)
Non-confined	4,200	(32%)	10	(28%)	20	(21%)	$123	(28%)
Confined	300	(3%)	0	(0%)	0	(0%)	$0	(0%)
Intentional vacant and unsecured	10,400	(61%)	20	(43%)	20	(27%)	$183	(65%)
Non-confined	9,400	(55%)	20	(43%)	20	(27%)	$183	(65%)
Confined	1,000	(6%)	0	(0%)	0	(0%)	$0	(0%)
All structures	**489,600**	**(100%)**	**2,700**	**(100%)**	**14,170**	**(100%)**	**$9,824**	**(100%)**
Intentional all structures	50,700	(10%)	400	(15%)	1,070	(8%)	$802	(8%)
Non-confined	25,000	(5%)	400	(15%)	1,010	(7%)	$801	(8%)
Confined	25,700	(5%)	0	(0%)	60	(1%)	$2	(0%)
Intentional vacant share of all intentional structure fires	**15,000**	**(30%)**	**20**	**(6%)**	**40**	**(4%)**	**$305**	**(38%)**

Note: Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Unknowns have been allocated proportionally. Fires are rounded to the nearest hundred, casualties are rounded to the nearest ten, and property loss was rounded to the nearest million dollars. Property loss was not adjusted for inflation. Sums may not equal totals due to rounding errors. Percentages were calculated before rounding.

Source: NFIRS and NFPA fire department experience survey.

Table 5.
Fires Spreading beyond Building of Origin in Vacant and All Structure Fires
2011-2015 Annual Averages

	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Vacant spread beyond building of origin	3,300	(11%)	10	(16%)	30	(16%)	$113	(16%)
Total vacant structure fires	30,200	(100%)	60	(100%)	160	(100%)	$710	(100%)
Vacant and secured spread beyond building of origin	1,200	(9%)	0	(10%)	10	(17%)	$65	(15%)
Total vacant and secured structure fires	13,100	(100%)	30	(100%)	80	(100%)	$431	(100%)
Vacant and unsecured spread beyond building of origin	2,100	(12%)	10	(20%)	10	(16%)	$48	(17%)
Total vacant and unsecured structure fires	17,100	(100%)	40	(100%)	80	(100%)	$279	(100%)
All structures spread beyond building of origin	18,400	(4%)	380	(14%)	880	(6%)	$1,494	(15%)
All structure fires	489,600	(100%)	2,700	(100%)	14,170	(100%)	9,824	(100%)

Note: Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Unknowns have been allocated proportionally. Fires are rounded to the nearest hundred, casualties are rounded to the nearest ten, and property loss was rounded to the nearest million dollars. Property loss was not adjusted for inflation. Sums may not equal totals due to rounding errors. Percentages were calculated before rounding.

Source: NFIRS and NFPA fire department experience survey.

Appendix A.
How National Estimates Statistics Are Calculated

The statistics in this analysis are estimates derived from the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA's) annual survey of U.S. fire departments. NFIRS is a voluntary system through 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 https://www.usfa.fema.gov/data/nfirs/.

NFIRS has a wide variety of data elements and codes. 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 not possible 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. From time to time, changes are made to methodologies or groupings. *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.* Readers should use the latest report available and contact us if clarification is needed.

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 5,000 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 serving 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*.

PROJECTING NFIRS TO NATIONAL ESTIMATES

As noted, NFIRS is a voluntary reporting 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. But there is enough reason for concern so that a second database -- the NFPA's fire experience 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's fire experience 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.

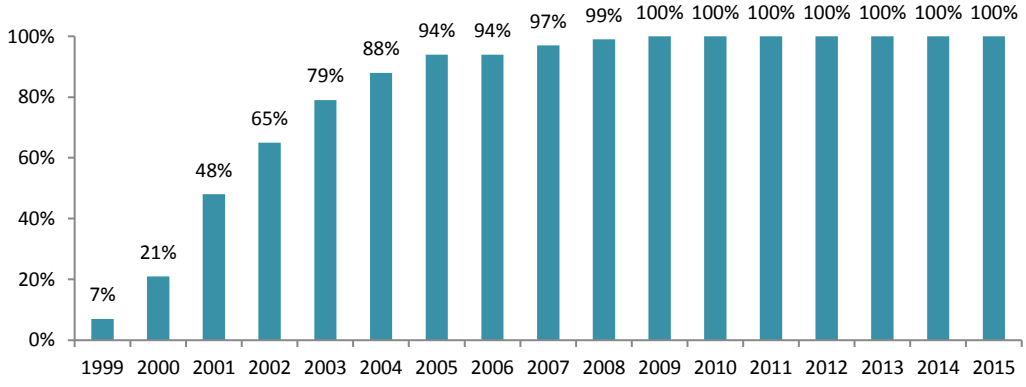
Analysts at the NFPA, the USFA and the Consumer Product Safety Commission developed the analytical rules used in analyzing data from the two data sets. "The National Estimates Approach to U.S. Fire Statistics," by John R. Hall, Jr. and Beatrice Harwood, provides a more detailed explanation of national 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. For 2002 data on, analyses are based on scaling ratios using only data originally collected in NFIRS 5.0:

$$\frac{\text{NFPA's fire experience survey projections}}{\text{NFIRS totals (Version 5.0)}}$$

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

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



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

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

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.*

SPECIFIC DATA ELEMENTS

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

$$\frac{\text{All fires}}{\text{(All fires – blank – undetermined – [fires in which EII =NNN and heat source <>40-99])}}$$

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

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

Code Grouping	**EII Code**	**NFIRS definitions**
Central heat	132	Furnace or central heating unit
	133	Boiler (power, process or heating)
Fixed or portable space heater	131	Furnace, local heating unit, built-in
	123	Fireplace with insert or stove
	124	Heating stove
	141	Heater, excluding catalytic and oil-filled
	142	Catalytic heater
	143	Oil-filled heater
Fireplace or chimney	120	Fireplace or chimney
	121	Fireplace, masonry
	122	Fireplace, factory-built
	125	Chimney connector or vent connector
	126	Chimney – brick, stone or masonry
	127	Chimney-metal, including stovepipe or flue
Fixed wiring and related equipment	210	Unclassified electrical wiring
	211	Electrical power or utility line

	212	Electrical service supply wires from utility
	213	Electric meter or meter box
	214	Wiring from meter box to circuit breaker
	215	Panel board, switch board or circuit breaker board
	216	Electrical branch circuit
	217	Outlet or receptacle
	218	Wall switch
	219	Ground fault interrupter
Transformers and power supplies	221	Distribution-type transformer
	222	Overcurrent, disconnect equipment
	223	Low-voltage transformer
	224	Generator
	225	Inverter
	226	Uninterrupted power supply (UPS)
	227	Surge protector
	228	Battery charger or rectifier
	229	Battery (all types)

Code Grouping	**EII Code**	**NFIRS definitions**
Lamp, bulb or lighting	230	Unclassified lamp or lighting
	231	Lamp-tabletop, floor or desk
	232	Lantern or flashlight
	233	Incandescent lighting fixture
	234	Fluorescent light fixture or ballast
	235	Halogen light fixture or lamp
	236	Sodium or mercury vapor light fixture or lamp
	237	Work or trouble light
	238	Light bulb
	241	Nightlight
	242	Decorative lights – line voltage
	243	Decorative or landscape lighting – low voltage
	244	Sign
Cord or plug	260	Unclassified cord or plug
	261	Power cord or plug, detachable from appliance
	262	Power cord or plug- permanently attached
	263	Extension cord
Torch, burner or soldering iron	331	Welding torch

	332	Cutting torch
	333	Burner, including Bunsen burners
	334	Soldering equipment
Portable cooking or warming equipment	631	Coffee maker or teapot
	632	Food warmer or hot plate
	633	Kettle
	634	Popcorn popper
	635	Pressure cooker or canner
	636	Slow cooker
	637	Toaster, toaster oven, counter-top broiler
	638	Waffle iron, griddle
	639	Wok, frying pan, skillet
	641	Breadmaking machine

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.

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.

Extent of Fire Spread. All structure fires with incident types indicating a confined fire were shown separately and are assumed to be confined to the object of origin. Fires that spread beyond the room of origin are calculated by summing fires with damage:

a) confined to the floor of origin (code 3),
b) confined to the building of origin (code 4), and
c) extending beyond building of origin (code 5).

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.

Inflation. Property damage estimates are not adjusted for inflation unless so indicated.