October 2017 | Volume 18, Issue 8

Portable Heater Fires in Residential Buildings (2013-2015)

These topical reports are designed to explore facets of the U.S. fire problem as depicted through data collected in the U.S. Fire Administration's National Fire Incident Reporting System. Each topical report briefly addresses the nature of the specific fire or fire-related topic, highlights important findings from the data, and may suggest other resources to consider for further information. Also included are recent examples of fire incidents that demonstrate some of the issues addressed in the report or that put the report topic in context.

Findings

- Each year, from 2013 to 2015, an estimated 1,650 portable heater fires in residential buildings were reported to fire departments within the United States. These fires caused an estimated 90 deaths, 175 injuries, and $84 million in property loss.
- Only 4 percent of heating fires in residential buildings involved portable heaters; however, portable heaters were involved in 43 percent of fatal heating fires in residential buildings.
- Portable heater fires in residential buildings peaked in January (25 percent).
- The leading reported factor contributing to ignition of portable heater fires in residential buildings was placing a heat source too close to combustible objects (54 percent).
- Portable heater fires in residential buildings most often started in bedrooms (37 percent). In these fires, bedding, such as blankets, sheets, and comforters, was the leading item first ignited by portable heaters at 23 percent.
- Smoke alarms were not present in 32 percent of portable heater fires in occupied residential buildings. Additionally, automatic extinguishing systems (AESs) were present in only 2 percent of portable heater fires in occupied residential buildings.

Each year, from 2013 to 2015, portable heater fires in residential buildings — a subset of heating fires in residential buildings — accounted for an estimated average of 1,650 fires in the U.S.[1,2] These fires resulted in an annual average of 90 deaths, 175 injuries, and $84 million in property loss.[3] The term "portable heater fires" applies to those fires that are caused by catalytic heaters, oil-filled heaters, or other heaters, such as electric heaters, that are designed to be carried or moved for use in a variety of locations.[4] Portable heaters are a subset of space heaters — small heaters designed to heat specific areas or rooms of a building.[5]

While portable heater fires in residential buildings were small in number, representing only 4 percent of all heating fires in residential buildings, their consequences were substantial: they accounted for 43 percent of fatal heating fires in residential buildings. Moreover, many of these fires were preventable, as human error was a contributing factor to the fire. For example, placing the heater too close to combustible items or leaving the heater unattended.

As part of a series of topical reports that address fires in residential buildings, this report addresses the characteristics of portable heater fires in residential buildings, as reported to the National Fire Incident Reporting System (NFIRS). The focus is on fires reported from 2013 to 2015 — the most recent data available at the time of the analysis.[6] NFIRS data is used for the analyses throughout this report. For a broader overview of heating fires, see the companion topical report, "Heating Fires in Residential Buildings (2013-2015)," Volume 18, Issue 7.

For the purpose of this report, the term "portable heater fires" is synonymous with "portable heater fires in residential buildings." "Portable heater fires" is used throughout the body of this report; the findings, tables, charts, headings and endnotes reflect the full category, "portable heater fires in residential buildings."

FEMA | U.S. Fire Administration
Working for a fire-safe America

National Fire Data Center
16825 S. Seton Ave.
Emmitsburg, MD 21727
https://www.usfa.fema.gov/data/statistics/

Type of fire

Building fires are divided into two classes of severity in the NFIRS: "confined fires," which are fires confined to certain types of equipment or objects, and "nonconfined fires," which are fires that are not confined to certain types of equipment or objects. Confined building fires are small fire incidents that are limited in extent, staying within pots, fireplaces, or certain other noncombustible containers.[7] Confined fires rarely result in serious injury or large content loss and are expected to have no significant accompanying property loss due to flame damage.[8]

Very few portable heater fires were confined fires — only 1 percent. The few fire incident records coded as "confined" portable heater fires in the NFIRS had sufficient data to be included in the overall analyses. As a result, the remainder of this report addresses all portable heater fires in residential buildings and does not distinguish between confined and nonconfined fires.

Loss measures

Table 1 presents losses of reported portable heater fires and all other heating fires in residential buildings (i.e., excluding portable heater fires) averaged over the three-year period from 2013 to 2015.[9] All of the loss measures for portable heater fires were substantially higher than the same loss measures for all other heating fires in residential buildings. As discussed, portable heater fires are mostly nonconfined fires (99 percent). As expected, their associated loss measures are higher since nonconfined fires are generally larger fires resulting in serious injury and more content losses. It is also expected that the loss measures for all other heating fires in residential buildings are lower as most confined fires, which are smaller, rarely result in serious injury or large content losses.[10]

Table 1. Loss measures for portable heater fires in residential buildings (three-year average, 2013-2015)

Measure	Portable heater fires in residential buildings	Heating fires in residential buildings (excluding portable heater fires)
Average loss:		
Fatalities/1,000 fires	25.8	1.2
Injuries/1,000 fires	75.6	9.4
Dollar loss/fire	$35,360	$6,660

Source: NFIRS 5.0.

Notes: 1. Average loss for fatalities and injuries is computed per 1,000 fires. Average dollar loss is computed **per fire** and is rounded to the nearest $10.
2. The 2013 and 2014 dollar-loss values were adjusted to 2015 dollars.

Where portable heater fires in residential buildings occur

One- and two-family residences were disproportionately represented in portable heater fires (Table 2).[11] One- and two-family residences accounted for 88 percent of portable heater fires — yet they represented only 64 percent of residential building fires.[12] Multifamily dwellings accounted for an additional 8 percent of portable heater fires. Multifamily dwellings, especially older apartments, condominiums, and the like, often have building-wide heating systems and the need for portable heaters may be less, perhaps accounting for the differences in portable heater fire incidence.

Table 2. Portable heater fires in residential buildings by property use (2013-2015)

Property use	Portable heater fires in residential buildings (percent)
One- or two-family residential buildings	87.7
Multifamily residential buildings	7.9
Other residential buildings	4.4
Total	100.0

Source: NFIRS 5.0.

Most portable heater fires started in bedrooms (37 percent) or family rooms and living rooms (16 percent). Fires that started in other function or activity areas accounted for 7 percent of fires (Table 3).

Table 3. Leading areas of fire origin in portable heater fires in residential buildings (2013-2015)

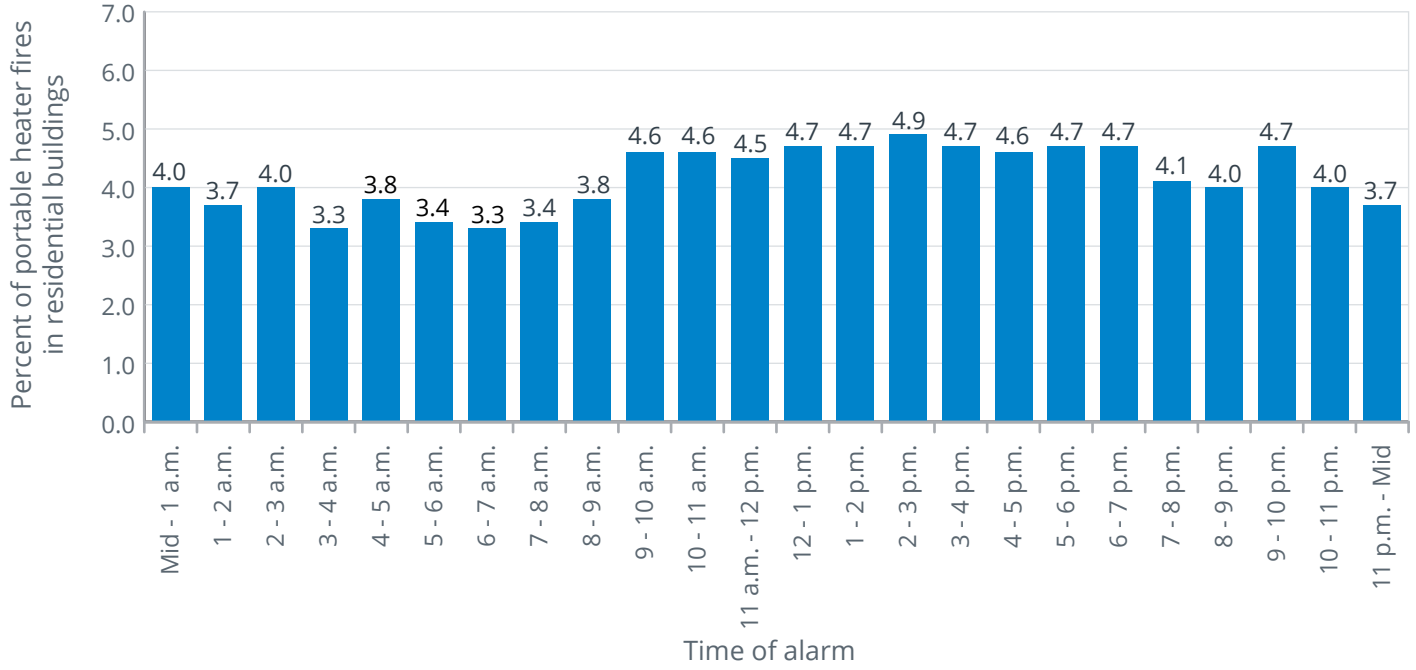
Areas of fire origin	Percent of portable heater fires in residential buildings (unknowns apportioned)
Bedrooms	36.8
Common room, den, family room, living room, lounge	15.7
Other function areas	6.9
Bathrooms	5.6
Vehicle storage: garage, carport	5.5

Source: NFIRS 5.0.

When portable heater fires in residential buildings occur

As shown in Figure 1, portable heater fires were relatively constant throughout the day with some slight variations. They were generally at their lowest in the early morning hours, roughly between 5 and 8 a.m., and at their highest from noon to 4 p.m. This latter four-hour period accounted for 19 percent of portable heater fires.[13]

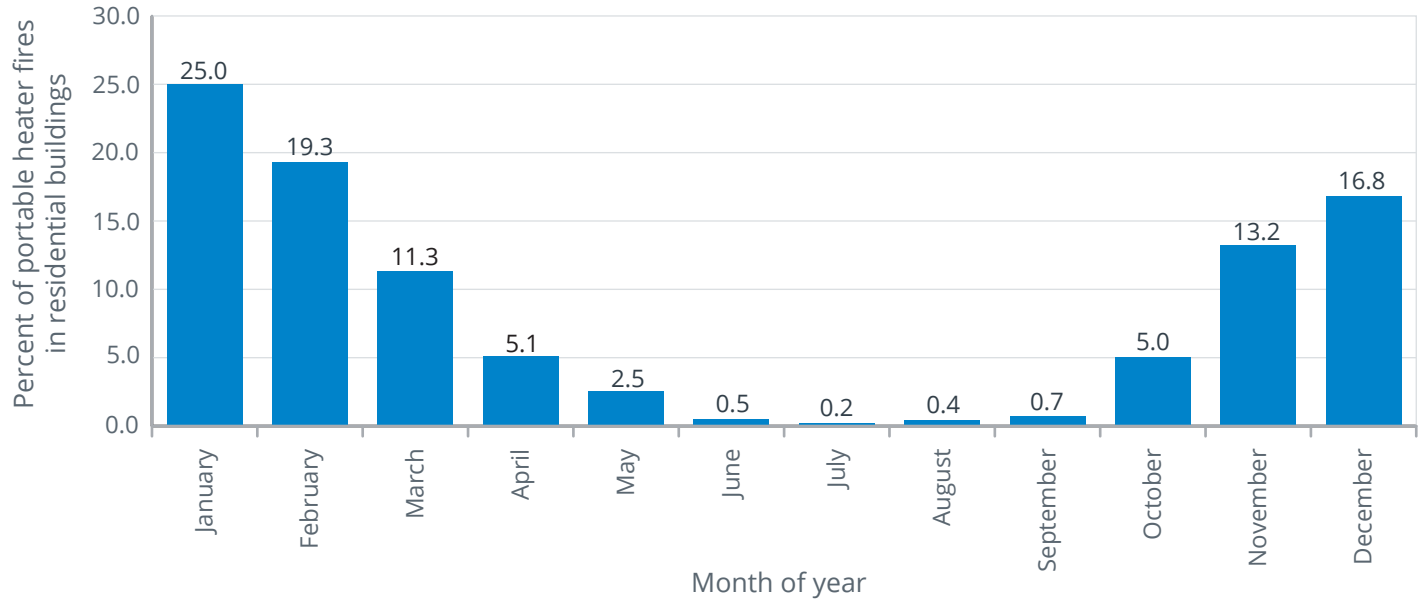
Figure 1. Portable heater fires in residential buildings by time of alarm (2013-2015)



Source: NFIRS 5.0.
Note: Total does not add up to 100 percent due to rounding.

Figure 2 shows the pattern of portable heater fires reported to the NFIRS throughout the year. As expected, the number of portable heater fires increased during the late fall and winter months (November through March), peaking in January (25 percent). From April to September, fire incidence declined from 5 percent to less than 1 percent. This is not surprising as the use of portable heaters is less common during the spring, summer and early fall months.

Figure 2. Portable heater fires in residential buildings by month (2013-2015)

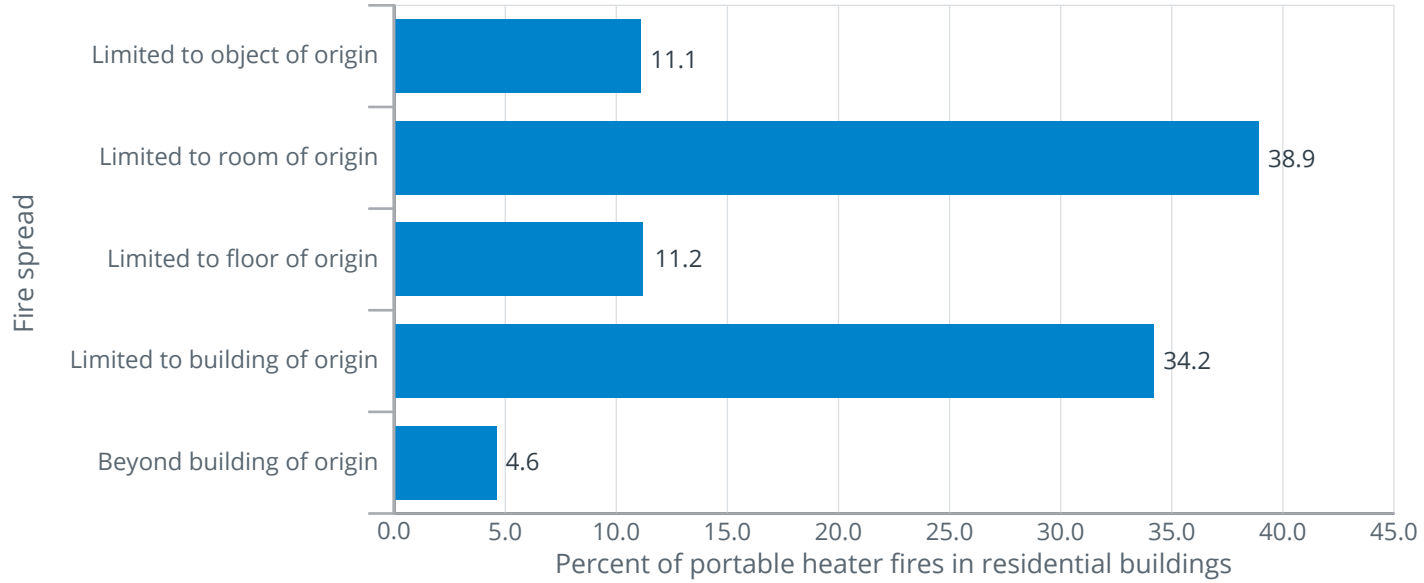


Source: NFIRS 5.0.

Fire spread in portable heater fires in residential buildings

Fifty percent of portable heater fires remained limited to the object or room of origin (Figure 3). When compared to other residential heating-related fires, portable heater fires tended to spread further throughout the home. Fifty percent of portable heater fires spread beyond the room of fire origin. By contrast, only 36 percent of nonconfined heating fires (excluding portable heater fires) in residential buildings spread beyond the room of origin. This increased fire spread may be, in part, why portable heater fires tended to be more serious as shown by the loss measures in Table 1.

Figure 3. Extent of fire spread in portable heater fires in residential buildings (2013-2015)

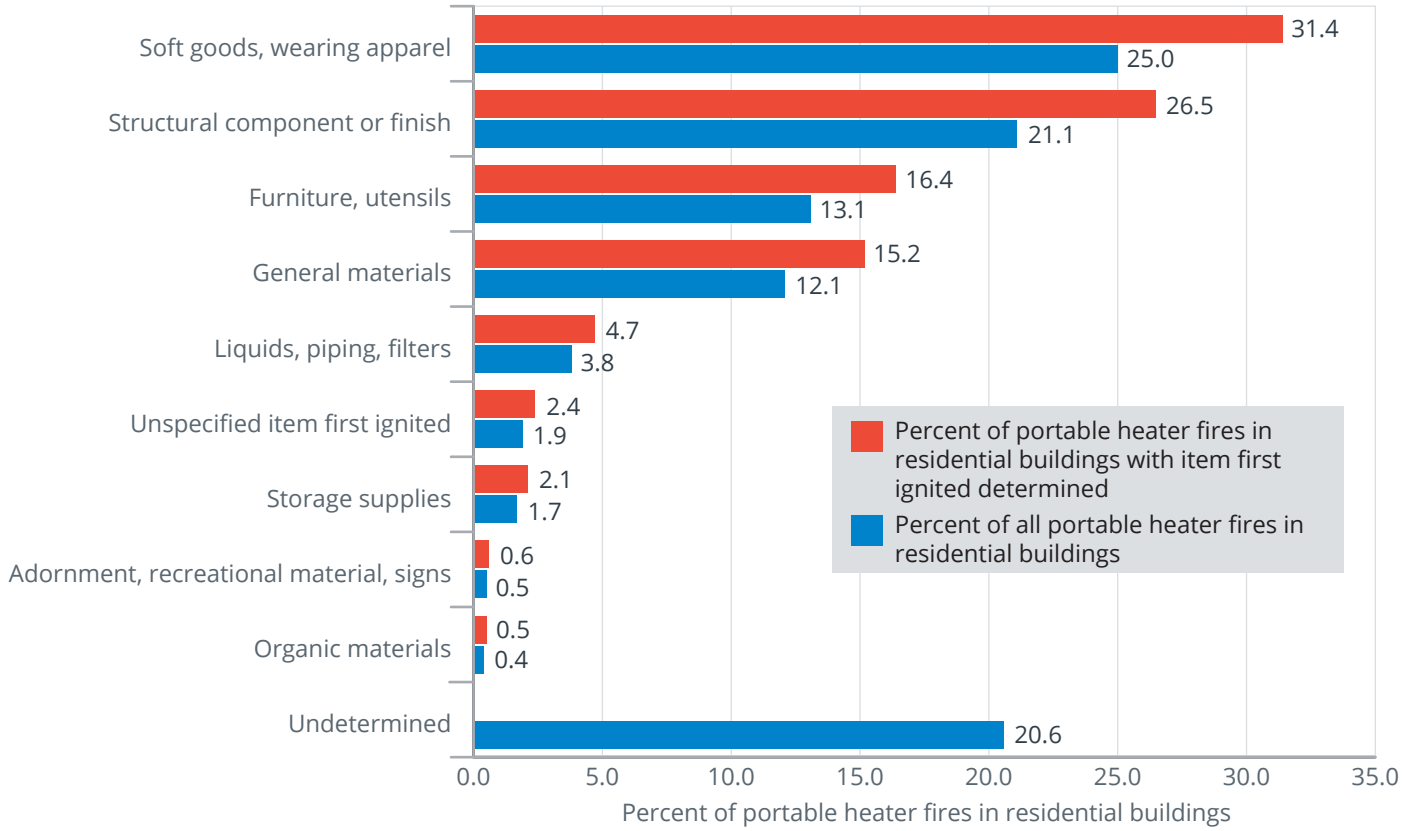


Source: NFIRS 5.0.

Item first ignited in portable heater fires in residential buildings

Thirty-one percent of items first ignited in portable heater fires fell under the "soft goods, wearing apparel" category (Figure 4). This category includes bedding, curtains and clothing. The next leading category, "structural component or finish," accounted for another 27 percent of portable heater fires. This category includes structural members or framing; exterior trim and finishes; interior wall coverings; insulation within the walls; and floor coverings, such as rugs or carpets. "Furniture, utensils" was the third leading category at 16 percent.

Figure 4. Item first ignited in portable heater fires in residential buildings by major category (2013-2015)



Source: NFIRS 5.0.
Note: Total percentages for each distribution of portable heater fires in residential buildings do not add up to 100 percent due to rounding.

Of the fires that originated in bedrooms (Table 3), bedding (such as blankets, sheets and comforters) was the leading item first ignited by portable heaters (23 percent). Clothing not on a person accounted for another 13 percent.

For portable heater fires that originated in family rooms or living rooms, 24 percent were started with the ignition of upholstered sofas and chairs. Floor coverings, such as rugs, carpets or mats, accounted for 10 percent, while electrical wire and cable insulation accounted for an additional 10 percent.

Factors contributing to ignition in portable heater fires in residential buildings

Table 4 shows the leading factors contributing to ignition of portable heater fires. Placing a heat source too close to combustible objects was the leading contributing factor (54 percent). Unspecified electrical failure, malfunction was a contributing factor in 11 percent of portable heater fires, and unattended equipment was a contributing factor in 9 percent of the fires. These three contributing factors played a role in 73 percent of residential portable heater fires.

Table 4. Leading factors contributing to ignition for portable heater fires in residential buildings (where factors contributing to ignition were specified, 2013-2015)

Factors contributing to ignition	Percent of portable heater fires in residential buildings (unknowns apportioned)
Heat source too close to combustibles	53.7
Unspecified electrical failure, malfunction	10.9
Unattended equipment	8.6
Unspecified short-circuit arc	4.8
Unspecified mechanical failure, malfunction	4.1

Source: NFIRS 5.0.
Notes: 1. Includes only incidents where factors that contributed to the ignition of the fire were specified.
2. Multiple factors contributing to fire ignition may be noted for each incident.

Portable heater equipment involved in ignition

Table 5 shows the specific type of portable heater that provided the principal heat source to cause the ignition of the fire. Heaters including floor furnaces, wall heaters and baseboard heaters were the leading equipment involved in ignition in 77 percent of the reported portable heater fires in residential buildings. Oil filled heaters and catalytic heaters accounted for the remaining 23 percent of portable heaters involved in the ignition of these fires.

Table 5. Portable heater equipment involved in ignition in residential building fires (2013-2015)

Equipment involved in ignition	Percent of portable heater fires in residential buildings (unknowns apportioned)
Heater; includes floor furnaces, wall heaters and baseboard heaters	77.4
Heater, oil filled	13.2
Heater, catalytic	9.3

Source: NFIRS 5.0.
Note: Total does not add up to 100 percent due to rounding.

Suppression/Alerting systems in portable heater fires in residential buildings

Fire fatalities and injuries have declined over the last 35 years, partly due to new technologies to detect and extinguish fires. Smoke alarms are present in most homes. In addition, the use of residential sprinklers is widely supported by the fire service and is gaining support within residential communities.

Note that the data presented in Tables 6, 7 and 8 are the raw counts from the NFIRS dataset and are not scaled to national estimates of smoke alarms and sprinklers in portable heater fires. In addition, the NFIRS does not allow for the determination of the type of smoke alarm (i.e., photoelectric or ionization) or the location of the smoke alarm with respect to the area of fire origin.

Smoke alarms

As shown in Table 6, smoke alarms were reported as present in 39 percent of portable heater fires. Smoke alarms were not present in 33 percent of portable heater fires, and firefighters were unable to determine if a smoke alarm was present in another 28 percent of these fires. Additionally, smoke alarm presence was not reported in less than 1 percent of incidents.[14] Thus, smoke alarms were potentially missing in 33 to 61 percent of these fires with the ability to spread and possibly result in fatalities.

Table 6. Presence of smoke alarms in portable heater fires in residential buildings (2013-2015)

Presence of smoke alarms	Percent
Present	38.7
None present	32.9
Undetermined	27.9
Null/Blank	0.5
Total	100.0

Source: NFIRS 5.0.

While 7 percent of all portable heater fires occurred in residential buildings that were **not** currently or routinely occupied, these buildings — which are under construction, undergoing major renovation, vacant and the like — are unlikely to have alerting and suppression systems that are in place and, if in place, that are operational. In fact, only 12 percent of all portable heater fires in unoccupied residential buildings were reported as having smoke alarms that operated. As a result, the detailed smoke alarm analyses in the next section focus on portable heater fires in occupied residential buildings only.

Smoke alarms in portable heater fires in occupied residential buildings

Smoke alarms were reported as present in 40 percent of portable heater fires in occupied residential buildings (Table 7). No smoke alarms were present in 32 percent of portable heater fires in occupied residential buildings, and firefighters were unable to determine if a smoke alarm was present in another 28 percent of these fires.

When smoke alarms were present (40 percent) and the alarm operational status was considered, the percentage of smoke alarms reported as present consisted of:

- Present and operated — 23 percent.
- Present but did not operate — 10 percent (alarm failed to operate, 7 percent; fire too small, 3 percent).
- Present but operational status unknown — 7 percent.

When the subset of incidents where smoke alarms were reported as present was analyzed separately as a whole, smoke alarms were reported to have operated in 59 percent of the incidents. Smoke alarms failed to operate in 18 percent of the incidents, and in another 7 percent, the fire was too small to activate the alarm. The operational status of the alarm was undetermined in 16 percent of the incidents.

If a fire occurs, properly installed and maintained smoke alarms provide an early warning signal to everyone in a home. Smoke alarms help save lives and property. The U.S. Fire Administration (USFA) continues to partner with other government agencies and fire service organizations to improve and develop new smoke alarm technologies. More information on smoke alarm technologies, performance, disposal and storage, training bulletins, and public education and outreach materials can be found at https://www.usfa.fema.gov/prevention/technology/smoke_fire_alarms.html. Additionally, the USFA's position statement on smoke alarms is available at https://www.usfa.fema.gov/about/smoke_alarms_position.html.

Table 7. NFIRS smoke alarm data for portable heater fires in occupied residential buildings (2013-2015)

Presence of smoke alarms	Smoke alarm operational status	Smoke alarm effectiveness	Count	Percent
Present	Fire too small to activate smoke alarm		80	3.0
	Smoke alarm operated	Smoke alarm alerted occupants, occupants responded	478	17.9
		Smoke alarm alerted occupants, occupants failed to respond	16	0.6
		No occupants	78	2.9
		Smoke alarm failed to alert occupants	11	0.4
		Undetermined	44	1.6
	Smoke alarm failed to operate		190	7.1
	Undetermined		174	6.5
None present			851	31.8
Undetermined			752	28.1
Total incidents			2,674	100.0

Source: NFIRS 5.0.

Notes: 1. The data presented in this table are raw data counts from the NFIRS dataset summed (not averaged) from 2013 to 2015. They do not represent national estimates of smoke alarms in portable heater fires in occupied residential buildings. They are presented for informational purposes.
2. Total percent does not add up to 100 percent due to rounding.

Automatic extinguishing systems in portable heater fires in occupied residential buildings

The analyses presented here also differentiate between occupied and unoccupied housing, as very few reported fires in unoccupied housing have AESs present. Full AESs were present in only 2 percent of portable heater fires in occupied housing (Table 8).

Residential sprinkler systems help to reduce the risk of deaths and injuries, homeowner insurance premiums, and uninsured property losses. Yet many homes do not have AESs, although they are often found in hotels and businesses. Sprinklers are required by code in hotels and many multifamily residences. There are major movements in the U.S. fire service to require sprinklers in all new homes. At present, however, they are largely absent in residences nationwide.[15]

The USFA and fire service officials across the nation are working to promote and advance residential fire sprinklers. More information on costs and benefits, performance, training bulletins, and public education and outreach materials regarding residential sprinklers is available at https://www.usfa.fema.gov/prevention/technology/home_fire_sprinklers.html. Additionally, the USFA's position statement on residential sprinklers is available at https://www.usfa.fema.gov/about/sprinklers_position.html.

Table 8. NFIRS automatic extinguishing system data for portable heater fires in occupied residential buildings (2013-2015)

AES presence	Count	Percent
AES present	41	1.5
Partial system present	3	0.1
AES not present	2,521	94.3
Unknown	109	4.1
Total incidents	2,674	100.0

Source: NFIRS 5.0.

Note: The data presented in this table are raw data counts from the NFIRS dataset summed (not averaged) from 2013 to 2015. They do not represent national estimates of AESs in portable heater fires in occupied residential buildings. They are presented for informational purposes.

Examples

The following recent examples of portable heater fires reported by the media illustrate the leading factors contributing to ignition of these fires — unattended equipment left too close to combustibles — and the damage they cause:

- March 2017: A house fire outside of Portland, Oregon, killed five children, ages 4 to 13; one adult, age 38; and critically burned another family member, age 39. A component of the home's fireplace malfunctioned several days before the fire, causing the family to use a portable heater until they could get the fireplace repaired. Combustible materials placed too close to the portable heater ignited and started the devastating blaze. The one survivor was still in critical condition at a Portland hospital burn center.[16]
- February 2017: After they extinguished a mattress fire of a home in Billerica, Massachusetts, firefighters determined the cause to be an electric space heater sitting on top of an end table directly next to the bed. The two-alarm fire caused significant damage to the second floor of the home, making it uninhabitable. The occupants of the home were downstairs when the fire ignited and escaped without injury.[17]
- December 2016: Firefighters were dispatched about mid-day to an accidental apartment fire in Chattanooga, Tennessee. The firefighters contained the fire to one apartment. The fire started in the apartment's bedroom, but there was smoke damage to some adjacent apartments. The cause of the fire was a portable space heater that was placed too close to combustibles, including a bed. No one was home at the time of the fire, and no injuries were reported. One person was displaced as a result of the fire, and damages were estimated at $15,000.[18]

NFIRS data specifications for portable heater fires in residential buildings

Data for this report were extracted from the NFIRS annual Public Data Release (PDR) files for 2013, 2014 and 2015. Only version 5.0 data were extracted.

Portable heater fires in residential buildings were defined using the following criteria:

- Aid Types 3 (mutual aid given) and 4 (automatic aid given) were excluded to avoid double counting of incidents.
- Incident Types 111, 114, 116, 120 to 123:[19]

Incident Type	Description
111	Building fire
114	Chimney or flue fire, confined to chimney or flue
116	Fuel burner/boiler malfunction, fire confined
120	Fire in mobile property used as a fixed structure, other
121	Fire in mobile home used as fixed residence
122	Fire in motor home, camper, recreational vehicle
123	Fire in portable building, fixed location

Notes: Incident Types 114 and 116 do not specify if the structure is a building.

- Property Use Series 400, which consists of the following:

Property Use	Description
400	Residential, other
419	One- or two-family dwelling
429	Multifamily dwelling
439	Boarding/Rooming house, residential hotels
449	Hotel/Motel, commercial
459	Residential board and care
460	Dormitory-type residence, other
462	Sorority house, fraternity house
464	Barracks, dormitory

- Structure Type:
  - For Incident Types 114 and 116:
    - 1—Enclosed building, or
    - 2—Fixed portable or mobile structure, or
    - Structure Type not specified (null entry).
  - For Incident Types 111 and 120 to 123:
    - 1—Enclosed building, or
    - 2—Fixed portable or mobile structure.

- The USFA Structure Fire Cause Methodology was used to determine residential building heating fire incidents.[20] Heating fire incidents involving heating stoves and food were believed to be cooking fires. As a result, fires with equipment involved in Ignition Code 124 (stove, heating) and Item First Ignited Code 76 (cooking materials, includes edible materials for man or animal, excludes cooking utensils) were excluded from the heating cause category.

- Equipment involved in Ignition Codes 141 to 143:

Equipment involved in ignition	Description
141	Heater; includes floor furnaces, wall heaters and baseboard heaters; excludes hot water heaters
142	Heater, catalytic
143	Heater, oil-filled

- Equipment Portability Code 1 was used to identify portability.

The analyses contained in this report reflect the current methodologies used by the USFA. The USFA is committed to providing the best and most current information on the U.S. fire problem and continually examines its data and methodology to fulfill this goal. Because of this commitment, data collection strategies and methodological changes are possible and do occur. As a result, analyses and estimates of the fire problem may change slightly over time. Previous analyses and estimates on specific issues (or similar issues) may have used different methodologies or data definitions and may not be directly comparable to the current ones.

Information regarding the USFA's national estimates for residential building fires, as well as the data sources used to derive the estimates, can be found in the document "Data Sources and National Estimates Methodology Overview for the U.S. Fire Administration's Topical Fire Report Series (Volume 18)," https://www.usfa.fema.gov/downloads/pdf/statistics/data_sources_and_national_estimates_methodology_vol18.pdf. This document also addresses the specific NFIRS data elements analyzed in the topical reports, as well as "unknown" data entries and missing data.

To request additional information, visit https://www.usfa.fema.gov/contact.html. To comment on this specific report, visit http://apps.usfa.fema.gov/contact/dataReportEval?reportTitle=Portable%20Heater%20Fires%20in%20Residential%20Buildings%20(2013-2015).

Notes:

[1]In the NFIRS Version 5.0, a structure is a constructed item of which a building is one type. In previous versions of the NFIRS, the term "residential structure" commonly referred to buildings where people live. To coincide with this concept, the definition of a residential structure fire for NFIRS 5.0 includes only those fires where the NFIRS 5.0 structure type is 1 or 2 (enclosed building and fixed portable or mobile structure) with a residential property use. Such structures are referred to as "residential buildings" to distinguish these buildings from other structures on residential properties that may include fences, sheds and other uninhabitable structures. In addition, confined fire incidents that have a residential property use but do not have a structure type specified are presumed to occur in buildings. Nonconfined fire incidents that have a residential property use without a structure type specified are considered to be invalid incidents (structure type is a required field) and are not included.

[2]The term "residential buildings" includes what are commonly referred to as "homes," whether they are one- or two-family dwellings or multifamily buildings. It also includes manufactured housing, hotels and motels, residential hotels, dormitories, assisted living facilities, and halfway houses — residences for formerly institutionalized individuals (patients with mental disabilities or drug addictions, or those formerly incarcerated) that are designed to facilitate their readjustment to private life. The term "residential buildings" does not include institutions, such as prisons, nursing homes, juvenile care facilities, or hospitals, even though people may reside in these facilities for short or long periods of time.

[3]National estimates are based on 2013 to 2015 native Version 5.0 data from the NFIRS, residential structure fire loss estimates from the National Fire Protection Association's (NFPA's) annual surveys of fire loss, and the USFA's residential building fire loss estimates: https://www.usfa.fema.gov/data/statistics/order_download_data.html. Further information on the USFA's residential building fire loss estimates can be found in the "National Estimates Methodology for Building Fires and Losses," August 2012, https://www.usfa.fema.gov/downloads/pdf/statistics/national_estimate_methodology.pdf. For information on the NFPA's survey methodology, see the NFPA's report "Fire Loss in the United States During 2015," September 2016, http://www.nfpa.org/news-and-research/fire-statistics-and-reports/fire-statistics/fires-in-the-us/overall-fire-problem/fire-loss-in-the-united-states. In this topical report, fires are rounded to the nearest 50, deaths to the nearest five, injuries to the nearest 25, and dollar loss to the nearest $1 million.

[4]For purposes of this analysis, portable heater fires in residential buildings are defined as those residential buildings (defined above in endnote 2) for which the cause of the fire was determined to be portable heaters.

[5]Space heaters may be fixed (stationary) or portable. Space heaters typically include: heating and wood stoves; heaters (including portable kerosene heaters, portable electric heaters, oil-filled heaters, and catalytic heaters); local furnaces; and fireplace inserts.

[6]Fire department participation in the NFIRS is voluntary; however, some states do require their departments to participate in the state system. Additionally, if a fire department is a recipient of a Fire Act Grant, participation is required. From 2013 to 2015, 67 percent of the NFPA's annual average estimated 1,294,500 fires to which fire departments responded were captured in the NFIRS. Thus, the NFIRS is not representative of all fire incidents in the U.S. and is not a "complete" census of fire incidents. Although the NFIRS does not represent 100 percent of the incidents reported to fire departments each year, the enormous dataset exhibits stability from one year to the next, without radical changes. Results based on the full dataset are generally similar to those based on part of the data.

[7]In the NFIRS, confined fires are defined by Incident Type Codes 113 to 118.

[8]The NFIRS distinguishes between "content" and "property" loss. Content loss includes losses to the contents of a structure due to damage by fire, smoke, water and overhaul. Property loss includes losses to the structure itself or to the property itself. Total loss is the sum of the content loss and the property loss. For confined fires, the expectation is that the fire did not spread beyond the container (or rubbish for Incident Type Code 118), and hence, there was no property damage (damage to the structure itself) from the flames. However, there could be property damage as a result of smoke, water and overhaul.

[9]The average fire death and fire injury loss rates computed from the national estimates above do not agree with average fire death and fire injury loss rates computed from NFIRS data alone. The fire death rate computed from national estimates is (1,000 x 90/1,650) = 54.5 deaths per 1,000 portable heater fires in residential buildings, and the fire injury rate is (1,000 x 175/1,650) = 106.1 injuries per 1,000 portable heater fires in residential buildings.

[10]"Heating Fires in Residential Buildings (2013-2015)," USFA, October 2017, Volume 18, Issue 7, https://www.usfa.fema.gov/downloads/pdf/statistics/v18i7.pdf.

[11]"One- and two-family residential buildings" include detached dwellings, manufactured homes, mobile homes not in transit, and duplexes. "Multifamily residential buildings" include apartments, townhouses, rowhouses, condominiums, and other tenement properties. "Other residential buildings" include boarding/rooming houses, hotel/motels, residential board and care facilities, dormitory-type residences, sorority/fraternity houses, and barracks.

[12]"Residential Building Fires (2013-2015)," USFA, June 2017, Volume 18, Issue 1, https://www.usfa.fema.gov/downloads/pdf/statistics/v18i1.pdf.

[13]For the purposes of this report, the time of the fire alarm is used as an approximation for the general time at which the fire started. However, in the NFIRS, it is the time at which the fire was reported to the fire department.

[14]All incidents where smoke alarm presence was not reported (i.e., null/blank) were confined fires (Incident Type code 116). The NFIRS allows abbreviated reporting for confined fires. Many reporting details of these fires (including smoke alarm presence) are not required, and as a result, may not be reported.

[15]U.S. Department of Housing and Urban Development and U.S. Census Bureau, American Housing Survey for the United States: 2011, September 2013, "Health and Safety Characteristics-All Occupied Units (National)," Table S-01-AO, https://www.census.gov/content/dam/Census/programs-surveys/ahs/data/2011/h150-11.pdf (accessed May 18, 2017).
[16]"Mother, child die in Riddle fire caused by portable heater, bringing total to 6," nbc16.com, March 3, 2017, http://nbc16.com/news/local/mother-child-die-in-riddle-fire-caused-by-portable-heater-bringing-total-to-6 (accessed May 8, 2017).
[17]Sobey, Rick. "A house in flames, a reminder of space-heater risks," www.lowellsun.com, Feb. 5, 2017, http://www.lowellsun.com/todaysheadlines/ci_30775514/house-flames-reminder-space-heater-risks (accessed May 8, 2017).
[18]"Space heater starts afternoon apartment fire on Central Avenue," www.chattanoogan.com, Dec. 16, 2016, http://www.chattanoogan.com/2016/12/16/338205/Space-Heater-Starts-Afternoon-Apartment.aspx (accessed May 10, 2017).
[19]Heating is defined by the equipment used to heat a residential building. Incident Types 113, 115, 117 and 118 were excluded because, by definition, these Incident Types were not heating fires.
[20]The USFA Structure Fire Cause Methodology is designed for structure fires of which buildings are a subset. This methodology was used to determine heating as a cause of fires in residential buildings. The cause methodology and definitions can be found in the document "National Fire Incident Reporting System Version 5.0 Fire Data Analysis Guidelines and Issues," July 2011, https://www.usfa.fema.gov/downloads/pdf/nfirs/nfirs_data_analysis_guidelines_issues.pdf.