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Multiple-Fatality Fires in Residential Buildings (2021-2023)

These topical reports are designed to explore facets of the U.S. fire problem. 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.

Findings

- Each year, from 2021 to 2023, an estimated average of 200 multiple-fatality fires in residential buildings were reported within the United States. These fires caused an estimated annual average of 720 deaths, 125 injuries and $42 million in property loss.
- Less than one-tenth of a percent of residential building fires involved multiple fatalities. However, these fatalities accounted for 26% of all fatalities that resulted from residential building fires.
- Multiple-fatality fires in residential buildings tended to be larger, caused more damage and had higher injury rates than both single-fatality fires and nonfatal fires in residential buildings.
- One- and two-family dwellings accounted for 81% of multiple-fatality fires in residential buildings.
- Multiple-fatality fires in residential buildings occurred most frequently from midnight to 6 a.m. This 6-hour period accounted for 53% of the multiple-fatality residential building fires.
- Multiple-fatality fires in residential buildings were more prevalent in the cooler months, peaking in January at 14%.
- "Other unintentional, careless" action was the leading cause of multiple-fatality fires in residential buildings at 24%.
- Common areas such as living and family rooms (24%), followed by bedrooms (19%), were the leading areas of fire origin in multiple-fatality fires in residential buildings.
- In 93% of multiple-fatality fires in residential buildings, the fire extended beyond the room of origin.
- Being "asleep" (60%) was the leading human factor contributing to the ignition of multiple-fatality fires in residential buildings.
- Smoke alarms were not present in 20% of multiple-fatality fires in occupied residential buildings.
- Automatic extinguishing systems (AESs), including residential sprinklers, were not present in 91% of multiple-fatality fires in occupied residential buildings.

Each year, from 2021 to 2023, an estimated average of 200 multiple-fatality fires in residential buildings occurred in the U.S.[1] These fires resulted in an estimated annual average of 720 deaths, 125 injuries and $42 million in property loss.

Fires in residential buildings that resulted in 2 or more civilian fire deaths were rare occurrences. In fact, less than one-tenth of a percent of residential building fires involved multiple fatalities.[2] However, these multiple fatalities accounted for 26% of all fatalities that resulted from residential building fires. In addition, and most importantly, these multiple-fatality events are inherently tragic and cause extreme devastation.

The term "residential buildings" includes what are commonly referred to as "homes," whether they are one- or two-family dwellings or multifamily buildings.[3] It also includes manufactured housing, hotels and motels,

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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.

This topical report, issued by the U.S. Fire Administration's (USFA's) National Fire Data Center (NFDC), addresses the characteristics of multiple-fatality fires in residential buildings as reported to the National Fire Incident Reporting System (NFIRS).[4] The focus of this report is on fires from 2021 to 2023, the most recent data available at the time of the analysis. NFIRS data from the Public Data Release (PDR) files are used for the analyses throughout this report. Some of the characteristics examined include fire spread, area of fire origin, human factors contributing to ignition, and alerting/suppression systems.[5, 6] The information in this report can be used to assess and understand the nature of the fatal fire problem and its implications for the targeting of prevention programs. Additional information on the fatal fire problem can be found in USFA's topical report, "Fatal Fires in Residential Buildings (2018-2020)" (Volume 22, Issue 2).

For this report, the term "residential multiple-fatality fires" is synonymous with "multiple-fatality fires in residential buildings." "Residential multiple-fatality fires" is used throughout the body of this report; the findings, tables, figures, headings and endnotes reflect the full category "multiple-fatality fires in residential buildings."

Loss measures

Although residential multiple-fatality fires accounted for less than one-tenth of a percent of all residential building fires and only 11% of all fatal fires in residential buildings, these fires had tremendous and devastating outcomes. Table 1 presents losses, averaged over the 3-year period from 2021 to 2023, for reported residential multiple-fatality, single-fatality and nonfatal fires.[7] In addition to resulting in over twice as many deaths per fire as that of single-fatality residential building fires, residential multiple-fatality fires had 19 times as many injuries per fire and nearly 6 times the dollar loss per fire compared with that of nonfatal residential building fires. These statistics reflect the destructive nature of residential multiple-fatality fires.

Table 1. Loss measures for multiple-fatality, single-fatality and nonfatal fires in residential buildings (3-year average, 2021-2023)

Measure	Multiple-fatality fires in residential buildings	Single-fatality fires in residential buildings	Nonfatal fires in residential buildings
Average loss:			
Fatalities per fire	2.37	1.00	0.00
Injuries per fire	0.38	0.20	0.02
Dollar loss per fire	$153,110	$132,250	$25,690

Source: NFIRS 5.0.
Notes: 1. Average loss is computed **per fire**; average dollar loss is rounded to the nearest $10.
2. The 2021 and 2022 dollar-loss values were adjusted to 2023 dollars.

As Table 2 shows, 91% of residential multiple-fatality fires involved 2 or 3 fatalities (77% involved 2 fatalities while 14% involved 3 fatalities). Residential multiple-fatality fires that resulted in 5 or more fatalities were rare and accounted for only 4% of all multiple-fatality fires.

Table 2. Fatalities per fire in multiple-fatality fires in residential buildings (2021-2023)

Fatalities per fire	Percent of multiple-fatality fires in residential buildings
2	76.8
3	14.3
4	4.7
5 or more	4.2
Total	100.0

Source: NFIRS 5.0.

Property use

As shown in Table 3, one- and two-family dwellings accounted for 81% of residential multiple-fatality fires. This is not surprising since most of the population lives in these types of residences.[8] Multifamily dwellings such as apartments, townhouses, condominiums and tenement properties accounted for 11% of all residential multiple-fatality fires. Other residential occupancies, including boarding and rooming houses as well as hotels and motels, were a very small portion, accounting for only 7% of residential multiple-fatality fires.[9] The distribution of residential multiple-fatality fires was similar to that of single-fatality residential fires.

Table 3. Property use for multiple- and single-fatality fires in residential buildings (2021-2023)

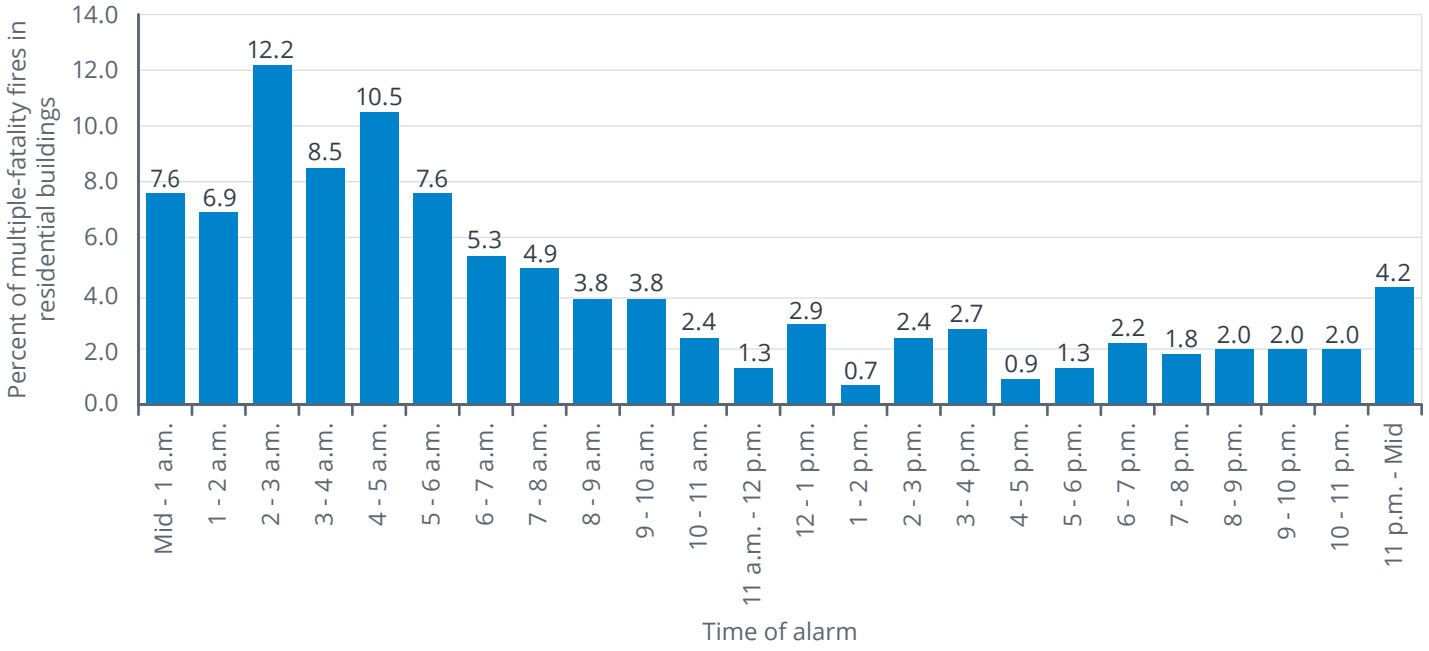
Property use	Percent of multiple-fatality fires in residential buildings	Percent of single-fatality fires in residential buildings
One- and two-family dwellings	81.3	77.6
Multifamily dwellings	11.4	15.1
Other residential buildings	6.7	6.5
Boarding, rooming houses	0.7	0.3
Hotels and motels	0.0	0.5
Total	100.0	100.0

Source: NFIRS 5.0.
Note: Total percent of multiple-fatality fires in residential buildings does not add up to 100% due to rounding.

When multiple-fatality fires in residential buildings occur

As shown in Figure 1, residential multiple-fatality fires occurred most frequently in the early morning hours.[10] From 2021 to 2023, residential multiple-fatality fires were highest from midnight to 6 a.m., peaking from 2 a.m. to 3 a.m. (12%). The fires that occurred during these 6 hours accounted for 53% of all multiple-fatality fires. Multiple-fatality fires then declined throughout the day, reaching the lowest point during the early afternoon hour from 1 p.m. to 2 p.m.

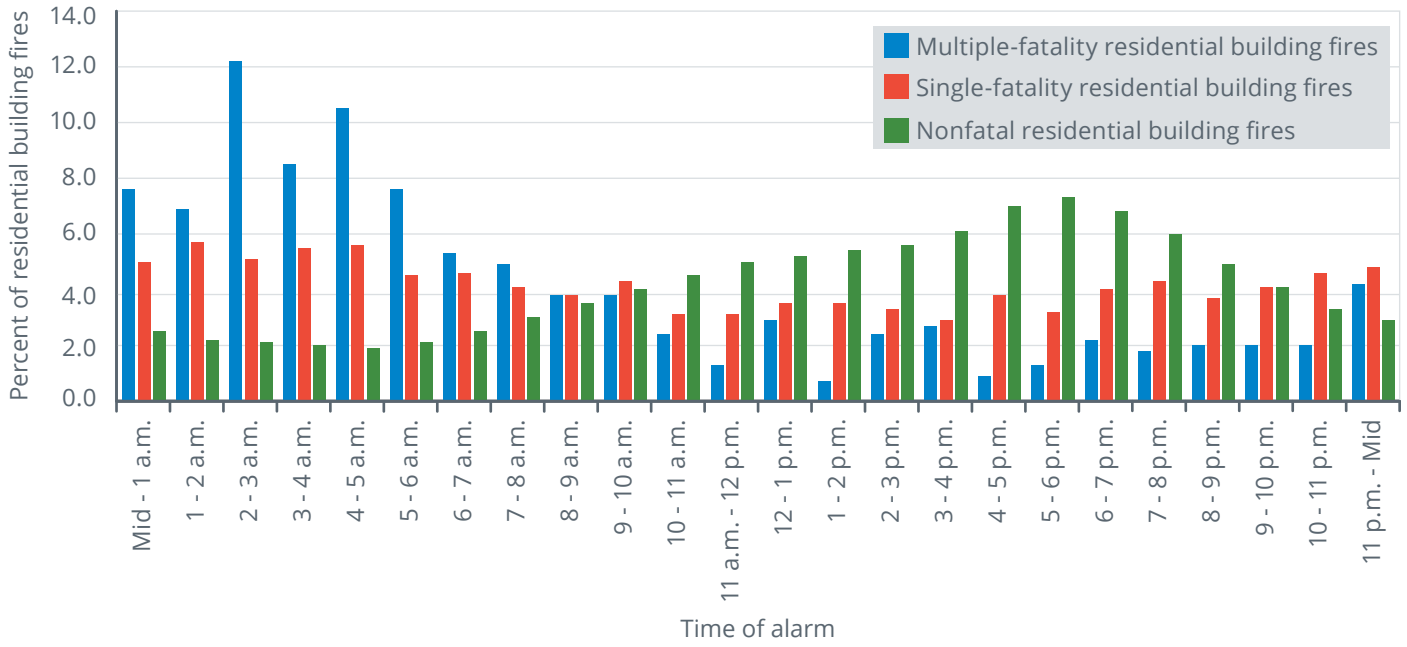
Figure 1. Multiple-fatality fires in residential buildings by time of alarm (2021-2023)



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

The time of alarm profile for residential multiple-fatality fires contrasted with the alarm time profile for nonfatal residential building fires as shown in Figure 2. Nonfatal fires had the reverse daily cycle, with fires, predominantly caused by cooking, occurring more often during the late afternoon and evening.[11] There are several possible reasons for this. First, many people are sleeping and less aware in the middle of the night. If smoke alarms are not present, these individuals are more likely to die before waking up to a fire.[12] Second, cigarette and other smoldering fires started by careless actions before people retire for the night may go unnoticed and grow to rapidly progressing fires while they are sleeping. While residential multiple-fatality fires had a more similar time profile to single-fatality residential fires by occurring more often in the early morning hours, the multiple-fatality fire profile was much more pronounced.

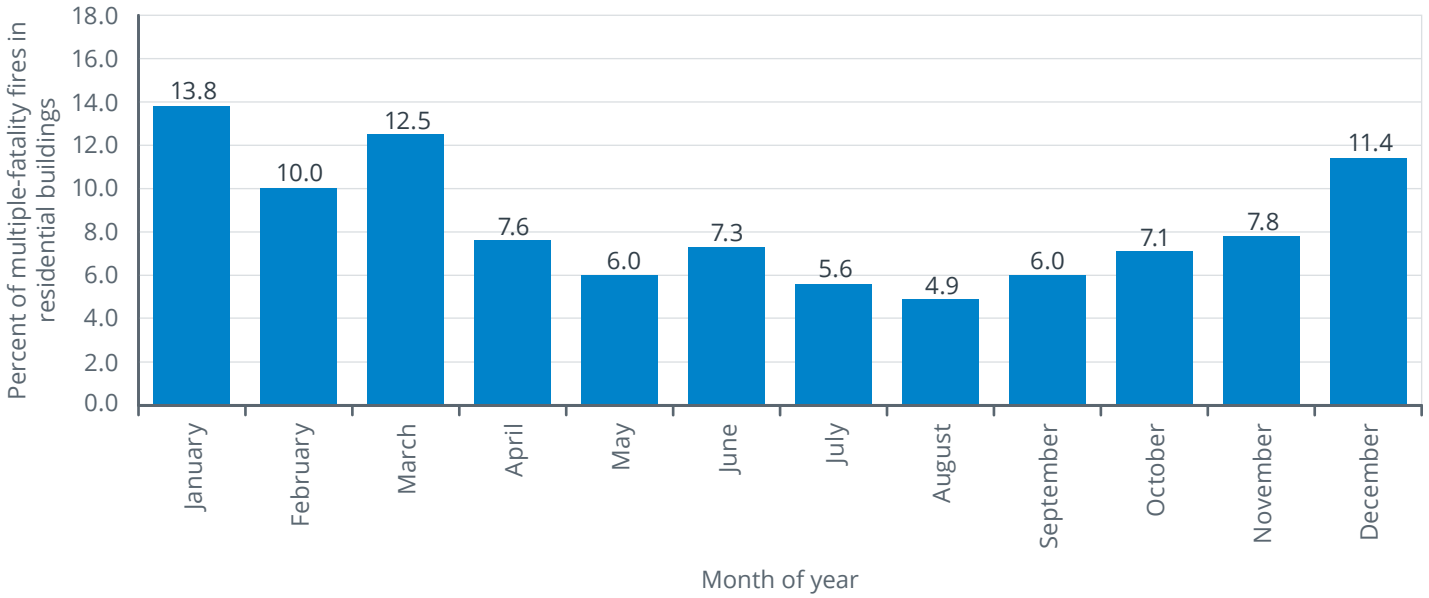
Figure 2. Time of alarm for multiple-fatality, single-fatality and nonfatal fires in residential buildings (2021-2023)



Source: NFIRS 5.0.

There was a higher incidence of residential multiple-fatality fires in the cooler months. In fact, nearly half (48%) of residential multiple-fatality fires occurred in the 4 months of December through March. Residential multiple-fatality fires peaked in January at 14% (Figure 3) and were lowest in August at 5%.

Figure 3. Multiple-fatality fires in residential buildings by month (2021-2023)



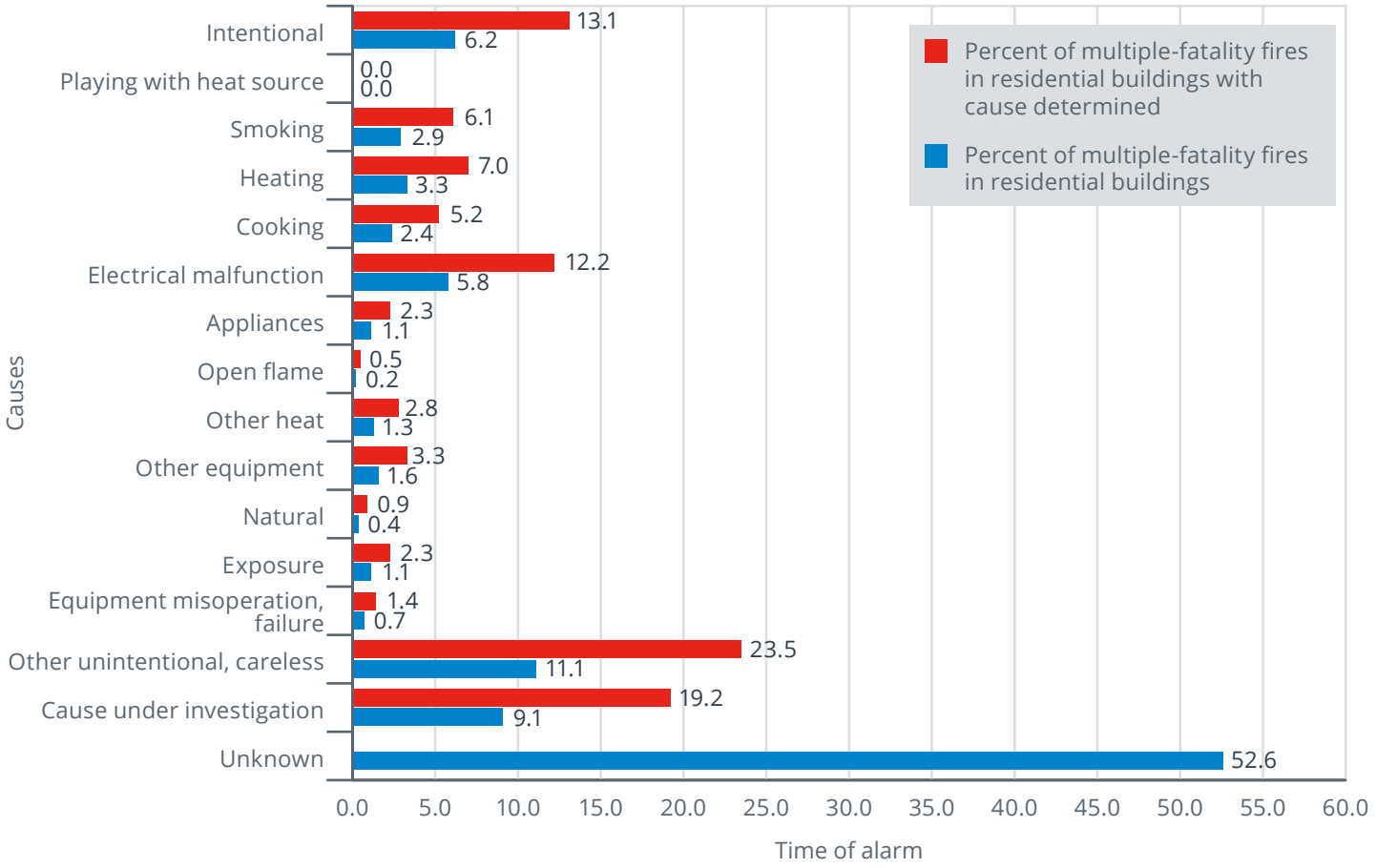
Source: NFIRS 5.0.

Causes of multiple-fatality fires in residential buildings

"Other unintentional, careless" action was the leading cause of residential multiple-fatality fires at 24% (Figure 4).[13] "Other unintentional, careless" actions include misuse of a material or product, abandoned or discarded materials or products, heat source placed too close to combustibles, and miscellaneous unintentional actions. The next leading cause was "cause under investigation" at 19% followed by "intentional" action (13%) and "electrical malfunction" (12%). These 4 leading causes accounted for 68% of multiple-fatality fires.

By comparison, "other unintentional, careless" action and "cause under investigation" were also the leading causes of single-fatality residential fires at 22% and 18%, respectively, followed by smoking at 11%.[14] "Other unintentional, careless" action was determined to be the fire cause more frequently in both multiple-fatality and single-fatality fires than in nonfatal residential fires (9%), where cooking was the predominant cause (48%).

Figure 4. Causes of multiple-fatality fires in residential buildings (2021-2023)



Source: NFIRS 5.0.

Notes:
1. Causes are listed in order of the USFA Structure Fire Cause Hierarchy for ease of comparison of fire causes across different aspects of the fire problem. Fires are assigned to 1 of 16 cause groupings using a hierarchy of definitions, as shown in this figure. A fire is included in the highest category into which it fits. If it does not fit the top category, then the second one is considered, and if not that one, the third and so on. For example, if the fire is judged to be intentionally set and a match was used to ignite it, it is classified as intentional and not open flame because intentional is higher in the hierarchy.
2. A large percentage (53%) of residential multiple-fatality fire incidents reported to the NFIRS did not have sufficient information to determine the cause of the fire. The cause analyses reflect only the 47% of incidents where enough information and detail were reported to determine the cause of the multiple-fatality fire.
3. Total percentages do not add up to 100% due to rounding.

Where multiple-fatality fires in residential buildings start (area of fire origin)

Table 4 shows the leading areas of fire origin in residential multiple-fatality fires. These fires started most frequently in common rooms including dens, family rooms, living rooms and lounges (24%) and bedrooms (19%). Fires starting in cooking areas or kitchens accounted for an additional 16% of residential multiple-fatality fires. These areas of fire origin were also the 3 leading areas of fire origin for single-fatality residential fires, although the leading area of fire origin for these fires was bedrooms, followed by common rooms.

Table 4. Leading areas of origin for multiple-fatality fires in residential buildings (2021-2023)

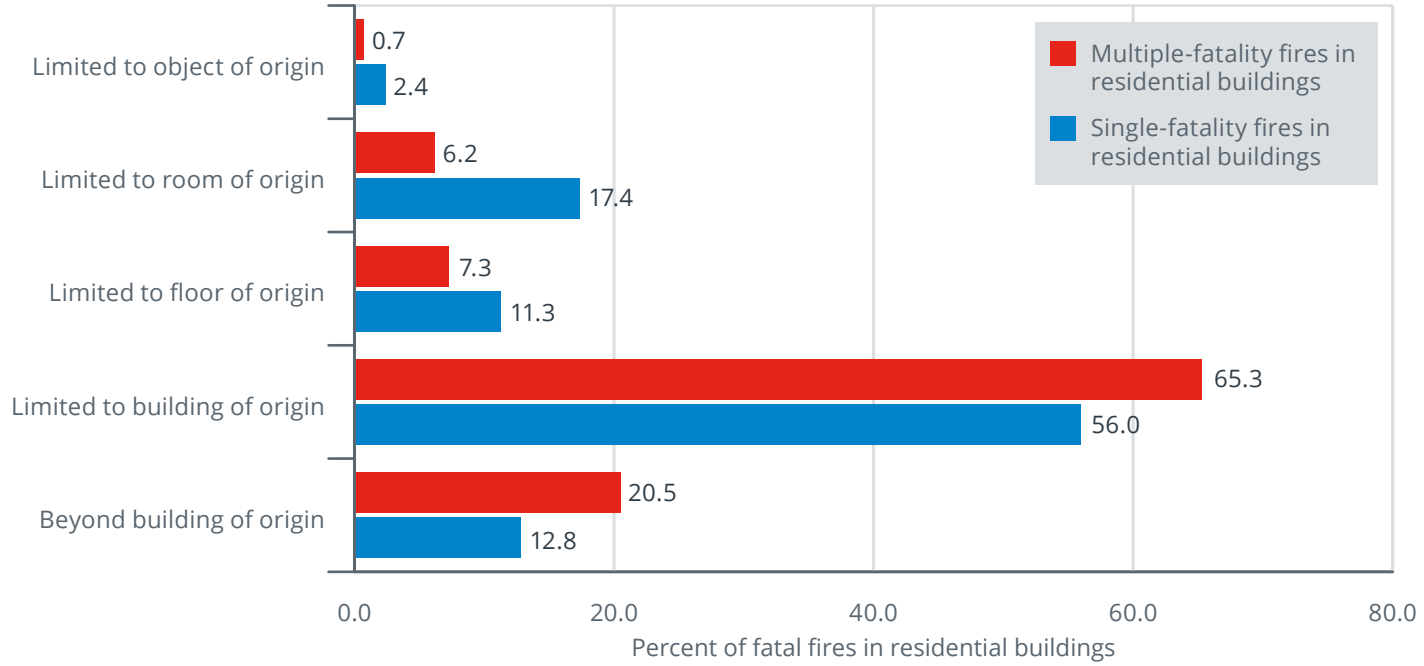
Area of origin	Percent (unknowns apportioned)
Common room, den, family room, living room, lounge	24.3
Bedrooms	19.0
Cooking area, kitchen	16.2

Source: NFIRS 5.0.
Note: Only includes residential multiple-fatality fires where the area of origin was specified. The area of origin was specified in 63% of reported multiple-fatality fires in residential buildings.

Fire spread in multiple-fatality fires in residential buildings

As shown in Figure 5, 93% of residential multiple-fatality fires extended beyond the room of origin. By comparison, 80% of single-fatality fires extended beyond the room of origin. While only 7% of residential multiple-fatality fires were limited to the room or object of origin, these smaller spreading fires are evidence that a fire does not have to be large to cause multiple fatalities.

Figure 5. Extent of fire spread in multiple- and single-fatality fires in residential buildings (2021-2023)



Source: NFIRS 5.0.
Note: Total percent of single-fatality fires in residential buildings does not add up to 100% due to rounding.

Human factors contributing to ignition of multiple-fatality fires in residential buildings

Human factors — the human condition or situation that allowed the heat source and combustible material to combine to ignite the fire — largely contributed to the ignition of residential multiple-fatality fires. As shown in Table 5, the leading human factor contributing to the ignition of the fire was being "asleep" (60%). This finding is expected, as 67% of residential multiple-fatality fires occurred during the 10-hour period from 9 p.m. to 7 a.m. when many people were likely to be sleeping (Figure 1). "Possibly impaired by alcohol or drugs" and "physical disability" were the next leading human factors contributing to the ignition of the fire at 15% and 12%, respectively.

Table 5. Human factors contributing to ignition of multiple-fatality fires in residential buildings (where human factors contributing to ignition were specified, 2021-2023)

Human factors contributing to ignition	Percent (unknowns apportioned)
Asleep	60.0
Possibly impaired by alcohol or drugs	15.0
Physical disability	12.1
Multiple persons involved	10.0
Age was a factor	7.9
Unattended or unsupervised person	7.1
Possible intellectual disability	7.1

Source: NFIRS 5.0.

Notes: 1. Only includes multiple-fatality fires where human factors that contributed to the ignition of the fire were specified. At least 1 human factor contributing to ignition was specified in 31% of reported multiple-fatality fires in residential buildings. In 67% of reported multiple-fatality fires in residential buildings, the human factor contributing to ignition was reported as "none."

2. Multiple human factors contributing to fire ignition may be noted for each incident; total will exceed 100%.

Alerting/suppression systems in multiple-fatality fires in residential buildings

Partly due to early detection and fire extinguishing systems, fire fatalities and injuries have declined over the last 45 years. Smoke alarms are present in most homes. In addition, residential sprinkler systems have gained support from the fire service and many residential communities. However, as shown in the following tables, these technologies were not present in some residential multiple-fatality fires.

In this report, "smoke alarms" refer to both smoke alarms and smoke detectors.[15] Smoke alarms are stand-alone devices with their own power source and notification capability. Smoke detectors detect smoke as a component of a larger system containing separate notification capability, typically in larger areas or structures.

The data presented in Tables 7 and 8 show the reported counts from the NFIRS dataset and are not scaled to national estimates of smoke alarms or AESs in multiple-fatality fires in residential buildings. In addition, while the NFIRS allows for the determination of the type of detector (i.e., smoke, heat or combination), 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 in multiple-fatality fires in residential buildings

Smoke alarms were reported as present in 27% of residential multiple-fatality fires (Table 6). By comparison, smoke alarms were present in 44% of residential nonfatal fires.[16] In 21% of residential multiple-fatality fires, there were no smoke alarms present. This lack of early warning is a considerable factor in residential multiple-fatality fires. Lastly, in 52% of residential multiple-fatality fires, firefighters were unable to determine if a smoke alarm was present.

Table 6. Presence of smoke alarms in multiple-fatality fires in residential buildings (2021-2023)

Presence of smoke alarms	Percent
Present	26.5
None present	21.2
Undetermined	52.3
Total	100.0

Source: NFIRS 5.0.

Where the existence of a smoke alarm was undetermined, 92% of the fires spread beyond the floor of fire origin. Because these fires were so expansive, it may have been impossible to determine the presence of smoke alarms.

Fires in one- and two-family housing accounted for 94% of residential multiple-fatality fires in which no smoke alarm was present. Multifamily housing accounted for just 5% of these fires, perhaps because they are subject to more stringent codes and often require the landlord or manager to maintain the detection systems.

Residential multiple-fatality fires that were **not** currently or routinely occupied accounted for a small portion (4%) of all residential fatal fires. These unoccupied buildings — which are under construction, undergoing major renovations, vacant and the like — are unlikely to have alerting and suppression systems that are in place, and if in place, that are operational. As a result, the detailed smoke alarm and AES analyses in the next sections focus on multiple-fatality fires in occupied residential buildings only.

Smoke alarms in multiple-fatality fires in occupied residential buildings

Smoke alarms were reported as present in 27% of multiple-fatality fires in occupied residential buildings (Table 7). In 20% of multiple-fatality fires in occupied residential buildings, there were no smoke alarms present, while in 52% of multiple-fatality fires in occupied residential buildings, firefighters were unable to determine if a smoke alarm was present.[17]

When smoke alarms were present (27%) and the alarm's operational status was analyzed, the percentage of smoke alarms reported as present consisted of:

- Present and operated — 13%.
- Present but did not operate — 5% (alarm failed to operate, 5%; fire too small, 0%).
- Present but operational status unknown — 10%.[18]

When only the subset of incidents where smoke alarms were reported as present was analyzed, smoke alarms were reported to have operated in 47% of the incidents and failed to operate in 17%. The operational status of the alarm was undetermined in 36% of these incidents.

At least 20% of multiple-fatality fires in occupied residential buildings had no smoke alarms present. This percentage is likely higher considering reported fires without information on smoke alarms are not factored in.[19]

If a fire occurs, properly installed and maintained smoke alarms provide an early warning signal to everyone in a home. It is well documented that smoke alarms help save lives and property. The USFA continues to partner with other government agencies, nongovernment organizations and fire service organizations to improve and develop new smoke alarm technologies. More information on smoke alarm technologies, performance, training bulletins, and public education and outreach materials can be found at https://www.usfa.fema.gov/prevention/home-fires/prepare-for-fire/smoke-alarms/. Additionally, the USFA's position statement on home smoke alarms is available at https://www.usfa.fema.gov/about/position-statements/.

Table 7. NFIRS smoke alarm data for multiple-fatality fires in occupied residential buildings (2021-2023)

Presence of smoke alarms	Smoke alarm operational status	Smoke alarm effectiveness	Count	Percent
Present	Fire too small to activate smoke alarm		0	0.0
	Smoke alarm operated	Smoke alarm alerted occupants; occupants responded	28	6.5
		Smoke alarm alerted occupants; occupants failed to respond	5	1.2
		No occupants	0	0.0
		Smoke alarm failed to alert occupants	2	0.5
		Undetermined	21	4.9
	Smoke alarm failed to operate		20	4.6
	Undetermined		42	9.7
None present			88	20.4
Undetermined			226	52.3
Total incidents			432	100.0

Source: NFIRS 5.0.

Notes: 1. The data presented in this table are reported counts from the NFIRS dataset summed (not averaged) from 2021 to 2023. They do not represent national estimates of smoke alarms in multiple-fatality fires in occupied residential buildings. They are presented for informational purposes.
2. Total does not add up to 100% due to rounding.

Automatic extinguishing systems in multiple-fatality fires in occupied residential buildings

AESs, including residential sprinklers, were not present in 91% of multiple-fatality fires in occupied residential buildings (Table 8). Overall, full or partial AESs were present in less than 1% of multiple-fatality fires in occupied residential buildings. As a comparison, the presence of suppression systems in nonfatal fires in occupied residential buildings was 5%.[20]

Table 8. NFIRS automatic extinguishment system data for multiple-fatality fires in occupied residential buildings (2021-2023)

AES presence	Count	Percent
AES present	2	0.5
Partial system present	0	0.0
AES not present	391	90.5
Unknown	39	9.0
Total incidents	432	100.0

Source: NFIRS 5.0.

Note: The data presented in this table are reported counts from the NFIRS dataset summed (not averaged) from 2021 to 2023. They do not represent national estimates of AESs in multiple-fatality fires in occupied residential buildings. They are presented for informational purposes.

Residential sprinkler systems help to reduce the risk of deaths and injuries, homeowners insurance premiums, and insured and uninsured property losses. Despite these advantages, many homes do not have AESs, although they are often found in other frequently occupied locations such as hotels, multifamily residences and businesses where they are required by code. In addition, there are major movements in the U.S. fire service to require sprinklers in all new single-family homes.

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/home-fires/prepare-for-fire/home-fire-sprinklers/. Additionally, the USFA's position statement on residential sprinklers is available at https://www.usfa.fema.gov/about/position-statements/.

Examples

The following are recent examples of residential multiple-fatality fires reported by the media:

- July 2024: 4 people were killed in a Plant City, Florida, mobile home fire that was intentionally set. Shortly after midnight on a Wednesday morning, a homeowner made an emergency call reporting smoke and flames in a mobile home with 3 adults and 5 dogs trapped inside. 5 minutes after arrival on scene, firefighters pulled 3 adults out of a bedroom window. All 3 adults died. A fourth person was also found dead in another part of the house after the fire was contained. In addition, 3 of the 5 dogs were killed. After investigation into the fire, detectives determined that a 25-year-old resident of the home started the fire with the intention of burning it down. This resident was arrested and charged with 4 counts of first-degree murder while engaged in arson, 3 counts of aggravated cruelty to animals, and 1 count of arson.[21]
- June 2024: 6 family members died after an early-morning fire broke out at their vacation rental home in Necedah, Wisconsin. The fire started before 2:30 a.m., and after firefighters battled the fire for about 3 hours, authorities determined that 6 people were unaccounted for and still inside the home. All 6 people, which included a 66-year-old pastor, his 2 adult daughters, and 3 granddaughters, were killed in the fire. The fire, which is believed to have been accidental, is under investigation.[22]
- March 2024: 2 people died after a fire broke out in a Martinsville, Indiana, mobile home around 5:43 a.m. on a Sunday. Before arrival, firefighters were informed that 2 occupants of the home were still believed to be inside. Upon arrival, firefighters made an aggressive interior attack while also searching for the missing occupants. During the search, however, the occupants were both found deceased. The fire, which was brought under control within 20 minutes, is still under investigation.[23]

Prevention of multiple-fatality residential building fires

Residential multiple-fatality fires occurred more frequently from midnight to 6 a.m. and most often started in living room areas and bedrooms. In addition, the leading human factor contributing to the ignition of residential multiple-fatality fires was being "asleep." These facts indicate the need to be awakened in the event of a fire. USFA recommends that smoke alarms are installed in every bedroom, outside each separate sleeping area, and on every level of the home, including the basement. Additional prevention information and public outreach materials on smoke alarms are available at https://www.usfa.fema.gov/prevention/home-fires/prepare-for-fire/smoke-alarms/. In addition to having a smoke alarm, research has shown that a closed door to the rooms where people sleep could potentially save lives. Additional information and resources on closed doors are available at https://fsri.org/programs/close-before-you-doze.

There was also a higher incidence of residential multiple-fatality fires in the cooler months from December to March. As mentioned earlier, this is perhaps due to the increased indoor activities. When indoors, it is imperative to practice fire safety. This includes cooking safely, heating homes safely and never placing heat sources too close to combustibles. For prevention information and public outreach materials on how to carry out various indoor activities safely, visit https://www.usfa.fema.gov/prevention/.

Finally, in the event of any type of residential building fire, is it important to have a home fire escape plan since every second counts. Information and public outreach materials on home fire escape planning is available at https://www.usfa.fema.gov/prevention/home-fires/prepare-for-fire/home-fire-escape-plans/index.html.

NFIRS data specifications for multiple-fatality fires in residential buildings

Data for this report were extracted from the NFIRS annual PDR files for 2021, 2022 and 2023.[24] Only Version 5.0 data were extracted.

Multiple-fatality fires in residential buildings were defined using the following criteria:

- Incident Types 111 to 123 (excludes Incident Type 112):

Incident Type	Description
111	Building fire
113	Cooking fire, confined to container
114	Chimney or flue fire, confined to chimney or flue
115	Incinerator overload or malfunction, fire confined
116	Fuel burner/boiler malfunction, fire confined
117	Commercial compactor fire, confined to rubbish
118	Trash or rubbish fire, contained
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

Note: Incident Types 113 to 118 do not specify if the structure is a building.

- Incidents with Aid Types 3 (mutual aid given) and 4 (automatic aid given) were excluded to avoid counting a single incident more than once.
- Property Use Series 400, which consists of the following:

Property Use	Description
400	Residential, other
419	One- or two-family dwelling, detached, manufactured home, mobile home not in transit, duplex
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 113 to 118:
    - 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.
- Civilian deaths greater than 1.

Although voluntary, the NFIRS is the world's largest national database of fire incident information. By contributing to the NFIRS, the fire service is helping to make data-informed decisions ranging from local budget development to the identification of national preparedness initiatives. It is important that fire departments participate in the NFIRS and critical that the data they report are complete and accurate. This provides for sound decision-making that has an impact on reducing community risk and emergency response at the local level.

Analysis disclaimer

Complete or full years of data are required for statistical analyses presented in these topical reports. Although NFIRS data for a calendar year are often reported to the USFA throughout the year, fire departments and/or states have until the official cutoff date as set forth by the NFDC to submit their data to the USFA. Typically, this cutoff date is July 1 after the end of the previous calendar year. This provides states with ample time to perform data quality checks and correct incidents with questionable reported data before they are set to released status in the national production database and Enterprise Data Warehouse. Once the data are released to the USFA, additional data quality reviews are completed before the data are prepared for public release.

The analyses contained in this report reflect the current methods 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 data received from participating fire departments and the analytical methods used to fulfill this goal. Because of this commitment and the variation in the quality of the reported data as well as any changes in the fire problem from year to year, data collection strategies and methodological changes are possible and do occur. As a result, analyses and estimates of the fire problem may vary over time. Previous analyses and estimates for specific issues (or similar issues) may have used different methodologies or different data definitions and therefore may not be directly comparable to the current analyses and estimates.

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 23)," https://www.usfa.fema.gov/downloads/pdf/statistics/data-sources-and-national-estimates-methodology-vol23.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 http://www.usfa.fema.gov/contact.html.

Notes:

[1]National estimates are based on 2021 to 2023 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/statistics/data-sets/. 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, http://www.usfa.fema.gov/downloads/pdf/statistics/national_estimate_methodology.pdf. For detailed information regarding the NFPA's survey methodology, see the NFPA's "Methodology used for calculating national estimates from NFPA's 2023 fire experience survey," October 2024. In this topical report, fires are rounded to the nearest 100, deaths to the nearest 5, injuries to the nearest 25 and dollar loss to the nearest million dollars. Deaths and injuries refer to civilian fire casualties only and do not include firefighters who die or are injured as a result of a fire.

[2]Each year, from 2021 to 2023, an estimated average of 357,500 residential building fires were reported to fire departments in the U.S. Annually, these fires resulted in an estimated average of 2,815 deaths, 10,675 injuries and $10.8 billion in property loss (USFA's residential building fire loss estimates).

[3]In NFIRS Version 5.0, a structure is a constructed item of which a building is 1 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 the 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.

[4]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 2021 to 2023, 66% of the NFPA's annual average estimated 1,415,667 fires to which fire departments responded were captured in the NFIRS. Therefore, 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% 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.

[5]For an understanding of the data elements collected by the NFIRS Version 5.0 and their definitions, refer to the document "National Fire Incident Reporting System Complete Reference Guide," January 2015, https://www.usfa.fema.gov/downloads/pdf/nfirs/nfirs_complete_reference_guide_2015.pdf.

[6]This report excludes analyses of the characteristics of the civilian fire fatalities (e.g., gender, race and age of the victim; activity prior to death; etc.) that resulted from these multiple-fatality fires. These characteristics are analyzed separately as part of the Civilian Fire Fatalities in Residential Buildings topical report.

[7]The average fire death and fire injury loss rates computed from the national estimates do not agree with average fire death and fire injury loss rates computed from the NFIRS data alone. The fire death rate computed from national estimates is 720/200 = 3.6 deaths per multiple-fatality fire in residential buildings, and the fire injury rate is 125/200 = 0.63 injuries per multiple-fatality fire in residential buildings.

[8]The U.S. Census Bureau showed that, in 2023, 75.5% of occupied housing units were 1-unit attached and detached structures or mobile homes (100.6 million), U.S. Department of Housing and Urban Development and U.S. Census Bureau, 2023 American Housing Survey — Table Creator, select "2023 (Year) Housing Unit Characteristic (Table); Units by Structure Type (Variable 1); Occupancy/Vacancy Status (Variable 2)," https://www.census.gov/programs-surveys/ahs/data/interactive/ahstablecreator.html?s_areas=00000&s_year=2023&s_tablename=TABLE0&s_bygroup1=3&s_bygroup2=27&s_filtergroup1=1&s_filtergroup2=1 (accessed November 19, 2024). In 2023, household size was estimated at 2.49 people per household (https://data.census.gov/table/ACSCP1Y2023.CP02?q=social%20characteristics). Thus, 100.6 million housing units x 2.49 people per household = 250.5 million people. With the 2023 U.S. population given as 334.9 million, (https://www.census.gov/data/tables/time-series/demo/popest/2020s-national-total.html), approximately 74.8% of the population lived in what the NFIRS defines as one- and two-family housing.

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

[10]For 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.

[11]USFA, "Cooking Fires in Residential Buildings (2017-2019)," Volume 21, Issue 5, July 2021, https://www.usfa.fema.gov/downloads/pdf/statistics/v21i5.pdf.

[12]NFPA, "Smoke alarms in U.S. Home Fires," June 2024, https://www.nfpa.org/education-and-research/research/nfpa-research/fire-statistical-reports/smoke-alarms-in-us-home-fires.

[13]The USFA Structure Fire Cause Methodology was used to determine the cause of multiple-fatality 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.

[14]The USFA differentiates between smoking as a cause of fires and fires ignited by smoking materials. Smoking (or smoking-related fires) are considered a behavioral cause. Fires ignited by smoking materials are considered to be a group of fires where smoking materials were the heat source. The 2 sets are similar but not identical. A deliberately set fire with smoking materials as the heat source of ignition would be considered an "intentional" fire; a fire unintentionally set by someone smoking (cigarettes, cigars or other smoking materials) would be considered a "smoking" fire.

[15]Smoke alarms in the context of this report refer to both smoke alarms and smoke detectors. This distinction is **not** made within the NFIRS, as the NFIRS refers only to "detectors," and semantically these are really "alarms."

[16]Here, 44% reflects nonconfined residential nonfatal fires only. Nonconfined fires are generally large and more serious fires. Confined fires, defined in the NFIRS as Incident Types 113 to 118, are excluded from this analysis as the NFIRS smoke alarm data elements are not required to be completed for these types of fires.

[17]Total percentages do not add up to 100% due to rounding.

[18]Total percentages do not add up to 27% due to rounding.

[19]Here, **at least** 20% of multiple-fatality fires in occupied residential buildings had no smoke alarms present — the 20% that were known to not have smoke alarms and some portion (or as many as all) of the fires where the smoke alarm presence was undetermined.

[20]The 5% reflects nonconfined nonfatal fires in occupied residential buildings.

[21]"Man charged with intentionally setting the house fire that killed four on County Line Road," The Ledger, July 31, 2024, https://www.theledger.com/story/news/fire/2024/07/31/county-line-road-home-fire-kills-four-people-overnight/74616396007/ (accessed Nov. 19, 2024).

[22]Caplan, Anna Lazarus; "Pastor and 3 Grandchildren Among 6 Family Members Killed in Wisconsin House Fire: 'Such a Tremendous Loss,'" People, July 2, 2024, https://people.com/pastor-and-three-grandchildren-among-6-family-members-killed-in-fire-8673072 (accessed Nov. 19, 2024).

[23]Adkins, Jay; "2 Die in Martinsville mobile home fire," WISHTV, March 4, 2024, https://www.wishtv.com/news/local-news/2-die-in-martinsville-mobile-home-fire/ (accessed Nov. 19, 2024).

[24] The NFIRS PDR files are available for download at https://www.fema.gov/about/openfema/data-sets/fema-usfa-nfirs-annual-data.