NFPA RESEARCH

Home Heating Fires

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Key Findings

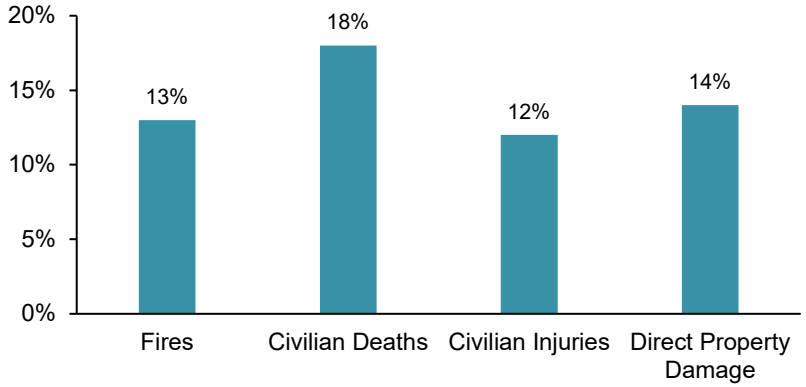
- Heating equipment is a leading cause of fires in US homes.
- Home fires involving heating equipment follow a clear seasonal pattern and are most common during the cold weather months.
- Municipal fire departments in the US responded to an estimated annual average of 44,210 home structure fires caused by heating equipment in 2016–2020.
- Heating equipment fires resulted in an estimated 480 civilian deaths; 1,370 civilian injuries; and one billion dollars in direct property damage each year from 2016 to 2020.
- Heating equipment caused one in six of the home structure fires (13 percent) that took place in 2016–2020.
- These fires also accounted for almost one-fifth of the home fire fatalities (18 percent), one in eight injuries (12 percent), and 14 percent of the direct property damage resulting from home fires in 2016–2020.
- Space heaters were most often responsible for home heating equipment fires, accounting for one-third of the fires, as well as most of the deaths and injuries in home fires caused by heating equipment.
- Home fires caused by heating equipment were less likely to occur in the overnight hours from midnight to 6 a.m. (13 percent), but these fires accounted for more than two in five fatalities (43 percent), as well as disproportionate shares of injuries (22 percent) and direct property damage (20 percent).

Home Heating Equipment Fires: 2016–2020

Heating equipment is a leading cause of fires in US homes. Municipal fire departments in the US responded to an estimated annual average of 44,210 home structure fires caused by heating equipment in 2016–2020. These fires resulted in an estimated 480 civilian deaths; 1,370 civilian injuries; and more than one billion dollars in direct property damage each year.

Heating equipment is a leading cause of fires in US homes. Heating equipment caused one in six home structure fires (13 percent) in 2016–2020, while also accounting for almost one-fifth of the home fire fatalities (18 percent), one in eight injuries (12 percent), and 14 percent of the direct property damage resulting from home fires, as shown in Figure 1.

Figure 1. Share of Home Structure Fires Caused by Heating Equipment: 2016–2020 Annual Averages



Types of Heating Equipment Involved in Home Fires

Space heaters were the type of heating equipment responsible for the largest shares of losses in home heating equipment fires, accounting for one-third of the fires, but nearly nine out of ten deaths and four out of five of the injuries in home fires caused by heating equipment.

Three in ten of the heating equipment fires were small (confined) fires that resulted in minimal damage. While the larger (non-confined) fires involving fireplaces or chimneys were involved in fewer than one in ten fires caused by heating equipment (7 percent), they caused just over one-fifth of the direct property damage (22 percent). Other leading types of heating equipment involved in home heating equipment fires included central heat systems, water heaters, and fuel burners or boilers.

Figure 2. Home Structure Fires Caused by Heating Equipment by Type of Heating Equipment*: 2016–2020 Annual Averages

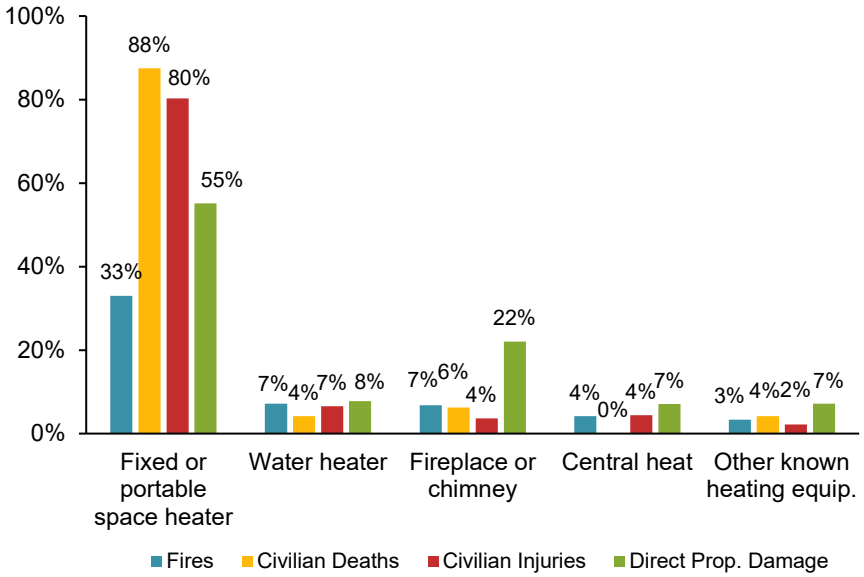


*Figure shows non-confined fires only.

Home Heating Fires by Dwelling Type

Single-family homes with year-round occupancy accounted for the largest share of home heating fires (45 percent), as well as nine out of ten deaths (88 percent) and disproportionate shares of the injuries (61 percent) and direct property damage (74 percent). See Table A.

Approximately one-third of the fires (34 percent) occurred in one- or two-family homes lacking further classification. Smaller shares of the deaths (3 percent), injuries (6 percent), and direct property damage (6 percent) were associated with these fires. Multifamily residences with more than two living units accounted for 13 percent of the fires. These fires resulted in a smaller share of deaths (5 percent), but nearly one-fifth of the civilian injuries (19 percent).

Trends in Home Fires Involving Heating Equipment

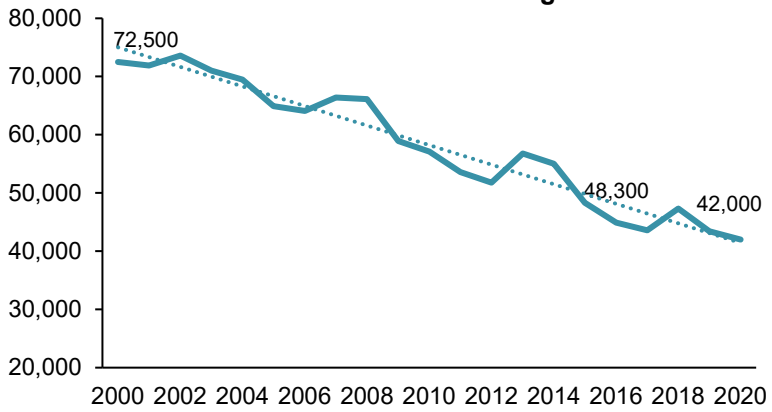
The number of home fires involving heating equipment has followed a distinct, though somewhat inconsistent, downward trend since 2000, as shown in Figure 3. From over 70,000 heating equipment fires each year in 2000–2003, the estimated number of fires has fallen to fewer than 50,000 since 2015, with the 42,000 estimated fires in 2020 representing a new low point.

Improvements in safety standards, such as those requiring automatic cut-off devices for electric or kerosene space heaters when they are tipped over and more guarding around heating coils of electric heaters and burners of kerosene heaters, are likely to have influenced the decline in home heating fires. More complete information on home fires involving heating equipment by year is available in Table 2 of the supporting tables report.

Table A. Share of Home Heating Structure Fires by Type of Dwelling: 2016–2020 Annual Averages

Type of Dwelling	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage
Single family, year-round.	45%	88%	61%	74%
Two-family, year-round.	4%	3%	5%	4%
One- or two-family, unclassified	34%	3%	6%	6%
Multifamily, 1–2 units	4%	1%	9%	3%
Multifamily, 3–6 units	3%	1%	7%	5%
Multifamily, 7–20 living units	3%	3%	7%	4%
Multifamily, > 20 living units	1%	1%	4%	2%
Multifamily, unclassified	6%	0%	0%	0%

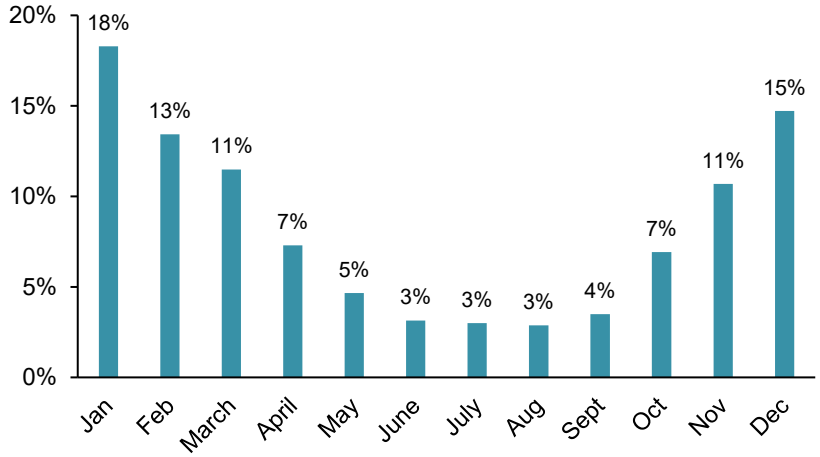
Figure 3. Home Fires Involving Heating Equipment by Year: 2000–2020 Annual Averages



Home Fire Involving Heating Equipment by Month

Home fires involving heating equipment followed a clear seasonal pattern and were highest during the cold weather months, as shown in Figure 4. Nearly half of the heating equipment fires (46 percent) occurred in the three-month period from December through February, while a much smaller share of the fires (13 percent) occurred in the warm weather months of June through September.

Figure 4. Home Fires Involving Heating Equipment by Month: 2016–2020 Annual Averages

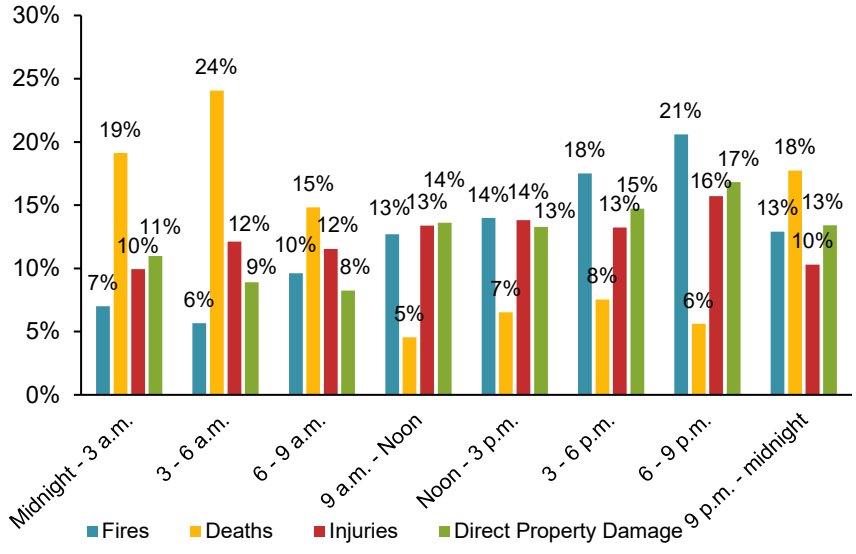


Home Fires Involving Heating Equipment by Time of Day

Home fires caused by heating equipment were less likely to occur in the overnight hours from midnight to 6 a.m. (13 percent), but they accounted for more than two out of five fatalities (43 percent), as well as disproportionate shares of injuries (22 percent) and direct property damage (20 percent), as showed in Figure 5. Occupants have less time to respond to fires in the overnight hours when they are likely to be asleep and farther away from areas of egress, underscoring the importance of equipping homes with detection systems for early warning.

The peak period for fires was from 6 p.m. to 9 p.m., which accounted for one-fifth of the fires (21 percent). These fires resulted in smaller shares of deaths (6 percent), injuries (16 percent), and direct property damage (17 percent), likely because people were in the room of origin or a nearby area. Figure 5 shows that only 13 percent of the fires occurred between midnight and 6 a.m., but these fires accounted for two out of five deaths (39 percent) and just over one-fifth of the injuries (22 percent).

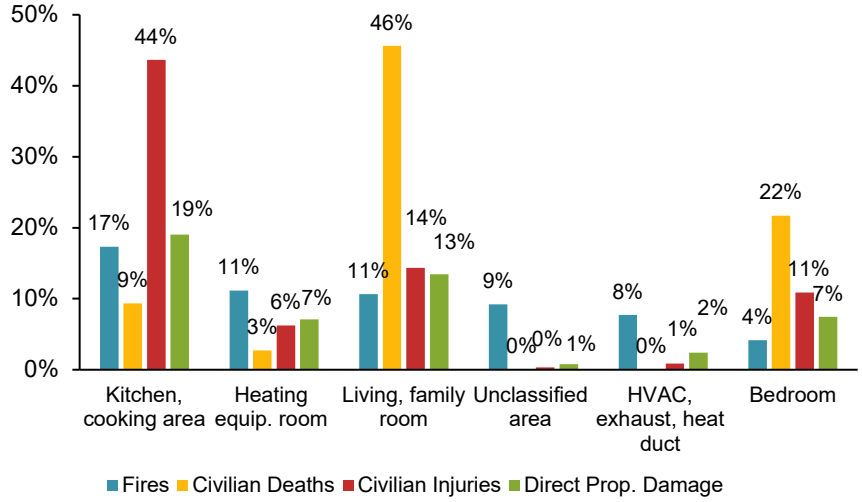
Figure 5. Home Fires Involving Heating Equipment by Time of Day: 2016–2020 Annual Averages



Area of Origin of Home Heating Fires

Fires originating in a kitchen or cooking area accounted for the largest share of home heating fires (17 percent). These fires also accounted for the largest shares of injuries (44 percent) and direct property damage (19 percent). Fires originating in a living room or family room accounted for approximately one in ten fires (11 percent), but nearly half of the civilian deaths (46 percent). Although a comparatively small share of the fires originated in bedrooms (4 percent), they accounted for just over one-fifth of the civilian deaths (22 percent) and approximately one in ten injuries (11 percent).

Figure 6. Home Fires Involving Heating Equipment by Area of Origin: 2016–2020 Annual Averages



Safety with Heating Equipment

NFPA has identified a number of home safety practices that can help to prevent fires caused by heating equipment. These include the following:

- Keep anything that can burn at least three feet away from heating equipment.
- Maintain a three-foot "kid-free zone" around home fires and space heaters.
- Never use your oven to heat your home.
- Have a qualified professional install stationary space heating equipment, water heaters, and central heating equipment according to local codes and manufacturer's instructions.
- Have heating equipment and chimneys inspected and cleaned every year by a qualified professional.
- Remember to turn portable heaters off when leaving a room or going to bed.
- Always use the appropriate type of fuel, as specified by the manufacturer, for fuel-burning space heaters.
- Ensure that the fireplace has a sturdy screen to stop embers from flying into the room. Make sure that ashes are cool before placing them in a bin for removal.

Acknowledgments

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