Grill fires reported to local fire departments

US fire departments responded to an estimated average of 10,600 home structure and outdoor fires involving grills per year during 2014–2018. These fires caused an average of 10 civilian deaths, 160 civilian injuries, and $149 million in direct property damage annually. The term grill in this report includes all grills, hibachis, and barbecues.

The estimated 10,600 home grill fires reported annually included around 4,900 fires per year in or on structures (46 percent). All the grill fire deaths, 100 of the associated fire injuries (64 percent) and $135 million in direct property damage per year (91 percent) resulted from fires involving structures.

On average, 5,700 outside and unclassified grill fires were reported annually during this period (54 percent). These fires caused an average of 60 civilian injuries and $14 million in direct property damage.

While grill fires are more common in the warmer months, Figure 1 shows that people grill all year. According to the Hearth, Patio & Barbecue Association (HPBA), two-thirds of grill owners grill on the Fourth of July, and more than half grill on Memorial Day and Labor Day.1 They also found that some households have more than one type of grill or smoker.

Figure 2 shows that the leading area of origin for structure fires involving grills was an exterior balcony or open porch, and 44 percent of the property damage from grill structure fires resulted from fires that started there. A grill fire that starts on a balcony can easily spread to an exterior wall and, from there, into concealed structural spaces. Courtyards, terraces, and patios were the most common areas for outside or unclassified grill fires. While most grills are intended for outdoor use, some are intended for the kitchen. Only grills intended for indoor use should be used inside.

Overall, grill fires were most likely to start when either cooking materials (including food) or flammable or combustible liquids or gas ignited. The latter were more commonly seen in gas grill fires. The 10 percent of grill structure fires that began with the ignition of exterior wall coverings or finishings caused 45 percent of the grill structure fire property loss.

Five of every six (8,900, or 84 percent) grills involved in home fires during 2014–2018 were fueled by gas, while 1,300, or 12 percent, used charcoal or another solid fuel. The leading causes of grill fires varied by power and fuel source and by whether the fire involved a structure.

The leading factors contributing to grill fires overall were failure to clean, leaks or breaks, leaving the grill unattended, and having the grill too close to something that could catch fire. Failure to clean and leaks or breaks were more commonly seen in gas grill fires than in fires involving solid-fueled grills.
While changes to the data collection rules may have impacted these trends, it is clear that gas grill fires have become much more common.\(^2\) In the 1980s and 1990s, the number of gas grill fire climbed while solid-fueled grill fires declined. In 1980, gas grill fires were roughly 1.3 times as common as solid-fueled grill fires. In 2018, gas grill fires were six times as common. For more information about trends, see the companion *Home Grill Fires Supporting Tables.*

### Thermal burns associated with grills

An estimated average of 19,700 people per year went to hospital emergency departments because of injuries associated with grills or barbecues in 2014–2018. Roughly half of these injuries (9,500) were thermal burns. More than half of the thermal burns were non-fire burns typically caused by contact with a grill or its contents. Children under five years of age accounted for two-fifths of the grill contact burns.\(^3\) One out of every 10 total grill injuries was a contact burn incurred by a young child. There were numerous cases of young children with burned hands after touching a hot grill or grill part. The following examples, taken from the National Electronic Injury Surveillance System database, show how grills can cause thermal burns.

#### Thermal burn examples

- A 24-year-old man was burned when he tried to relight a grill with lighter fluid, and it exploded in his face.
- A 46-year-old man suffered burns over 10–19 percent of his body after using gasoline to light a grill. The canister ignited and ignited his shirt.
- A 48-year-old woman was lighting a grill when the gas line disconnected, shooting flames into her face and hair.
- A 32-year-old man suffered burns to his face and arm when, at first, a gas grill would not ignite, but then burst into flames.
- A 47-year-old man suffered facial burns when lighting a gas grill while wearing a nasal cannula for medical oxygen.
- A father had his 7-month-old daughter in a chest carrier when he got too close to a grill. The girl was burned on her foot and knee.
A 4-year-old girl ran over a hot coal that had just been poured out of a grill and burned her foot.

A 7-year-old boy was playing football at home and ran into a hot grill.

A 2-year-old boy fell into a grill that was turned off but still hot. He suffered first-degree burns to his cheek, chest, and forearm.

An 18-month-old girl fell and hit her face on a grill.

Methodology

For more detailed information about the causes, circumstances, and trends related to grill fires, see the Home Grill Fires Supporting Tables.

The statistics in this analysis are estimates derived from the US Fire Administration’s National Fire Incident Reporting System (NFIRS) and the NFPA’s annual survey of US fire departments. Fires reported to federal or state fire departments or industrial fire brigades are not included in these estimates. Only civilian (non-firefighter) casualties are included in this analysis.

Grills were identified by NFIRS equipment involved in ignition (EII) code 643, grill, hibachi, or barbecue. Fires with NFIRS structure fire incident type code 113, Confined cooking fire in or on a structure, and the non-confined structure fire incident type codes (111–112 and 120–123) were analyzed separately and summed. Fires with other confined fire incident types were excluded from the analysis. Outside non-rubbish and unclassified fires (NFIRS incident type codes 100, 140–149, and 160–199) and outside rubbish fires (NFIRS incident type codes 150–159) were also analyzed separately and summed.

Only fires on home properties (NFIRS property use codes 419, one-or two-family home, including manufactured housing, and 429, apartments or other multi-family homes) were included. Grill fires in which the property use was coded as something other than homes are not captured here.

For more information on the methodology used for this report, see “How NFPA’s National Estimates Are Calculated for Home Structure Fires.”

Estimates of thermal burns are based on National Electronic Injury Surveillance System (NEISS) data obtained from the US Consumer Product Safety Commission (CPSC) website, cpsc.gov, most recently accessed in April 2020. The following product codes were included: charcoal or woodburning grills (3218); electric grills (3229); gas or LP-grills or stoves (for outdoor use) (3248); grills, not specified (3249); kerosene grills or stoves (3230); and other grills or stoves (3233). Burns in which the fire involvement code 0 — no fire involvement or flame spread — was used were counted as contact burns with fire or flame spread. No adjustments were made when text indicated non-grill or barbecue equipment or flame or flash burns with no fire involvement.

Acknowledgments

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

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

To learn more about research at NFPA, visit nfpa.org/research.

Email: research@nfpa.org.

NFPA No. USS105

---


2 NFIRS 5.0, first introduced in 1999, originally defined EII as the piece of equipment that provided the principal heat source that caused ignition if the equipment malfunctioned or was used improperly. Change 290, effective in 2006, amended the definition to include any equipment that was the principal heat source. Beginning in 2012, change 337 required EII to be completed if the heat source or the factor contributing to ignition indicated some type of operating equipment was involved. This was removed, effective with 2015 data.