



SMOKE ALARMS IN U.S. HOME FIRES FACT SHEET

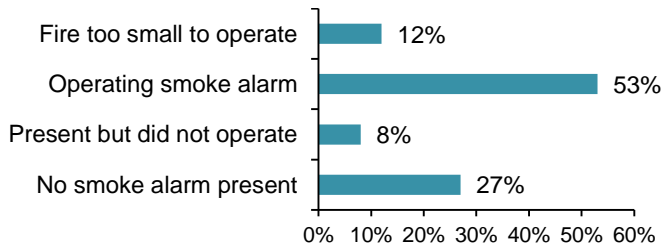
Smoke alarms provide an early warning of a fire, giving people additional escape time. In telephone surveys done for NFPA, almost all households (96%) reported having at least one smoke alarm. That still leaves roughly five million households with no smoke alarms.

Smoke alarm presence and performance in reported home fires

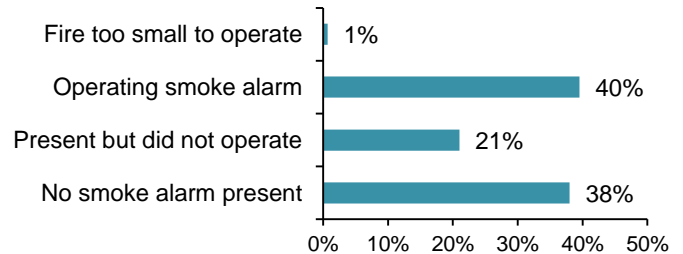
In 2009-2013, smoke alarms sounded in more than half (53%) of the home fires reported to U.S. fire departments.

Reported home structure fires and fire deaths by smoke alarm performance 2009-2013

A. Fires



B. Deaths



Three of every five home fire deaths resulted from fires in homes with no smoke alarms (38%) or no working smoke alarms (21%).

- The death rate per 100 reported home fires was more than twice as high in homes that did not have any working smoke alarms (1.18 deaths per 100 fires), either because no smoke alarm was present or an alarm was present but did not operate), as it was in homes with working smoke alarms (0.53 per 100 fires).
- The death rate from reported fires in homes that had at least one smoke alarm (0.59 deaths per 100 fires) was one-third (36%) lower than in homes that had no smoke alarms at all (0.98 deaths per 100 fires).
- The death rate was much higher in fires in which a smoke alarm was present but did not operate (1.89 deaths per 100 fires) than it was in home fires with no smoke alarms at all.

In reported home fires with smoke alarms:

- Almost half (46%) of the alarms were powered by battery only.
- Two-thirds (67%) of home fire deaths were caused by fires in homes with smoke alarms powered by battery only.

In reported home fires large enough to activate the alarm,

- Hardwired smoke alarms operated 94% of the time.
- Battery-powered smoke alarms operated in four out of five (80%) fires.

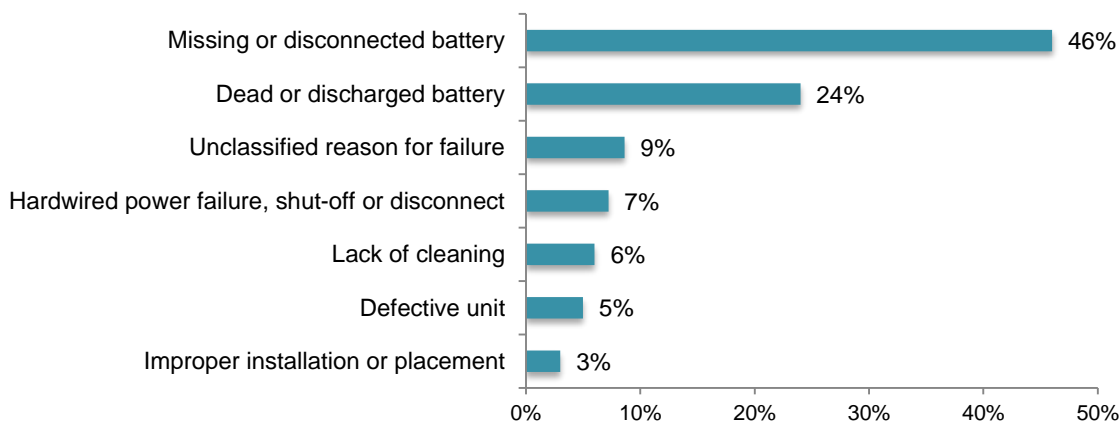
¹Homes include one- or two-family homes, manufactured homes, as well as apartments or other multi-family housing. In general, any fire that occurs in or in a structure is considered a structure fire, even if the fire was limited to contents and the building itself was not damaged. Estimates were derived from USFA's National Fire Incident Reporting System and NFPA's annual fire department experience survey.

Reasons that smoke alarms did not operate

In fires in which the smoke alarms were present but did not operate,

- Almost half (46%) of the smoke alarms had missing or disconnected batteries. Nuisance alarms were the leading reason for disconnected smoke alarms.
- Dead batteries caused one-quarter (24%) of the smoke alarm failures.
- Only 7% of the failures were due to hardwired power source problems, including disconnected smoke alarms, power outages, and power shut-offs.

**Reason smoke alarm did not operate in reported home structure fires
2009-2013**



Interconnected smoke alarms, smoke alarms in the bedroom increase safety

In a Consumer Product Safety Commission (CPSC) survey of households with any fires, including fires in which the fire department was not called, interconnected smoke alarms were more likely to operate and alert occupants to a fire.¹ People may know about a fire without hearing a smoke alarm.

- When smoke alarms (interconnected or not) were on all floors, they sounded in 37% of fires and alerted occupants in 15%.
- When smoke alarms were not on all floors, they sounded in only 4% of the fires and alerted occupants in only 2%.
- In homes that had interconnected smoke alarms, the alarms sounded in half (53%) of the fires and alerted people in one-quarter (26%) of the fires.

According to another CPSC study, when the door was closed, a smoke alarm sounded 10-20 decibels softer in the next room. The sound was also about 20 decibels softer on a floor above or below.² Having smoke alarms in the bedrooms make it more likely that a sounding alarm will be loud enough to wake someone who was asleep when a fire started

¹ Michael A. Greene and Craig Andres. [2004-2005 National Sample Survey of Unreported Residential Fires](#). U.S. Consumer Product Safety Commission, July 2009.

² Arthur Lee. [The Audibility of Smoke Alarms in Residential Homes](#), Bethesda, MD: U.S. Consumer Product Safety Commission, September 2005, revised January 2007.

Source: *Smoke Alarm in U.S. Home Fires*, Marty Ahrens, September 2015