



# Smoke Alarms in Reported U.S. Home Fires



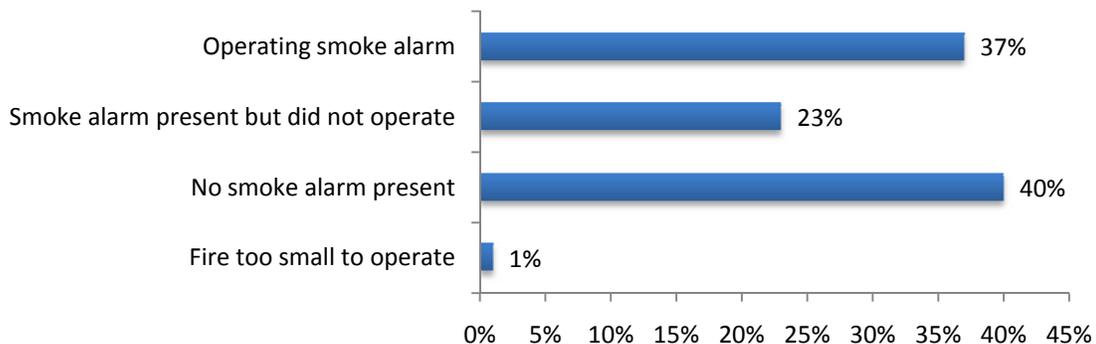
Ninety-six percent of all homes have at least one smoke alarm, according to a 2008 telephone survey. Overall, three-quarters of all U.S. homes have at least one *working* smoke alarm.

## Smoke Alarm Presence and Performance

In 2003-2006, smoke alarms sounded in roughly half of the home fires reported to U.S. departments.

- Almost two-thirds of home fire deaths resulted from fires in homes with no smoke alarms or no working smoke alarms.
  - No smoke alarms were present in 40% of the home fire deaths.
  - In 23% of the home fire deaths, smoke alarms were present but did not sound.

### Home Structure Fire Deaths by Smoke Alarm Performance 2003-2006



## Interconnected smoke alarms on all floors increase safety

Interconnected smoke alarms were more likely to operate and alert occupants to a fire in a U.S. Consumer Product Safety Commission (CPSC) survey of households with any fires, including fires in which the fire department was not called.<sup>1</sup>

- When on all floors, alarms 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.
  - People may learn about or be alerted to a fire without hearing a smoke alarm.

<sup>1</sup>Michael A. Greene and Craig D. Andres, *2004-2005 Residential Fire Survey*, Presentation to the Public-Private Fire Safety Council, May 15, 2008.

Homes include one- and two-family dwellings, manufactured homes, apartments, townhouses, rowhouses, and condominiums.

## Home Smoke Alarm Power Sources

- More than half of the smoke alarms found in reported fires and two-thirds of the alarms found in homes with fire deaths were powered by battery only.
- Hardwired smoke alarms tend to be interconnected so that if one sounds, all will sound.
- In fires considered large enough to activate the alarm,
  - Hardwired smoke alarms operated 91% of the time.
  - Battery-powered smoke alarms operated in 75%.

*Little causal detail is required about certain categories of minor fires, identified by incident type and collectively called confined fires, by the U.S. Fire Administration's National Fire Incident Reporting System (NFIRS). Confined fires were omitted from these calculations.*

## Reasons for Smoke Alarm Failure

In more than half of the reported home fires<sup>1</sup> in which the smoke alarms were present but did not operate, batteries were missing or disconnected. Nuisance alarms were the leading reason for disconnected smoke alarms.

- Roughly one of every five smoke alarm failures was due to dead batteries.
- Only 8% of the failures were due to hardwired power source problems, including disconnected smoke alarms, power outages and power shut-offs.

### Reason Smoke Alarm Failed to Operate in Home Structure Fires 2003-2006

