

# **HOME FIRES INVOLVING AIR CONDITIONING, FANS OR RELATED EQUIPMENT**

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**July 2010**



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## **Abstract**

In 2007, air conditioning, fans or related equipment was involved in an estimated 8,100 reported home structure fires, with associated losses of 26 civilian deaths, 294 civilian injuries, and \$106 million in direct property damage.

Keywords: Air conditioning, fan, heat pump, fire statistics, home fires, residential fires.

## **Acknowledgements**

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

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

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NFPA No. USS48

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## Executive Summary

In 2007, air conditioning, fans or related equipment was involved in an estimated 8,100 reported U.S. home structure fires, with associated losses of 26 civilian deaths, 294 civilian injuries and \$106 million in direct property damage. The number of these fires has increased each of the last three years.

In 2003-2007, the 7,200 reported home structure fires per year involving air conditioning, fans or related equipment included 2,500 per year involving central and room air conditioners specifically and 3,800 per year involving fans. Heat pumps accounted for 500 fires per year. No other specific type of equipment accounted for 300 or more fires per year. Air conditioners and fans also accounted for nearly all the associated losses.

Air conditioners and heat pumps have comparable numbers of fires relative to usage. In 2005, 82.4 million housing units had air conditioning without heat pumps, 53.5 million central and 28.9 million room air conditioners in one or more rooms. In 2005, heat pumps were used as central air conditioning equipment in 12.3 million households. This gives heat pumps a higher rate of fires relative to usage but lower rates of associated loss.

In 2008, an estimated 31,220 injuries were reported to hospital emergency rooms as involving air conditioners, fans, humidifiers, dehumidifiers, air purifiers, and heat pumps. The leading types of injuries were laceration (13,240), contusion or abrasion (5,480), and strain or sprain (4,610).

In 1995-2003 (excluding 1999, which was not reported), there were 12.1 electrocution deaths per year involving air conditioners and 4.7 electrocution deaths per year involving fans.

The leading factors contributing to ignition for air conditioning, fans or related equipment are mostly mechanical or electrical failures without failure mode specifics. One-third (33%) of fires involving air conditioning, fans or related equipment began with ignition of wire or cable insulation. The leading areas of origin for home fires involving air conditioning or related equipment are bathroom (21%) and bedroom (18%). The leading areas of origin for fire deaths are bedroom (40%) and living room, family room, or den (29%).

Air conditioners have a shorter season of usage than fans, based on fire incidence. If fires occurred evenly throughout the year, then every month would have 8.3% (1 in 12) of the fires. For all air conditioning, fans or related equipment combined, the three peak months of June, July, and August account for 40% of the fires (compared to 25% if every block of three months had an equal share of fires). June, July and August accounted for 55% of air conditioner fires and 33% of fires involving fans. It is not surprising that fans have a longer season, because the category of fans includes fans used to help cooling (e.g., portable fans, attic fans) but also fans used year-round for ventilation (e.g., kitchen fans, bathroom fans).

## **Safe Use of Air Conditioning, Fans and Related Home Cooling Equipment**

- Select and install cooling equipment for safety and effectiveness.
- Use electric-powered equipment safely, in accordance with manufacturer's instructions.
- Inspect and maintain electric-powered equipment regularly for safety.
- Make sure your equipment has the label showing that it is listed by a recognized testing laboratory.

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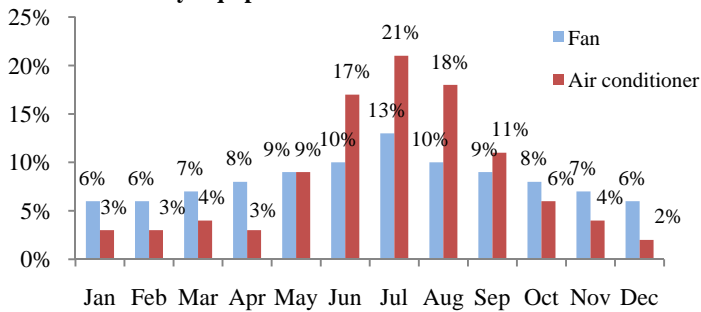
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## Home Fires Involving Air Conditioning, Fans or Related Equipment

In 2003-2007, U.S. fire departments responded to an estimated average of **7,200** home<sup>1</sup> structure fires per year that involved air conditioning, fans or related equipment. These fires caused an annual average of 31 civilian fire deaths, 262 civilian fire injuries, and \$153 million in direct property damage.

**Home Fires Involving Air Conditioning, Fans or Related Equipment by Equipment and Month: 2003-2007**



55% of the home air conditioning fires and 33% of the fan fires occurred during the summer months of June, July and August. Ventilation fans in the kitchen and bathroom are used all year.

Electrical and mechanical factors were the leading causes of home air conditioning, fan or related equipment fires.

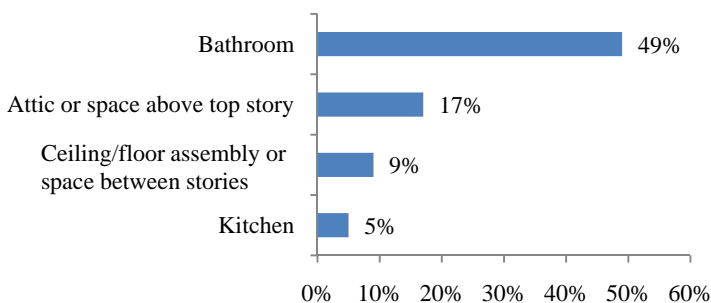
In 2007, air conditioning, fans or related equipment were involved in 2% of reported home structure fires and associated civilian injuries, and in 1% of associated civilian deaths and property damage.

### Fans

Fans in 2003-2007 were involved in an average of 2,810 home fires per year, resulting in an average of

- 15 civilian deaths,
- 135 civilian injuries, and
- \$80 million in direct property damage.

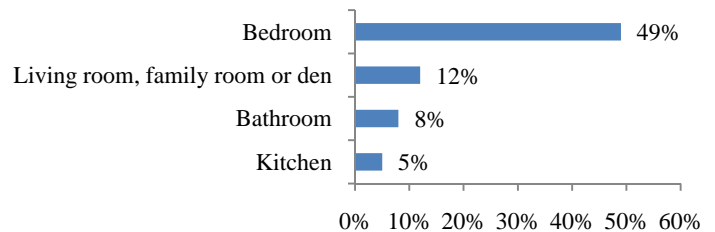
**Home Stationary or Installed Fan Fires by Area of Origin: 2003-2007**



Portable fans were involved in one-quarter (26%) of the fan fires, 87% of the fan deaths, and 65% of the fan injuries.

Half (49%) of the stationary fan fires started in the bathroom, while half (49%) of the portable fan fires started in the bedroom.

**Home Portable Fan Fires by Area of Origin 2003-2007**



### Air Conditioners

Air conditioning was involved in an average of 2,500 home fires per year in 2003-2007, with an average of

- 13 civilian deaths,
- 101 civilian injuries, and
- \$58 million in direct property damage.

27% of home air conditioning fires started in the bedroom, 12% began in the living room, family room or den, and 11% started in a duct. Central air conditioning cannot be separated from room air conditioning in these statistics.

<sup>1</sup>Homes are dwellings, duplexes, manufactured homes, apartments, townhouses, rowhouses, and condominiums.