

U.S. Fire Administration/National Fire Data Center

All Structure Fires in 2000

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Findings

- In 2000, 505,500 structure fires resulted in \$8.5 billion in property loss, 3,500 fatalities, and 19,600 injuries.
- Structure fires are more than twice as deadly, injurious, and costly as fires generally.
- Three-quarters of structure fires occur in residential structures, with kitchens being the leading area of fire origin.
- The leading causes of structure fires are cooking, incendiary/suspicious, and heating.
- More structure fires take place in the winter, with the lowest percentage taking place in the summer. The highest percentage of structure fires occur between 5 and 6 p.m.
- In the majority of structure fires, smoke alarms either were not present or were present and did not operate

Americans live, work, meet, and play in structures, relying on them for comfort, safety, and convenience. Fires in homes, office buildings, stores, manufacturing plants, and many other structures are the most deadly, injurious, and costly of all fires in the United States. An estimated 505,500 structure fires occurred in 2000, resulting in \$8.5 billion in property loss, 3,500 fatalities, and 19,600 injuries.¹

Based on 2000 data from the National Fire Incident Reporting System (NFIRS), fires in structures account for more than 30% of all fires, but they cause nearly 76% of property loss, approximately 72% of fatalities, and nearly 82% of injuries resulting from fires.² Structures include residences (homes, apartment buildings, condominiums, hotels, etc.), assembly buildings, office buildings, schools, businesses, manufacturing facilities, and plants.³

LOSS MEASURES

When compared to outside fires and fires generally, structure fires are more severe. As illustrated in Figure 1, structure fires have more than twice the rate of dollar loss, deaths, and injuries than fires generally.⁴

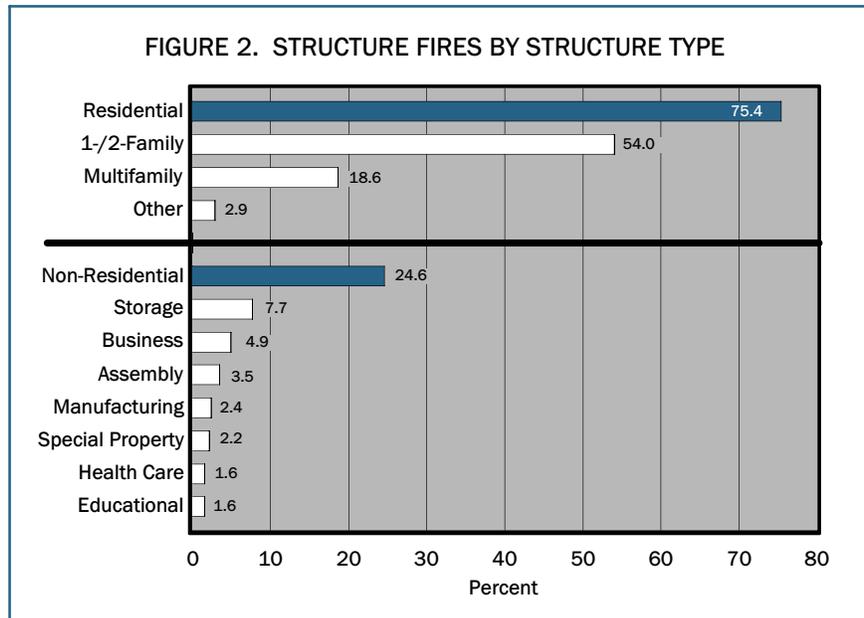
FIGURE 1. LOSS MEASURES FOR STRUCTURE FIRES

Loss Measure	All Fires	Structure Fires	Outside Fires
\$ Loss/Fire	\$6,601	\$16,219	\$774
Fatalities/1,000 Fires	2.4	5.7	0.1
Injuries/1,000 Fires	15.2	39.9	2.0

Source: NFIRS only

WHERE FIRES OCCUR

The majority of structure fires occur in residential structures (Figure 2).⁴ Within residential structures, the highest percentage of fires occur in one- or two-family homes, as opposed to in apartment buildings or condominium complexes (multifamily residential structures). Among non-residential structures, the majority of fires occur in storage facilities, followed by businesses (office buildings, stores, banks, etc.) and assembly structures (meeting places, churches, libraries, museums, etc.). More detailed discussion of residential and non-residential structure fires in 2000 is presented in Volume 3, Issues 9 and 10, respectively.



Source: NFIRS

Within structures, the leading area of origin for fires is cooking areas/kitchens, followed by bedrooms (Figure 3). The leading areas of origin are consistent with the fact that the majority of structure fires take place in residences, and the majority of residences have kitchens, bedrooms, and common rooms, such as living rooms, family rooms, and dens.

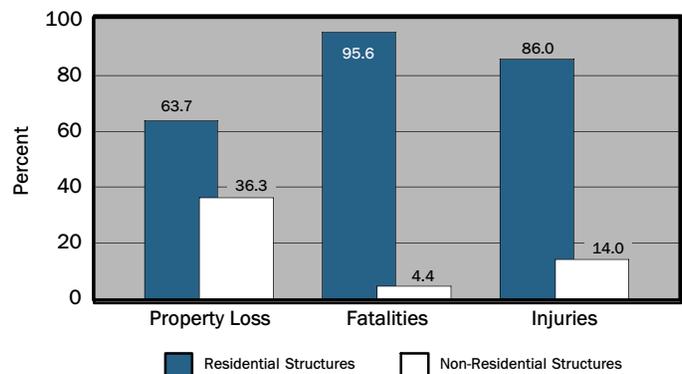
Figure 4 illustrates that residential structure fires caused the majority of property loss, fatalities, and injuries resulting from structure fires.

FIGURE 3. STRUCTURE FIRES BY LEADING AREAS OF ORIGIN

Area of Origin	Fires (%)
Cooking Area, Kitchen	25.6
Bedroom <5 People	10.4
Common Room, Den	5.5
Vehicle Storage Area	4.8
Wall Surface Exterior	4.6

Source: NFIRS

FIGURE 4. FIRE LOSSES BY STRUCTURE TYPE



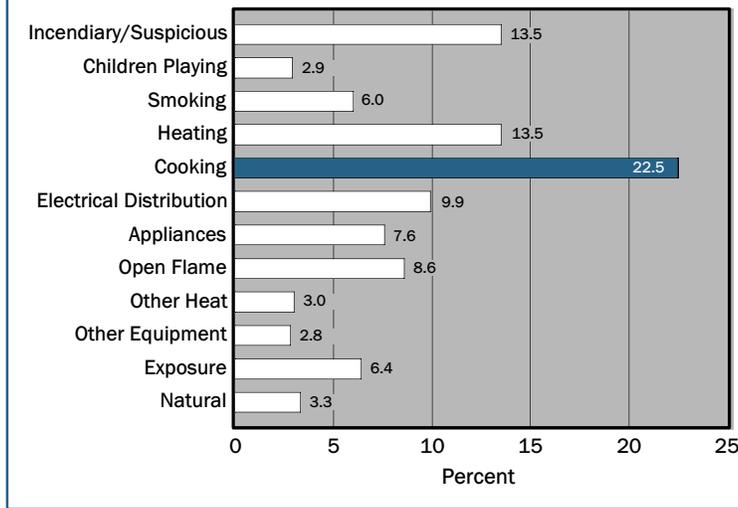
Source: NFIRS

CAUSES

Consistent with the fact that the highest percentage of structure fires originate in kitchens, the leading cause of structure fires is cooking (Figure 5). Heating and incendiary/suspicious fires also account for high percentages of all structure fires. Although many of the causes of structure fires (heating, electrical distribution, appliances) do not require human action for the ignition of such fire, cooking fires usually do require human involvement. The leading cause of non-residential structure fires is incendiary/suspicious, causing about 20% of such incidents.

The heat sources of structure fires are consistent with their causes, as Figure 6 indicates. Heat radiated or conducted from equipment is the heat source in nearly 31% of the fires, followed by electrical arcing, other forms of heat from operating equipment, sparks or flame from equipment, and cigarettes.

FIGURE 5. CAUSES OF STRUCTURE FIRES
(unknowns apportioned)



Source: NFIRS

FIGURE 6. STRUCTURE FIRES BY LEADING HEAT SOURCES

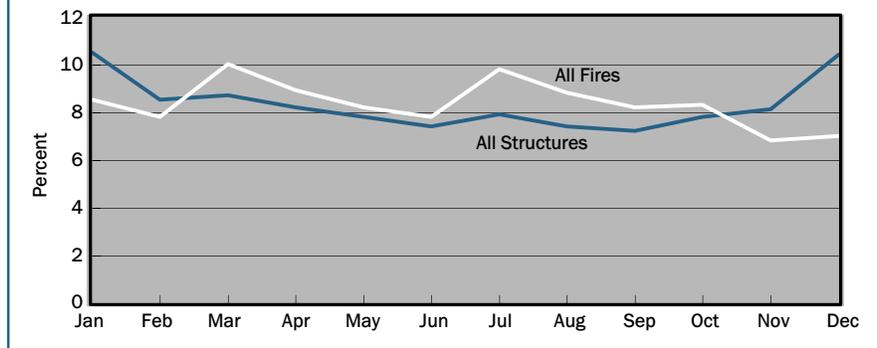
Heat Source	Fires (%)
Radiated or conducted heat from equipment	30.8
Electrical arcing	13.0
Heat from powered equipment, other	7.5
Spark, ember, or flame from operating equipment	5.9
Cigarette	5.6

Source: NFIRS

WHEN FIRES OCCUR

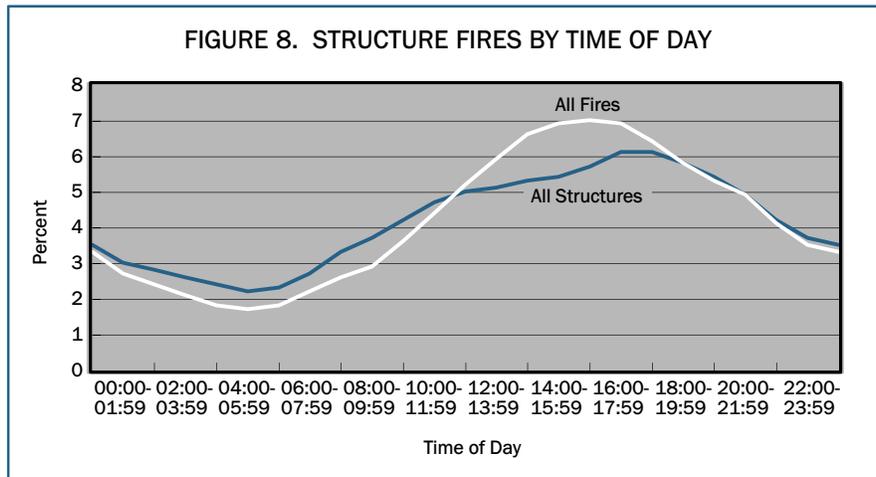
Although there is no discernable seasonal pattern for fires generally, more structure fires take place in the winter months than during any other season (Figure 7). The highest number of fires occur in December and January, and the lowest number occur in June and September. This is consistent with the leading causes of structure fires—cooking and heating. During the summer months, many people opt to cook outdoors, and their heating is turned off in favor of air conditioning or open windows.

FIGURE 7. STRUCTURE FIRES BY MONTH



Source: NFIRS

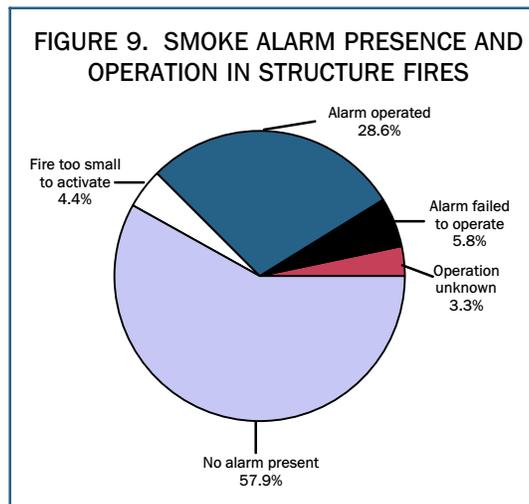
When analyzed by time of day, as illustrated in Figure 8, the highest number of structure fires occur in the early evening, similar to the trend for fires generally. This trend may be related to the leading cause of structure fires—cooking—since many people prepare dinner in their homes during the early evening.



Source: NFIRS

SMOKE ALARMS

No smoke alarm was present in the majority of structure fires; alarms were present and operated in just over 28% of structure fires (Figure 9). Similarly, 78% of fire deaths and nearly 60% of fire injuries occurred in structure fires where no alarm was present, or where an alarm was present but failed to operate.



Source: NFIRS

EXAMPLES

October 9, 2000: Arson destroyed two floors of a Harrisburg, PA synagogue in an early morning fire on Yom Kippur. The fire was set in an area of the synagogue that was under construction and quickly spread to destroy parts of a religious school and small sanctuary.⁵

April 5, 2001: Firefighters arrived on the scene of a Massachusetts house fire with heavy fire burning through the roof and reports of people trapped inside. Fire crews attempted unsuccessfully to rescue the resident inside, but were driven back by intense flames. The cause of the fire was cooking.⁶

January 1, 2002: A wall-mounted electric heating and air conditioning unit caused a fire that destroyed 10 out of 12 units of a Tennessee apartment building, killing four people and injuring two others. The fire spread to the attic and other apartments.⁷

CONCLUSION

Structure fires endanger people and impact the economy and many other aspects of the American way of life. Individuals must do whatever they can to actively prevent structure fires. First, people must pay careful attention to their cooking practices, the operability of their appliances, and the maintenance of their heating systems. The high percentage of structure fires caused by heating and cooking points to the need for additional public education regarding the prevention of structure fires and the importance of practicing safe behaviors.

Additionally, the importance of smoke alarms cannot be stressed enough. The fact that nearly three-quarters of all structure fire deaths occurred in structures without smoke alarms or without operable smoke alarms indicates that many structure fire fatalities and injuries might be prevented with the installation and proper upkeep of smoke alarms.

To request additional information, comment on this report, or review the detailed methodology used in this analysis, visit <http://www.usfa.fema.gov/feedback/>.

Notes:

1. Estimates of the U.S. fire problem are taken from the National Fire Protection Association's (NFPA's) annual survey, *Fire Loss in the United States*.
2. Distribution statistics are based on data from the National Fire Incident Reporting System (NFIRS 2000). At the time of this report, NFIRS is transitioning from version 4.1 to 5.0. Approximately 79% of the fire incident data for 2000 was reported to the USFA in NFIRS 4.1 format and converted to 5.0.
3. Structure fire statistics do not include mobile properties used as structures.
4. Loss measures and rates are based on NFIRS 2000 data.
5. "PA Synagogue Fire Called Arson," *The Associated Press*, October 10, 2000.
6. "MA Bravest Battle Fatal House Fire," *Firehouse* Web site, April 6, 2001. <http://www.firehouse.com>
7. "7 Killed in Fires in Tennessee, Ohio," *The Associated Press*, January 2, 2002.