



RESEARCH

Catastrophic Multiple-Death Fires in 2015

Stephen G. Badger

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Where we get our data

NFPA obtains its data by reviewing national and local news media, including fire service publications. A news clipping service reads all daily U.S. newspapers and notifies NFPA's Fire Analysis and Research Division of catastrophic fires.

Once an incident has been identified, we request information from the local fire department or the agency having jurisdiction. NFPA's annual survey of U.S. fire experience and mailings to the state fire marshals are additional data sources, although not principal ones. We also contact federal agencies that have participated in the investigation of such fires.

The diversity and redundancy of these sources enable us to collect the most complete data available on catastrophic fires throughout the United States. We understand that, in many cases, a fire department cannot release information due to ongoing litigation. In other cases, fire departments have been unable to determine the information we requested.

Acknowledgments

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Copies of this analysis are available from:

National Fire Protection Association
One-Stop Data Shop
1 Batterymarch Park
Quincy, MA 02169
www.nfpa.org
E-mail: osds@nfpa.org
Phone: 617-984-7451

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Catastrophic Multiple-Death Fires in 2015

The year saw the lowest number of such fires and associated deaths ever reported, with nine fires resulting in 42 fatalities.

Every year, NFPA reports on the most severe loss-of-life fires in the United States, referred to here as “catastrophic multiple-death fires.”

These fires are defined as those that cause five or more deaths in a home or three or more deaths in a non-home structure or non-structure fire, such as a wildfire or vehicle fire. Vehicle crashes are included in this study if a fire in the vehicle caused the crash or the local coroner or medical examiner confirmed to NFPA that the victims died of thermal injuries or inhalation of products of combustion, rather than impact injuries.

In 2015, there were nine multiple-death fires resulting in 42 deaths, including four children under age six. By comparison, in 2014 there were 25 catastrophic multiple-death fires resulting in the deaths of 131 people, including 11 children under age six.

The decrease in these types of fires over the past decade is striking. In 2006, there were 36 multiple-death fires resulting in 223 deaths, including 28 children under age six. Between 2006 and 2015, there were 243 catastrophic multiple-death fires, including 126 homes fires, 59 non-home structure fires, and 58 non-structure fires. Those fires resulted in 1,317 deaths, with 726 deaths in home fires, 305 in non-home structures, and 286 in non-structure fires.

Here is a look at how these catastrophic fires broke down over the 10-year period:

DEATHS: The number of deaths in home fires ranged from the minimum threshold of five to a high of 10. In non-home structures, fires killed between three and 29 people, with a mine explosion and fire accounting for the largest lost-of-life incident. Non-structural fires killed between three and 24 people, with the largest loss of life occurring in an airplane crash and fire.

CHILDREN UNDER THE AGE OF SIX: Between 2006 and 2015, 222 children under age six died in 105 fires. Of these fires, 92 were in homes, eight were non-home structures, and five were in vehicles. The largest number of victims under age six in any one fire was five. This happened four times, all in home fires, three in single-family dwellings and one in an apartment building.

TIME OF DAY: Most of the catastrophic multiple-death fires (140 out of the 243) broke out between the hours of 11 p.m. and 7 a.m., resulting in 779 deaths, with 176 of these victims children under the age of six. These overnight fires occurred most frequently in homes (106 fires), with 24 in non-home fires, and 10 in non-structure fires.

DETECTION AND SUPPRESSION EQUIPMENT: Of the 124 structures where information on smoke detection systems was reported, only 56 had any detection equipment at all. Nineteen of these systems operated and 17 systems did not operate. The operation of the remaining 20 systems was not reported. In the 17 fires where the detection systems did not operate, 10 were cases where the smoke alarm battery was missing. No reason was reported for the other seven fires. In 68 fires, including 54 homes and 14 non-home structures, there was no smoke alarm present. These fires resulted in 369 deaths, 86 of which were children under age six.

The reported information on automatic suppression systems was rare, with only six properties having any type of suppression system. Four of those systems operated, and two did not. The reasons that the two systems did not operate were not reported. In the four fires where the systems operated, the systems were either not in the area of fire origin or were damaged by an explosion.

Suppression systems were not present in 122 properties (99 homes and 23 non-home structures). These fires accounted for 695 deaths.

2015 FINDINGS

The number of catastrophic multiple-death fires in 2015 was sharply lower than in the past. The year finished with the lowest number of such fires and associated deaths ever reported, with nine such fires resulting in 42 deaths. Of those fires, four were in homes, with 23 deaths including four children under the age of six. Two were in non-home structures, resulting in eight deaths, and three were in wildland and aircraft fires, resulting in 11 deaths. By comparison, there were 25 catastrophic multiple-death fires in 2014, resulting in the deaths of 131 people, including 11 children under age six.

The most severe fire in 2015 occurred in New York, where firefighters responding to a structure fire at 12:23 a.m. arrived to find a 1,000-square-foot (93-square-meter) three-story single-family home of unprotected wood-frame construction heavily involved in fire. A family of nine was at home when the fire broke out, and seven children were killed. The victims ranged in age from five to 16. After extinguishing the fire, firefighters removed the victims from bedrooms on the second floor. Firefighters believe a hot plate in the first-floor kitchen, which had been left on overnight for Sabbath observances, ignited nearby combustibles. The fire extended to cabinetry, walls, and throughout the kitchen, then spread throughout the dining room and a family room and into a hallway through open doors and up to the second-floor bedrooms. A smoke alarm located in the basement was ineffective due to its location. The mother attempted to rescue her children from the second-floor bedrooms but was unable to due to the smoke and heat conditions. She and one daughter escaped and were treated for smoke inhalation and burns.

In 2015, firefighters in the United States responded to an estimated 1,345,500 fires. Of those, 501,500 occurred in structures: 388,000 in residential structures, and 113,500 in nonresidential structures. Additionally, 844,000 fires occurred outside of structures or involved vehicles. In all, these fires accounted for an estimated 3,280 deaths. Of those, 2,685 occurred in structures: 2,605 in residential structures, and 80 in nonresidential structures. Another 595 deaths occurred in vehicle or outside fires. The nine fires categorized as catastrophic multiple-death accounted for a fraction of a percent of the total estimated fires last year, and the 42 deaths represented 1.3 percent of the total fire deaths in the U.S. in 2015. For more information on fire loss in the U.S. last year, see the summary of the “Fire Loss in the United States During 2015” report on page 62.

CATASTROPHIC HOME FIRES

There were four catastrophic multiple-death fires in homes in 2015, compared to 15 the year before. All four fires occurred in single-family homes. These fires killed 23 people, 65 fewer than in 2014. Of the 23 victims, four were children under the age of six, which was seven fewer than the year before. All four of the home fires broke out between the hours of 11 p.m. and 7 a.m.

One of the four fires was the seven-fatality incident described above. The second most deadly home fire killed six people in a three-story, 16,386-square-foot (1,522-square-meter) single-family home, constructed mostly of stone. There was an alarm system present. The alarms sounded and notified an offsite alarm company, which in turn notified the fire department. The fire originated under or near a 15-foot (4.6-meter) Fraser fir Christmas tree located in the great room. The tree had been inside the home for almost a month. A high-resistance connection inside a floor receptacle under the tree ignited a plastic sheet or tree skirt, which in turn ignited the tree. The fire developed rapidly as indicated by the fact the six victims were unable to escape even with a functioning alarm system.

Two fires killed five people each. The first broke out at just after 4 a.m. in a one-story, 1,200-square-foot (112-square-meter) single-family home of unprotected wood-frame construction. No information was reported on detection or suppression equipment. The cause was reported as undetermined and fire broke out in multiple locations. The other five-fatality fire occurred in a three-story home of unprotected, ordinary construction. This structure was attached to a two-unit apartment building. The fire of undetermined cause broke out on an enclosed porch and spread through an open window into the attached building and throughout both buildings. One man died in the building of origin and a mother and three of her children died in the second building.

CATASTROPHIC NON-HOME STRUCTURE FIRES

Two of the nine catastrophic multiple-death fires that occurred in 2015 were in non-home structures and resulted in eight deaths. The number of fires in non-home structures was three fewer than the year before, with 12 fewer deaths.

Both fires broke out between the hours of 11 p.m. and 7 a.m. The first fire killed five squatters in a boarded-up vacant single-family home. The fire, of undetermined cause, started in the living room by a window where squatters had pulled part of the plywood off to allow entrance and egress. The second fire broke out at 5:30 a.m. in a one-story tire shop with three people inside the business. The cause and origin of the fire were not reported.

CATASTROPHIC NON-STRUCTURE FIRES

In 2015, three non-structure fires killed 11 people, including three firefighters. This is three fewer fires in this category, and 15 fewer deaths, than in 2014.

The first fire occurred when a small jet crashed into a four-unit apartment building. The jet fuel immediately caught fire, trapping occupants in the aircraft. Four passengers were killed by fire or products of combustion; five additional passengers died of multiple blunt force trauma. No one in the apartment building was injured or killed.

The other two fires were wildland/urban interface fires. The first fire burned 76,067 acres (30,783 hectares) and killed four people: three in their homes, and one outside next to a car.

In the second wildland fire incident, three firefighters died when a wind shift caused the fire to overspread their position. They attempted to escape, but in zero visibility their apparatus went off the road and down a 40-foot (12-meter) embankment. One firefighter survived the crash.

SUPPRESSION EQUIPMENT AND SMOKE DETECTION

There was no suppression equipment in any of the structure fires last year. This is unfortunate, because sprinklers are a proven lifesaving technology across many different kinds of properties, including homes. The risk of dying in a reported fire in a home decreases by about 80 percent when sprinklers are present, and sprinklers reduce the average property loss in home fires by 71 percent per fire. More information about home fire sprinklers is available online at NFPA's Fire Sprinkler Initiative website, firesprinklerinitiative.org/.

Information about automatic smoke detection equipment was available for four of the six catastrophic structure fires that occurred in 2015. Three homes were equipped with smoke alarms. All operated, but one operated with a delay and another was located in the basement and was ineffective in alerting the victims. The third system did operate and notified an alarm company, which in turn alerted the fire department, but it is not known why the occupants did not escape. The vacant building had no smoke alarms.

Smoke alarms have been proven effective in reducing the risk of death in home fires. The most effective arrangement is interconnected, multiple-station smoke alarms supplied by hardwired AC power with a battery backup. These should be located outside each sleeping area, on each level, and in each bedroom. Homeowners should routinely test smoke alarms according to manufacturers' recommendations. NFPA recommends testing home smoke alarms at least monthly.

Batteries should also be replaced according to manufacturers' recommendations; conventional batteries should be replaced at least yearly. If an alarm "chirps"—a warning that the battery is low—the battery should be replaced right away. All smoke alarms, including hard-wired alarms and alarms that use 10-year batteries, should be replaced when they are 10 years old, or sooner if they do not respond properly when tested.

Smoke alarms are only effective if occupants leave the building when they sound. Children should be familiar with the sound of a properly operating smoke alarm and follow a practiced escape plan that emphasizes two exits from any location, as well as a designated meeting place once they have left the structure. Exit drills in the home are part of many schools' curricula. Practicing the plan helps families determine whether children and others readily waken to the sound of a smoke alarm if it sounds during the night; that knowledge, along with assistance for family members who require it, can be factored into the escape plan. Practicing escape plans, as well as basic fire prevention principles, might have prevented many of the fires and deaths included in this report.

***Stephen G. Badger**, a fire data assistant with NFPA's Fire Analysis and Research Division, is retired from the Quincy, Massachusetts, Fire Department.*

2015 Catastrophic Multiple-Death Fires by Type

HOME FIRE DEATHS

NEW YORK

Date, Time of Alarm, Number of Deaths

March 21, 12:23 a.m., 7 deaths

Number of Stories, Occupancy Type, and Construction Type

This was a three-story, 1,000-square-foot (93-square-meter) single-family home of unprotected wood-frame construction. The home was occupied by a family of nine at the time the fire broke out.

Smoke Alarm and Other Protection Devices

There was one smoke alarm in the basement. It operated but was ineffective due to being below the level of the fire. There was no automatic suppression equipment present.

Fire Origin and Path

The fire broke out in the first-floor kitchen when a hot plate on the counter, left on during Sabbath observances, ignited nearby combustibles. The fire extended to cabinetry, the wall, and into a family room and dining room, then through open doors to a hallway and up to the second-story bedrooms.

Contributing Factors and Victim Locations

The seven victims died in bedrooms on the second floor. The mother attempted to rescue the children but was driven out by heat and smoke. She and one daughter escaped but were treated for burns and smoke inhalation. The victims were aged 16, 13, 12, 10, 8, 7, and 5.

MARYLAND

Date, Time of Alarm, Number of Deaths

January 15, 3:31 a.m., 6 deaths

Number of Stories, Occupancy Type, and Construction Type

This was a two- and three-story, 16,386-square-foot (1,522-square-meter) single-family home of ordinary construction. The home was occupied by a family of six at the time the fire broke out.

Smoke Alarm and Other Protection Devices

There was an alarm system present. The system activated and alerted an alarm company that in turn notified the fire department. Minutes after the alarm activated, several 911 calls were received from neighbors. There was no automatic suppression equipment present.

Fire Origin and Path

The fire is believed to have started in the great room when an electrical failure ignited plastic and the tree skirt under a 15-foot (4.5-meter) Christmas tree.

Contributing Factors and Victim Locations

It took investigators several days to locate and recover the bodies from under much of the collapsed home. Five of the victims were located in debris of the three bedrooms, and the sixth body was located in the great room. The victims were aged 63, 56, 8, 8, 7, and 6.

OHIO

Date, Time of Alarm, Number of Deaths

January 6, 4:17 a.m., 5 deaths

Number of Stories, Occupancy Type, and Construction Type

This was a one-story, 1,200-square-foot (112-square-meter) single-family home of unprotected wood-frame construction and was occupied at the time the fire broke out.

Smoke Alarm and Other Protection Devices

No information was reported on detection or suppression equipment.

Fire Origin and Path

The only information reported is that the fire broke out in multiple areas with multiple heat sources.

Contributing Factors and Victim Locations

The five victims and two that were injured were reported to have been asleep at the time the fire broke out. The victims were aged 54, 43, 22, 22, and 1.

KENTUCKY

Date, Time of Alarm, Number of Deaths

October 20, 2:30 a.m., 5 deaths

Number of Stories, Occupancy Type, and Construction Type

This was a three-story, single-family home (referred to here as Building 1) of unprotected ordinary construction. The size of the home was not reported. This home was attached by an enclosed porch to a two-unit home (referred to here as Building 2). The construction and size of this building was not reported. Both homes were occupied at the time the fire broke out.

Smoke Alarm and Other Protection Devices

There were smoke alarms present in Building 1, the building of origin. It was reported they activated with a delay as they were not near the fire's point of origin. There were no alarms in Building 2. There was no automatic suppression equipment present in either building.

Fire Origin and Path

The fire of undetermined cause broke out on an enclosed porch on the ground floor between the attached buildings. The fire spread from the porch through a window into the dining room of Building 2 and spread rapidly through both buildings.

Contributing Factors and Victim Locations

An elderly man was found in a first-floor bedroom of Building 1, and a woman and three of her children were found in a bedroom on the second floor of Building 2. The victims were aged 68, 36, 10, 3, and 1.

NON-RESIDENTIAL

CALIFORNIA

Date, Time of Alarm, Number of Deaths

December 13, 6:44 a.m., 5 deaths

Number of Stories, Occupancy Type, Construction Type, Operating Status

This was a one-story, 1,200-square-foot (112-square-meter) vacant single-family dwelling of unprotected wood-frame construction. There were six squatters in the building at the time the fire broke out.

Detection Systems and Suppression Systems

There was no automatic detection or suppression equipment.

Fire Origin and Path

The fire broke out on the first floor at the point of egress, a window in the back living room. The cause was undetermined.

Contributing Factors and Victim Locations

This vacant dwelling was boarded up with plywood, which had been pulled partially away from a window in the back of the building. Entrance and exit was through this window. The fire broke out inside the building at this window and spread through the room, blocking the victims' escape. The five victims died or were injured in two bedrooms. A sixth person and three firefighters were injured. The victims were aged 56, 37, 36, 34, and 28.

CALIFORNIA

Date, Time of Alarm, Number of Deaths

April 25, 5:30 a.m., 3 deaths

Number of Stories, Occupancy Type, Construction Type, Operating Status

This was a one-story tire shop. The ground floor area and construction type were not reported. There were three people in the business at the time of the fire.

Detection Systems and Suppression Systems

No information was reported on detection or suppression equipment.

Fire Origin and Path

No information was reported on the cause or origin.

Contributing Factors and Victim Locations

One firefighter was injured fighting this fire. The ages of the victims, all adults, were not listed.

WASHINGTON

Date, Time of Alarm, Number of Deaths

August 19, 2:30 p.m., 3 deaths, all firefighters

Setting

Wildland/urban interface fire.

Climate

This was a hot and dry day with the area in extreme drought conditions.

Fire Origin and Path

The cause of this fire was trees in contact with power lines.

Factors Hindering Occupant Escape

When the wind shifted, the firefighters were attempting to escape the fire in their apparatus when it left the road in zero visibility and went down an embankment. One other firefighter was injured in the crash. The victims were aged 31, 26, and 20.

NON-STRUCTURAL

OHIO

Date, Time of Alarm, Number of Deaths

November 10, 2:55 p.m., 4 deaths (all on the aircraft)

Setting

This incident involved a small business jet aircraft with seven passengers and two crew members. The aircraft crashed into a four-unit apartment building and instantly caught fire.

Climate

No information was reported.

Fire Origin and Path

The aircraft crashed into the second story of a four-unit apartment building and JP-4 fuel caught fire immediately.

Factors Hindering Occupant Escape

The fire burned the aircraft and apartment building and spread to two other buildings. The medical examiner's office reported that four of the nine occupants of the aircraft died of inhalation of products of combustion and/or thermal injuries, and the other five died of multiple blunt force trauma. The report did not indicate if the victims were passengers or crew. The ages of the four victims were not reported, but they were all adults.

CALIFORNIA

Date, Time of Alarm, Number of Deaths

September 12, 1:24 p.m., 4 deaths

Setting

Wildland/urban interface fire. Fuels included conifers intermixed with hardwoods, Manzanita, and chamise.

Climate

The temperature at the time was 88 degrees Fahrenheit (31 degrees Celsius), relative humidity was 12 percent, winds 18 miles per hour (29 kilometers per hour) with gusts of 30 miles per hour (48 kilometers per hour).

Fire Origin and Path

The cause and origin are undetermined at this time.

Factors Hindering Occupant Escape

This fire burned 76,067 acres (30,783 hectares), destroyed 1,958 structures, including 1,200 homes, 27 multi-family properties, 68 commercial properties and 585 minor structures. Another 93 structures were damaged. The four victims died in different locations in the fire area. Three were in their homes and one was located outdoors near his car. Four firefighters deployed their shelters but were injured. The ages of three of the victims were 72, 69, and 66. The fourth victim, whose age was not reported, was an adult.