



RESEARCH



Fire Loss in the United States During 2020

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September 2021

Key Findings

In 2020, local fire departments responded to an estimated 1.4 million fires in the United States. These fires caused 3,500 civilian fire deaths and 15,200 reported civilian fire injuries. Property damage was estimated at \$21.9 billion.

On average, a fire department responded to a fire somewhere in the US every 23 seconds in 2020. A home structure fire was reported every 89 seconds, a home fire death occurred every three hours and 24 minutes, and a home fire injury occurred every 46 minutes.

More than one-third of the fires (490,500 — or 35 percent) occurred in or on structures. Most fire losses were caused by these fires, including 2,730 civilian fire deaths (78 percent); 13,000 civilian fire injuries (86 percent); and \$12.1 billion in direct property damage (55 percent). Major fires in the California wildland/urban interface (WUI) caused \$4.2 billion in direct property damage (19 percent). Unfortunately, losses from these fires were not broken out by incident type. A substantial portion of the loss was undoubtedly due to structure fires.

Only one-quarter of the fires (26 percent) occurred in home properties, including one- or two-family homes and apartments or other multifamily housing, yet these fires caused three-quarters of the civilian fire deaths (74 percent) and injuries (76 percent).

One of every five fires (19 percent) occurred in one- or two-family homes, yet these fires caused nearly two-thirds of the civilian fire deaths (64 percent) and nearly three-fifths of the civilian fire injuries (57 percent). The 6 percent of fires that occurred in apartments caused 10 percent of the civilian fire deaths and 19 percent of the injuries.

Vehicle fires accounted for 15 percent of the fires, 18 percent of the civilian deaths, and 11 percent of the civilian injuries.

Neither structures nor vehicles were involved in half of the fires reported in 2020. These fires included brush, grass, or wildland fires — excluding crops, timber, and other properties of value (20 percent); outside rubbish fires (16 percent); outside fires involving property of value (6 percent); and other fires (7 percent).

The 2020 estimates of the number of fires were 40–64 percent lower than in 1980 for most of the major incident type categories. However, property loss, adjusted for inflation, was 10 percent higher in 2020 than in 1980. This was partially due to the previously mentioned California WUI fires and a \$3 billion Navy ship fire.

The 2020 estimate of total fire deaths was 46 percent lower than in 1980, home fire deaths were 50 percent lower, deaths in one- or two-family home fires were 47 percent lower, and apartment fire deaths were 66 percent lower.

Because the US population has grown since 1980, population-based rates have dropped even more than the estimates have.

Less progress has been made in preventing deaths and injuries associated with reported fires. For overall home fires, the 2020 rate of 7.2 deaths per 1,000 reported home fires was almost identical to the rate of 7.1 in 1980. The rate for one- or two-family home fires was 16 percent higher than in 1980, while the rate for apartment fires was 43 percent lower.

Most of the reduction in reported fires and fire losses occurred more than a decade ago. There is still more work to do, particularly around home fires.

Introduction

In many ways, 2020 was an anomaly. With the COVID-19 pandemic, many businesses were shuttered. Some people worked remotely, some continued normal work, and still others lost their jobs. Overall, people spent more time at home.

An Acosta report released in September 2020 noted that 55 percent of shoppers were eating at home more often during the pandemic than before it began.¹ The Outdoor Foundation reported that 53 percent of Americans at least six years of age engaged in outdoor recreation at least once during 2020.² This was the highest outdoor recreational participation rate ever recorded. These are examples of how people's behaviors and routines changed during the pandemic. While we do not yet have national data on the causes of fires in 2020, increases and decreases in various activities were likely associated with the corresponding changes in related fires.

In 2020, local fire departments, including departments protecting towns, townships, cities, and counties, responded to an estimated 1,388,500 fires in the US. These fires caused an estimated 3,500 civilian deaths; 15,200 civilian injuries; and \$21.9 billion in direct property damage. This report provides a breakdown of these fires. [Firefighter fatalities and injuries](#) are discussed in separate NFPA reports and are not included here.

On average, a fire department responded to a fire somewhere in the US every 23 seconds in 2020. A civilian was fatally injured in a fire every two hours and 31 minutes. Every 35 minutes, a civilian suffered a non-fatal fire injury.

The fire and fire loss estimates in this analysis are derived from NFPA's 2020 fire department experience survey (FES). Only fires reported to

local fire departments are included. State fire agencies were also surveyed about large loss and catastrophic multiple-death fires. Such major incidents were added to the results from the FES. For more information on how these estimates were calculated, see [Methodology Used in Calculating National Estimates from NFPA's Fire Experience Survey](#).

Trends

While some year-to-year fluctuation is normal, from 2019 to 2020, the total number of fires rose 8 percent, civilian deaths fell 6 percent, and civilian injuries fell 8 percent. The increase in total fires was statistically significant. Meanwhile, direct property damage was 1.5 times as high in 2020 as it was in 2019. The 2020 fire property damage included losses of \$4.2 billion from California fires in the WUI and a California blaze that destroyed a naval ship (\$3 billion). The WUI fires included a wide variety of incidents and property types; these could not be broken down further.

The estimate of total fires was 54 percent lower in 2020 than in 1980, while fire death and injury estimates were 46 percent and 50 percent lower, respectively, over the same period. Property loss, adjusted for inflation, was 10 percent higher than in 1980. See Figures 1–3.

US Census data shows that the resident population of the US grew 46 percent from 1980 to 2020. The resulting rate of 4.2 fires per 1,000 population in 2020 was 68 percent lower than the 13.1 rate in 1980 and 7 percent higher than the 2019 rate of 3.9.

The 10.6 civilian fire deaths per million population in 2020 was 63 percent lower than the 28.6 rate in 1980 and 6 percent lower than the rate of 11.3 in 2019. (See Figures 4 and 5.)

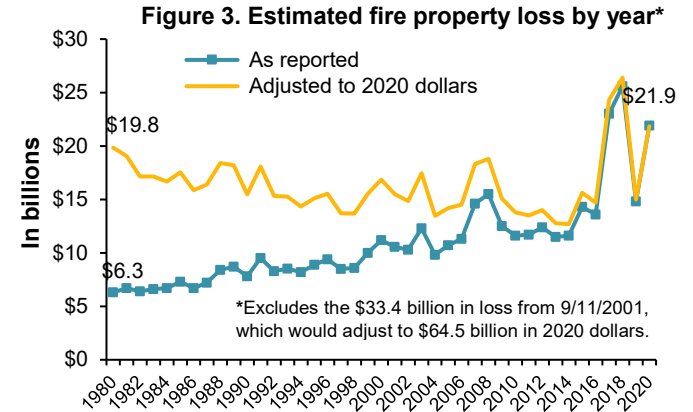
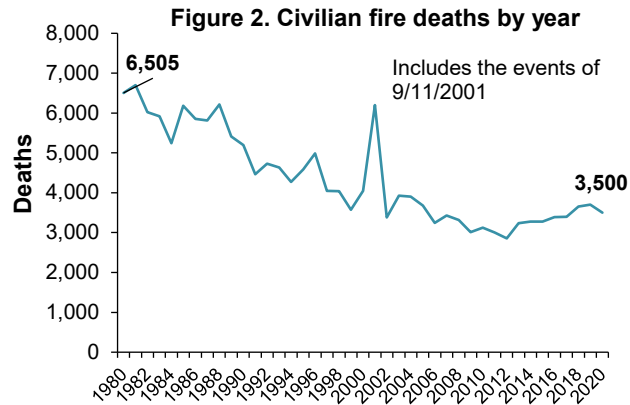
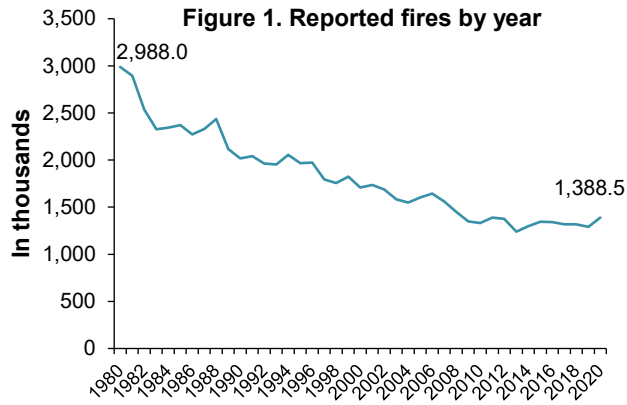
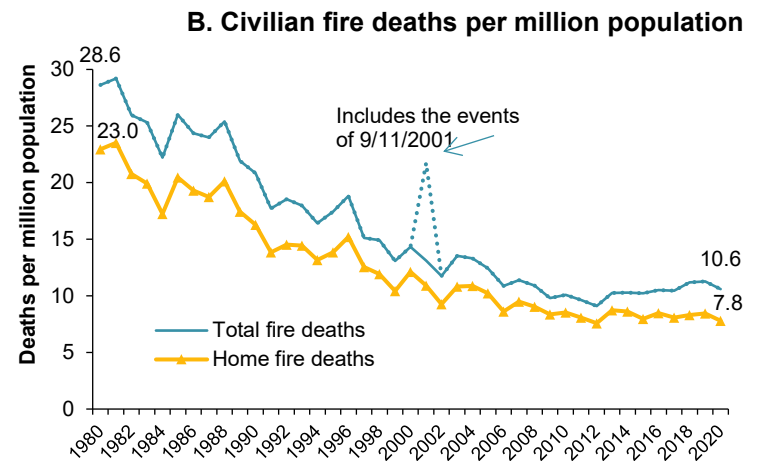
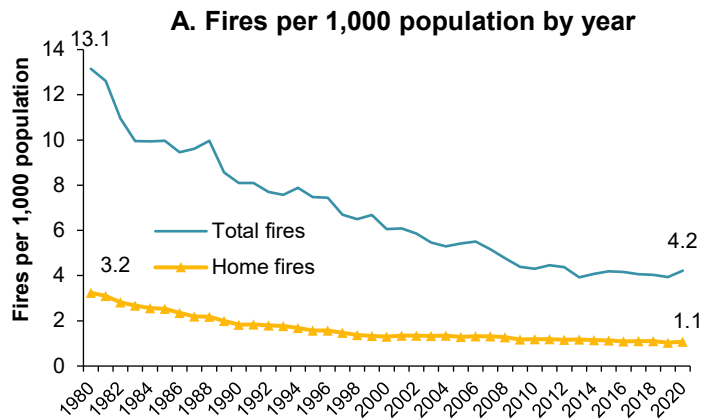
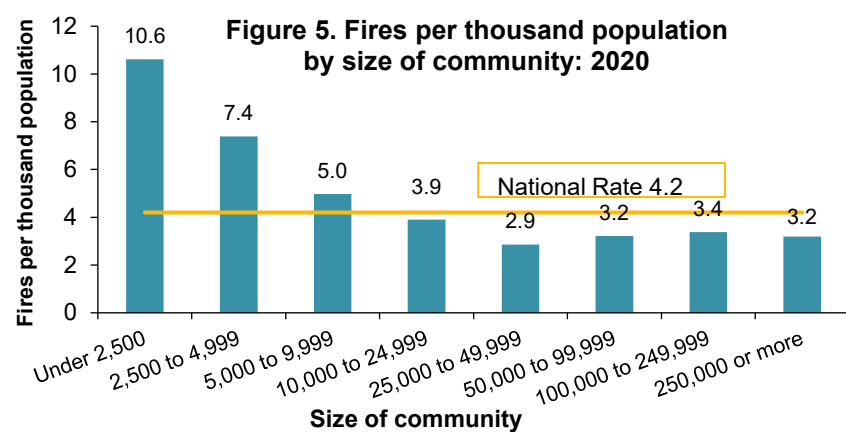


Figure 4. Population-based fire and civilian fire death rates: 1980–2020



While smaller communities have fewer fires than larger communities, the 10.6 fires per 1,000 population for fire departments protecting communities with fewer than 2,500 people is 2.5 times the overall national rate. Fire departments in smaller communities are less likely to conduct fire prevention or code enforcement activities.³ Open burning to get rid of debris might also be more common in these communities. Figure 5 shows that the rate of fires generally decreases as the population protected increases from very small to midsize, with the lowest population-based rate of fires found in departments protecting populations of at least 25,000.



The fire rates tell only part of the story. To really understand the US fire problem, the areas of progress, and the remaining challenges, we need to know more about where fires occur, the causes of these fires, and whether fires and casualties are increasing or decreasing in actual number and population-based rates. For information about specific fire causes or fires in specific occupancies, see [nfpa.org/News-and-Research](https://www.nfpa.org/News-and-Research).

Table 1 provides a summary of fires, civilian casualties, and direct property loss by type of fire for 2020.

Definitions

Civilian: Anyone other than a firefighter.

Structure fire: In general, any fire in or on a structure is considered a structure fire, even if the structure itself is not damaged.

Homes: One- or two-family homes, including manufactured homes, and apartments, or other multifamily housing.

Non-home or other residential: Hotels, motels, dormitories, rooming houses, residential board and care, and unclassified residential.

Residential: Homes plus non-home or other residential.

Non-residential: Public assembly, educational (excluding dorms), institutional, stores or offices, industrial, utility, manufacturing or processing, storage, and bridges, tents, poles, and other special properties.

Highway vehicle: Vehicle intended for use on roadways, such as cars, trucks, motorcycles, buses, recreational vehicles in transit, etc. A vehicle burning inside a garage is considered a vehicle fire if the fire did not spread to the structure or other items.

Structure Fires

In 2020, the estimated 490,500 structure fires (35 percent of the reported fires) caused 2,730 civilian fire deaths (78 percent of total civilian fire deaths); 13,000 civilian injuries (86 percent); and \$12.1 billion in direct property damage (55 percent). While structure fires probably dominated the \$4.2 billion in property loss from California wildfires, it is not possible to disaggregate these fires by incident type or occupancy.

Table 1. Reported Fires in 2020 by Incident Type

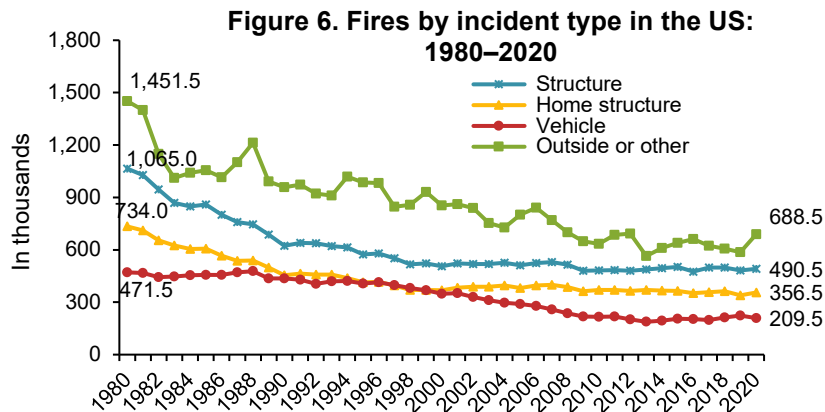
Incident Type	Fires	Civilian Deaths	Civilian Injuries	Property Loss (In Millions) ¹
Fires in California Wildland-Urban Interface (WUI)				\$4,200 (19%)
Structure Fire	490,500 (35%)	2,730 (78%)	13,000 (86%)	\$12,107 (55%)
Residential structure fire	379,500 (27%)	2,630 (75%)	11,900 (78%)	\$8,703 (40%)
Home structure fire	356,500 (26%)	2,580 (74%)	11,500 (76%)	\$8,400 (38%)
<i>One- and two-family home, including manufactured homes</i>	270,500 (19%)	2,230 (64%)	8,600 (57%)	\$6,771 (31%)
<i>Apartment or other multifamily housing</i>	86,000 (6%)	350 (10%)	2,900 (19%)	\$1,629 (7%)
Other residential structure fire	23,000 (2%)	50 (1%)	400 (3%)	\$303 (1%)
Non-residential structure fire	111,000 (8%)	100 (3%)	1,100 (7%)	\$3,404 (16%)
Vehicle Fire	209,500 (15%)	630 (18%)	1,700 (11%)	\$5,170 (24%)
Highway vehicle fire	173,000 (12%)	580 (17%)	1,500 (10%)	\$1,615 (7%)
Other vehicle fire*	36,500 (3%)	50 (1%)	200 (1%)	\$3,555* (16%)
Outside and Other Fire**	688,500 (50%)	140 (4%)	500 (3%)	\$389 (2%)
Fire outside but no vehicle (outside storage, crops, timber, etc.)	84,000 (6%)	**	**	\$210 (1%)
Fires in brush, grass, or wildland (excluding crops and timber) with no dollar loss	277,000 (20%)	**	**	**
Outside rubbish fire	225,000 (16%)	**	**	**
All other fires	102,500 (7%)	**	**	\$179 (1%)
Total	1,388,500 (100%)	3,500 (100%)	15,200 (100%)	\$21,866 (100%)

* Includes a \$3 billion naval ship fire in California.

** Casualty data is not reported for subcategories of outside and other fires. Property damage is not captured for brush, grass, or wildland with no loss or outside rubbish fires.

Note: Sums may not equal totals due to rounding errors.

Source: NFPA's 2020 survey of fire departments for US fire experience and surveys of state fire authorities for large loss and catastrophic multiple-death fires.

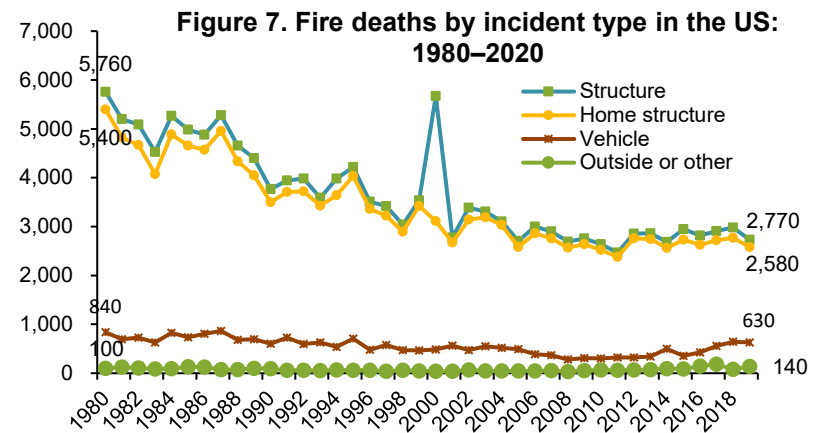


In 2020, on average, fire departments responded to a structure fire every 64 seconds, a structure fire death occurred every three hours and 13 minutes, and a structure fire injury occurred every 41 minutes.

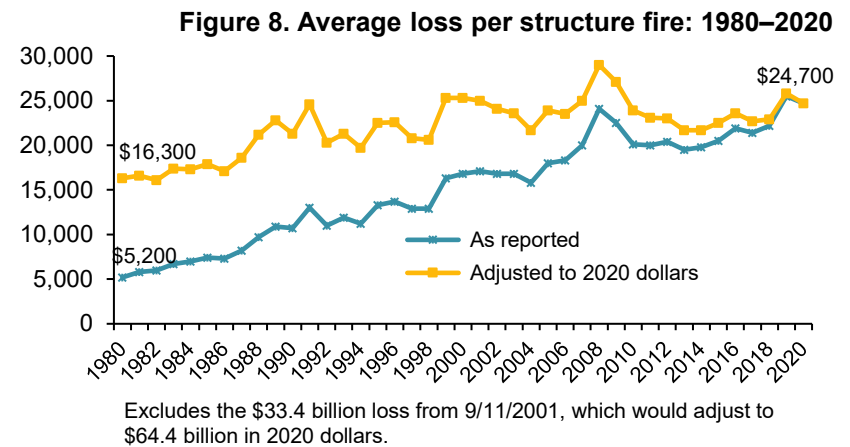
From 2019 to 2020, the number of structure fires rose 2 percent, while associated civilian deaths fell 8 percent, civilian injuries fell 6 percent, and property damage fell 1 percent. The estimate of the total number of structure fires was 54 percent lower in 2020 than in 1980, while structure fire death and injury estimates were 52 percent and 47 percent lower, respectively, over the same period. Although somewhat lower in 2020, structure fires cause 80–90 percent of the civilian fire deaths and injuries in most years, with the events of September 11, 2001, contributing to a high of 92 percent in 2001. See Figures 6 and 7.

Figure 8 shows that the average loss per structure fire, adjusted for inflation, was 1.5 times as high in 2020 (\$24,700) as in 1980 (\$16,300).

In 2020, an estimated 379,500 total residential structure fires (27 percent) caused 2,630 civilian deaths (75 percent); 11,900 civilian injuries (78 percent); and \$8.7 billion in direct property damage (40 percent). From 2019 to 2020, residential structure fires rose 5 percent, associated



civilian deaths fell 8 percent, civilian injuries fell 6 percent, and residential fire property damage rose 9 percent. The increase in residential fires was statistically significant.

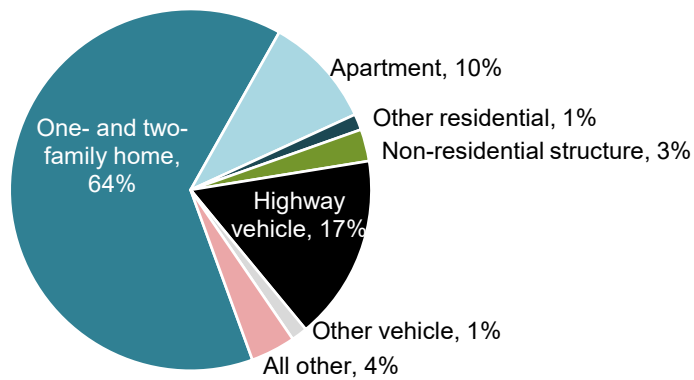


The estimate of 379,500 residential structure fires reported in 2020 was 50 percent lower than the 757,500 in 1980. Residential structure fire deaths fell 52 percent from 5,446 in 1980 to 2,630 in 2020.

The 2020 estimate of 11,900 residential fire injuries was 44 percent lower than the 21,100 in 1980.

See Figure 9 for a breakdown of 2020 fire deaths by type of fire.

Figure 9. Civilian fire deaths by incident type and occupancy: 2020



Home Structure Fires

The 356,500 home structure fires in 2020 (26 percent) caused 2,580 civilian fire deaths (74 percent); 11,500 civilian injuries (76 percent), and \$8.4 billion in direct property damage (38 percent). On average, a home structure fire was reported every 89 seconds, a home fire death occurred every three hours and 24 minutes, and a home fire injury occurred every 46 minutes.

From 2019 to 2020, the number of home structure fires rose 5 percent, associated civilian deaths fell 7 percent, civilian injuries fell 6 percent, and home fire property damage rose 8 percent. With the COVID-19 pandemic, more people spent more time at home during 2020. This meant more cooking; more use of heating, air conditioning, and other equipment; and other activities that can contribute to home fires, which could account for the increase.

However, more people at home also means more people are available to assist in the event of a fire. This could have contributed to the reduction in fire deaths. Sesseng, Storesund, and Steen-Hansen found that being alone at the time of a fire was one of the common factors in fatal fires in Norway.⁴

With homes accounting for 94 percent of residential structure fires, it is not surprising that the pattern for home fires resembles that of residential structure fires. The estimated number of home structure fires was 51 percent lower in 2020 than in 1980, while estimates for home fire deaths and injuries were 50 percent and 42 percent lower, respectively.

Figure 4 shows that the population-based rates of home fires and home deaths were both 66 percent lower in 2020 than in 1980. The rate of reported home fires fell from 3.2 per thousand population in 1980 to 1.1 in 2020, while the home fire death rate dropped from 23.0 per million population to 7.8 per million population over the same period. The trend lines for the home fire death rate and total fire death rate are very similar.

For information on the causes and circumstances of home fires, see NFPA's report, *Home Structure Fires*. For information about deaths and injuries caused by home fires, see NFPA's report, *Home Fire Victims by Age and Gender*.

In 2020, the 270,500 one- or two-family home structure fires (19 percent) caused 2,230 civilian fire deaths (64 percent); 8,600 civilian fire injuries (57 percent); and \$6.8 billion in direct property damage (31 percent). From 2019 to 2020, fires in one- or two-family homes rose 2 percent, while deaths fell 7 percent, injuries fell 2 percent, and property damage rose 5 percent. The estimated number of structure fires in one- or two-family homes was 54 percent lower in 2020 than in 1980, while estimated deaths and injuries were both 47 percent lower.

The 86,000 apartment or other multifamily housing fires in 2020 (6 percent) caused 350 civilian fire deaths (10 percent); 2,900 civilian fire

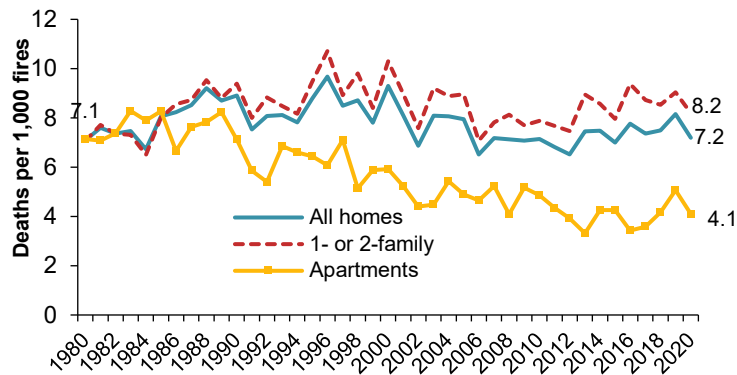
injuries (19 percent), and \$1.6 billion in direct property damage (7 percent). From 2019 to 2020, the number of reported apartment fires jumped 15 percent, a statistically significant increase, returning to roughly the 2018 level after a steep decline from 2018 to 2019. From 2019 to 2020, apartment fire deaths fell 8 percent, injuries fell 15 percent, and property damage jumped 22 percent, returning to 2017–2018 levels.

The estimated number of apartment structure fires was 40 percent lower in 2020 than in 1980, while apartment fire deaths and apartment fire injuries were 66 percent and 19 percent lower, respectively. The 2020 apartment injury estimate is the lowest seen since the survey began.

Less progress has been made in reducing deaths and injuries in reported home fires. In 1980, there were 7.1 deaths per 1,000 reported home fires overall. This was also true for one- or two-family homes and apartments. In 2020, the 7.2 deaths per 1,000 reported home fires was actually 2 percent higher than in 1980. In comparison, the death rate per 1,000 reported apartment fires dropped 43 percent to 4.1.

Apartment buildings, particularly high-rise apartments, are more regulated than one- or two-family homes where the 2020 rate of 8.2 deaths per 1,000 reported fires was 16 percent higher than in 1980.

Figure 10. Deaths per 1,000 reported home fires by year and occupancy: 1980–2020

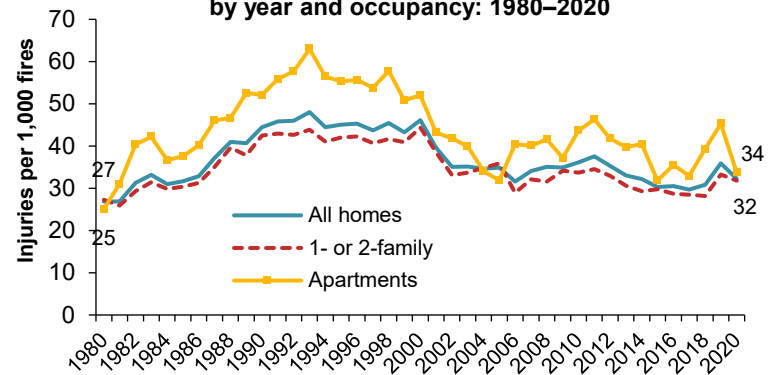


While the rates fluctuated, 1984 was the only one year in which the death rate (6.5) per 1,000 one- or two-family home fires was lower than it was in 1980. Apartment fire-based death rates have had a fairly consistent downward trend. In many years, the death rate per 1,000 total home fires was higher than in 1980 because there are more reported fires in one- or two-family than there are in apartments. See Figure 10.

Figure 11 shows that the 2020 rate of 34 civilian injuries per 1,000 apartment fires was 34 percent higher than the 1980 rate of 25. For one- or two-family home fires, the 2020 rate of 32 injuries per 1,000 fires was 17 percent higher than the 1980 rate of 27. The 32 injuries per 1,000 reported home fires overall in 2020 was 20 percent higher than the rate of 27 in 1980.

Caution should be used when interpreting these results. Occupants who are alerted by smoke alarms may handle a small fire without fire department assistance, resulting in fewer small fires being reported. In addition, many apartment buildings have monitored fire detection that can result in a fire department response even when the system is triggered by a minor fire.

Figure 11. Injuries per 1,000 reported home fires by year and occupancy: 1980–2020



Non-Home Structure Fires

Non-home occupancies, including other residential properties such as dormitories, hotels and motels, rooming houses, and residential board and care occupancies, and non-residential properties, such as public assembly, educational, institutional, retail, office, manufacturing, and industrial or utility occupancies, are more regulated than home properties.

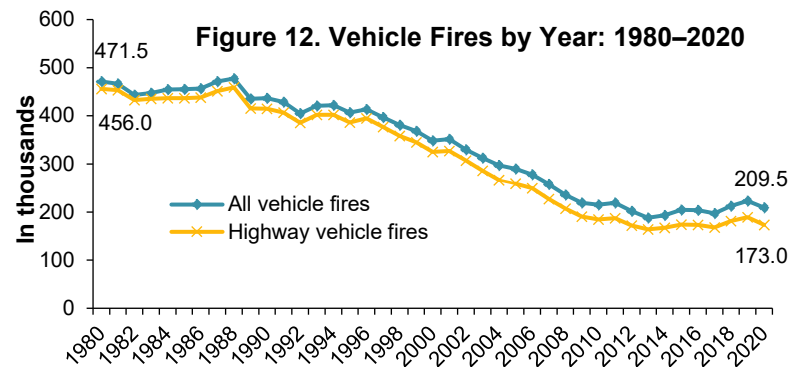
In 2020, the estimated 23,000 structure fires in other residential properties (2 percent) — including unclassified residential structures — caused 50 civilian fire deaths (1 percent), 400 civilian fire injuries (3 percent), and \$303 million in direct property damage (1 percent). From 2019 to 2020, other residential structure fires rose 5 percent, deaths fell 50 percent, and injuries fell 20 percent. Direct property damage climbed 45 percent. The 2020 estimated number of other residential structure fires was 2 percent lower than in 1980; 2020 estimates of civilian fire deaths and injuries were 80 and 71 percent lower, respectively.

In 2020, the 111,000 non-residential structure fires (8 percent) caused an estimated 100 civilian fire deaths (3 percent); 1,100 civilian injuries (7 percent); and \$3.4 billion in direct property damage (16 percent). From 2019 to 2020, non-residential structure fires fell 8 percent, deaths fell 9 percent, injuries fell 8 percent, and direct property damage fell 21 percent. The 2020 estimate of non-residential structure fires was 64 percent lower than the 1980 estimate, while the estimates for civilian deaths and injuries were 56 and 70 percent lower, respectively.

NFPA has reports on the causes and circumstances of fires in many of these occupancies. For the latest annual averages of fires, civilian casualties, and property damage by occupancy or property use (currently 2015–2019), see [Fires by Occupancy or Property Type](#).

Vehicle Fires in 2020

Vehicle fires are an often-overlooked part of the fire problem, yet in 2020, an estimated 209,500 vehicle fires (15 percent) caused 630 civilian fire deaths (18 percent); 1,700 civilian fire injuries (11 percent); and \$5.2 billion in direct property damage (24 percent). More than half of the vehicle property loss resulted from a July 2020 naval ship fire in California that resulted in an estimated loss of \$3 billion.



From 2019 to 2020, vehicle fires overall fell 6 percent, while vehicle fire deaths fell 2 percent, vehicle fire injuries fell 15 percent, and property damage more than doubled. The estimated number of vehicle fires was 56 percent lower in 2020 than in 1980. Estimates of deaths and injuries were 15 and 58 percent lower, respectively.

Eighty-three percent of the vehicle fires, 92 percent of the associated deaths, and 88 percent of the associated injuries resulted from fires involving highway vehicles. The 173,000 highway vehicle fires (12 percent of total fires) in 2020 caused an estimated 580 civilian fire deaths (17 percent); 1,500 civilian fire injuries (10 percent); and \$1.6 billion in direct property damage (7 percent). Fire departments responded to an average of one highway vehicle fire every 3 minutes and 3 seconds.

The 9 percent decline in highway vehicle fires from 2019 to 2020 was statistically significant. In addition, highway vehicle fire deaths rose 5 percent, injuries fell 12 percent, and property damage fell 2 percent. The estimated number of highway vehicle fires in 2020 was 62 percent lower than the 1980 estimate, while the associated fire death estimate was only 11 percent lower, and the injury estimate was 47 percent lower.

For more information on the causes and circumstances of highway vehicle fires, see NFPA's 2020 report *Vehicle Fires*. Vehicles that burn inside a garage or other structure but do not damage the structure or spread to other contents are counted as vehicle fires and are the exception to the structure fire definition discussed earlier.

Other non-highway vehicles, such as boats or ships; aircraft; trains; and agricultural, garden, or industrial vehicles, were involved in an estimated 36,500 fires (3 percent) in 2020. These fires caused 50 civilian deaths (1 percent), 200 civilian injuries (1 percent), and \$3.6 billion in direct property damage (16 percent). From 2019 to 2020, other vehicle fires rose 9 percent, while deaths fell 47 percent, injuries fell 33 percent, and property damage rose to six times the previous estimate.

The 2020 estimate of other non-highway vehicle fires was more than twice the 1980 estimate. It is possible that more such vehicles, including boats, planes, construction vehicles, and garden vehicles, are in use today. Despite this large increase in fires, the estimated number of deaths was 44 percent lower, and the number of injuries was 84 percent lower.

Outside and Other Fires in 2020

Half of the reported fires in 2020 (50 percent) were non-structural, non-vehicle fires or “other fires” that did not fit into any of the standard categories. The estimated 688,500 outside and other fires caused 140 civilian fire deaths (4 percent), 500 civilian fire injuries (3 percent), and \$389 million in direct property damage (2 percent). Casualties were

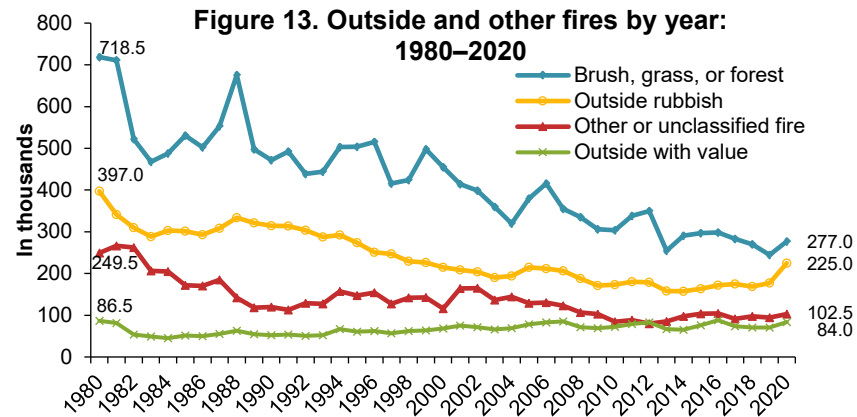
grouped together in this broad category and not subdivided further. A fire in an outside or unclassified property was reported every 46 seconds.

The 84,000 outside fires involving property of value (6 percent), such as outside storage, crops, timber, etc., caused \$210 million in direct property damage (1 percent). Outside and other fires also included 277,000 brush, grass, and wildland fires, excluding crops and timber, (20 percent) and 225,000 outside rubbish fires (16 percent). Property damage information was not collected for these two incident types in NFPA's survey. The remaining 102,500 other non-structural, non-vehicle fires (7 percent) caused \$179 million in direct property damage (1 percent).

From 2019 to 2020, outside and other fires of all types combined rose 17 percent, while associated deaths jumped 75 percent, injuries fell 29 percent, and direct property damage climbed 28 percent (excluding the major WUI fires in 2020). The estimated number of outside fires involving property of value, such as outside storage, crops, or timber — but not structures or vehicles — rose 19 percent, while property damage from these incidents rose 2 percent. Brush, grass, or wildland fires with no value or loss involved rose 13 percent. Outside rubbish fires rose 27 percent. Other fires rose 8 percent. Direct property damage from these other fires jumped 83 percent.

The increases in outside rubbish fires; outside fires involving property of value; and brush, grass, or wildland fires were statistically significant. Amidst the pandemic, the Centers for Disease Control and Prevention advised that outdoor activities carried less risk of exposure to COVID-19 than socializing indoors.⁵ Increased outdoor time may have contributed to the increased prevalence of these fires.

The estimated number of outside and other non-structural, non-vehicular fires was 53 percent lower in 2020 than it was in 1980. The death estimate from these fires was 56 percent higher, while the estimated number of injuries was 64 percent lower. The estimated number of outside fires involving property of value was 3 percent lower in 2020 than in 1980. Figure 13 shows that the biggest decreases in this category were in the estimated number of brush, grass, or wildland fires with no value or loss (61 percent), other fires (59 percent), and outside rubbish fires (43 percent).



¹ “New Acosta Report Details How COVID-19 Is Reinventing How America Eats,” Acosta, September 2020. <https://www.acosta.com/news/new-acosta-report-details-how-covid-19-is-reinventing-how-america-eats>. Accessed August 5, 2021.

² *2021 Outdoor Participation Trends Report*. Outdoor Foundation. <https://outdoorindustry.org/wp-content/uploads/2015/03/2021-Outdoor-Participation-Trends-Report.pdf>. Accessed August 5, 2021.

³ Hylton Haynes. *Fourth Needs Assessment of the US Fire Service*. Quincy, MA: NFPA, 2016.

⁴ Sesseng, Christian; Storesund, Karolina; and Steen-Hansen, Anne, “Analysis of fatal fires in Norway in the 2005–2014 period.” RISE Fire Research, Report A17

Acknowledgments

NFPA is grateful to the many fire departments that responded to the 2020 fire experience survey for their continuing efforts to provide the data necessary to make national projections. The authors would also like to thank the members of the NFPA staff who worked on this year’s survey, including Steve Belski, Frank Deely, and Jay Petrillo, for editing the survey forms and making follow-up calls to fire departments.

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⁵ “Outdoor and Indoor Activities,” Centers for Disease Control and Prevention. Updated August 19, 2021. <https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/outdoor-activities.html>. Accessed September 15, 2021.