NFPA® RESEARCH

Fire Loss in the United States During 2021

Shelby Hall and Ben Evarts

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Key Findings

In 2021, local fire departments responded to an estimated 1.35 million fires in the United States. These fires caused 3,800 civilian fire deaths and 14,700 reported civilian fire injuries. The property damage caused by these fires was estimated at $15.9 billion.

On average, a fire department responded to a fire somewhere in the US every 23 seconds in 2021. A home structure fire was reported every 93 seconds, a home fire death occurred every three hours and eight minutes, and a home fire injury occurred every 47 minutes.

More than one-third of the fires (486,500, or 36 percent) occurred in or on structures. Most of the fire losses were caused by these fires, including 3,010 civilian fire deaths (79 percent); 12,600 civilian fire injuries (86 percent); and $12.7 billion in direct property damage (80 percent). Major fires in the Colorado wildland/urban interface (WUI) caused $648 billion in direct property damage (4 percent). Unfortunately, losses from WUI 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 (25 percent) occurred in home properties, including one- or two-family homes and apartments or other multifamily housing. However, these fires caused three-quarters of the civilian fire deaths (75 percent) and injuries (76 percent).

One of every five fires (20 percent) occurred in one- or two-family homes, yet these fires caused nearly two-thirds of the civilian fire deaths (64 percent) and over half of the civilian fire injuries (54 percent). The six percent of fires that occurred in apartments caused 11 percent of the civilian fire deaths and 21 percent of the injuries.

Vehicle fires accounted for 15 percent of the fires, 18 percent of the civilian fire deaths, and 10 percent of the civilian fire injuries.

Neither structures nor vehicles were involved in half of the fires (49 percent) reported in 2021. These fires not including structures nor vehicles were: brush, grass, or wildland fires — excluding crops, timber, and other properties of value (20 percent); outside rubbish fires (17 percent); outside fires involving property of value (6 percent); and other fires (6 percent).

The 2021 overall estimate for total fire incidents was 55 percent lower than in 1980. Additionally, property loss, adjusted for inflation, was 20 percent lower in 2021 than in 1980.

The 2021 estimate of total fire deaths was 42 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 the deaths and injuries associated with reported fires. For overall home fires, the 2021 rate of 7.9 deaths per 1,000 reported home fires was higher than the rate of 7.1 in 1980. The rate for one- or two-family home fires was 35 percent higher than in 1980, while the rate for apartment fires was 31 percent lower.

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

Introduction

In 2021, local fire departments, including departments protecting towns, townships, cities, and counties, responded to an estimated 1,353,500 fires in the US. These fires caused an estimated 3,800 civilian deaths; 14,700 civilian injuries; and $15.9 billion in direct property damage. This report provides a breakdown of these fires. Firefighter fatalities and injuries have been broken down in separate NFPA reports and are not included here.

The year 2021 was a difficult time for many, including fire departments. Fire stations continued to respond to frequent medical calls related to COVID-19 and firefighters had to manage COVID-19 outbreaks and understaffing within their departments.

On average, a fire department responded to a fire somewhere in the US every 23 seconds in 2021. A civilian was fatally injured in a fire every two hours and 18 minutes. Every 36 minutes, a civilian suffered a non-fatal fire injury.

The fire and fire loss estimates in this analysis are derived from NFPA's 2021 fire 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 of the FES. For more information on how these estimates were calculated, see *Methodology Used in Calculating National Estimates from NFPA's Fire Experience Survey*.

There are many potential explanations for the fluctuation in our fire statistics. While we could speculate on some of those causes, this report's primary purpose is to report related data[1].

Trends

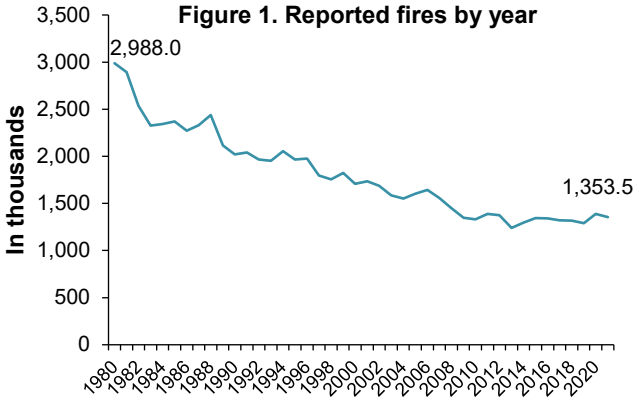
While some year-to-year fluctuation is normal, from 2020 to 2021, the total number of fires decreased 2.5 percent, civilian deaths rose 8.5 percent, and civilian injuries fell 3.3 percent. Meanwhile, direct property damage decreased by 30 percent compared to the property damage in 2020. However, the 2020 fire property damage included losses of $4.2 billion from California fires in the WUI and a fire that destroyed a naval ship in San Diego, California ($3 billion). In 2021, the largest losses resulted from WUI fires in Colorado. Although the reported property loss for 2021 is significantly lower than in 2020, it still represents an overall upward trend in the past five years.

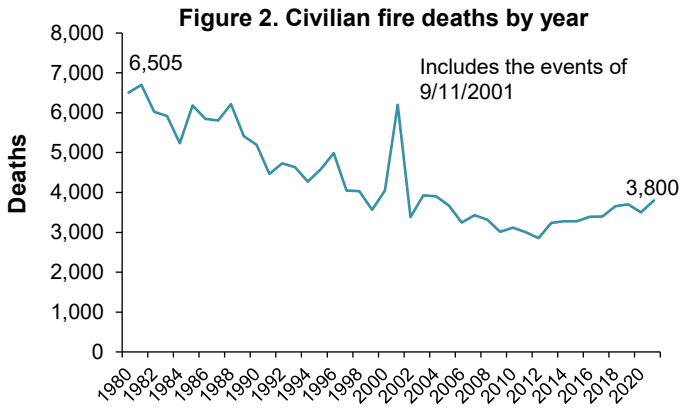
The estimate of total fires was 55 percent lower in 2021 than in 1980, while fire death and injury estimates were 42 percent and 44 percent lower, respectively, over the same period. Property loss, adjusted for inflation, was 20 percent lower in 2021 than in 1980. See Figures 1–3.

US Census data shows that the resident population of the US grew 46 percent from 1980 to 2021. The resulting rate of 4.1 fires per 1,000 population in 2021 was 68 percent lower than the 13.1 rate in 1980 and two percent lower than the 2020 rate of 4.2.

The 11.5 civilian fire deaths per million population in 2021 was 60 percent lower than the 28.6 rate in 1980 and 8 percent higher than the rate of 10.6 in 2020. (See Figures 4 and 5.)

[1] You may note mentions of statistical significance in this report. If an increase or decrease from year to year is statistically significant, it is mentioned. Otherwise, the change is not statistically significant, even if it appears it should. This does not mean it is not important or meaningful, only that it did not meet our threshold of statistical significance.





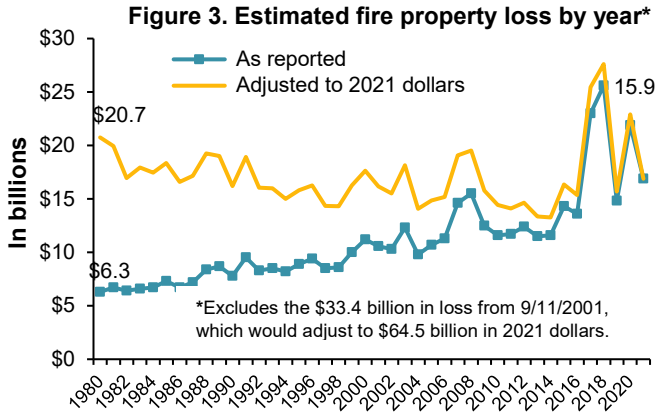
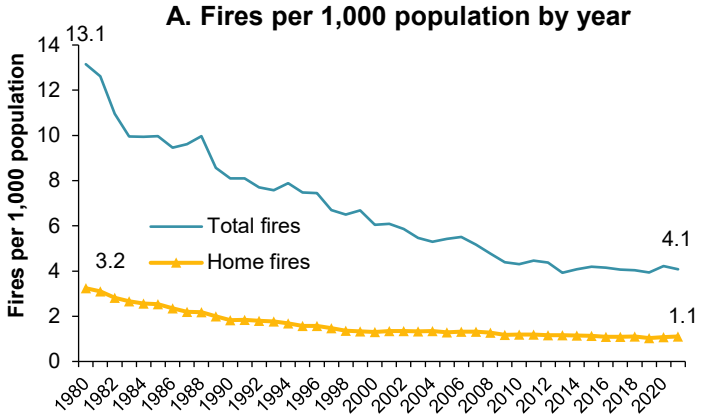
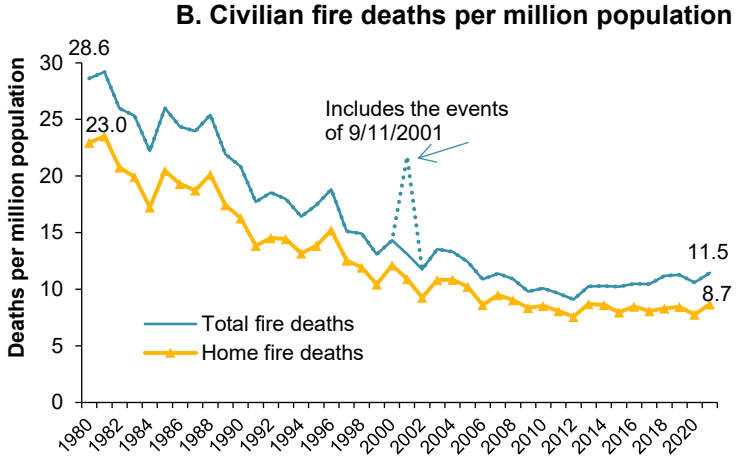


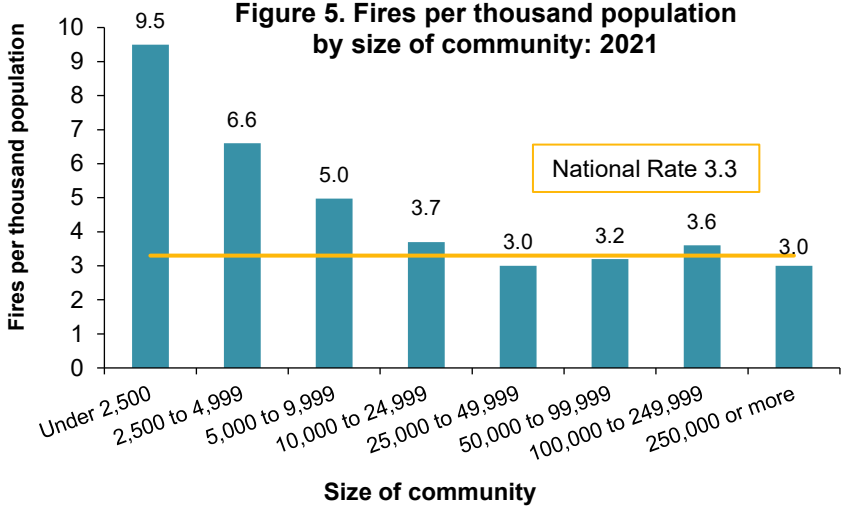
Figure 4. Population-based fire and civilian fire death rates: 1980–2021





While smaller communities have fewer fires than larger communities, the 9.5 fires per 1,000 population for fire departments protecting communities with fewer than 2,500 people is nearly 3 times the overall national rate. Fire departments in smaller communities are less likely to conduct fire prevention or code enforcement activities.[1] 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.

Figure 5. Fires per thousand population by size of community: 2021



Fire rates only tell 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.

Table 1 on the next page provides a summary of the fires, civilian casualties, and direct property loss in 2021 by type of fire.

Definitions

Civilian: Anyone other than a firefighter.

Structure fire: In general, any fire in or on a structure, 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: A vehicle, such as a car, truck, motorcycle, bus, recreational vehicle, etc., intended for use on roadways. A vehicle burning inside a garage is considered a vehicle fire if the fire does not spread to the structure or other items.

Structure Fires

In 2021, the estimated 486,500 structure fires (36 percent of the reported fires) caused 3,010 civilian fire deaths (79 percent); 12,600 civilian injuries (86 percent); and $12.8 billion in direct property damage (80 percent). While structure fires probably dominated the $678 million in property loss from Colorado wildfires, it is not possible to disaggregate these fires by incident type or occupancy.

Table 1. Reported Fires in 2021 by Incident Type

Incident Type	Fires		Civilian Deaths		Civilian Injuries		Property Loss (In Millions)[1]	
Fires in California Wildland-Urban Interface (WUI)							**$678**	**(4%)**
Structure Fire	**486,500**	**(36%)**	**3,010**	**(79%)**	**12,600**	**(86%)**	**$12,751**	**(80%)**
Residential structure fire	**361,000**	**(27%)**	**2,880**	**(76%)**	**11,500**	**(78%)**	**$8,949**	**(56%)**
Home structure fire	338,000	(25%)	2,840	(75%)	11,100	(76%)	$8,697	(55%)
One- and two-family homes, including manufactured homes	*256,500*	*(20%)*	*2,440*	*(64%)*	*8,000*	*(54%)*	*$6,972*	*(44%)*
Apartment or other multifamily housing	*81,500*	*(6%)*	*400*	*(11%)*	*3,100*	*(21%)*	*$1,725*	*(11%)*
Other residential structure fire	*23,000*	(2%)	40	(1%)	400	(3%)	$252	(2%)
Non-residential structure fire	125,500	(9%)	130	(3%)	1,100	(7%)	$3,564	(22%)
Vehicle Fire	**208,500**	**(15%)**	**680**	**(18%)**	**1,500**	**(10%)**	**$2,165**	**(14%)**
Highway vehicle fire	174,000	(13%)	650	(17%)	1,100	(7%)	$1,547	(10%)
Other vehicle fire	34,500	(2%)	30	(1%)	400	(3%)	$618	(4%)
Outside and Other Fire**	**658,500**	**(49%)**	**110**	**(3%)**	**600**	**(4%)**	**$363**	**(2%)**
Fire outside but no vehicle (outside storage, crops, timber, etc.)	79,500	(6%)	**	**	**	**	$156	(1%)
Fires in brush, grass, or wildland (excluding crops and timber) with no dollar loss	269,500	(20%)	**	**	**	**	**	**
Outside rubbish fire	229,500	(17%)	**	**	**	**	**	**
All other fires	80,000	(6%)	**	**	**	**	$207	(1%)
Total	**1,353,500**	**(100%)**	**3,800**	**(100%)**	**14,700**	**(100%)**	**$15,957**	**(100%)**

** Casualty data is not reported for subcategories of outside and other fires. Property damage is not captured for brush, grass, or wildland with no dollar loss or outside rubbish fires.
Note: Sums may not equal totals due to rounding errors.
Source: NFPA's 2021 survey of fire departments for US fire experience and surveys of state fire authorities for large loss and catastrophic multiple-death fires.

In 2021, on average, fire departments responded to a structure fire every 65 seconds, a structure fire death occurred every 2 hours and 54 minutes, and a structure fire injury occurred every 41 minutes.

From 2020 to 2021, the number of structure fires fell 1 percent, while associated civilian deaths rose 10 percent, civilian injuries fell 3 percent, and property damage rose 5 percent. The estimate of the total number of structure fires was 54 percent lower in 2021 than in 1980, while structure fire death and injury estimates were 48 percent and 47 percent lower, respectively, over the same period. Although somewhat lower in 2021, 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 2021 ($26,200) as it was in 1980 ($17,000).

In 2021, an estimated 361,000 total residential structure fires (27 percent) caused 2,880 civilian deaths (76 percent); 11,500 civilian injuries (78 percent); and $8.9 billion in direct property damage (56 percent). From 2020 to 2021, the number of residential structure fires fell 5 percent, associated civilian deaths increased 9.5 percent, civilian injuries fell 3.4 percent, and residential fire property damage rose 2.8 percent. The decrease in residential fires was statistically significant.

Figure 6. Fires by incident type in the US: 1980–2021

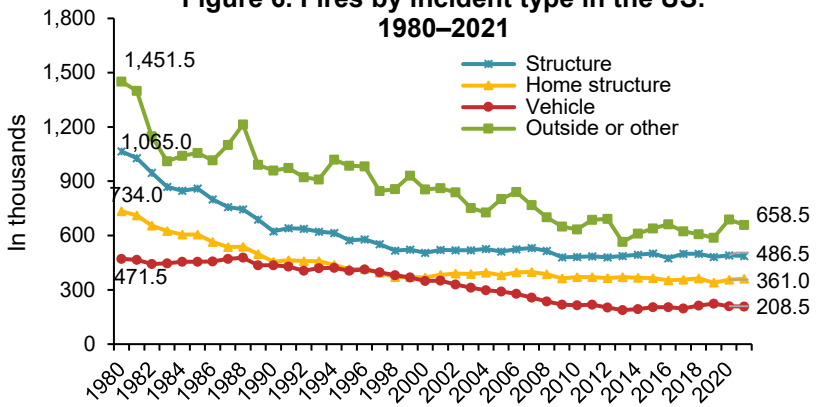


Figure 7. Fire deaths by incident type in the US: 1980–2021

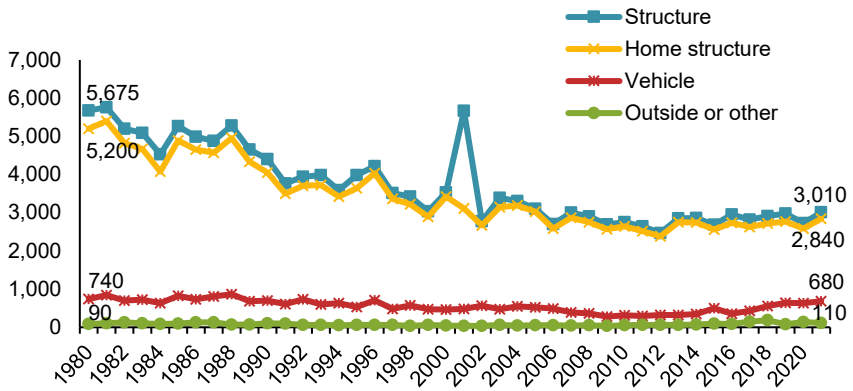
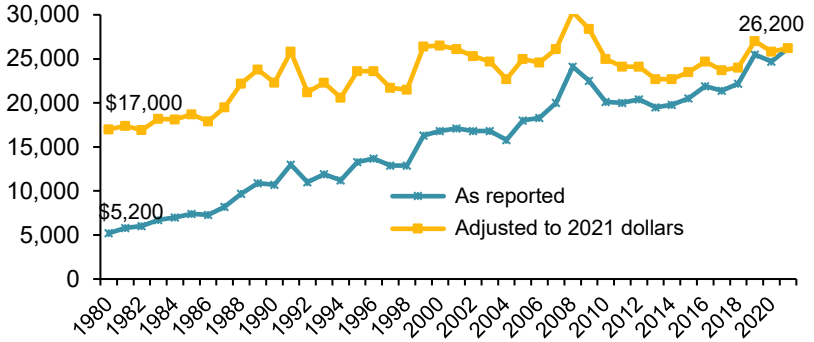


Figure 8. Average loss per structure fire: 1980–2021

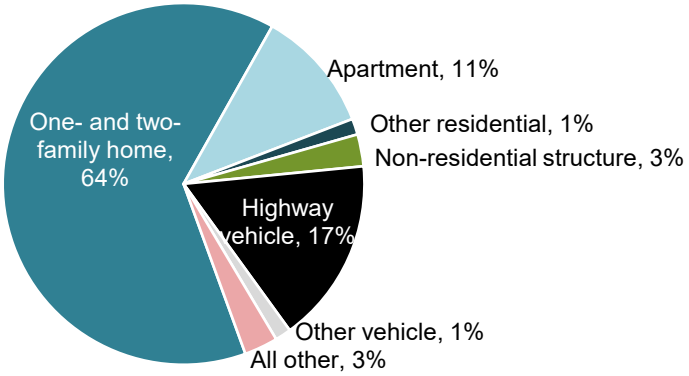


Excludes the $33.4 billion loss from 9/11/2001, which would adjust to $64.4 billion in 2020 dollars.

The estimate of 361,000 residential structure fires reported in 2021 was 52 percent lower than the 757,500 residential structure fires in 1980. Residential structure fire deaths fell 47 percent from 5,446 in 1980 to 2,880 in 2021. The 2021 estimate of 11,500 residential fire injuries was

46 percent lower than the 21,100 reported residential fire injuries in 1980. See Figure 9 for a breakdown of the 2021 fire deaths by type of fire.

Figure 9. Civilian fire deaths by incident type and occupancy: 2021



Home Structure Fires

The 338,000 home structure fires in 2021 (27 percent) caused 2,840 civilian fire deaths (75 percent); 11,100 civilian injuries (76 percent), and $8.4 billion in direct property damage (38 percent). On average, a home structure fire was reported every 93 seconds, a home fire death occurred every three hours and 5 minutes, and a home fire injury occurred every 47 minutes.

From 2020 to 2021, the number of home structure fires fell 5 percent, the associated civilian deaths rose 10 percent, civilian injuries fell 4 percent, and home fire property damage rose 4 percent.

With homes accounting for 97 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 54 percent lower in 2021 than in 1980, while estimates for home fire deaths and injuries were 45 percent and 44 percent lower, respectively.

Figure 4 shows that the population-based rates of home fires and home fire deaths were 67 and 62 percent lower, respectively, in 2021 than in 1980. The rate of reported home fires fell from 3.2 per 1,000 population in 1980 to 1.1 in 2021, while the home fire death rate dropped from 23 per million population to 8.7 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 2021, the 256,500 one- or two-family home structure fires (20 percent) caused 2,440 civilian fire deaths (64 percent); 8,000 civilian fire injuries (54 percent); and $6.9 billion in direct property damage (44 percent). From 2020 to 2021, fires in one- or two-family homes fell 5 percent, while deaths rose 9 percent, injuries fell 7 percent, and property damage rose 3 percent. The estimated number of structure fires in one- or two-family homes was 57 percent lower in 2021 than in 1980, while the estimated deaths and injuries were 42 and 50 percent lower, respectively.

The 81,500 apartment or other multifamily housing fires in 2021 (6 percent) caused 400 civilian fire deaths (11 percent); 3,100 civilian fire injuries (21 percent), and $1.7 billion in direct property damage (11 percent). From 2020 to 2021, the number of apartment fires decreased 5 percent, apartment fire deaths rose 14 percent, injuries rose 7 percent, and property damage rose 6 percent.

The estimated number of apartment structure fires was 43 percent lower in 2021 than in 1980, while apartment fire deaths and apartment fire injuries were 61 percent and 14 percent lower, respectively. The 2021

apartment fire injuries, while not as low as the 2020 figure, continues a downward trend overall.

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 2021, there were 8 deaths per 1,000 reported home fires, a 13 percent increase from 1980. In comparison, the death rate per 1,000 reported apartment fires has fallen 31 percent to 4.9.

Apartment buildings, particularly high-rise apartments, are more regulated than one- or two-family homes, where the 2021 rate of 9.5 deaths per 1,000 reported fires was 35 percent higher than in 1980. While the rates fluctuated, 1984 was the only year in which the death rate per 1,000 one- or two-family home fires (6.5) was lower than it was in 1980. Apartment fire-based death rates have had a consistent downward trend. However, the rates in 2021 and 2019 were the highest since 2010. See Figure 10.

Figure 11 shows that the 2021 rate of 38 civilian injuries per 1,000 apartment fires was 52 percent higher than the 1980 rate of 25. For one- or two-family home fires, the 2021 rate of 31 injuries per 1,000 fires was 14 percent higher than the 1980 rate of 27. The 31 injuries per 1,000 reported home fires overall in 2021 was 16 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, which can lead to a fire department response even when the system is triggered by a minor fire.

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

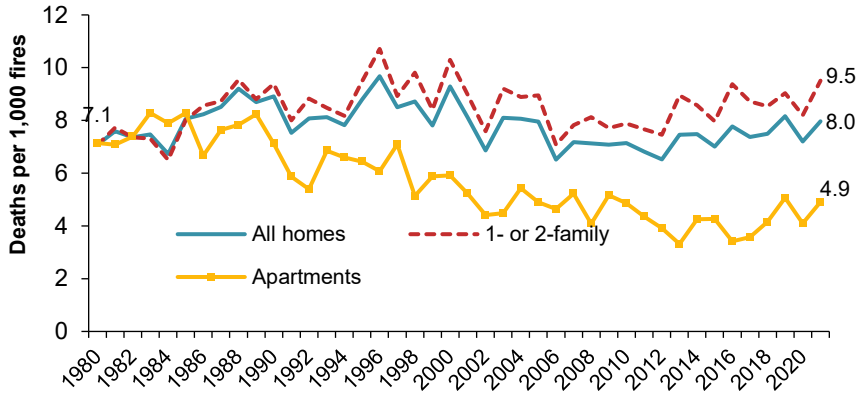
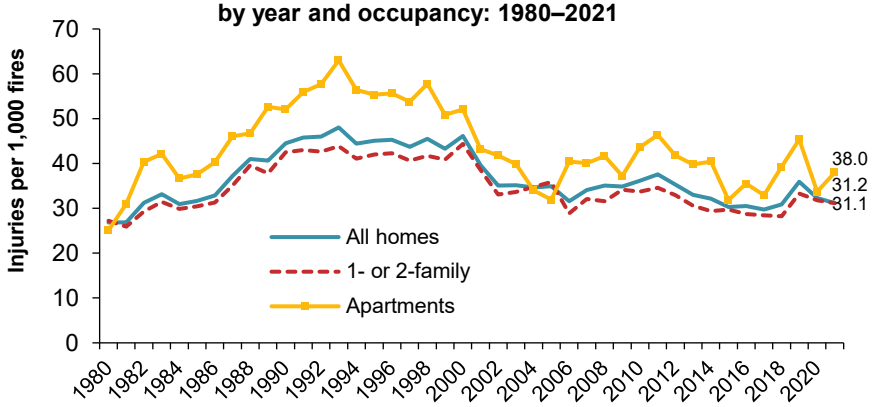


Figure 11. Injuries per 1,000 reported home fires by year and occupancy: 1980–2021



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 2021, the estimated 23,000 structure fires in other residential properties (2 percent) — including unclassified residential structures — caused 40 civilian fire deaths (1 percent), 400 civilian fire injuries (3 percent), and $252 million in direct property damage (2 percent). From 2020 to 2021, the number of other residential structure fires and injuries did not significantly change, while deaths fell 20 percent. The 2021 estimated number of other residential structure fires was 2 percent lower than in 1980, while the estimates of civilian fire deaths and injuries were 80 and 71 percent lower, respectively.

In 2021, the 115,500 non-residential structure fires (9 percent) caused an estimated 130 civilian fire deaths (3 percent); 1,100 civilian injuries (7 percent); and $3.6 billion in direct property damage (22 percent). From 2020 to 2021, non-residential structure fires rose 4 percent, deaths rose 30 percent, injuries did not significantly change, and direct property damage rose 6 percent. The 2021 estimate of non-residential structure fires was 62 percent lower than the 1980 estimate, while the estimates for civilian deaths and injuries were 43 and 70 percent lower, respectively.

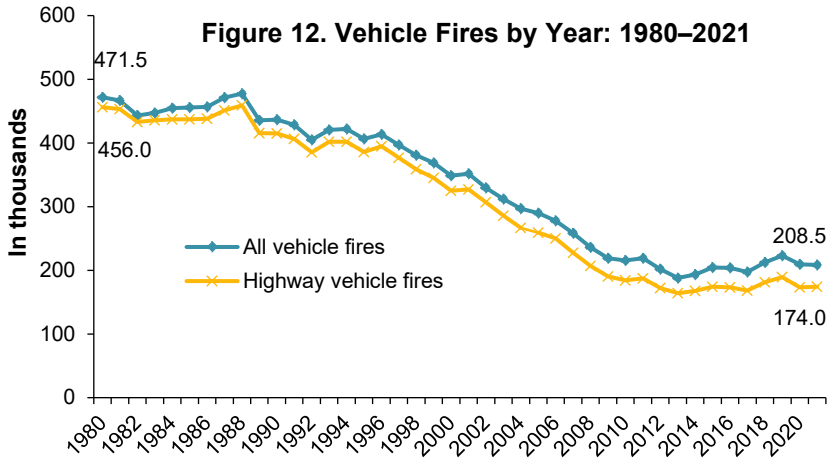
NFPA has reports on the causes and circumstances of fires in many of these occupancies. For the latest annual averages of fires, civilian casualties, and property damage by occupancy or property use (currently 2015–2019), see *Fires by Occupancy or Property Type.*

Vehicle Fires in 2021

Vehicle fires are an often-overlooked part of the fire problem, yet in 2021, an estimated 208,500 vehicle fires (15 percent) caused 680 civilian fire deaths (18 percent); 1,500 civilian fire injuries (10 percent); and $2.1 billion in direct property damage (14 percent).

From 2020 to 2021, the number of vehicle fires fell 5 percent, while vehicle fire deaths rose 1 percent, vehicle fire injuries fell 12 percent, and property damage fell roughly 50 percent. Last year's fire on a Navy boat was largely responsible for the high estimate in 2020. The estimated number of vehicle fires was 62 percent lower in 2021 than in 1980. Estimates of deaths and injuries caused by vehicle fires were 7 and 53 percent lower, respectively.

Eighty-three percent of the vehicle fires, 86 percent of the associated deaths, and 73 percent of the associated injuries resulted from fires involving highway vehicles. The 174,000 highway vehicle fires (13 percent of the total fires) in 2021 caused an estimated 650 civilian fire deaths (17 percent); 1,100 civilian fire injuries (7 percent); and $1.5 billion in direct property damage (10 percent). Fire departments responded to an average of one highway vehicle fire every 3 minutes and 2 seconds.



From 2020 to 2021, highway vehicle fire deaths rose 12 percent, injuries fell 26 percent, and property damage fell 4 percent. The estimated number of highway vehicle fires in 2021 was 62 percent lower than the 1980 estimate, while the associated fire death estimate actually rose 2 percent, and the injury estimate was 61 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 34,500 fires (2 percent) in 2021. These fires caused 30 civilian deaths (1 percent), 400 civilian injuries (3 percent), and $618 million in direct property damage (4 percent). From 2020 to 2021, other vehicle fires fell 6 percent, while deaths fell 40 percent, injuries rose 100 percent, and property damage fell 82 percent to its pre-2020 estimates. The decrease in civilian deaths associated with other vehicle fires is statistically significant.

The 2021 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 36 percent lower and the number of injuries was 87 percent lower.

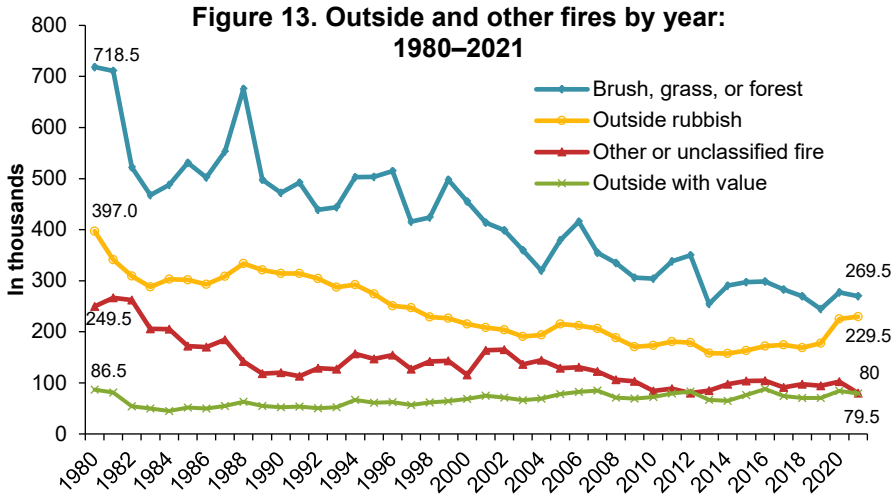
Outside and Other Fires in 2021

Half of the reported fires in 2021 (49 percent) were non-structural, non-vehicle fires, also known as other fires, that did not fit into any of the standard categories. The estimated 658,500 outside and other fires caused 110 civilian fire deaths (3 percent), 600 civilian fire injuries (4 percent), and $363 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 48 seconds.

The 76,500 outside fires involving property of value (6 percent), such as outside storage, crops, timber, etc., caused $156 million in direct property damage (1 percent). Outside and other fires also included 269,500 brush, grass, and wildland fires, excluding crops and timber, (20 percent) and 229,500 outside rubbish fires (20 percent). Property damage information was not collected for these two incident types in NFPA's survey. The remaining 80,000 other non-structural, non-vehicle fires (6 percent) caused $207 million in direct property damage (1 percent).

From 2020 to 2021, outside and other fires of all types combined fell 4 percent, while the associated deaths fell 3 percent, injuries fell 5 percent, and direct property damage dropped 55 percent (excluding the major WUI fires in 2021). The estimated number of outside fires involving property of value, such as outside storage, crops, or timber — but not structures or vehicles — fell 5 percent, while property damage from these incidents fell 25 percent. Brush, grass, or wildland fires with no value or loss involved fell 3 percent. Outside rubbish fires rose 2 percent. Other fires fell 22 percent. Direct property damage from these other fires rose 16 percent. The decrease in other fires of all types (excluding outside rubbish fires; brush, grass, and wildland fires; and outside fires of value) was statistically significant.

The estimated number of outside and other non-structural, non-vehicle fires was 55 percent lower in 2021 than it was 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 (62 percent), other fires (68 percent), and outside rubbish fires (42 percent).



Acknowledgments

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To learn more about research at NFPA, visit nfpa.org/research.

Email: research@nfpa.org.

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[1] *Fifth Needs Assessment of the US Fire Service*. Quincy, MA: NFPA, 2020.