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FIRE LOSS IN THE UNITED STATES DURING 2018

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Abstract

United States fire departments responded to an estimated 1,318,500 fires in 2018. These fires resulted in 3,655 civilian fire fatalities; 15,200 civilian fire injuries; and an estimated $25.6 billion in direct property loss (this figure includes $12.4 billion in losses from major California wildfires). On average, there was a civilian fire death every 2 hours and 24 minutes and a civilian fire injury every 35 minutes in 2018. Home fires caused 2,720, or 74 percent, of the civilian fire deaths. Fires accounted for four percent of the 36,746,500 total calls. Eight percent of the calls were false alarms; 64 percent of the calls were for medical aid such as emergency medical services (EMS) or rescues.

Acknowledgements

NFPA is grateful to the many fire departments that responded to the *2018 National Fire Experience Survey* for their continuing efforts to provide the data necessary to make national projections. The author 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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Section I

Overview of 2018 United States Fire Experience

Number of Fires

- Public fire departments responded to 1,318,500 fires in 2018, only 1,000 fewer than in 2017.
- Of these, 499,000 fires occurred in structures.
- Of the structure fires that occurred in 2018, 363,000, or 73 percent, occurred in home structures, including one- and two-family homes, manufactured homes, and apartments. This was an increase of 2 percent.
- There were also 181,500 fires in highway-type vehicles, an increase of 8 percent from the previous year.
- The 607,000 fires that occurred in outside and other properties represented a decrease of 3 percent from the previous year.
- Every 24 seconds, a United States fire department responds to a fire somewhere in the nation. A fire occurs in a structure at the rate of one every 63 seconds, and a home fire occurs every 87 seconds. Fires occur in highway vehicles at the rate of one every 2 minutes 54 seconds, and there is a fire in an outside and other property every 52 seconds.

Civilian Fire Deaths

- In 2018, 3,655 civilians died in fires, an increase of 8 percent from the previous year. This is partially due to the 85 deaths in the Camp Fire in November 2018.
- Of these, 2,720, or 74 percent of all fire deaths, occurred in the home, an increase of 3 percent compared to 2017.
- Another 490 civilians died in highway vehicle fires, which represents 13 percent of all fire deaths.
- Nationwide, a civilian died in a fire every 2 hours and 24 minutes, and a civilian died in a home fire every 3 hours and 13 minutes.

Civilian Fire Injuries

- In 2018, fires caused 15,200 civilian fire injuries, a 4 percent increase over the previous year. Many civilian injuries are not reported to the fire service, and the estimate for civilian injuries may be low.
- Of these, 12,700 civilian injuries, or 84 percent of all civilian injuries, occurred in structure fires.
- Home fires were responsible for 11,200 civilian injuries, or 74 percent of all civilian injuries, in 2018.
- Another 1,300 civilian injuries, or 9 percent of all civilian injuries, occurred in highway vehicle fires.
- Nationwide, there was a civilian fire injury every 35 minutes, and a civilian fire injury in home fires every 41 minutes.

Property Damage

- An estimated $25.6 billion in property damage occurred as a result of fire in 2018. This number includes over $12 billion in losses from wildfires.
- $11.1 billion in property damage occurred in structure fires, including $8 billion in property loss in home fires.
- Highway vehicle fires resulted in $1.4 billion in property loss last year.

Intentionally Set Fires

- An estimated 25,500 fires were intentionally set in 2018, (excluding fires whose causes were unknown), an increase of 13 percent over the year before.
- Intentionally set fires in structures also resulted in 350 civilian deaths, an increase of 25 percent from the previous year.
- At the same time, intentionally set structure fires resulted in $593 million in property loss, an increase of 2 percent from 2017.
- There were 9,500 intentionally set vehicle fires, an increase of 12 percent from the previous year. These fires resulted in $65 million in property damage, a decrease of 13 percent from the year before.

Methods

Sample Selection

The NFPA Fire Service Inventory file currently lists 29,705 public fire departments in the US. Based on the desired levels of statistical precision and available resources, the NFPA set a target of 2,700 fire department survey responses for the 2018 sample.

Because of the variation in fire loss results by community size, fire departments were placed in one of the following 10 strata by the size of the community protected (Table 1).

Table 1. Fire Department Stratum by Size of Community Protected

Stratum	Population Size of Community Protected
1	1,000,000 and up
2	500,000 to 999,999
3	250,000 to 499,999
4	100,000 to 249,999
5	50,000 to 99,999
6	25,000 to 49,999
7	10,000 to 24,999
8	5,000 to 9,999
9	2,500 to 4,999
10	2.499 and under

Sample sizes for the individual strata were chosen to ensure the best estimate of civilian deaths in one-and two-family dwellings, the statistic that most aptly reflects the overall severity of the fire problem. All departments that protect 5,000 people or more were included. The 8,854 departments in the eight highest strata protect a population of 279 million, or 85% of the US population as of July 2018.

The rest of the sample included 14,338 randomly selected departments from strata 9 and 10 (less than 5,000 population protected), for a total sample size of 23,192, or 78% of all fire departments in the United States known to the NFPA.

Data Collection

Surveys were mailed in early January 2019. A second mailing was sent in mid-March to fire departments that had not responded to the first mailing. A total of 2,631 departments responded to the questionnaire.

Table 2 shows the number of departments that responded by the region and the size of community.

Table 2. Number of Fire Departments That Responded to 2018 NFPA Survey, by Region and Community Size

Population of Community	All	Northeast	Midwest	South	West
1,000,000 or More	10	1	1	2	6
500,000 to 999,999	27	1	2	15	9
250,000 to 499,999	39	1	6	18	14
100,000 to 249,999	137	8	27	58	44
50,000 to 99,999	222	28	73	71	50
25,000 to 49,999	350	55	151	101	43
10,000 to 24,999	607	124	253	165	65
5,000 to 9,999	414	100	165	103	46
2,500 to 4,999	285	45	135	71	34
Fewer than 2,500	540	84	259	124	73
Total	2,631	447	1,072	728	384

Source: NFPA's Survey of Fire Departments for the 2018 Fire Experience.

The overall response rate was 11%, although response rates were considerably higher for departments protecting larger communities than they were for departments protecting smaller communities. The overall response rate was 50% for departments protecting communities with the populations of 50,000 or more (more than the previous survey); 23% for departments protecting communities of 10,000 to 49,999 (same as the previous survey); and 7% for departments protecting communities with populations of less than 10,000, which are comprised of mostly volunteers (same as the previous survey). Some fire departments were moved into different population strata when they reported changes in the size of the population they protect. The 2,631 departments that did respond protect 118 million people, or 36% of the total US population.

Technical staff members of the Data and Analytics group reviewed the submitted surveys for completeness and consistency. When appropriate, they followed up on questions with a telephone call.

After the edit procedures were completed, the survey data were keyed into a computer file, where additional checks were made. The file was then ready for data analysis and estimation procedures.

Estimation Methodology

The estimation method used for the survey was ratio estimation[1] with stratification by community size. For each fire statistic, a sample loss rate was computed for each stratum. This rate consisted of the total for that particular statistic from all the fire departments reporting it divided by the total population protected by the departments reporting the statistic. Note that this means that the departments used in calculating each statistic could be different, reflecting differences in unreported statistics. The sample fire loss rates by stratum were then multiplied by the population weighting factors to determine the estimates and then combined to provide the overall national estimate.

If this method of estimation is to be effective, estimates of the total number of fire departments and the total population protected in each stratum must be accurate. The NFPA makes every effort to ensure that this is the case. The population weights used for the national estimates were developed using the NFPA FSI (Fire Service Inventory) file and US Census population figures.

For each estimate, a corresponding standard error was also calculated. The standard error is a measure of the error caused by the fact that estimates are based on a sampling of fire losses rather than on a complete census of the fire problem. Due to the fact that the survey is based on a random sample of the smaller departments, we can be confident that the actual value falls within the percentage noted in parentheses for the overall national fire loss statistics: number of fires (2 percent), number of civilian deaths (10 percent), number of civilian injuries (8 percent), and property loss (3 percent).

The standard error helps in determining whether year-to-year differences are statistically significant. Differences that were found to be statistically significant were noted in the tables. Property loss estimates are particularly prone to large standard errors because they are sensitive to unusually high losses, and, as a result, large percentage differences from year to year may not always be statistically significant. In general, response rates have fallen over the past few years, and this has increased the uncertainty inherent in the estimates.

In addition to sampling errors, there are non-sampling errors. These include biases of the survey methodology, incomplete or inaccurate reporting of data to the NFPA, and differences in data collection methods by responding fire departments. As an example of a non-sampling error, most of the fires included in the survey took place in highly populated residential areas because the fire departments selected for the surveys are primarily public fire departments that protect sizable residential populations. Fires that occur in sparsely populated areas protected primarily by State and Federal Departments of Forestry are not likely to be included in the survey results.

The NFPA Fire Incident Data Organization (FIDO) database was also used in conjunction with the annual survey to help identify any large-loss fires or deaths that the survey might have missed.

The editors of the survey data attempted to verify all the reported civilian deaths in vehicle fires. They contacted most of the fire departments that reported fire-related deaths in vehicles and found that many of the deaths were indeed the result of fire. In some instances, however, impact was found to have been the cause of death. This can have a considerable impact on the estimates.

The results presented in this report are based on fire incidents attended by public fire departments. No adjustments were made for unreported fires and losses (e.g., fires extinguished by the occupant). Also, no adjustments were made for fires attended solely by private fire brigades (e.g., industry and military installations), or for fires extinguished by fixed suppression systems with no fire department response.

[1]William G. Cochran, *Sampling Techniques* (New York City: John Wiley, 1977), pp.150-161.

Section II

Results

Number of Fires

Based on the data from our 2018 National Fire Experience Survey, we estimate that public fire departments in the US responded to 1,318,500 fires last year, virtually the same as 2017.

Of these fires, an estimated 499,000 were structure fires. The number of structure fires has trended downward over the past 40 years, falling from a peak of 1,098,000 in 1977. From 1998 to 2008, the number of structure fires fluctuated between 505,000 and 530,500 annually. Since 2009, the estimated number of structure fires per year has been below 500,000 every year except for 2015. Figure 1 shows these trends in detail.

We categorize structure fires as residential and nonresidential. Residential properties include one- and two-family homes, including manufactured homes, apartments or other multi-family housing, hotels and motels, dormitories, and boarding houses. *Home* encompasses one- or two-family homes, including manufactured housing and apartments or other multi-family homes. Homes are much less regulated than other residential properties. Nonresidential structure properties include public assembly, schools and colleges, health care and correctional institutions, stores and offices, industrial facilities, storage facilities, and other structures such as outbuildings and bridges.

In 2018, there were 387,000 residential structure fires, accounting for 78 percent of all structure fires, an increase of 8,000 fires from 2017. Of these fires, 276,500 occurred in one- and two-family homes, accounting for 55 percent of all structure fires. Another 86,500 fires occurred in apartments, 17 percent of the structure fire total. The total number of home fires for 2018 was 363,000. There were also 112,000 nonresidential structure fires in 2018, a decrease of 7 percent from 2017.

The 607,000 outside fires or other non-structure, non-vehicle fires accounted for almost half (46 percent) of all reported fires. These included 270,000 brush, grass, and forest fires (20 percent of total fires); 169,000 outside rubbish fires (13 percent of total fires); 70,500 outside fires involving property of value (5 percent of the total fires); and 97,500 other non-structure, non-vehicle fires (7 percent of total fires).

From 2017 to 2018, outside or other fires decreased by 3 percent. Outside and other fires peaked in 1977 at 1,658,500. The number of such fires then decreased steadily — to 1,011,000 in 1983 — and remained relatively flat through the 1980s. By 1993, the number of outside fires dropped to 910,500 and remained near the 1 million level for the next three years. In 2013, outside and other fires dropped to a record low of 564,500, the only year these fires have dropped below 600,000. From 2017 to 2018, brush, grass, or forest fires decreased 5 percent; outside rubbish fires decreased 3 percent; fires involving property of value decreased by 5 percent; and other non-structure, non-vehicle fires increased 7 percent.

In addition to residential, nonresidential, and outside fires, there were an estimated 181,500 highway vehicle fires in 2018, an increase of 8 percent from the year before, and 31,000 other vehicle fires, an increase of 5 percent.

Table 3. Estimates of 2018 Fires, Civilian Deaths, Civilian Injuries, and Property Loss in the United States

	Estimate	Range[1]	Percent Change from 2017
Number of Fires	1,318,500	1,295,500 to 1,342,000	-<1%
Number of Civilian Deaths	3,655	3,310 to 4,000	+8%
Number of Civilian Injuries	15,200	14,000 to 16,400	+4%
Property Loss[2]	$25.6 Billion*	$25.2 Billion to $26 Billion	+11%

Source: NFPA's Survey of Fire Departments for 2018 US Fire Experience.
The estimates are based on data reported to the NFPA by fire departments that responded to the 2018 National Fire Experience Survey.
[1] These are 95% confidence intervals.
[2] This includes overall direct property loss to contents, structures, vehicles, machinery, vegetation, and anything else involved in a fire. It does not include indirect losses. No adjustment was made for inflation in the year-to-year comparison.
*Includes $12 Billion+ losses in major wildfires.

Table 4. Estimates of 2018 Fires and Property Loss, by Property Use

	Number of Fires		Property Loss[1]	
Type of Fire	Estimate	Percent Change from 2017	Estimate	Percent Change from 2017
Major Wildfires 2018			$12,400,000,000	
Fires in Structures	499,000	+0%	$11,066,000,000	+3%
Fires in Highway Vehicles	181,500**	+8%	$1,403,000,000	+3%
Fires in Other Vehicles[2]	31,000	+5%	$473,000,000	-20%**
Fire Outside but No Vehicle (outside-storage, crops, timber, etc.)	70,500	-5%	$139,000,000	+1%
Fires in Brush, Grass, Wildland (excluding crops and timber) with No Value or Loss Involved	270,000	-5%		
Fires in Rubbish, Including Dumpsters (outside of structures), with No Value or Loss Involved	169,000	-3%		
All Other Fires	97,500	+7%	$176,000,000	+29%**
Total	**1,318,500**	**-<1%**	**$25,600,000,000**	**+11%****

Source: NFPA's Survey of Fire Departments for 2018 US Fire Experience.
The estimates are based on data reported to the NFPA by fire departments that responded to the 2018 National Fire Experience Survey.
Note: Sums may not equal totals due to rounding errors.
[1] This includes overall direct property loss to contents, structures, vehicles, machinery, vegetation, or anything else involved in the fire. It does not include indirect losses, e.g., business interruption or temporary shelter costs. No adjustment was made for inflation in the year-to-year comparison.
[2] This includes trains, boats, ships, aircraft, farm vehicles, and construction vehicles.

*Change was statistically significant to the .05 level.
**Change was statistically significant to the .01 level.

Table 5. Estimates of 2018 Structure Fires and Property Loss, by Property Use

Property Use	Structure Fires		Property Loss[1]	
	Estimate	Percent Change from 2017	Estimate	Percent Change from 2017
Public Assembly	15,500	+7%	$384,000,000	+35%*
Educational	4,500*	+18%	$109,000,000	+113%**
Institutional	6,500	-7%	$44,000,000	+10%
Residential (total)	387,000	+2%	$8,286,000,000	+5%
One- andTwo-Family Homes[2]	276,500	+5%	$6,493,000,000	+6%
Apartments	86,500	-9%	$1,529,000,000	-4%
Other Residential[3]	24,000	+9%	$264,000,000	+63%**
Stores and Offices	18,000	0%	$778,000,000	+2%
Industry, Utility, Defense[4]	11,000**	29%	$508,000,000	+1%
Storage in Structures	27,000	-2%	$833,000,000	-<1%
Special Structures	29,500**	-24%	$124,000,000	-62%**
Total	**499,000**	**+0%**	**$11,066,000,000**	**+3%**

Source: NFPA's Survey of Fire Departments for 2018 US Fire Experience.
The estimates are based on data reported to the NFPA by fire departments that responded to the 2018 National Fire Experience Survey.
Note: Sums may not equal totals due to rounding errors.

[1] Includes overall direct property loss to contents, structure, vehicles, machinery, vegetation, or anything else involved in a fire. It does not include indirect losses, e.g., business interruption or temporary shelter costs. No adjustment was made for inflation in the year-to-year comparison.

[2] This includes manufactured homes.

[3] Includes hotels and motels, college dormitories, boarding houses, etc.

[4] Incidents handled only by private fire brigades or fixed suppression systems are not included in the figures shown here.

*Change was statistically significant to the .05 level.
**Change was statistically significant to the .01 level.

Figure 1. Fire Incidents by Type in the United States, by Year (1977-2018)

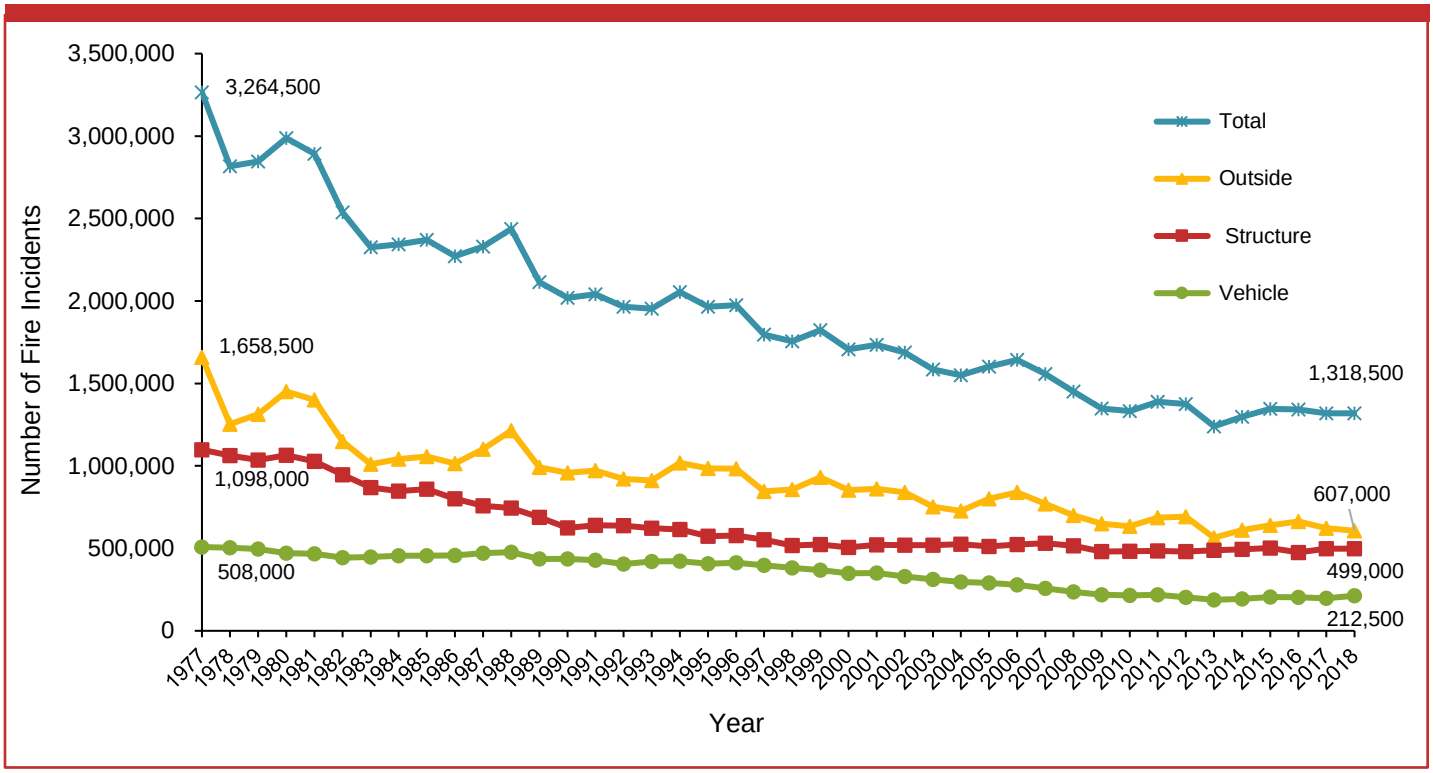
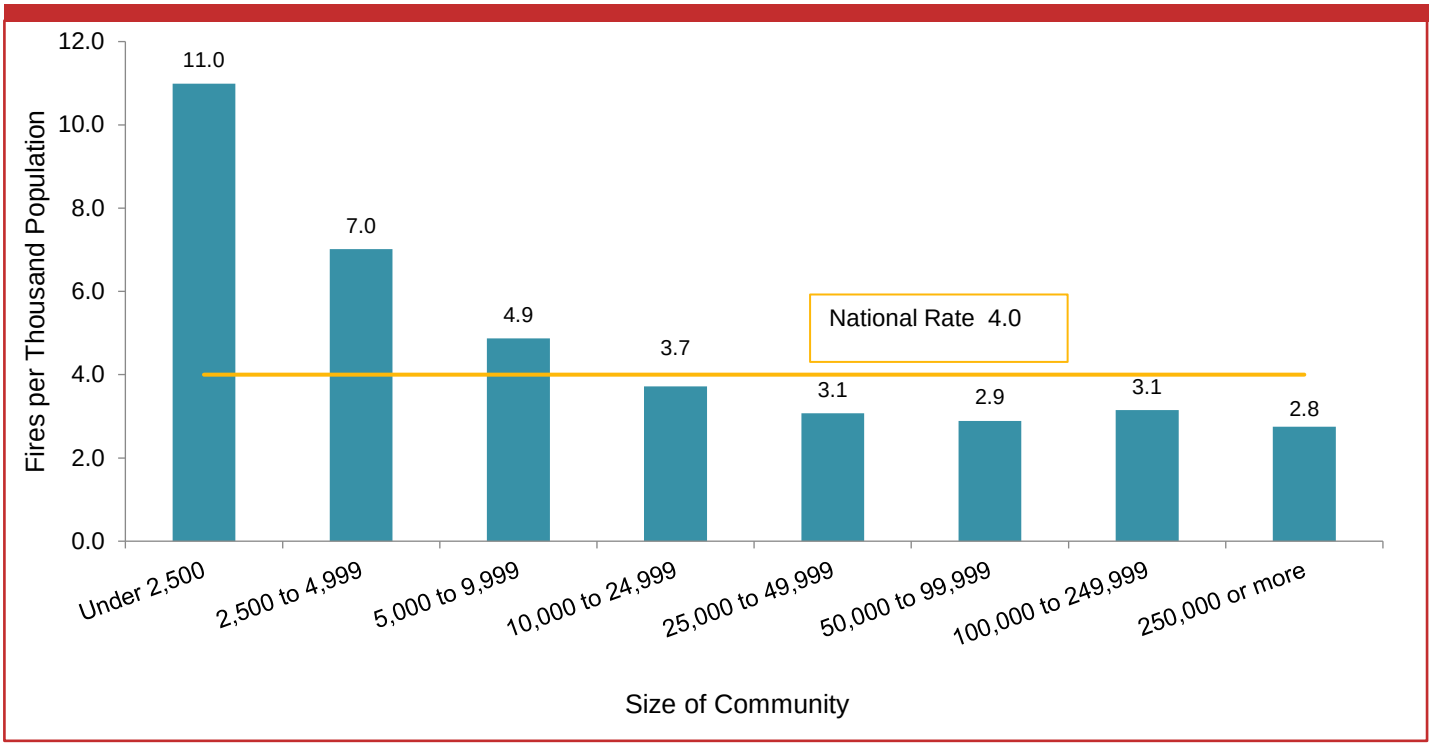


Figure 2. Fires per Thousand Population, by Size of Community (2018)



Civilian Fire Deaths

The 1,318,500 fires reported by fire departments in 2018 resulted in an estimated 3,655 civilian deaths, an increase of 8 percent from the 2017 total. This was partially driven by the 85 deaths in the Camp Fire in California in November. Residential and vehicle fire deaths also increased. We can better understand the nature of these deaths by examining the types of properties where the deaths occurred.

The 363,000 home structure fires (which includes one- and two-family homes and apartments) caused 2,720 civilian deaths, an increase of 3 percent from 2017. This includes 2,360 deaths (65 percent of the total number of civilian deaths) in one- and two-family homes and 360 in apartments or other multi-family housing, including condominiums. Seventy-four percent of civilian fire deaths resulted from home fires.

Home fire deaths reached their peak in 1978, when 6,015 people died in such fires. The number has trended downwards until recent years, with fewer than 5,000 annual deaths since 1982 and less than 4,000 deaths since 1991, with the exception of 1996. Since 2006, home fire deaths have remained below 3,000 per year.

Overall, home fire deaths over the period of 1977 to 2018 declined from 5,865 to 2,720, a drop of 54 percent. The number of home fires also dropped steadily over the same period. However, the death rate per 1,000 home fires fluctuated considerably during that period, from 8.1 in 1977 to a high of 9.7 in 1996 and a low of 6.5 in 2006. The death rate per 1,000 home fires was 7.5 in 2018. This suggests that, while the number of reported home fires and home fire deaths both declined during the period, the fire death rate risk has remained relatively unchanged. That is, given a fire serious enough to report to the fire department, the risk of dying in that fire has not decreased significantly over the past 40 years.

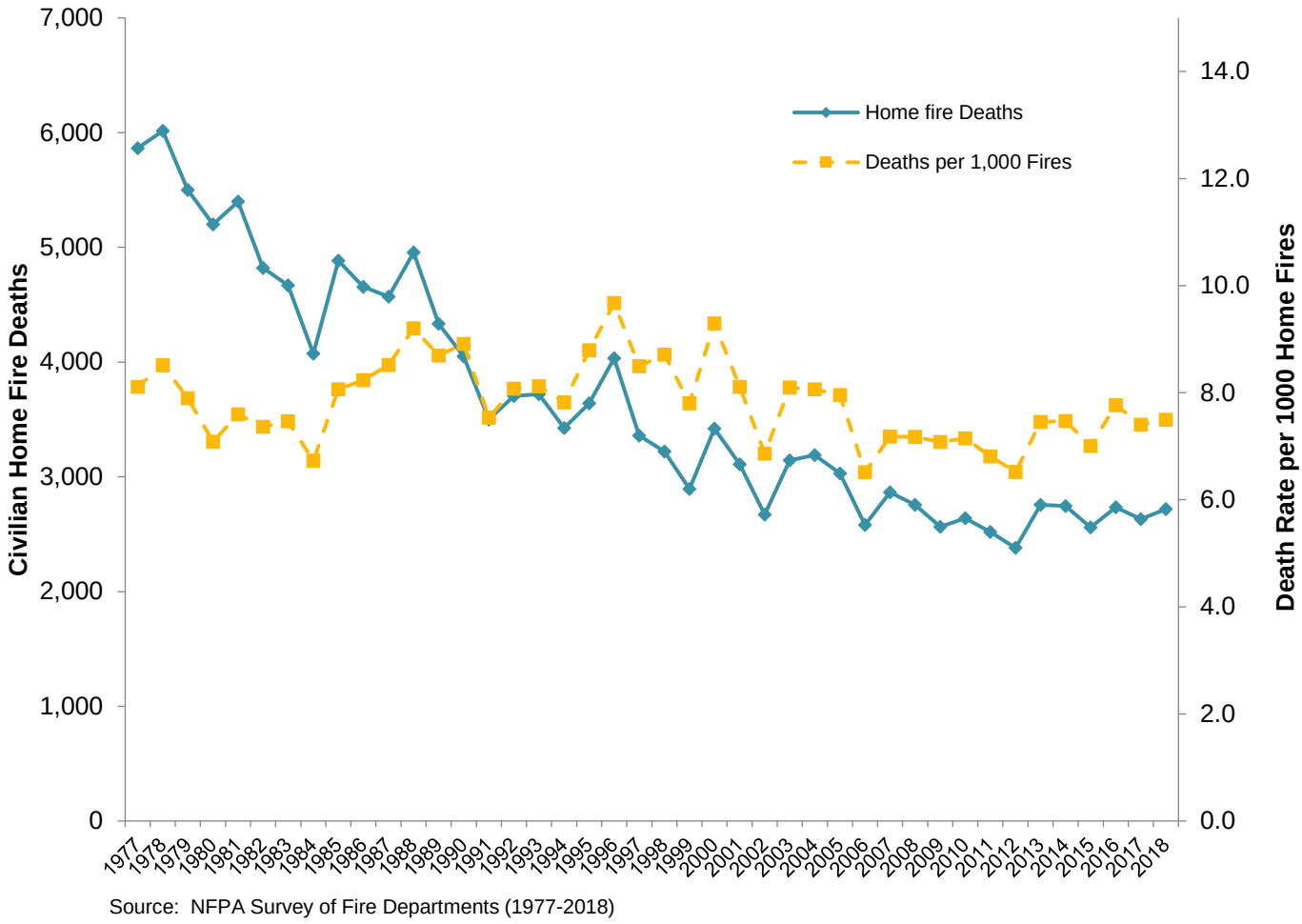
In 2018, there were also 100 civilian fire deaths in other residential occupancies, such as hotels, motels, dormitories, and boarding houses, for an increase of 25 percent compared to 2017. In addition, 90 civilians died in nonresidential structure fires, a decrease of 14 percent from the year before.

Of the 2,910 civilian deaths in structure fires, 350 (12 percent) died in fires that were intentionally set.

With 2,720 home fire deaths accounting for 74 percent of all civilian fire deaths, fire safety initiatives targeted at the home remain the key to any reductions in the overall fire death toll. There are five major strategies for reducing the death toll in home fires. First, more widespread public fire safety education is needed on how to prevent fires and how to avoid serious injury or death if a fire occurs. Information on the common causes of fatal home fires should be used in the design of fire safety education messages. Second, people need to install and maintain smoke alarms and develop and practice escape plans. Third, wider use of residential sprinklers must be aggressively pursued. Fourth, additional ways must be sought to make home products safer from fire. The regulations requiring more child-resistant lighters are a good example. Finally, the special fire safety needs of high-risk groups, such as children, older adults, the poor, and people with disabilities, need to be addressed. As indicated, there has been significant success in reducing the number of reported home fires, but once a serious fire starts, deaths are almost as likely to occur in a home fire as they were 40 years ago.

In the highway vehicle fires category, the number of civilian deaths rose from an estimated 400 in 2017 to an estimated 490 in 2018. These numbers exclude deaths due to trauma if the fire was not a factor in the death. Between 1980 and 2009, the number of highway vehicle deaths decreased by 60 percent. Since a low of an estimated 260 deaths in 2009, the number of deaths has fluctuated, getting as high 490 in 2018.

Figure 3. Civilian Home Fire Deaths and Rates per 1,000 Fires (1977-2018)



Source: NFPA Survey of Fire Departments (1977-2018)

Table 6. Estimates of 2018 Civilian Fire Deaths and Injuries, by Property Use

Property Use	Civilian Deaths			Civilian Injuries		
	Estimate	Percent Change from 2017	Percent of All Civilian Deaths	Estimate	Percent Change from 2017	Percent of All Civilian Injuries
Residential (total)	2,820	+4%	77%	11,600	+6%	76%
One- and Two- Family Homes[1]	2,360	+3%	67%	7,800	+4%	51%
Apartments	360	+6%	10%	3,400	+9%	22%
Other Residential[2]	100	+25%	3%	400	+29%	3%
Nonresidential Structures[3]	90	-14%	2%	1,100	-12%	7%
Highway Vehicles	490	+23%	13%	1,300	-5%	9%
Other Vehicles[4]	70	+133%	2%	200	-16%	1%
All Other[5]	100	-31%	3%	1,000	+12%	7%
Camp Fire (wildland fire)	85		2%			
Total	**3,655**	**+8%**		**15,200**	**+4%**	

Source: NFPA's Survey of Fire Departments for 2018 US Fire Experience.
The estimates are based on data reported to the NFPA by fire departments that responded to the 2017 National Fire Experience Survey.
Note: Sums may not equal totals due to rounding errors.
[1] This includes manufactured homes.
[2] Includes hotels and motels, college dormitories, boarding houses, etc.
[3] This includes public assembly, educational, institutional, store and office, industry, utility, storage, and special structure properties.
[4] This includes trains, boats, ships, farm vehicles, and construction vehicles.
[5] This includes outside properties with value, as well as brush, rubbish, and other outside locations.

Civilian Fire Injuries

In addition to the 3,655 civilians who died in fires in 2018, there were an estimated 15,200 civilian fire injuries, an increase of 4 percent over 2017. Since civilian fire injuries are not always reported to the fire service, estimates of civilian fire injuries may be lower than actual levels. For example, many injuries occur at small fires to which fire departments do not respond. Fire departments may also not be aware of injuries for which they do not provide treatment or medical transport.

Of the 15,200 civilians injured in 2018, we estimate that 12,700 civilians were injured in structure fires, with 11,200 injured in home structure fires, an increase of 6 percent over the previous year. Of these injuries, 7,800 occurred in one- and two-family homes and manufactured homes, and 3,400 occurred in apartments. An additional 1,100 civilians were injured in nonresidential structure fires in 2018, a decrease of 12 percent from the year before. Additionally, 1,300 civilians were injured in highway vehicle fires, a 5 percent decrease from 2017. Fires in other vehicles (including airplanes, trains, ships, construction vehicles, and farm vehicles) caused 200 civilian injuries in 2018.

Between 1977 and 2018, the number of civilian injuries ranged from a peak of 31,325 in 1979 to a low of 14,660 in 2016, a decrease of 53.2 percent. Since 1997, civilian injuries have remained below 35,000 per year, below 19,000 since 2002, and below 16,000 since 2013.

Property Loss

NFPA estimates that the 1,318,500 fires to which the fire service responded in 2018 caused $25.6 billion in property damage, an 11% increase over the $23 billion in 2017. It is worth noting that the $25.6 billion figure includes major wildfires in California in 2018, which caused over $12 billion in direct property damage.

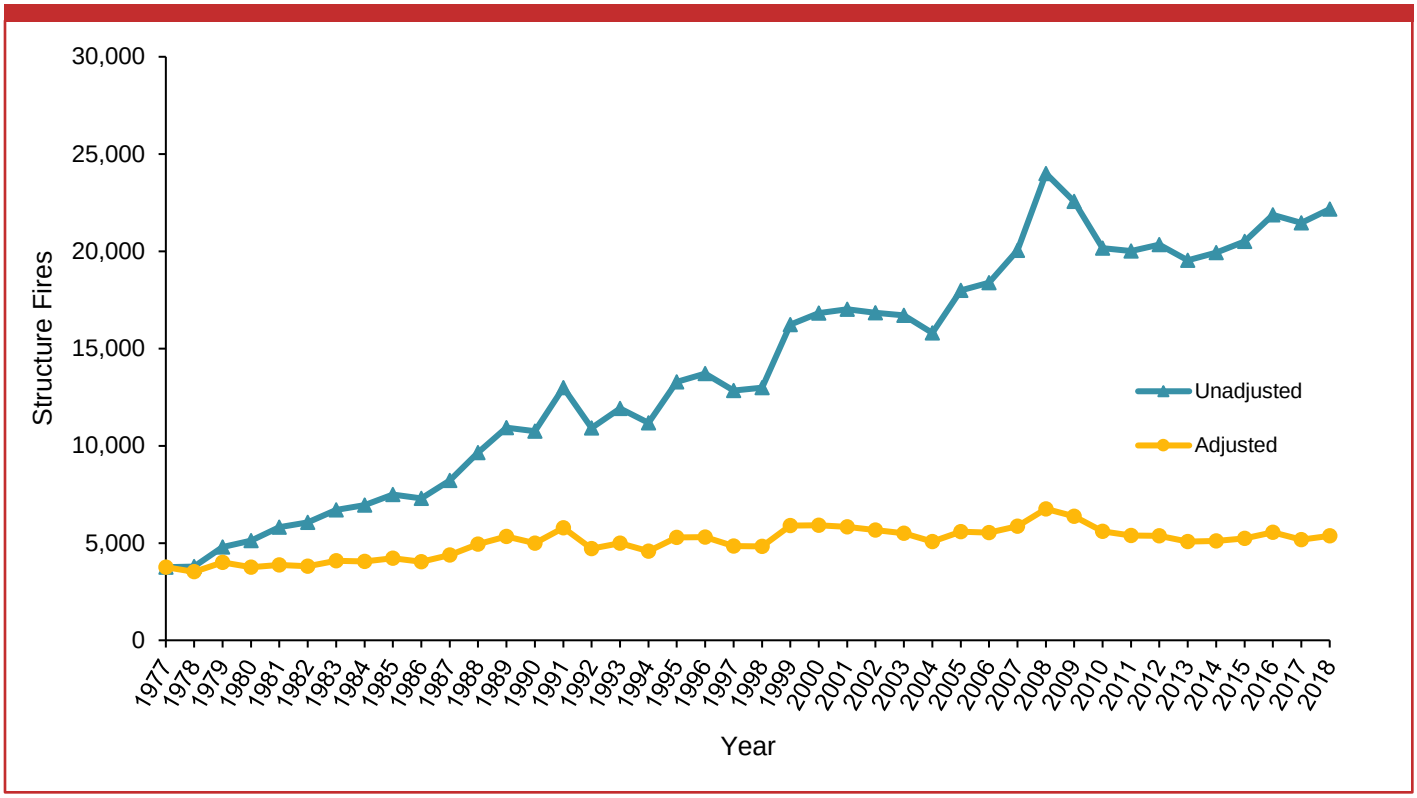
Fires in structures not related to wildfires resulted in $11.1 billion in property damage, an increase of 3 percent from 2017. Each structure fire resulted in an average property loss of $22,176, an increase of 3 percent from the previous year. From 1977 to 2018, excluding the events of September 11, 2001, the average loss per structure fire was $3,757 in 1977 and $22,176 in 2018, for a nearly six-fold increase. When property loss is adjusted for inflation in 2018 dollars, however, the increase in the average structure fire loss between 1977 and 2018 was 43 percent.

Of the 2018 property losses in structures, $8 billion of damage occurred in home structures, an increase of 4 percent from 2017. An estimated $6.5 billion of this loss occurred in one- and two-family homes, an increase of 5 percent. An estimated loss of $1.5 billion occurred in apartments or other multifamily housing, including condominiums, a decrease of four percent.

Other property damage results for 2018 included $778 million in store and office properties, an increase of two percent; $508 million in industrial and manufacturing properties; $1.4 billion in highway vehicles; and $473 million in other vehicles, a 20 percent decrease.

It should be kept in mind that property loss totals can change significantly from year to year due to the impact of occasional large-loss fires. NFPA provides an annual analysis of such fires in the November/December issue of the *NFPA Journal.*

Figure 4. Average Loss per Structure Fire in the United States (1977-2018)



Intentionally Set Fires

NFPA estimates that 25,500 structure fires were intentionally set in 2018, an increase of 13 percent from the year before. These fires resulted in an estimated 350 civilian deaths, an increase of 25 percent from the previous year. These fires resulted in $593 million in property loss, an increase of 2 percent compared to 2017.

In 2018, there were also an estimated 9,500 intentionally set vehicle fires, an increase of 12 percent compared to the year before. These fires resulted in $65 million in property loss, a decrease of 13 percent from 2017.

Estimates of intentionally set fires do not include fires where the cause is unknown or unreported.

Table 7. Estimate of 2018 Losses in Intentionally Set Structure Fires

Intentionally Set Structure Fires	Estimate	Percent Change from 2017
Number of Structure Fires	25,500	+13%
Civilian Deaths	350	+25%
Property Loss[1]	$593,000,000	+2%

Source: NFPA's Survey of Fire Departments for 2018 US Fire Experience.
The estimates are based on data reported to the NFPA by fire departments that responded to the 2018 National Fire Experience Survey.
[1] This includes overall direct property loss to contents, structure, vehicles, machinery, vegetation, or anything else involved in a fire. It does not include indirect losses, e.g., business interruption or temporary shelter costs. No adjustment was made for inflation in the year-to-year comparison.

Table 8. Fire Department Responses, by Type of Call, 2018

	Number	Percent of Calls	Percent Change from 2017
Fire Incidents	1,318,500	4%	-<1%
Medical Aid Responses (ambulance, EMS, rescue)	23,551,500	64%	+5%
False Alarms	2,889,000	8%	+13%
Mutual Aid or Assistance Calls	1,512,500	4%	+12%
Hazardous Material Responses (spills, leaks, etc.)	426,000	1%	+1%
Other Hazardous Responses (arcing wires, bomb removal, etc.)	706,500	2%	+2%
All Other Responses (smoke scares, lockouts etc.)	6,342,500	17%	+6%
Total Incidents	**36,746,500**	**100%**	**+6%**

Source: NFPA's Survey of Fire Departments for 2018 US Fire Experience.
The percent of fires and non-fire incidents by community size is shown in Table 14.
Note: Sums may not equal totals due to rounding errors.
A further breakdown on false responses was collected on the 2018 surveys and the results can be seen in Table 15.

Table 9. Average Number of Fires and Non-Fire Incidents, by Community Size, 2014-2018

	Community Size									
	1,000,000 or More	500,000 to 999,999	250,000 to 499,999	100,000 to 249,999	50,000 to 99,999	25,000 to 49,999	10,0000 to 24,999	5,000 to 9,999	2,500 to 4,999	Under 2,500
Fires	6,237	2,268	1,061	477	191	101	58	34	28	14
Rescue, EMS etc.	156,740	66,710	27,411	12,164	4,926	2,110	992	361	209	53
False Alarm Responses	16,225	6,054	2,498	1,149	912	301	139	56	26	7
Mutual Aid Responses	1,452	1,179	477	332	212	155	91	54	39	14
Hazardous Materials	2,783	832	333	167	87	49	25	11	5	1
Other Hazardous	2,411	1,107	616	282	141	71	37	18	12	3
All Other Responses	78,948	14,922	7,850	3,098	1,278	519	222	89	46	10
Total for All Incidents	**264,796**	**93,073**	**40,247**	**17,671**	**7,747**	**3,307**	**1,564**	**622**	**363**	**102**
	1,000,000 or More	500,000 to 999,999	250,000 to 499,999	100,000 to 249,999	50,000 to 99,999	25,000 to 49,999	10,0000 to 24,999	5,000 to 9,999	2,500 to 4,999	Under 2,500
Fires	2%	2%	3%	3%	2%	3%	4%	5%	8%	13%
Rescue, EMS etc.,	59%	72%	68%	69%	64%	64%	63%	58%	58%	52%
False Alarm Responses	6%	7%	6%	7%	12%	9%	9%	9%	7%	7%
Mutual Aid Responses	1%	1%	1%	2%	3%	5%	6%	9%	11%	14%
Hazardous Materials	1%	1%	1%	1%	1%	1%	2%	2%	1%	1%
Other Hazardous	1%	1%	2%	2%	2%	2%	2%	3%	3%	3%
All Other Responses	30%	16%	20%	18%	16%	16%	14%	14%	13%	10%
Total for All Incidents	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: NFPA's Survey of Fire Departments for 2018 US Fire Experience.
Note: Some large responses from cities are included here, but handled separately in the overall projection.

Table 10. Fire Department False Alarm Responses, by Type of Call, 2018

Type of Call	Estimate	Percentage Change from 2017	Percent of All False Alarms
Malicious, Mischievous False Call	171,500	+22%	6%
System Malfunction	888,500	+18%	31%
Unintentional Call	1,378,500	+7%	48%
Other False Alarms (bomb scares, unclassified false alarms, etc.)	450,500	+22%	16%
Total	**2,889,000**	**+13%**	**100%**

Source: NFPA's Survey of Fire Departments for 2018 US Fire Experience.
Note: Sums may not equal totals due to rounding errors.

Section III

Conclusions

Conclusions

The total number of fires continues to stay relativelysteady. In Figure 2, Fires per Thousand Population, by Size of Commnity, you can see the rate of fire incidents is much higher in communities with less than 5,000 population.

Since 1977, the number of home fire deaths has declined considerably, but the number of deaths per 1,000 fires has remained fairly flat, from a high of 9.7 deaths per 1,000 fires in 1996 to a low of 6.5 deaths per 1,000 fires in 2013 (See Figure 3). One can conclude that even though the number of fires is decreasing, the risk of death in the event of a fire has remained relatively constant for the period of 1977 to 2017

When looking at property loss adjusted for inflation (See Figure 4), the average loss per structure has remained relatively unchanged in recent years, at around $5,000 per structure fire in 1977 dollars.

In conclusion, although the frequency of fire incidents has gone down, the risk of death and property loss remains relatively constant in reported fires.

Definition of Terms

Civilian: Includes anyone other than a firefighter. Covers public service personnel such as police officers, civil defense staff, non-fire service medical personnel, and utility company employees.

Death: An injury that occurred as a direct result of a fire that is fatal or becomes fatal within one year.

Fire: Any instance of uncontrolled burning. Includes combustion explosions and fires out on arrival. Excludes controlled burning (whether authorized or not), over pressure rupture without combustion, mutual aid responses, smoke scares, and hazardous responses (e.g., oil spill without fire).

Fire Department: A public organization that provides fire prevention, fire suppression, and associated emergency and non-emergency services to a jurisdiction such as a county, municipality, or organized fire district.

Injury: Physical damage that is suffered by a person as a direct result of fire and that requires (or should require) treatment by a practitioner of medicine (physician, nurse, paramedic, EMT) within one year of the incident (regardless of whether treatment was actually received), or that results in at least one day of restricted activity immediately following the incident. Examples of injuries resulting from fire are smoke inhalation, burns, wounds and punctures, fractures, heart attacks (resulting from stress under fire conditions), strains, and sprains.

Property Damage: Includes all forms of direct loss to contents, structures, machinery, vehicles, vegetation, or anything else involved in the fire but not indirect losses, such as business interruption or temporary shelter provisions.

Structure: An assembly of materials forming a construction for occupancy or use in such a manner as to serve a specific purpose. A building is a form of structure. Open platforms, bridges, roof assemblies over open storage or process areas, tents, air-supported, and grandstands are other forms of structures.

Vehicles, Highway, and Other: Fires in these instances may have been associated with a crash; however, reported casualties and property loss should be the direct result of the fire only. Highway vehicles include any vehicle designed to operate normally on highways, e.g., automobiles, motorcycles, buses, trucks, trailers (not mobile homes on foundations), etc. Other vehicles include trains, boats and ships, aircraft, and farm and construction vehicles.