

# **INTENTIONAL FIRES**

**Jennifer D. Flynn**

**May 2009**



**National Fire Protection Association  
Fire Analysis and Research Division**

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## **Abstract**

In 2003-2006, an estimated 316,610 intentional fires were reported to U.S. fire departments, annually. The 316,610 intentional fires were associated with losses of 437 civilian fire deaths, 1,404 civilian fire injuries, and \$1.1 billion in direct property damage. In 2006, 10 firefighters died and 7,200 firefighters were injured, while on duty, at the scene of or during response to intentional fires. In 2007, 18% of arson offenses were cleared by arrest or exceptional means.

Keywords: Arson, intentional fire, suspicious, firesetting, firesetter, fire statistics.

## **Acknowledgements**

The National Fire Protection Association thanks all the fire departments and state fire authorities who participate in the National Fire Incident Reporting System (NFIRS) and the annual NFPA fire experience survey. These firefighters are the original sources of the detailed data that make this analysis possible. Their contributions allow us to estimate the size of the fire problem.

We are also grateful to the U.S. Fire Administration for its work in developing, coordinating, and maintaining NFIRS.

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## Intentional Fires Executive Summary

In 2003-2006, an estimated 316,610 intentional fires reported to U.S. fire departments, annually, resulted in 437 civilian fire deaths, 1,404 civilian fire injuries, and \$1.1 billion in direct property damage.

Seventy-six percent of intentional fires occur outside and 8% of intentional fires involve vehicles. All intentional fires have been fairly level since 1999. Of all outside and other fires, 31% are intentional. Ten percent of all structure fires and 8% of all vehicle fires are intentional.

Intentional structure fires account for 16% of intentional fires, but are associated with 86% of civilian deaths, 79% of civilian injuries, and 83% of direct property damage.

More than half (57%) of structure fires in vacant and unsecured buildings are intentional. Forty-two percent of structure fires in buildings that were being demolished were intentional

Half (54%) of intentional structure fires and four out of five civilian deaths (85%) and civilian injuries (82%) occur in homes. In intentional home structure fires specifically, the leading area of origin in the bedroom, and for these fires the leading item first ignited is mattress or bedding material. In public property, including stores or offices, middle, junior high, or high schools, and public assembly facilities, intentional structure fires are most common in the bathroom.

Rates of intentional structure fires or arson offenses, relative to population, are highest in large cities but are also higher in rural communities (less than 2,500 population) than in small towns (say, 2,500 to 9,999 population). The percentage of structure fires that are intentional is largest for the large cities, and for this measure, there is no secondary peak for rural communities.

In 2006, there were an estimated 10 firefighter on-duty deaths, at the scene of or during response or returning to or from an intentional fire. During that same year, there were an estimated 7,200 firefighter on-duty injuries.

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*In the U.S., typically 1 of every 6 arson offenses (18% in 2007) is cleared by arrest or “exceptional means.”*

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*Juveniles have accounted for roughly half of all U.S. arson arrestees beginning in 1992 (47% in 2007).*

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*The Northeast had the highest arson clearance rates in 2001-2007. Prior to that, the highest arson clearance rates were in the South, now the second highest region.*

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*In 2007, 84% of arson arrestees were male and 75% were white.*

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*23% of intentional fires in 2006 had been motivated by fire-play or curiosity.*

*Arson arrests and clearance information comes from the FBI's Uniform Crime Reports*

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Fire departments responded to an estimated **51,840** intentional structure fires annually during 2003-2006. These fires resulted in:

- 377 civilian deaths
- 1,115 civilian injuries
- \$898.1 million in direct property damage

*Half of all intentional structure fires are started in the home.*

*These fires resulted in:*

- 85% of the civilian deaths
- 82% of the civilian injuries
- 64% of the direct property damage

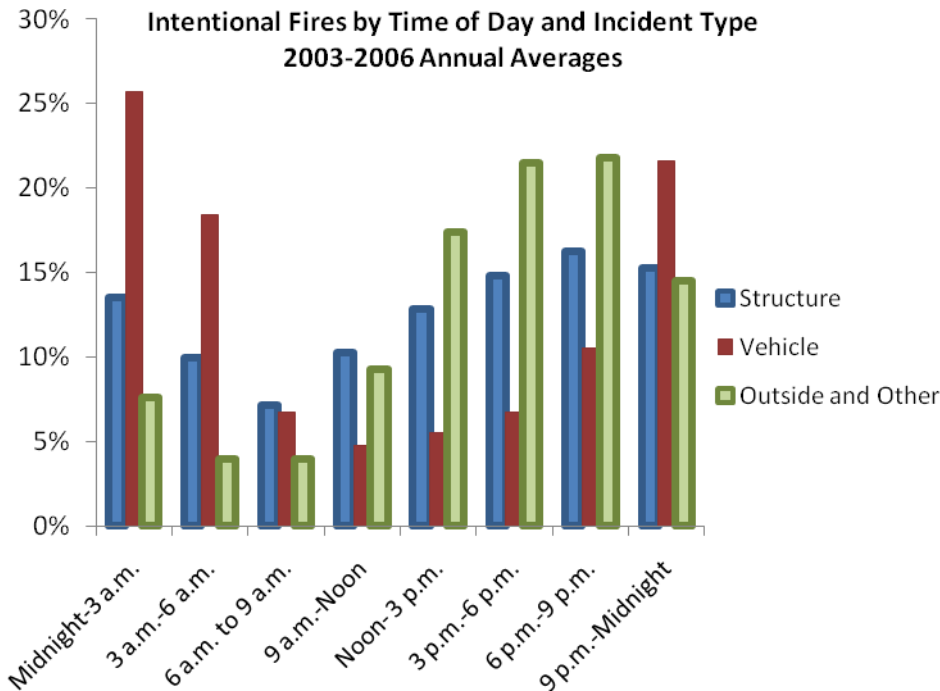
*from intentional structure fires.*

*5% of fires in homes are intentionally started*

*The bedroom is the leading area of origin for intentional home structure fires.*

*The bathroom is the leading area in public properties such as stores, offices, or schools.*

*Large cities have a larger percentage of intentional structure fires.*



Although 3 of every 4 intentional fires are started outside most of the intentional fire casualties and property loss resulted from structure fires.

*In 2006, 10 firefighters died and 7,200 firefighters were injured, while on duty, at the scene or responding to intentional fires.*

*\*An "intentional" fire is a fire that threatens harm and includes deliberate misuse of heat source or a fire of an incendiary nature.*

According to FBI Statistics, in 2007:

- An estimated 5-7% of arson offenses resulted in convictions
- 18% of arson offenses were cleared by arrest or exceptional means
- 47% of arrestees were under the age of 18

## Defining Arson and Intentional Fires

### What is an “intentional” fire?

The fire statistics in this analyses use detailed data from the U.S. Fire Administration’s national Fire Incident Reporting Systems (NFIRS). The definition of “intentional” in NFIRS 5.0 specifically includes “deliberate misuse of heat source or a fire of an incendiary nature.” Not all intentional fire are incendiary and intentional is not the same as arson.

### What is “arson”?

The Uniform Crime Reporting Program defines arson as “any willful or malicious burning or attempt to burn, with or without intent to defraud, a dwelling house, public building, motor vehicle or aircraft, personal property of another, etc.” Here, “willful” is essentially the same as “intentional,” and the rest of the definition consists of examples of types of harm that are included.

### What data sources are used in this report?

Several data sources are used in this analysis. National estimates for this analysis are derived from the National Fire Incident Reporting Systems (NFIRS) and the NFPA’s annual fire department experience survey. In NFIRS Version 5.0, intentional fires are identified by cause of ignition code 1. Only fires reported to municipal fire departments are included in these statistics. Details on the methodology used may be found in Appendix A.

“Intentional” is a code entry unique to NFIRS Version 5.0. Prior to 1999, the field ignition factor includes a choice between “incendiary,” “suspicious” “child playing,” and many other fire causes. This is important to keep in mind when look at trend analysis over multiple years. More information on the coding history is in Appendix B.

NFIRS Version 5.0 has six categories of confined structure fires, including cooking fires confined to the cooking vessel, confined chimney or flue fires, confined incinerator fire, confined fuel burner or boiler fire or delayed ignition, confined commercial compactor fire, and trash or rubbish fires in a structure with no flame damage to the structure or its contents. Although causal information is not required for these incidents, it is provided in some cases. Confined fires are analyzed separately from non-confined fires; estimates are based on the share with causal data.

Another source of arson estimates used in this report is the Federal Bureau of Investigation’s Uniform Crime Reports. This source does not take into account gaps in reporting in its published numbers of arson crimes, but does in estimating arson offense rates relative to population.



## Intentional Fires and Arson Offenses

**In 2003-2006, an estimated 316,610 intentional fires were reported to U.S. fire departments, annually.** The 316,610 intentional fires were associated with losses of 437 civilian fire deaths, 1,404 civilian fire injuries, and \$1.1 billion in direct property damage. (See Table A and Table 1.)

**Three out of every four intentional fires occurs outside, but most of the associated losses result from intentional structure fires.**

Seventy-six percent of intentional structure fires occur outside. Intentional structure fires account for 16% of intentional fires, but are associated with 86% of civilian deaths, 79% of civilian injuries, and 83% of direct property damage. Three out of every four intentional fires occurs outside, but of all the outside fires that occur, 31% are intentional. Ten percent of all structure fires and 8% of all vehicle fires are intentional.

**Table A. Intentional Fires by Incident Type  
2003-2006 Annual Averages**

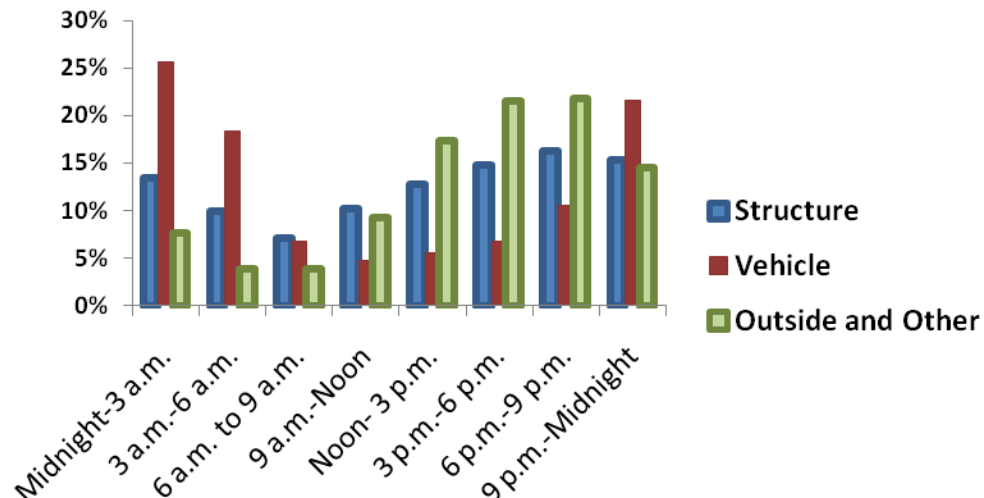
Incident Type	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
			Count	Percentage	Count	Percentage	Count	Percentage
Structures	51,840	(16%)	377	(86%)	1,115	(79%)	\$990	(83%)
Vehicles	24,510	(8%)	40	(9%)	70	(5%)	\$166	(14%)
Outside & Other	240,260	(76%)	20	(5%)	219	(16%)	\$27	(3%)
<b>Total</b>	<b>316,610</b>	<b>(100%)</b>	<b>437</b>	<b>(100%)</b>	<b>1,404</b>	<b>(100%)</b>	<b>\$1,075.9</b>	<b>(100%)</b>

Source: NFIRS Version 5.0 and NFPA Survey

*In 1987, Massachusetts instituted the Burned Motor Vehicle Reporting Law. This law requires that owners of burned motor vehicles complete and sign a report that must also be signed by a fire official from the department in the community. In the first 5 years since the law was instituted, vehicle arsons fell 74%.*

*-(Annual Report of the Massachusetts Fire Incident Reporting System 2007)*

**Figure 1. Intentional Fires by Time of Day and Incident Type  
2003-2006 Annual Averages**

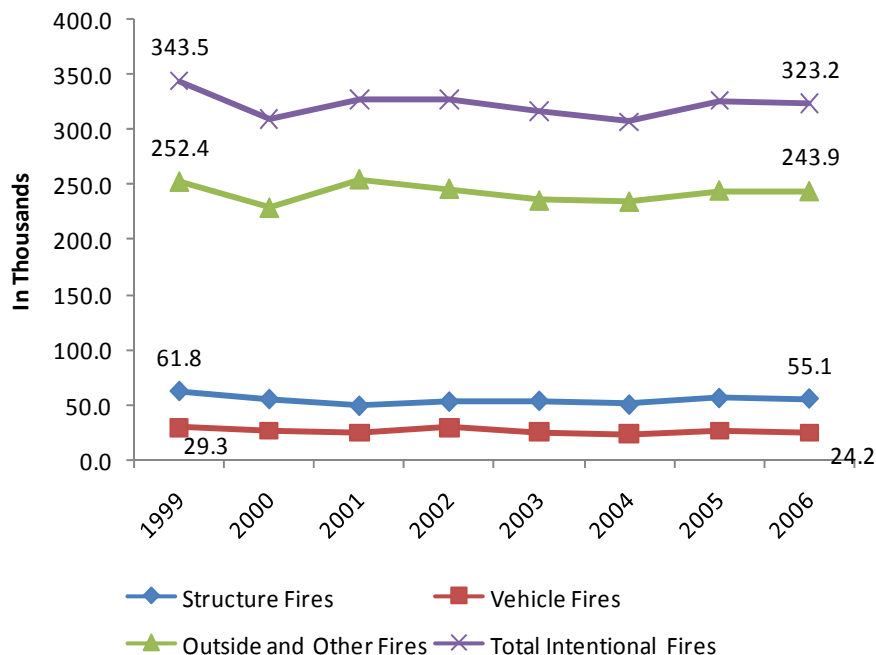


Source: NFIRS Version 5.0 and NFPA Survey

**Intentional vehicle fires peak in the very early morning hours, while outside and other fires peak during the afternoon and intentional structure fires peak in the evening.**

Figure 1 and Table 2 show that 66% of intentional vehicle fires occur between the hours of 9 p.m. and 6 a.m., peaking between 11 p.m. and 2 a.m. Sixty-six percent of intentional outside or other fires occur between the hours of noon and 9 p.m., peaking between 5 and 6 p.m. Forty-six percent of intentional structure fires occur between the hours of 3 p.m. and midnight, peaking between 8 and 9 p.m.

**Figure 2. Intentional Fire Trends 1999-2006**



Source: NFIRS Version 5.0 and NFPA Survey

**Fire-play or curiosity is the leading suspected motivation factor for arsonists.**

An analysis of the NFIRS Arson Module data from 2006 shows that fire-play or curiosity was the leading suspected motive behind intentional fires. Twenty-three percent of intentional fires in 2006 were motivated by fire-play or curiosity. (See Figure 3.)

The 2009 Arson Awareness week theme is Arson for Profit. The U.S. Fire Administration cites David J. Icové’s research, *Combating Arson for Financial Motives*, when discussing

*The trends in intentional fires and associated losses have been fairly level since 1999.*

*Figure 2 and Table 3 show the trend for “Intentional” fires by structure, vehicle, and outside. However, they should be used with caution. Tables 4-6 show trends for civilian deaths, injuries, and direct property damage.*

*Prior to 1999, NFIRS ignition factors included two codes “Suspicious” and “Incendiary.” With Version 5.0, which was instituted in 1999, “Intentional” was introduced and “Suspicious” was removed. What appears to be a significant drop in intentional fires in 1999 may actually be an artifact from the change in coding. Also, with the introduction of NFIRS Version 5.0, use of 5.0 was still very partial in 1999-2001, therefore use of these statistics can be less stable. For a breakdown of “Incendiary” and “Suspicious” fires from 1980-1998 and more information on trend analysis please see Appendix B.*

*Table 7 shows the latest statistics from the NFPA survey, which provides estimates of intentional structure fires through 2007, and the FBI’s Uniform Crime Reports. These two estimates tend to track very closely together, with both running below the NFIRS national estimates, as would be expected because the NFIRS national estimates include an allocation of unknowns. All three estimates show a long-term downward trend in intentional fires and arson offenses.*

motivation for arson. According to Icove, financial motives include collecting insurance, liquidating property, dissolving business, concealing loss, pursuing employment, clearing parcels, and reducing competition.

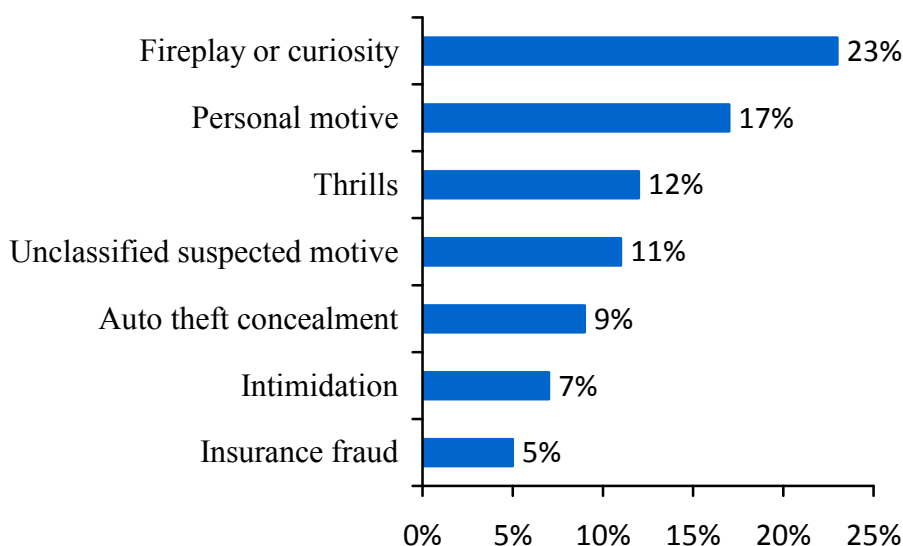
Table 8 shows arson fires in 2006 by motivation factor as was collected in the Arson Module of NFIRS Version 5.0. It appears that 21% of intentional fires reported in the Arson Module were potentially motivated by monetary or other gain.

Nearly half of all suspected motives, however, were not curiosity or gain. Personal motives (17%) and thrills (12%) were the leading motives of this type.

The Arson Module is optional according to NFIRS 5.0 rules. Therefore, a large percentage of the incidents recorded were unknown or unreported and were allocated across those motives that were known. Caution should be used when using these estimates. Motives have been classified into general categories, but that is not to say that one motivation factor can be exclusively categorized by the motive heading.

The U.S. Fire Administration's report *Attacking the Violent Crime of Arson (2004)* states that arson is usually a personal crime directed against specific victims. According to the report, spite and revenge were reportedly the most common motives behind incendiary fires as a whole. The 2006 estimates from the Arson Module show that personal motive and thrills are the next leading suspected motives after curiosity.

**Figure 3. Intentional Fires by Suspected Motivation Factor  
2006 Estimates**



Source: NFIRS Version 5.0 and NFPA Survey

**One out of every four intentional structure fires spreads beyond the room of fire origin.**

Table B shows that nearly two out of every three intentional structure fires (62%) is a confined fire or confined to the object that was first ignited. Another 13% of fires remain confined to the room of fire origin. Twenty-two percent of intentional structure fires spread beyond the room of fire origin but were confined to the building and 4% spread beyond the building.

**Table B. Intentional Structure Fires by Extent of Flame Damage  
2003-2006 Annual Averages**

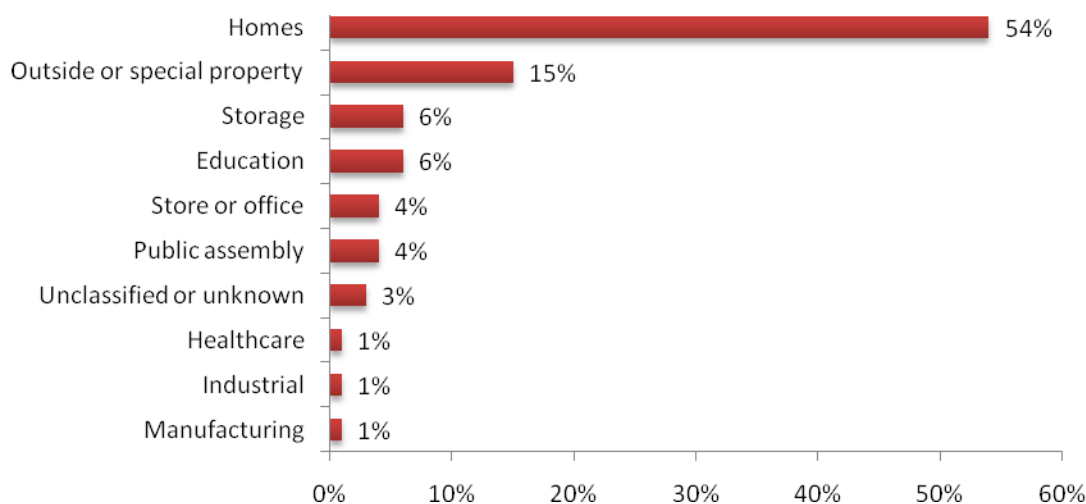
	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Confined or contained fire	22,870	(44%)	0	(0%)	52	(5%)	\$2.4	(0%)
Confined to object of origin	9,140	(18%)	19	(5%)	206	(18%)	\$59.8	(7%)
Confined to room of origin	6,620	(13%)	59	(16%)	359	(32%)	\$84.8	(9%)
Confined to floor of origin	2,080	(4%)	42	(11%)	148	(13%)	\$85.2	(10%)
Confined to building of origin	9,230	(18%)	222	(59%)	298	(27%)	\$498.1	(56%)
Beyond building of origin	1,900	(4%)	34	(9%)	53	(5%)	\$165.5	(18%)
	51,840	(100%)	377	(100%)	1,115	(100%)	\$895.8	(100%)

Source: NFIRS Version 5.0 and NFPA Survey

**Half (54%) of all intentional structure fires occurred in the home.**

Homes were the leading property type involved in intentional structure fires and resulting losses. Eighty-five percent of civilian deaths and 82% of civilian injuries from intentional structure fires occurred in the home. Fifteen percent of intentional structure fires took place in outside or special property types. (See Figure 4 and Table 9.)

**Figure 4. Intentional Structure Fires, by Property Use  
2003-2006 Annual Averages**



Source: NFIRS Version 5.0 and NFPA Survey

**Five percent of home structure fires are reported as intentional.**

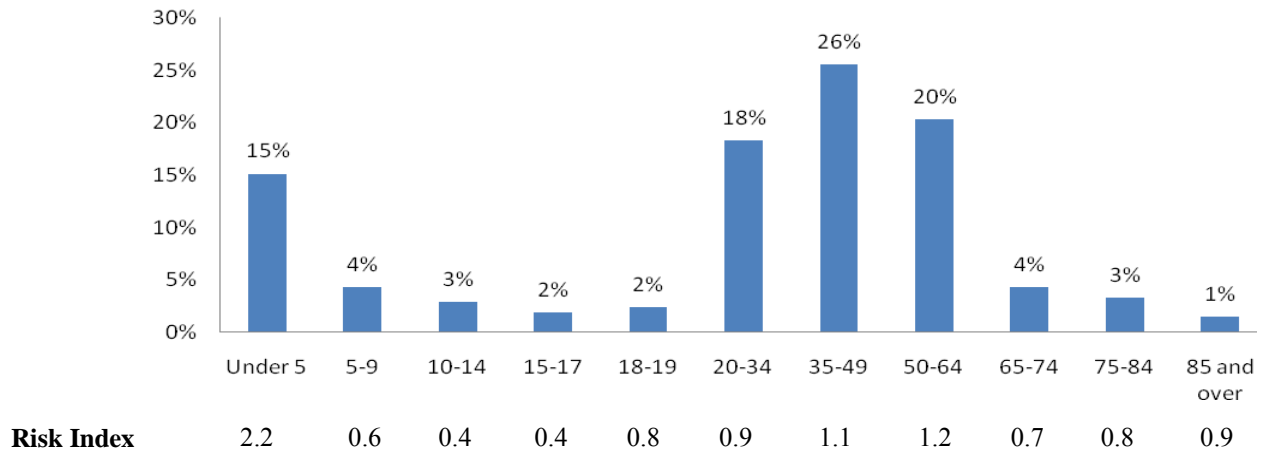
Table C shows the percentage of all fires in each property that were reported as intentional by property type. Percentages come from several different occupancy reports and therefore analysis years may not match up. According to Figure 4, 51% of intentional structure fires occurred in homes. Table C shows that of the structure fires that happen in homes, 5% are reported as intentional. Educational properties, stores and other merchandise properties, warehouses, and public assembly properties tend to report a larger share of intentional fires than do other properties.

**Table C. Percentage of Fires that were Reported as Intentional by Property Type**

<b>Property</b>	<b>Percent of Fires</b>	<b>Years Analyzed</b>	<b>Associated Report</b>
Educational properties	22%	2002-2005	<a href="#">U.S. Structure Fires in Educational Properties, August 2007</a>
Stores and other merchandise properties	14%	1999-2002	<a href="#">U.S. Fires in Selected Occupancies, March 2006</a>
Warehouse, excluding Cold Storage	13%	2003-2006	<a href="#">Warehouse Fires Excluding Cold Storage, February 2009</a>
Public assembly, excluding eating and drinking and religious properties	13%	2000-2004	<a href="#">U.S. Structure Fires in Public Assembly Properties Excluding Eating and Drinking Establishments and Religious and Funeral Properties, February 2007</a>
Religious and funeral properties	10%	2000-2004	<a href="#">U.S. Structure Fires in Religious and Funeral Properties, February 2009</a>
Offices	7%	2000-2004	<a href="#">U.S. Structure Fires in Office Properties, May 2007</a>
Homes	5%	2003-2006	<a href="#">Home Structure Fires, January 2009</a>
Mental health and substance abuse facilities	5%	2003-2006	<a href="#">Structure Fires in Medical, Mental Health, and Substance Abuse Facilities, February 2009</a>
Clinics or doctor's office	5%	2003-2006	<a href="#">Structure Fires in Medical, Mental Health, and Substance Abuse Facilities, February 2009</a>
Eating and drinking establishments	4%	2000-2004	<a href="#">U.S. Structure Fires in Eating and Drinking Establishments, February 2007</a>
Dormitory, fraternity, sorority, or barracks	4%	2002-2005	<a href="#">U.S. Structure Fires in Dormitories, Fraternities, Sororities, and Barracks</a>
Industrial or manufacturing properties	3%	2000-2004	<a href="#">U.S. Structure Fires in Industrial and Manufacturing Properties, May 2007</a>
Nursing homes	1%	2002-2005	<a href="#">U.S. Structure Fires in Nursing Homes, September 2008</a>
Hospitals or hospice facilities	0%	2003-2006	<a href="#">Structure Fires in Medical, Mental Health, and Substance Abuse Facilities, February 2009</a>

**Children under 5 and adults age 35-64 are at highest risk of dying in a home intentional structure fire.** Figure 5 shows that children under the age of five are more than twice as likely to die in an intentional home structure fire than is the general public. In 2002-2005, this age group made up 15% of the demographic that died in these fires. Please see the 2008 NFPA report *Characteristics of Home Fire Victims,*” by this author.

**Figure 5.**  
**Home Structure Fire Civilian Deaths Caused**  
**by Intentional Fires, by Age Group**  
**2002-2005 Annual Averages**



Note: The risk index for an age group is the ratio of that age group's civilian fire deaths per million population to the civilian fire death rate per million population for all age groups combined. The risk index for all age groups combined is 1.00.

Source: NFIRS Version 5.0 and NFPA annual survey

**Bathroom areas were the leading area of origin in intentional structure fires in schools, public assembly facilities, and stores or offices.**

Table D shows a breakdown of leading area of origin for intentional structure fires by property use. Table 10 shows that for all property types, the leading area of origin for these fires is unclassified outside area, followed by bedrooms, kitchens and cooking areas, and bathrooms.

Garage or vehicle storage area was the leading area of fire origin for intentional fires in storage properties. While bathrooms, locker rooms, and lavatories were the leading area of origin for intentional structure fires that occurred in stores or offices, middle school, junior highs, or high schools, and public assembly facilities.

Half of intentional structure fires occurred in the home. The bedroom is the leading area of origin, followed closely by kitchen or cooking area, for intentional fires in homes. Of the home structure fires that start in the bedroom, the leading item first ignited is mattress or bedding material. A surprising item that's not usually found in the bedroom but was among the leading items first ignited (meaning the arsonist brought it to fuel the fire) was flammable or combustible liquid or gas. The fires that resulted in the highest property damage were started when the arsonist first ignited trash or rubbish, though only 3% of home structure fires were started this way.

*See Tables 11-15 for breakdown of Area of Origin, Alarm Time, Month, and Day of Week organized by property type.*

**Overall, intentional structure fires peak on the weekends and in July.**

For all properties combined, intentional structure fires peak during the month of July. Ten percent of the fires that occurred in July took place on July 4<sup>th</sup> and July 5<sup>th</sup>, the peak days of July for intentional structure fires. Of the intentional structure fires that occurred on July 4<sup>th</sup> and 5<sup>th</sup> during 2003-2006, 51% took place in 9 of the 50 states.

A breakdown of alarm day and month by property use shows that intentional structure fires in homes and storage facilities peak on the weekends. Intentional structure fires in stores or offices and public assembly facilities peak on the weekend and on Monday.

July is the peak month for fires in homes and stores or offices. Fires in storage facilities peak during April, May and July, while intentional structure fires in public assembly facilities peak June through August.

Intentional structure fires in middle schools, junior highs, or high schools buck the trend and peak during the weekday and during spring months.

**Table D. Leading Area of Origin in Intentional Structure Fires, by Property Use  
2003-2006 Annual Averages**

	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
<b>All Properties</b>	<b>51,840</b>	<b>(100%)</b>	<b>377</b>	<b>(100%)</b>	<b>1,116</b>	<b>(100%)</b>	<b>\$898.1</b>	<b>(100%)</b>
Unclassified outside area	6,450	(12%)	1	(0%)	13	(1%)	\$21.1	(2%)
Bedrooms	4,310	(8%)	119	(32%)	424	(38%)	\$130.9	(15%)
Kitchen or cooking area	3,920	(8%)	35	(9%)	96	(9%)	\$43.1	(5%)
Bathroom, lavatory, locker room or check room	3,520	(7%)	7	(2%)	51	(5%)	\$10.2	(1%)
<b>Homes</b>	<b>28,090</b>	<b>(54%)</b>	<b>320</b>	<b>(85%)</b>	<b>910</b>	<b>(82%)</b>	<b>\$570.4</b>	<b>(64%)</b>
Bedrooms	3,750	(13%)	84	(26%)	349	(38%)	\$122.8	(22%)
Kitchen or cooking area	3,300	(12%)	32	(10%)	93	(10%)	\$37.3	(7%)
Unclassified outside area	2,540	(9%)	1	(0%)	10	(1%)	\$6.8	(1%)
Common room, living room, family room, lounge or den	2,190	(8%)	54	(17%)	87	(10%)	\$66.4	(12%)
<b>Storage</b>	<b>3,330</b>	<b>(6%)</b>	<b>6</b>	<b>(2%)</b>	<b>19</b>	<b>(2%)</b>	<b>\$47.2</b>	<b>(5%)</b>
Garage or vehicle storage area	700	(21%)	1	(18%)	8	(39%)	\$6.6	(14%)
Unclassified storage area	500	(15%)	2	(29%)	5	(23%)	\$10.0	(21%)
Unclassified outside area	270	(8%)	0	(0%)	2	(8%)	\$1.7	(4%)
Exterior wall surface	250	(8%)	0	(0%)	1	(6%)	\$1.4	(3%)

**Table D. Leading Area of Origin in Intentional Structure Fires, by Property Use  
2003-2006 Annual Averages (Continued)**

	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
<b>Store or Office</b>	<b>2,050</b>	<b>(4%)</b>	<b>2</b>	<b>(1%)</b>	<b>28</b>	<b>(2%)</b>	<b>\$91.5</b>	<b>(10%)</b>
Bathroom, lavatory, locker room or c	180	(9%)	0	(0%)	3	(11%)	\$0.9	(1%)
Unclassified outside area	170	(8%)	0	(0%)	0	(0%)	\$2.7	(3%)
Sales or showroom area	140	(7%)	0	(0%)	6	(22%)	\$12.2	(13%)
Exterior wall surface	130	(6%)	0	(0%)	1	(2%)	\$4.4	(5%)
<b>Middle School, Junior High, or High School</b>	<b>2,220</b>	<b>(4%)</b>	<b>0</b>	<b>(0%)</b>	<b>16</b>	<b>(1%)</b>	<b>\$17.6</b>	<b>(2%)</b>
Bathroom, lavatory, locker room or c	1,370	(62%)	0	(0%)	15	(93%)	\$0.6	(3%)
Hallway, corridor, mall	170	(8%)	0	(0%)	0	(0%)	\$0.4	(2%)
Small assembly area, less than 100 pe capacity	100	(4%)	0	(0%)	1	(4%)	\$3.3	(19%)
Trash or rubbish chute, area or contai	70	(3%)	0	(0%)	0	(0%)	\$0.0	(0%)
<b>Public Assembly</b>	<b>1,990</b>	<b>(4%)</b>	<b>5</b>	<b>(1%)</b>	<b>15</b>	<b>(1%)</b>	<b>\$45.0</b>	<b>(5%)</b>
Bathroom, lavatory, locker room or c	440	(22%)	0	(0%)	2	(13%)	\$0.8	(2%)
Unclassified outside area	270	(14%)	0	(0%)	1	(4%)	\$2.8	(6%)
Kitchen or cooking area	140	(7%)	0	(0%)	0	(0%)	\$1.7	(4%)
Lawn, field or open area	110	(5%)	0	(0%)	0	(0%)	\$0.0	(0%)

Source: NFIRS Version 5.0 and NFPA Survey

**Forty-six percent of intentional structure fires occur between the hours of 3 p.m. and midnight, peaking between 8 and 9 p.m.**

Although, 46% of intentional structure fires occur between the hours of 3 p.m. and midnight, peaking between 8 and 9 p.m., civilian fire deaths peak between the hours of 2 a.m. and 4 a.m., in all property types. (See Tables 11-15).

A breakdown of alarm time by property use shows that alarm hour peak time varies greatly based on the type of property. Intentional home structure fires peak between 8 p.m. and 10 p.m. Civilian fire deaths in intentional home fire structures peak during the hours of 3 a.m. to 5 a.m.

Intentional structure fires in storage facilities peak between the hours of 3 p.m. and 9 p.m. For stores or offices these fires peak between the hours of midnight and 4 a.m. Intentional structure fires in public assembly properties peak during the evening and very late night or early morning.

Intentional fire in middle schools, junior highs, or high schools peak during normal school hours, between the hours of 9 a.m. and 3 p.m.



## Fires in vacant buildings are more likely to have been intentionally set than other structure fires.

According to Marty Ahren's report on *Vacant Building Fires*, fires in vacant buildings are more likely to have been intentionally set than other structure fires.<sup>1</sup> Intentional fires were much more common in unsecured vacant properties than in those that had been secured.

In 2003-2006, on average, 13,400 (43%) vacant structure fires were intentionally set per year. These fires caused an average of 16 civilian deaths, 34 civilian injuries, and \$248 million in direct property damage annually. During the same period, 10% of all reported structure fires were intentionally set. One-quarter (25%) of all intentionally set structure fires involved vacant buildings.

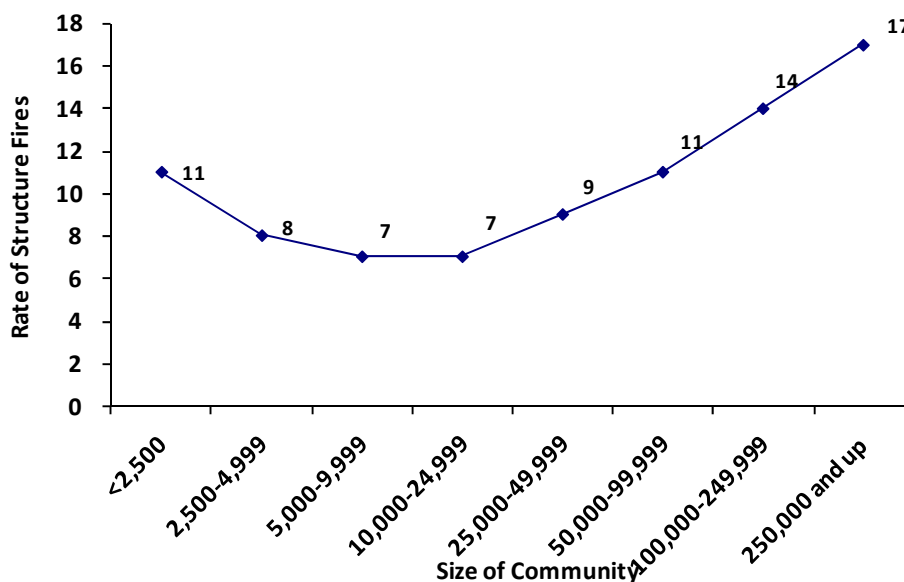
Overall, 8% of structure fires, 4% of associated civilian deaths, 4% of associated civilian injuries and 7% of associated direct property damage involve intentional fires in all structure statuses.

Fifty-seven percent of the fires in vacant and unsecured buildings were intentional fires. Forty-three percent of structure fires in buildings that were being demolished were intentional. More than half (58%) of the civilian structure fire deaths in buildings that were idle (not routinely used) resulted from intentional fires. (See Table 16)

## The rate of structure fires that are intentional is largest for the large cities, but also larger for rural communities, compared to small towns.

Rates of intentional structure fires or arson offenses, relative to population, are highest in large cities but are also higher in rural communities (under 2,500 population) than in small towns (say, 2,500 to 9,999 population). Figure 6 and Table 17 make this point, while also showing that the differences by size of community vary from year to year and from measure to measure.

**Figure 6. U.S. Intentional Structure Fire and Arson Offense Rates by Size of Community 2003-2006 Annual Averages**



Source: NFPA Survey

<sup>1</sup> Ahrens, Marty, *Vacant Building Fires*, NFPA Division of Fire Analysis and Research, April 2009.

**In the United Kingdom trends in intentional fires have been down and trends in Japan have been relatively level since 2000.**

In the U.K., there had been a substantial upward trend in intentional fires, especially for vehicles, until 2001. A change in definitions in 1994 accounted for much of the increase in intentional building fires in that year, but intentional fires have declined most years since 1994. In Japan, a fairly consistent upward trend is seen for fires. In Canada, there has been no consistent trend up or down in set fires, in total or as a share of all fires, or in associated losses. (See Tables 18-21).

**Table 1. Intentional Fires by Incident Type  
2003-2006 Annual Averages**

Incident Type	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Structures	51,840	(16%)	377	(86%)	1,115	(79%)	\$990	(83%)
Vehicles	24,510	(8%)	40	(9%)	70	(5%)	\$166	(14%)
Outside & Other	240,260	(76%)	20	(5%)	219	(16%)	\$27	(3%)
<b>Total</b>	<b>316,610</b>	<b>(100%)</b>	<b>437</b>	<b>(100%)</b>	<b>1,404</b>	<b>(100%)</b>	<b>\$1,075.9</b>	<b>(100%)</b>

Note: These are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of fires with Cause of Ignition unreported, blank, or unknown before or after investigation.

Source: NFIRS Version 5.0 and NFPA Annual Survey

**Table 2. Intentional Fires by Time of Day and Incident Type  
2003-2006 Annual Averages**

<b>A. Intentional Structure Fires</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Midnight-12:59 a.m.	2,460	(5%)	14	(4%)	47	(4%)	\$64.4	(7%)
1:00-1:59 a.m.	2,340	(5%)	13	(3%)	43	(4%)	\$52.9	(6%)
2:00-2:59 a.m.	2,190	(4%)	42	(11%)	49	(4%)	\$76.7	(9%)
3:00-3:59 a.m.	1,990	(4%)	37	(10%)	50	(5%)	\$59.9	(7%)
4:00-4:59 a.m.	1,750	(3%)	33	(9%)	38	(3%)	\$75.6	(8%)
5:00-5:59 a.m.	1,430	(3%)	15	(4%)	37	(3%)	\$40.3	(4%)
6:00-6:59 a.m.	1,130	(2%)	19	(5%)	18	(2%)	\$45.4	(5%)
7:00-7:59 a.m.	1,190	(2%)	9	(2%)	30	(3%)	\$14.4	(2%)
8:00-8:59 a.m.	1,360	(3%)	17	(5%)	53	(5%)	\$15.0	(2%)
9:00-9:59 a.m.	1,660	(3%)	18	(5%)	66	(6%)	\$23.1	(3%)
10:00-10:59 a.m.	1,800	(3%)	8	(2%)	49	(4%)	\$19.8	(2%)
11:00-11:59 a.m.	1,880	(4%)	18	(5%)	46	(4%)	\$18.5	(2%)
12:00-12:59 p.m.	2,110	(4%)	11	(3%)	60	(5%)	\$23.4	(3%)
1:00-1:59 p.m.	2,210	(4%)	17	(4%)	47	(4%)	\$22.1	(2%)
2:00-2:59 p.m.	2,330	(4%)	7	(2%)	48	(4%)	\$20.8	(2%)
3:00-3:59 p.m.	2,360	(5%)	7	(2%)	50	(4%)	\$33.3	(4%)
4:00-4:59 p.m.	2,600	(5%)	11	(3%)	55	(5%)	\$24.7	(3%)
5:00-5:59 p.m.	2,710	(5%)	14	(4%)	51	(5%)	\$34.8	(4%)
6:00-6:59 p.m.	2,760	(5%)	7	(2%)	51	(5%)	\$32.7	(4%)
7:00-7:59 p.m.	2,750	(5%)	15	(4%)	52	(5%)	\$29.3	(3%)
8:00-8:59 p.m.	2,910	(6%)	13	(3%)	48	(4%)	\$34.3	(4%)
9:00-9:59 p.m.	2,820	(5%)	13	(3%)	41	(4%)	\$50.7	(6%)
10:00-10:59 p.m.	2,640	(5%)	8	(2%)	50	(5%)	\$37.7	(4%)
11:00-11:59 p.m.	2,470	(5%)	11	(3%)	35	(3%)	\$46.0	(5%)
<b>Total</b>	<b>51,840</b>	<b>(100%)</b>	<b>377</b>	<b>(100%)</b>	<b>1,115</b>	<b>(100%)</b>	<b>\$895.8</b>	<b>(100%)</b>

**Table 2. Intentional Fires by Time of Day and Incident Type  
2003-2006 Annual Averages (Continued)**

<b>B. Intentional Vehicle Fires</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage</b>	
							<b>(in Millions)</b>	
Midnight-12:59 a.m.	2,140	(9%)	0	(0%)	5	(7%)	\$13.6	(9%)
1:00-1:59 a.m.	2,150	(9%)	1	(3%)	7	(10%)	\$15.2	(10%)
2:00-2:59 a.m.	2,020	(8%)	3	(9%)	2	(2%)	\$12.9	(8%)
3:00-3:59 a.m.	1,850	(8%)	3	(8%)	6	(9%)	\$13.2	(9%)
4:00-4:59 a.m.	1,500	(6%)	1	(3%)	2	(2%)	\$10.3	(7%)
5:00-5:59 a.m.	1,170	(5%)	2	(6%)	1	(2%)	\$7.5	(5%)
6:00-6:59 a.m.	760	(3%)	1	(1%)	0	(0%)	\$5.3	(3%)
7:00-7:59 a.m.	470	(2%)	2	(5%)	0	(0%)	\$2.5	(2%)
8:00-8:59 a.m.	430	(2%)	1	(2%)	1	(1%)	\$2.4	(2%)
9:00-9:59 a.m.	390	(2%)	1	(3%)	1	(1%)	\$1.7	(1%)
10:00-10:59 a.m.	380	(2%)	2	(4%)	2	(3%)	\$2.1	(1%)
11:00-11:59 a.m.	390	(2%)	2	(6%)	1	(1%)	\$1.7	(1%)
12:00-12:59 p.m.	440	(2%)	1	(3%)	2	(3%)	\$1.7	(1%)
1:00-1:59 p.m.	460	(2%)	4	(10%)	4	(6%)	\$1.7	(1%)
2:00-2:59 p.m.	450	(2%)	4	(11%)	4	(6%)	\$2.3	(1%)
3:00-3:59 p.m.	510	(2%)	1	(2%)	4	(6%)	\$3.7	(2%)
4:00-4:59 p.m.	550	(2%)	3	(8%)	5	(7%)	\$2.2	(1%)
5:00-5:59 p.m.	590	(2%)	0	(0%)	5	(7%)	\$3.0	(2%)
6:00-6:59 p.m.	690	(3%)	0	(0%)	2	(4%)	\$2.7	(2%)
7:00-7:59 p.m.	810	(3%)	3	(8%)	2	(4%)	\$3.9	(3%)
8:00-8:59 p.m.	1,080	(4%)	0	(0%)	3	(4%)	\$6.5	(4%)
9:00-9:59 p.m.	1,460	(6%)	2	(4%)	2	(3%)	\$8.6	(6%)
10:00-10:59 p.m.	1,730	(7%)	0	(0%)	3	(4%)	\$11.9	(8%)
11:00-11:59 p.m.	2,100	(9%)	2	(4%)	6	(8%)	\$15.9	(10%)
<b>Total</b>	<b>24,500</b>	<b>(100%)</b>	<b>40</b>	<b>(100%)</b>	<b>70</b>	<b>(100%)</b>	<b>\$152.6</b>	<b>(100%)</b>

**Table 2. Intentional Fires by Time of Day and Incident Type  
2003-2006 Annual Averages (Continued)**

<b>C. Intentional Outside and Other Fires</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Midnight-12:59 a.m.	7,240	(3%)	0	(1%)	5	(2%)	\$1.1	(4%)
1:00-1:59 a.m.	5,830	(2%)	0	(2%)	4	(2%)	\$0.6	(2%)
2:00-2:59 a.m.	5,220	(2%)	1	(3%)	4	(2%)	\$0.9	(3%)
3:00-3:59 a.m.	4,010	(2%)	0	(1%)	5	(2%)	\$0.4	(1%)
4:00-4:59 a.m.	2,960	(1%)	1	(3%)	1	(0%)	\$0.7	(2%)
5:00-5:59 a.m.	2,480	(1%)	1	(3%)	1	(0%)	\$0.7	(2%)
6:00-6:59 a.m.	2,200	(1%)	0	(0%)	1	(0%)	\$0.4	(1%)
7:00-7:59 a.m.	3,230	(1%)	0	(2%)	2	(1%)	\$0.2	(1%)
8:00-8:59 a.m.	4,110	(2%)	0	(0%)	4	(2%)	\$0.1	(0%)
9:00-9:59 a.m.	5,220	(2%)	1	(3%)	6	(3%)	\$0.3	(1%)
10:00-10:59 a.m.	7,490	(3%)	1	(4%)	7	(3%)	\$0.3	(1%)
11:00-11:59 a.m.	9,620	(4%)	1	(4%)	8	(4%)	\$0.4	(2%)
12:00-12:59 p.m.	12,140	(5%)	2	(8%)	15	(7%)	\$0.8	(3%)
1:00-1:59 p.m.	14,120	(6%)	2	(9%)	18	(8%)	\$1.0	(4%)
2:00-2:59 p.m.	15,540	(6%)	2	(9%)	22	(10%)	\$5.4	(20%)
3:00-3:59 p.m.	16,320	(7%)	4	(20%)	17	(8%)	\$1.1	(4%)
4:00-4:59 p.m.	16,870	(7%)	1	(4%)	17	(8%)	\$1.5	(6%)
5:00-5:59 p.m.	18,390	(8%)	2	(9%)	20	(9%)	\$0.6	(2%)
6:00-6:59 p.m.	17,870	(7%)	0	(2%)	17	(8%)	\$0.8	(3%)
7:00-7:59 p.m.	17,470	(7%)	1	(5%)	13	(6%)	\$7.9	(29%)
8:00-8:59 p.m.	17,020	(7%)	0	(1%)	12	(5%)	\$0.8	(3%)
9:00-9:59 p.m.	14,820	(6%)	1	(3%)	9	(4%)	\$0.5	(2%)
10:00-10:59 p.m.	11,290	(5%)	0	(0%)	6	(3%)	\$0.5	(2%)
11:00-11:59 p.m.	8,800	(4%)	1	(3%)	5	(2%)	\$0.4	(2%)
<b>Total</b>	<b>240,260</b>	<b>(100%)</b>	<b>20</b>	<b>(100%)</b>	<b>219</b>	<b>(100%)</b>	<b>\$27.4</b>	<b>(100%)</b>

Note: These are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of fires with Cause of Ignition unreported, blank, or unknown before or after investigation.

Source: NFIRS Version 5.0 and NFPA Annual Survey

**Table 3. Intentional Fires by Incident Type**

	Year	Structures	Vehicles	Outside and Other	Total	
<b>Incendiary or Suspicious</b>	1980	201,200	74,800	583,800	859,800	
	1981	190,900	65,500	568,200	824,600	
	1982	159,800	56,000	450,900	666,700	
	1983	138,800	55,300	381,100	575,200	
	1984	136,000	64,500	370,500	571,100	
	1985	143,600	72,900	381,000	597,500	
	1986	140,500	78,600	373,500	592,600	
	1987	129,100	76,500	368,900	574,500	
	1988	125,100	72,500	385,800	583,400	
	1989	117,000	70,000	332,600	519,600	
	1990	111,900	76,200	351,400	539,500	
	1991	113,900	76,800	367,400	558,100	
	1992	116,600	73,500	355,100	545,200	
	1993	104,400	68,200	347,200	519,800	
	1994	107,900	66,600	376,500	551,000	
	1995	99,300	66,300	368,300	533,900	
	1996	98,800	74,400	351,500	524,800	
	1997	85,000	64,500	293,300	442,800	
1998	86,000	66,300	294,900	447,200		
<b>Intentional</b>	1999	61,800	(43,900)	29,300	252,400	343,500
	2000	54,600	(39,900)	25,900	229,000	309,600
	2001	48,600	(33,800)	24,100	254,500	327,100
	2002	52,300	(33,100)	28,900	246,000	327,100
	2003	53,000	(28,500)	24,800	235,500	316,400
	2004	49,600	(29,200)	23,000	234,400	307,000
	2005	55,500	(29,100)	26,000	244,400	325,900
	2006	55,100	(29,100)	24,200	243,900	323,200

Notes: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Prior to 1999, intentional fires include fires coded as incendiary or suspicious. These estimates include a proportional share of unknown cause fires, defined as unknown Ignition Factor in 1998 and earlier years and as unknown Cause before or after investigation in 1999 and later years. From 1999 on, only fires reported in NFIRS Version 5.0 are used in the estimation. Allocation of unknowns is done separately for structure, vehicle, and other fires, and from 1999 on, for confined vs. non-confined structure fires and for outdoor trash fires vs. other outdoor fires. Numbers in parentheses for 1999 and later exclude confined fires. Fires are estimated to the nearest hundred. Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2006) and NFPA survey.

**Table 4. Deaths in Intentional Fires by Incident Type**

	Year	Civilian Fire Deaths in				Firefighters Fatally Injured at Scene or During Response	
		Structures	Vehicles	Outside and Other	Total		
<b>Incendiary or Suspicious</b>	1980	930	30	20	980	24	
	1981	810	20	20	850	21	
	1982	930	30	10	970	20	
	1983	860	190	10	1,070	16	
	1984	660	30	20	710	15	
	1985	720	40	30	800	29	
	1986	800	40	10	850	24	
	1987	730	60	30	820	27	
	1988	870	40	10	930	25	
	1989	840	50	10	910	16	
	1990	810	30	10	850	15	
	1991	690	30	10	740	17	
	1992	720	30	10	760	13	
	1993	840	40	10	890	9	
	1994	500	50	10	560	14	
	1995	740	70	10	820	13	
	1996	680	60	10	760	5	
	1997	660	40	10	710	6	
1998	640	40	10	680	10		
<b>Intentional</b>	1999	380	(380)	0	0	380	8
	2000	390	(390)	40	0	430	9
	2001	370	(370)	10	10	390	5
	2002	330	(330)	90	10	420	12
	2003	440	(440)	50	30	520	5
	2004	310	(310)	30	20	350	3
	2005	430	(430)	40	20	490	3
	2006	330	(330)	40	10	380	10

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Prior to 1999, intentional fires include fires coded as incendiary or suspicious. These estimates include a proportional share of unknown cause fires, defined as unknown Ignition Factor in 1998 and earlier years and as unknown Cause before or after investigation in 1999 and later years. From 1999 on, only fires reported in NFIRS Version 5.0 are used in the estimation. Allocation of unknowns is done separately for structure, vehicle, and other fires, and from 1999 on, for confined vs. non-confined structure fires and for outdoor trash fires vs. other outdoor fires. Numbers in parentheses for 1999 and later exclude confined fires. Civilian deaths are estimated to the nearest ten and firefighter deaths are estimated to the nearest one. Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2006) and NFPA survey.



**Table 5. Injuries in Intentional Fires by Incident Type**

	Year	Civilian Fire Injuries in			Total	Firefighters Injured at Scene or During Response or Return	
		Structures	Vehicles	Outside and Other			
<b>Incendiary or Suspicious</b>	1980	3,010	180	150	3,340	-	
	1981	3,790	190	170	4,150	-	
	1982	3,420	100	120	3,640	-	
	1983	3,160	130	120	3,410	-	
	1984	2,640	120	170	2,930	-	
	1985	2,840	140	140	3,120	11,300	
	1986	2,930	170	110	3,200	10,600	
	1987	2,700	180	130	3,010	8,300	
	1988	3,140	140	140	3,420	9,900	
	1989	2,990	150	110	3,250	9,600	
	1990	3,190	170	110	3,480	10,500	
	1991	3,390	130	170	3,700	10,800	
	1992	3,170	160	170	3,500	10,200	
	1993	3,330	100	150	3,580	8,900	
	1994	3,070	160	220	3,450	9,300	
	1995	2,550	130	180	2,860	7,900	
	1996	2,650	110	160	2,920	6,500	
	1997	2,090	120	120	2,330	6,100	
1998	2,320	160	220	2,700	5,600		
<b>Intentional</b>	1999	2,030	(2,030)	110	210	2,340	8,700
	2000	1,290	(1,200)	40	190	1,520	6,700
	2001	1,630	(1,630)	110	190	1,930	4,300
	2002	1,390	(1,320)	50	170	1,610	5,100
	2003	1,190	(1,110)	80	230	1,500	5,300
	2004	1,090	(1,060)	70	260	1,420	6,000
	2005	1,200	(1,140)	90	220	1,510	7,200
	2006	980	(940)	50	170	1,200	7,200

Notes: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Prior to 1999, intentional fires include fires coded as incendiary or suspicious. These estimates include a proportional share of unknown cause fires, defined as unknown Ignition Factor in 1998 and earlier years and as unknown Cause before or after investigation in 1999 and later years. From 1999 on, only fires reported in NFIRS Version 5.0 are used in the estimation. Allocation of unknowns is done separately for structure, vehicle, and other fires, and from 1999 on, for confined vs. non-confined structure fires and for outdoor trash fires vs. other outdoor fires. Numbers in parentheses for 1999 and later exclude confined fires. Civilian injuries are estimated to the nearest ten and firefighter injuries to the nearest hundred. .Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2006) and NFPA survey.

**Table 6. Direct Property Damage (in Millions) in Intentional Fires by Incident Type**

	Year	Structures	Vehicles	Outside and Other	Total	Total in 2006 Dollars	
<b>Incendiary or Suspicious</b>	1980	\$1,776	\$143	\$19	\$1,938	\$4,747	
	1981	\$1,994	\$108	\$32	\$2,135	\$4,726	
	1982	\$1,918	\$115	\$21	\$2,054	\$4,286	
	1983	\$1,675	\$166	\$14	\$1,854	\$3,749	
	1984	\$1,549	\$176	\$13	\$1,738	\$3,367	
	1985	\$1,920	\$142	\$22	\$2,084	\$3,899	
	1986	\$1,786	\$179	\$17	\$1,983	\$3,650	
	1987	\$1,803	\$185	\$14	\$2,002	\$3,552	
	1988	\$1,878	\$215	\$21	\$2,114	\$3,606	
	1989	\$1,584	\$222	\$32	\$1,838	\$2,990	
	1990	\$1,763	\$244	\$37	\$2,044	\$3,157	
	1991*	\$2,167	\$268	\$9	\$2,444	\$3,617	
	1992*	\$2,133	\$235	\$63	\$2,431	\$3,495	
	1993*	\$1,667	\$207	\$13	\$1,886	\$2,631	
	1994	\$1,756	\$238	\$33	\$2,027	\$2,759	
	1995	\$2,145	\$267	\$26	\$2,438	\$3,224	
	1996	\$1,802	\$263	\$29	\$2,094	\$2,693	
	1997	\$1,405	\$293	\$16	\$1,758	\$2,208	
	1998	\$1,467	\$324	\$86	\$1,877	\$2,324	
<b>Intentional</b>	1999*	\$991	(\$991)	\$170	\$14	\$1,174	\$1,420
	2000	\$1,118	(\$1,116)	\$124	\$170	\$1,412	\$1,653
	2001*	\$836	(\$831)	\$90	\$13	\$939	\$1,070
	2002	\$908	(\$906)	\$161	\$6	\$1,074	\$1,204
	2003	\$860	(\$857)	\$142	\$27	\$1,030	\$1,129
	2004	\$818	(\$817)	\$128	\$41	\$986	\$1,052
	2005	\$915	(\$911)	\$173	\$13	\$1,101	\$1,137
	2006	\$990	(\$988)	\$166	\$27	\$1,184	\$1,184

### **Table 6. Direct Property Damage (in Millions) in Intentional Fires (Continued)**

\*Figures for 1991 are distorted by the Oakland wildfire, which by itself accounted for \$1.5 billion in home structure fire damage. This fire was a rekindle of a suspicious fire. The national estimates approach has difficulty handling this fire, and the 1991 figures reflect only a fraction of this fire's loss. Similarly, figures for 1992 are overstated due to problems in handling the 1992 Los Angeles civil disturbance fires. Figures for 1993 are understated because they do not fully reflect losses in the three largest-loss incendiary and suspicious fires of 1993. Figures for 1999 are overstated by roughly half a billion dollars because of a household goods store fire coded as a \$250 million loss where there was no such incident, a probable miscoding of the loss amount. Figures exclude the events of September 11, 2001.

Notes: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Prior to 1999, intentional fires include fires coded as incendiary or suspicious. These estimates include a proportional share of unknown cause fires, defined as unknown Ignition Factor in 1998 and earlier years and as unknown Cause before or after investigation in 1999 and later years. From 1999 on, only fires reported in NFIRS Version 5.0 are used in the estimation. Allocation of unknowns is done separately for structure, vehicle, and other fires, and from 1999 on, for confined vs. non-confined structure fires and for outdoor trash fires vs. other outdoor fires. Numbers in parentheses for 1999 and later exclude confined fires. Damages are estimated to the nearest million dollars, and inflation adjustment is made using the consumer price index for purchasing power of the dollar, as shown in the *Statistical Abstract of the United States*.

Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-2006) and NFPA survey.

**Table 7. Size of the U.S. Intentional Fire and Arson Problems**

**A. 2007 Fires Reported to U.S. Fire Departments (NFPA Survey)**

<b>Intentional Fires</b>	<b>2007 Intentionally Set Fires</b>	<b>Percent of Fires of All Causes*</b>	<b>Comparison with 2006</b>
Structure fires	32,500	6%	+5%
Property damage in structure fires	\$733 Million	7%	-3%
Civilian deaths in structure fires	305	11%	-3%
Vehicle fires	20,500	7%	0%
Property damage in vehicle fires	\$145 Million	10%	+8.2%

**B. 2007 Crimes Reported to U.S. Law Enforcement Agencies (FBI Uniform Crime Reports)**

<b>Reported Arson Offenses*</b>	<b>2007 Arson Offenses</b>	<b>Percent of Reported Arsons</b>	<b>Change Since 2006</b>
Arson offense rate per 100,000 population - structures	10.0	43%	-6%
Arson offense rate per 100,000 population - mobile property	6.5	28%	-8%
Arson offense rate per 100,000 population - outdoor property	6.8	29%	-8%
Arson offense rate per 100,000 population - all properties	23.3	100%	-8%

\*Arson offense rates do not appear in this form in the FBI reports. Rates by property type were calculated by the NFPA as products of the FBI overall arson rate per 100,000 population (based on about three-fourths of reporting agencies) times the percentage of all arson offenses by property type (shown in the second column and based on nearly all reporting agencies).

Sources: NFPA survey, FBI's *Crime in the U.S.*

**Table 8. Intentional Fires by Suspected Motivation Factors  
2006 Estimates**

<b>Suspected Motive</b>	<b>Percent of Fires</b>
Fire-play or Curiosity	23%
<b><i>Motives of Gain</i></b>	<b>21%</b>
Indirect financial gain	11%
Auto theft concealment	9%
Burglary concealment	2%
Labor unrest	0%
Direct financial gain	7%
Insurance fraud	5%
Burglary	2%
Extortion	0%
Gain may or may not be financial	3%
Destroy records or evidence	1%
Void contract or lease	1%
Homicide	0%
Protest	1%
Homicide concealment	0%
<b><i>Motives not involving curiosity or gain</i></b>	<b>45%</b>
Personal	17%
Motive of excitement or attention	15%
Thrills	12%
Attention or sympathy	2%
Vanity or recognition	1%
Motive of power over others	12%
Intimidation	7%
Domestic violence	4%
Hate crime	1%
Motive of mental or emotional illness or disturbance	1%
Suicide	1%
Institutional	1%
Sexual excitement	0%
Societal	0%
<b><i>Unclassified suspected motive</i></b>	<b>11%</b>
Total	100%

**Table 8. Intentional Fires by Suspected Motivation Factors  
2006 Estimates (Continued)**

Note: These are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of fires with Cause of Ignition unreported, blank, or unknown before or after investigation.

This variable was collected in the Arson Module of NFIRS, it is not required that this module be completed and the variable “suspected motive” is also not required. More than one suspected motivation factor code can be selected for a single incident. For this analysis, only primary motivation factors were examined—motivation factors that were reported as the first suspected motivation. Only 6% of the reported incidents with completed arson modules indicated a specific suspected motive; all others were unknown and were allocated proportionally across knowns.

Source: Data from NFIRS Version 5.0

**Table 9. Intentional Structure Fires by Property Use  
2003-2006 Annual Averages**

	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
<b>Assembly</b>	<b>1,990</b>	<b>(4%)</b>	<b>5</b>	<b>(1%)</b>	<b>15</b>	<b>(1%)</b>	<b>\$45.0</b>	<b>(5%)</b>
Playground	400	(1%)	0	(0%)	0	(0%)	\$0.3	(0%)
Restaurant or cafeteria	280	(1%)	2	(0%)	5	(0%)	\$8.5	(1%)
<b>Educational Property</b>	<b>3,150</b>	<b>(6%)</b>	<b>0</b>	<b>(0%)</b>	<b>19</b>	<b>(2%)</b>	<b>\$52.4</b>	<b>(6%)</b>
High school or junior high school or middle school	2,220	(4%)	0	(0%)	16	(1%)	\$17.6	(2%)
Elementary school, including kindergarten	530	(1%)	0	(0%)	1	(0%)	\$32.2	(4%)
<b>Health Care, Detention, and Correction</b>	<b>660</b>	<b>(1%)</b>	<b>29</b>	<b>(8%)</b>	<b>64</b>	<b>(6%)</b>	<b>\$4.5</b>	<b>(1%)</b>
<b>Residential</b>	<b>30,520</b>	<b>(59%)</b>	<b>334</b>	<b>(89%)</b>	<b>958</b>	<b>(86%)</b>	<b>\$617.3</b>	<b>(69%)</b>
Homes	28,090	(54%)	320	(85%)	910	(82%)	\$570.4	(64%)
Unclassified residential	1,460	(3%)	5	(1%)	6	(1%)	\$14.9	(2%)
<b>Stores or Offices</b>	<b>2,050</b>	<b>(4%)</b>	<b>2</b>	<b>(1%)</b>	<b>28</b>	<b>(2%)</b>	<b>\$91.5</b>	<b>(10%)</b>
Unclassified mercantile or business	350	(1%)	1	(0%)	1	(0%)	\$21.2	(2%)
Business office	300	(1%)	0	(0%)	2	(0%)	\$13.8	(2%)
<b>Industrial, Utility, Defense, Agriculture, Mining</b>	<b>310</b>	<b>(1%)</b>	<b>0</b>	<b>(0%)</b>	<b>1</b>	<b>(0%)</b>	<b>\$2.4</b>	<b>(0%)</b>
<b>Manufacturing, Processing</b>	<b>260</b>	<b>(1%)</b>	<b>0</b>	<b>(0%)</b>	<b>2</b>	<b>(0%)</b>	<b>\$9.4</b>	<b>(1%)</b>
<b>Storage</b>	<b>3,330</b>	<b>(6%)</b>	<b>6</b>	<b>(2%)</b>	<b>19</b>	<b>(2%)</b>	<b>\$47.2</b>	<b>(5%)</b>
Outbuilding or shed	1,390	(3%)	1	(0%)	7	(1%)	\$7.1	(1%)
Parking garage (detached residential garage)	800	(2%)	1	(0%)	6	(1%)	\$6.3	(1%)
Unclassified storage	300	(1%)	0	(0%)	1	(0%)	\$8.3	(1%)
<b>Outside or Special Property</b>	<b>7,840</b>	<b>(15%)</b>	<b>0</b>	<b>(0%)</b>	<b>7</b>	<b>(1%)</b>	<b>\$19.7</b>	<b>(2%)</b>
Residential street, road or residential driveway	1,440	(3%)	0	(0%)	0	(0%)	\$0.3	(0%)
Open land or field	1,410	(3%)	0	(0%)	3	(0%)	\$2.5	(0%)
Unclassified outside or special property	820	(2%)	0	(0%)	0	(0%)	\$1.2	(0%)
Vehicle parking area	710	(1%)	0	(0%)	0	(0%)	\$0.5	(0%)
Unclassified street	710	(1%)	0	(0%)	1	(0%)	\$0.1	(0%)
Vacant lot	680	(1%)	0	(0%)	0	(0%)	\$0.1	(0%)
Outbuilding, protective shelter	530	(1%)	0	(0%)	2	(0%)	\$1.1	(0%)
Graded and cared-for plots of land	460	(1%)	0	(0%)	0	(0%)	\$0.1	(0%)
Street or road in commercial area	410	(1%)	0	(0%)	0	(0%)	\$0.1	(0%)
<b>Unclassified, Unknown, or None</b>	<b>1,730</b>	<b>(3%)</b>	<b>0</b>	<b>(0%)</b>	<b>4</b>	<b>(0%)</b>	<b>\$6.5</b>	<b>(1%)</b>
<b>Total</b>	<b>51,840</b>	<b>(100%)</b>	<b>377</b>	<b>(100%)</b>	<b>1,115</b>	<b>(100%)</b>	<b>\$895.8</b>	<b>(100%)</b>

**Table 9. Intentional Structure Fires by Property Use  
2003-2006 Annual Averages (Continued)**

Note: These are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of fires with Cause of Ignition unreported, blank, or unknown before or after investigation.

Source: NFIRS Version 5.0 and NFPA Annual Survey



**Table 10. Intentional Structure Fires in All Properties  
2003-2006 Annual Averages**

A. All Properties, Area of Origin	Fires		Civilian		Civilian		Direct Property	
			Deaths	Injuries	Damage	(in Millions)		
Unclassified outside area	6,450	(12%)	1	(0%)	13	(1%)	\$21.1	(2%)
Bedrooms	4,310	(8%)	119	(32%)	424	(38%)	\$130.9	(15%)
Kitchen or cooking area	3,920	(8%)	35	(9%)	96	(9%)	\$43.1	(5%)
Bathroom, lavatory, locker room or check room	3,520	(7%)	7	(2%)	51	(5%)	\$10.2	(1%)
Lawn, field or open area	3,290	(6%)	0	(0%)	5	(0%)	\$2.6	(0%)
Living room, family room, common room, lounge or den	2,390	(5%)	55	(15%)	96	(9%)	\$70.6	(8%)
Unclassified area	2,030	(4%)	1	(0%)	8	(1%)	\$17.3	(2%)
Unclassified function area	1,770	(3%)	21	(6%)	55	(5%)	\$44.6	(5%)
Trash or rubbish chute, area or container	1,700	(3%)	1	(0%)	1	(0%)	\$1.7	(0%)
Exterior wall surface	1,610	(3%)	0	(0%)	13	(1%)	\$28.6	(3%)
Garage or vehicle storage area	1,470	(3%)	10	(3%)	30	(3%)	\$31.9	(4%)
On or near highway, public way or street	1,470	(3%)	0	(0%)	1	(0%)	\$1.3	(0%)
Multiple areas of origin	1,300	(3%)	30	(8%)	39	(3%)	\$86.2	(10%)
Unclassified structural area	1,260	(2%)	13	(3%)	18	(2%)	\$45.4	(5%)
Unclassified storage area	1,110	(2%)	2	(0%)	15	(1%)	\$32.4	(4%)
Vacant structural area	940	(2%)	0	(0%)	2	(0%)	\$8.0	(1%)
Lobby or entrance way	930	(2%)	1	(0%)	12	(1%)	\$17.5	(2%)
Exterior balcony, unenclosed porch	900	(2%)	14	(4%)	33	(3%)	\$23.9	(3%)
Unclassified means of egress	880	(2%)	11	(3%)	20	(2%)	\$12.8	(1%)
Interior stairway or ramp	850	(2%)	20	(5%)	38	(3%)	\$23.3	(3%)
Hallway, corridor, mall	760	(1%)	9	(2%)	12	(1%)	\$7.9	(1%)
Courtyard, terrace or patio	710	(1%)	5	(1%)	10	(1%)	\$8.7	(1%)
Laundry room or area	590	(1%)	8	(2%)	17	(2%)	\$6.6	(1%)
Crawl space or substructure space	580	(1%)	1	(0%)	10	(1%)	\$36.8	(4%)
Closet	550	(1%)	0	(0%)	23	(2%)	\$13.4	(2%)
Storage of supplies or tools or dead storage	500	(1%)	2	(1%)	6	(1%)	\$9.7	(1%)
Wall assembly or concealed space	490	(1%)	0	(0%)	7	(1%)	\$5.7	(1%)
Exterior stairway, ramp, or fire escape	470	(1%)	0	(0%)	9	(1%)	\$8.7	(1%)
Storage room, area, tank, or bin	460	(1%)	1	(0%)	10	(1%)	\$8.5	(1%)
Ceiling/floor assembly or concealed space	350	(1%)	1	(0%)	1	(0%)	\$6.9	(1%)
Office	300	(1%)	0	(0%)	1	(0%)	\$26.2	(3%)
Heating equipment room	270	(1%)	3	(1%)	9	(1%)	\$4.7	(1%)
Other known area	3,700	(7%)	6	(1%)	34	(3%)	\$98.3	(11%)
<b>Total</b>	<b>51,840</b>	<b>(100%)</b>	<b>377</b>	<b>(100%)</b>	<b>1,115</b>	<b>(100%)</b>	<b>\$895.8</b>	<b>(100%)</b>

**Table 10. Intentional Structure Fires in All Properties  
2003-2006 Annual Averages (Continued)**

B. All Properties, Day of Week	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Sunday	8,000	(15%)	54	(14%)	164	(15%)	\$139.8	(16%)
Monday	7,470	(14%)	42	(11%)	162	(15%)	\$136.7	(15%)
Tuesday	7,170	(14%)	48	(13%)	147	(13%)	\$119.0	(13%)
Wednesday	7,070	(14%)	70	(19%)	158	(14%)	\$103.9	(12%)
Thursday	6,990	(13%)	42	(11%)	169	(15%)	\$150.2	(17%)
Friday	7,180	(14%)	66	(18%)	143	(13%)	\$125.1	(14%)
Saturday	7,960	(15%)	55	(15%)	172	(15%)	\$121.1	(14%)
Total	51,840	(100%)	377	(100%)	1,115	(100%)	\$895.8	(100%)
Average	7,410	(14%)	54	(14%)	159	(14%)	\$128.0	(14%)

C. All Properties, Alarm Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	4,070	(8%)	28	(7%)	87	(8%)	\$64.4	(7%)
February	3,690	(7%)	59	(16%)	125	(11%)	\$64.7	(7%)
March	4,470	(9%)	25	(7%)	94	(8%)	\$88.4	(10%)
April	4,690	(9%)	46	(12%)	98	(9%)	\$79.5	(9%)
May	4,650	(9%)	32	(8%)	89	(8%)	\$72.1	(8%)
June	4,470	(9%)	38	(10%)	99	(9%)	\$69.9	(8%)
July	5,010	(10%)	26	(7%)	92	(8%)	\$76.3	(9%)
August	4,480	(9%)	26	(7%)	90	(8%)	\$92.6	(10%)
September	4,050	(8%)	33	(9%)	86	(8%)	\$62.9	(7%)
October	4,430	(9%)	20	(5%)	79	(7%)	\$65.1	(7%)
November	3,940	(8%)	16	(4%)	88	(8%)	\$73.7	(8%)
December	3,880	(7%)	27	(7%)	89	(8%)	\$86.2	(10%)
Total	51,840	(100%)	377	(100%)	1,115	(100%)	\$895.8	(100%)
Average	4,320	(8%)	31	(8%)	93	(8%)	\$74.6	(8%)

**Table 10. Intentional Structure Fires in All Properties  
2003-2006 Annual Averages (Continued)**

<b>D. All Properties, Time of Day</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Midnight-12:59 a.m.	2,460	(5%)	14	(4%)	47	(4%)	\$64.4	(7%)
1:00-1:59 a.m.	2,340	(5%)	13	(3%)	43	(4%)	\$52.9	(6%)
2:00-2:59 a.m.	2,190	(4%)	42	(11%)	49	(4%)	\$76.7	(9%)
3:00-3:59 a.m.	1,990	(4%)	37	(10%)	51	(5%)	\$59.9	(7%)
4:00-4:59 a.m.	1,750	(3%)	33	(9%)	38	(3%)	\$75.6	(8%)
5:00-5:59 a.m.	1,430	(3%)	15	(4%)	37	(3%)	\$40.3	(4%)
6:00-6:59 a.m.	1,130	(2%)	19	(5%)	18	(2%)	\$45.4	(5%)
7:00-7:59 a.m.	1,190	(2%)	9	(2%)	30	(3%)	\$14.4	(2%)
8:00-8:59 a.m.	1,360	(3%)	17	(5%)	53	(5%)	\$15.0	(2%)
9:00-9:59 a.m.	1,660	(3%)	18	(5%)	66	(6%)	\$23.1	(3%)
10:00-10:59 a.m.	1,800	(3%)	8	(2%)	49	(4%)	\$19.8	(2%)
11:00-11:59 a.m.	1,880	(4%)	18	(5%)	46	(4%)	\$18.5	(2%)
12:00-12:59 p.m.	2,110	(4%)	11	(3%)	60	(5%)	\$23.4	(3%)
1:00-1:59 p.m.	2,210	(4%)	17	(4%)	47	(4%)	\$22.1	(2%)
2:00-2:59 p.m.	2,330	(4%)	7	(2%)	49	(4%)	\$20.8	(2%)
3:00-3:59 p.m.	2,360	(5%)	7	(2%)	50	(4%)	\$33.3	(4%)
4:00-4:59 p.m.	2,600	(5%)	11	(3%)	55	(5%)	\$24.7	(3%)
5:00-5:59 p.m.	2,710	(5%)	14	(4%)	51	(5%)	\$34.8	(4%)
6:00-6:59 p.m.	2,760	(5%)	7	(2%)	51	(5%)	\$32.7	(4%)
7:00-7:59 p.m.	2,750	(5%)	15	(4%)	52	(5%)	\$29.3	(3%)
8:00-8:59 p.m.	2,910	(6%)	13	(3%)	48	(4%)	\$34.3	(4%)
9:00-9:59 p.m.	2,820	(5%)	13	(3%)	41	(4%)	\$50.7	(6%)
10:00-10:59 p.m.	2,640	(5%)	8	(2%)	50	(5%)	\$37.7	(4%)
11:00-11:59 p.m.	2,470	(5%)	11	(3%)	35	(3%)	\$46.0	(5%)
<b>Total</b>	<b>51,840</b>	<b>(100%)</b>	<b>377</b>	<b>(100%)</b>	<b>1,115</b>	<b>(100%)</b>	<b>\$895.8</b>	<b>(100%)</b>
<b>Average</b>	<b>2,160</b>	<b>(4%)</b>	<b>16</b>	<b>(4%)</b>	<b>46</b>	<b>(4%)</b>	<b>\$37.3</b>	<b>(4%)</b>

Note: These are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of fires with Cause of Ignition unreported, blank, or unknown before or after investigation. Intentional fires with unknown area of origin were proportionally allocated across fires with known area of origin.

Source: NFIRS Version 5.0 and NFPA Annual Survey

**Table 11. Intentional Structure Fires in Homes  
2003-2006 Annual Averages**

A. Homes, Area of Origin	Fires		Civilian		Civilian		Direct Property	
			Deaths	Injuries	Damage	(in Millions)		
Bedrooms	3,750	(13%)	84	(26%)	349	(38%)	\$122.8	(22%)
Kitchen or cooking area	3,300	(12%)	32	(10%)	93	(10%)	\$37.3	(7%)
Unclassified outside area	2,540	(9%)	1	(0%)	10	(1%)	\$6.8	(1%)
Common room, living room, family room, lounge or den	2,190	(8%)	54	(17%)	87	(10%)	\$66.4	(12%)
Unclassified function area	1,370	(5%)	17	(5%)	45	(5%)	\$35.9	(6%)
Lawn, field or open area	1,210	(4%)	0	(0%)	0	(0%)	\$1.7	(0%)
Unclassified area	1,030	(4%)	1	(0%)	5	(1%)	\$11.4	(2%)
Multiple areas of origin	1,020	(4%)	28	(9%)	37	(4%)	\$69.6	(12%)
Exterior wall surface	980	(3%)	0	(0%)	11	(1%)	\$15.6	(3%)
Exterior balcony, unenclosed porch	800	(3%)	14	(4%)	33	(4%)	\$23.2	(4%)
Unclassified structural area	770	(3%)	12	(4%)	18	(2%)	\$26.2	(5%)
Interior stairway or ramp	710	(3%)	19	(6%)	32	(4%)	\$16.5	(3%)
Garage or vehicle storage area	620	(2%)	7	(2%)	23	(2%)	\$21.4	(4%)
Bathroom, lavatory, locker room or check room	620	(2%)	7	(2%)	24	(3%)	\$5.9	(1%)
Lobby or entrance way	580	(2%)	1	(0%)	8	(1%)	\$10.7	(2%)
Unclassified means of egress	570	(2%)	11	(3%)	15	(2%)	\$6.1	(1%)
Courtyard, terrace or patio	520	(2%)	5	(2%)	10	(1%)	\$7.2	(1%)
Crawl space or substructure space	490	(2%)	1	(0%)	9	(1%)	\$12.1	(2%)
Closet	470	(2%)	0	(0%)	23	(3%)	\$10.7	(2%)
Laundry room or area	460	(2%)	8	(2%)	16	(2%)	\$6.0	(1%)
Vacant structural area	400	(1%)	0	(0%)	1	(0%)	\$4.7	(1%)
Hallway, corridor, mall	390	(1%)	9	(3%)	10	(1%)	\$4.3	(1%)
Trash or rubbish chute, area or container	360	(1%)	1	(0%)	0	(0%)	\$0.6	(0%)
Exterior stairway, ramp, or fire escape	340	(1%)	0	(0%)	7	(1%)	\$7.0	(1%)
Wall assembly or concealed space	280	(1%)	0	(0%)	6	(1%)	\$3.9	(1%)
Unclassified storage area	270	(1%)	0	(0%)	10	(1%)	\$5.4	(1%)
Ceiling or floor assembly or concealed space	230	(1%)	1	(0%)	1	(0%)	\$4.7	(1%)
Heating equipment room	210	(1%)	3	(1%)	8	(1%)	\$3.3	(1%)
Duct for HVAC, cable, exhaust, heating, or AC	190	(1%)	0	(0%)	1	(0%)	\$0.1	(0%)
Attic or ceiling/roof assembly or concealed space	190	(1%)	1	(0%)	3	(0%)	\$6.3	(1%)
Storage room, area, tank, or bin	140	(1%)	0	(0%)	9	(1%)	\$2.7	(0%)
Other known area	1,090	(4%)	3	(1%)	9	(1%)	\$14.2	(2%)
<b>Total</b>	<b>28,090</b>	<b>(100%)</b>	<b>320</b>	<b>(100%)</b>	<b>910</b>	<b>(100%)</b>	<b>\$570.4</b>	<b>(100%)</b>

**Table 11. Intentional Structure Fires in Homes  
2003-2006 Annual Averages (Continued)**

<b>A. Homes, Day of Week</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Sunday	4,440	(16%)	47	(15%)	131	(14%)	\$83.0	(15%)
Monday	3,970	(14%)	38	(12%)	135	(15%)	\$94.9	(17%)
Tuesday	3,840	(14%)	45	(14%)	112	(12%)	\$74.8	(13%)
Wednesday	3,920	(14%)	43	(13%)	127	(14%)	\$78.0	(14%)
Thursday	3,760	(13%)	38	(12%)	148	(16%)	\$72.1	(13%)
Friday	3,820	(14%)	63	(20%)	120	(13%)	\$81.7	(14%)
Saturday	4,340	(15%)	46	(14%)	139	(15%)	\$86.0	(15%)
Total	28,090	(100%)	320	(100%)	910	(100%)	\$570.4	(100%)
Average	4,010	(14%)	46	(14%)	130	(14%)	\$81.5	(14%)

<b>B. Homes, Alarm Month</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
January	2,240	(8%)	26	(8%)	62	(7%)	\$45.0	(8%)
February	2,050	(7%)	32	(10%)	98	(11%)	\$41.1	(7%)
March	2,420	(9%)	24	(8%)	73	(8%)	\$46.2	(8%)
April	2,400	(9%)	42	(13%)	85	(9%)	\$47.4	(8%)
May	2,400	(9%)	31	(10%)	77	(8%)	\$51.0	(9%)
June	2,400	(9%)	32	(10%)	74	(8%)	\$40.7	(7%)
July	2,730	(10%)	22	(7%)	75	(8%)	\$50.3	(9%)
August	2,520	(9%)	22	(7%)	73	(8%)	\$47.4	(8%)
September	2,200	(8%)	31	(10%)	77	(8%)	\$46.3	(8%)
October	2,380	(8%)	17	(5%)	69	(8%)	\$41.2	(7%)
November	2,130	(8%)	16	(5%)	66	(7%)	\$43.7	(8%)
December	2,230	(8%)	27	(8%)	82	(9%)	\$70.1	(12%)
Total	28,090	(100%)	320	(100%)	910	(100%)	\$570.4	(100%)
Average	2,340	(8%)	27	(8%)	76	(8%)	\$47.5	(8%)

**Table 11. Intentional Structure Fires in Homes  
2003-2006 Annual Averages (Continued)**

<b>D. Homes, Alarm Time</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Midnight-12:59 a.m.	1,390	(5%)	13	(4%)	40	(4%)	\$28.6	(5%)
1:00-1:59 a.m.	1,320	(5%)	12	(4%)	34	(4%)	\$35.4	(6%)
2:00-2:59 a.m.	1,250	(4%)	15	(5%)	33	(4%)	\$39.8	(7%)
3:00-3:59 a.m.	1,110	(4%)	36	(11%)	46	(5%)	\$37.2	(7%)
4:00-4:59 a.m.	1,000	(4%)	31	(10%)	28	(3%)	\$54.8	(10%)
5:00-5:59 a.m.	800	(3%)	9	(3%)	32	(4%)	\$22.1	(4%)
6:00-6:59 a.m.	630	(2%)	18	(6%)	16	(2%)	\$17.7	(3%)
7:00-7:59 a.m.	650	(2%)	9	(3%)	27	(3%)	\$11.6	(2%)
8:00-8:59 a.m.	690	(2%)	17	(5%)	40	(4%)	\$10.5	(2%)
9:00-9:59 a.m.	850	(3%)	18	(6%)	55	(6%)	\$16.4	(3%)
10:00-10:59 a.m.	950	(3%)	7	(2%)	40	(4%)	\$16.4	(3%)
11:00-11:59 a.m.	950	(3%)	16	(5%)	38	(4%)	\$15.7	(3%)
12:00-12:59 p.m.	1,110	(4%)	11	(3%)	50	(6%)	\$17.4	(3%)
1:00-1:59 p.m.	1,080	(4%)	14	(4%)	35	(4%)	\$15.4	(3%)
2:00-2:59 p.m.	1,180	(4%)	7	(2%)	42	(5%)	\$15.7	(3%)
3:00-3:59 p.m.	1,230	(4%)	4	(1%)	38	(4%)	\$19.3	(3%)
4:00-4:59 p.m.	1,360	(5%)	11	(3%)	48	(5%)	\$19.1	(3%)
5:00-5:59 p.m.	1,440	(5%)	12	(4%)	40	(4%)	\$23.9	(4%)
6:00-6:59 p.m.	1,480	(5%)	7	(2%)	39	(4%)	\$18.9	(3%)
7:00-7:59 p.m.	1,520	(5%)	12	(4%)	47	(5%)	\$22.0	(4%)
8:00-8:59 p.m.	1,610	(6%)	12	(4%)	41	(5%)	\$24.0	(4%)
9:00-9:59 p.m.	1,590	(6%)	12	(4%)	36	(4%)	\$28.3	(5%)
10:00-10:59 p.m.	1,490	(5%)	8	(3%)	34	(4%)	\$26.7	(5%)
11:00-11:59 p.m.	1,400	(5%)	9	(3%)	29	(3%)	\$33.7	(6%)
<b>Total</b>	<b>28,090</b>	<b>(100%)</b>	<b>320</b>	<b>(100%)</b>	<b>910</b>	<b>(100%)</b>	<b>\$570.4</b>	<b>(100%)</b>
<b>Average</b>	<b>1,170</b>	<b>(4%)</b>	<b>13</b>	<b>(4%)</b>	<b>38</b>	<b>(4%)</b>	<b>\$23.8</b>	<b>(4%)</b>

**Table 11. Intentional Structure Fires in Homes  
2003-2006 Annual Averages (Continued)**

Home, Item First Ignited in the Bedroom	Fires		Civilian		Civilian		Direct Property	
			Deaths	Injuries	Injuries	Damage (in Millions)		
Mattress or bedding	1,300	(35%)	45	(54%)	167	(48%)	\$48.1	(39%)
Magazine, newspaper, writing paper	290	(8%)	0	(0%)	16	(5%)	\$9.3	(8%)
Clothing	280	(8%)	0	(0%)	29	(8%)	\$7.6	(6%)
Flammable or combustible liquid or gas, filter or piping	240	(6%)	24	(29%)	37	(10%)	\$13.0	(11%)
Unclassified furniture or utensil	240	(6%)	0	(0%)	22	(6%)	\$9.0	(7%)
Floor covering rug, carpet, or mat	170	(5%)	0	(0%)	4	(1%)	\$3.8	(3%)
Upholstered furniture or vehicle seat	130	(4%)	2	(2%)	12	(3%)	\$4.7	(4%)
Rubbish, trash, or waste	130	(3%)	0	(0%)	3	(1%)	\$1.6	(1%)
Multiple items first ignited	130	(3%)	3	(4%)	7	(2%)	\$4.8	(4%)
Unclassified soft goods, or wearing apparel	130	(3%)	0	(0%)	10	(3%)	\$3.0	(2%)
Unclassified item first ignited	120	(3%)	2	(2%)	7	(2%)	\$4.2	(3%)
Curtains, blinds, drapery, tapestry	110	(3%)	2	(2%)	8	(2%)	\$1.9	(2%)
Interior wall covering, excluding drapes	60	(2%)	0	(0%)	0	(0%)	\$1.5	(1%)
Box, carton, bag, basket, or barrel	50	(1%)	0	(0%)	1	(0%)	\$1.8	(1%)
Unclassified structural component or finish	50	(1%)	5	(6%)	3	(1%)	\$1.1	(1%)
Structural member or framing	50	(1%)	0	(0%)	0	(0%)	\$2.0	(2%)
Linen other than bedding	40	(1%)	0	(0%)	5	(2%)	\$0.7	(1%)
Toy or game	40	(1%)	0	(0%)	7	(2%)	\$1.3	(1%)
Other known area	180	(5%)	0	(0%)	11	(3%)	\$3.6	(3%)
<b>Total</b>	<b>3,740</b>	<b>(100%)</b>	<b>84</b>	<b>(100%)</b>	<b>349</b>	<b>(100%)</b>	<b>\$122.8</b>	<b>(100%)</b>

Note: These are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of fires with Cause of Ignition unreported, blank, or unknown before or after investigation. Intentional fires with unknown area of origin were proportionally allocated across fires with known area of origin.

Source: NFIRS Version 5.0 and NFPA Annual Survey

**Table 12. Intentional Structure Fires in Storage Facilities  
2003-2006 Annual Averages**

A. Storage, Area of Origin	Fires		Civilian		Civilian		Direct Property	
			Deaths	Injuries	Injuries	Damage (in Millions)		
Garage or vehicle storage area	700	(21%)	1	(18%)	8	(39%)	\$6.6	(14%)
Unclassified storage area	500	(15%)	2	(29%)	5	(23%)	\$10.0	(21%)
Unclassified outside area	270	(8%)	0	(0%)	2	(8%)	\$1.7	(4%)
Exterior wall surface	250	(8%)	0	(0%)	1	(6%)	\$1.4	(3%)
Storage of supplies or tools or dead storage	250	(7%)	2	(35%)	2	(8%)	\$2.7	(6%)
Vacant structural area	170	(5%)	0	(0%)	0	(0%)	\$0.7	(2%)
Storage room, area, tank, or bin	140	(4%)	1	(18%)	0	(0%)	\$2.1	(4%)
Unclassified structural area	130	(4%)	0	(0%)	0	(0%)	\$1.4	(3%)
Lawn, field or open area	130	(4%)	0	(0%)	2	(8%)	\$0.7	(1%)
Unclassified area	100	(3%)	0	(0%)	0	(0%)	\$1.3	(3%)
Wall assembly or concealed space	60	(2%)	0	(0%)	0	(0%)	\$0.1	(0%)
Trash or rubbish chute, area or container	60	(2%)	0	(0%)	0	(0%)	\$0.1	(0%)
Shipping receiving or loading area	50	(1%)	0	(0%)	0	(0%)	\$9.6	(20%)
Lobby or entrance way	40	(1%)	0	(0%)	0	(0%)	\$0.2	(0%)
Unclassified means of egress	40	(1%)	0	(0%)	0	(0%)	\$0.3	(1%)
Multiple areas of origin	40	(1%)	0	(0%)	0	(0%)	\$1.3	(3%)
Ceiling or floor assembly or concealed space	30	(1%)	0	(0%)	0	(0%)	\$0.3	(1%)
Lavatory, bathroom, locker room or check room	30	(1%)	0	(0%)	0	(0%)	\$0.3	(1%)
Unclassified vehicle area	30	(1%)	0	(0%)	0	(0%)	\$0.3	(1%)
Unclassified function area	30	(1%)	0	(0%)	0	(0%)	\$0.4	(1%)
Passenger area of vehicle	20	(1%)	0	(0%)	0	(0%)	\$0.5	(1%)
Exterior surface of vehicle	20	(1%)	0	(0%)	0	(0%)	\$0.1	(0%)
Exterior roof surface	20	(1%)	0	(0%)	0	(0%)	\$0.0	(0%)
Office	20	(1%)	0	(0%)	0	(0%)	\$1.8	(4%)
On or near highway, public way or street	20	(1%)	0	(0%)	0	(0%)	\$0.1	(0%)
Other known area	180	(5%)	0	(0%)	1	(6%)	\$3.3	(7%)
<b>Total</b>	<b>3,330</b>	<b>(100%)</b>	<b>6</b>	<b>(100%)</b>	<b>19</b>	<b>(100%)</b>	<b>\$47.2</b>	<b>(100%)</b>



**Table 12. Intentional Structure Fires in Storage Facilities  
2003-2006 Annual Averages**

<b>B. Storage, Day of Week</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Sunday	550	(17%)	2	(28%)	5	(26%)	\$7.2	(15%)
Monday	460	(14%)	1	(16%)	4	(20%)	\$3.2	(7%)
Tuesday	440	(13%)	0	(0%)	0	(0%)	\$7.0	(15%)
Wednesday	420	(13%)	0	(7%)	0	(0%)	\$3.9	(8%)
Thursday	450	(13%)	0	(0%)	2	(10%)	\$15.7	(33%)
Friday	450	(13%)	2	(26%)	2	(11%)	\$4.1	(9%)
Saturday	550	(17%)	1	(23%)	6	(33%)	\$6.0	(13%)
Total	3,330	(100%)	6	(100%)	19	(100%)	\$47.2	(100%)
Average	480	(14%)	1	(14%)	3	(14%)	\$6.7	(14%)

<b>C. Storage, Alarm Month</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
January	210	(6%)	0	(0%)	1	(7%)	\$2.3	(5%)
February	200	(6%)	0	(0%)	1	(3%)	\$2.3	(5%)
March	280	(8%)	0	(0%)	2	(12%)	\$3.3	(7%)
April	360	(11%)	0	(0%)	1	(6%)	\$12.3	(26%)
May	350	(11%)	0	(7%)	1	(7%)	\$2.7	(6%)
June	320	(9%)	3	(54%)	5	(23%)	\$4.0	(9%)
July	360	(11%)	1	(16%)	3	(15%)	\$5.0	(11%)
August	290	(9%)	0	(0%)	1	(6%)	\$2.4	(5%)
September	250	(8%)	0	(0%)	1	(4%)	\$2.8	(6%)
October	280	(8%)	1	(14%)	2	(8%)	\$5.1	(11%)
November	210	(6%)	1	(9%)	1	(6%)	\$2.4	(5%)
December	220	(7%)	0	(0%)	1	(3%)	\$2.5	(5%)
Total	3,330	(100%)	6	(100%)	19	(100%)	\$47.2	(100%)
Average	280	(8%)	1	(8%)	2	(8%)	\$3.9	(8%)

**Table 12. Intentional Structure Fires in Storage Facilities  
2003-2006 Annual Averages**

<b>D. Storage, Alarm Time</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Midnight-12:59 a.m.	150	(5%)	0	(0%)	0	(0%)	\$2.7	(6%)
1:00-1:59 a.m.	140	(4%)	0	(0%)	1	(3%)	\$1.9	(4%)
2:00-2:59 a.m.	130	(4%)	0	(7%)	0	(0%)	\$3.0	(6%)
3:00-3:59 a.m.	110	(3%)	0	(7%)	0	(0%)	\$2.4	(5%)
4:00-4:59 a.m.	90	(3%)	0	(0%)	2	(8%)	\$2.1	(5%)
5:00-5:59 a.m.	90	(3%)	0	(0%)	0	(0%)	\$2.1	(5%)
6:00-6:59 a.m.	70	(2%)	0	(0%)	0	(0%)	\$0.8	(2%)
7:00-7:59 a.m.	60	(2%)	1	(9%)	1	(4%)	\$0.2	(0%)
8:00-8:59 a.m.	60	(2%)	0	(0%)	0	(0%)	\$0.6	(1%)
9:00-9:59 a.m.	70	(2%)	0	(7%)	0	(0%)	\$0.8	(2%)
10:00-10:59 a.m.	100	(3%)	0	(0%)	1	(3%)	\$0.4	(1%)
11:00-11:59 a.m.	120	(4%)	0	(0%)	0	(0%)	\$0.7	(2%)
12:00-12:59 p.m.	120	(4%)	0	(0%)	2	(8%)	\$0.8	(2%)
1:00-1:59 p.m.	140	(4%)	0	(0%)	1	(6%)	\$1.2	(3%)
2:00-2:59 p.m.	150	(4%)	0	(0%)	1	(3%)	\$0.8	(2%)
3:00-3:59 p.m.	200	(6%)	3	(44%)	6	(30%)	\$1.5	(3%)
4:00-4:59 p.m.	250	(7%)	0	(0%)	1	(7%)	\$2.9	(6%)
5:00-5:59 p.m.	250	(8%)	1	(16%)	1	(6%)	\$1.9	(4%)
6:00-6:59 p.m.	200	(6%)	0	(0%)	1	(7%)	\$2.2	(5%)
7:00-7:59 p.m.	190	(6%)	0	(0%)	1	(4%)	\$1.1	(2%)
8:00-8:59 p.m.	190	(6%)	0	(0%)	2	(8%)	\$2.5	(5%)
9:00-9:59 p.m.	150	(4%)	1	(9%)	0	(0%)	\$8.9	(19%)
10:00-10:59 p.m.	160	(5%)	0	(0%)	0	(0%)	\$3.4	(7%)
11:00-11:59 p.m.	140	(4%)	0	(0%)	1	(3%)	\$2.1	(5%)
<b>Total</b>	<b>3,330</b>	<b>(100%)</b>	<b>6</b>	<b>(100%)</b>	<b>19</b>	<b>(100%)</b>	<b>\$47.2</b>	<b>(100%)</b>
<b>Average</b>	<b>139</b>	<b>(4%)</b>	<b>0</b>	<b>(4%)</b>	<b>1</b>	<b>(4%)</b>	<b>\$2.0</b>	<b>(4%)</b>

Note: These are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of fires with Cause of Ignition unreported, blank, or unknown before or after investigation. Intentional fires with unknown area of origin were proportionally allocated across fires with known area of origin.

Source: NFIRS Version 5.0 and NFPA Annual Survey

**Table 13. Intentional Structure Fires in Stores or Offices  
2003-2006 Annual Averages**

A. Store or Office, Area of Origin	Fires		Civilian		Civilian		Direct Property	
			Deaths		Injuries		Damage (in Millions)	
Bathroom, lavatory, locker room or check room	180	(9%)	0	(0%)	3	(11%)	\$0.9	(1%)
Unclassified outside area	170	(8%)	0	(0%)	0	(0%)	\$2.7	(3%)
Sales or showroom area	140	(7%)	0	(0%)	6	(22%)	\$12.2	(13%)
Exterior wall surface	130	(6%)	0	(0%)	1	(2%)	\$4.4	(5%)
Office	120	(6%)	0	(0%)	1	(2%)	\$13.8	(15%)
Lobby or entrance way	80	(4%)	0	(0%)	1	(2%)	\$4.4	(5%)
Trash or rubbish chute, area or container	70	(4%)	0	(0%)	1	(5%)	\$0.7	(1%)
Unclassified storage area	70	(3%)	0	(0%)	0	(0%)	\$12.7	(14%)
Kitchen or cooking area	70	(3%)	1	(28%)	2	(6%)	\$1.5	(2%)
Unclassified means of egress	60	(3%)	0	(0%)	1	(4%)	\$3.5	(4%)
Storage room, area, tank, or bin	50	(3%)	0	(0%)	1	(5%)	\$1.7	(2%)
Unclassified assembly or sales area, Multiple areas of origin	50	(3%)	0	(0%)	3	(12%)	\$2.5	(3%)
On or near highway, public way or street	50	(2%)	0	(0%)	1	(2%)	\$2.9	(3%)
Shipping receiving or loading area	50	(2%)	0	(0%)	0	(0%)	\$0.2	(0%)
Unclassified area	50	(2%)	0	(0%)	1	(2%)	\$5.6	(6%)
Unclassified function area	40	(2%)	0	(0%)	0	(0%)	\$0.1	(0%)
Lawn, field or open area	40	(2%)	0	(0%)	1	(4%)	\$2.9	(3%)
Laundry room or area	40	(2%)	0	(0%)	0	(0%)	\$0.0	(0%)
Vacant structural area	40	(2%)	0	(0%)	0	(0%)	\$0.3	(0%)
Exterior roof surface	40	(2%)	0	(0%)	0	(0%)	\$0.3	(0%)
Exterior stairway, ramp, or fire escape	40	(2%)	0	(0%)	0	(0%)	\$0.3	(0%)
Storage of supplies or tools or dead storage	30	(2%)	0	(0%)	0	(0%)	\$0.4	(0%)
Hallway, corridor, mall	30	(1%)	0	(0%)	0	(0%)	\$1.1	(1%)
Maintenance or paint shop or area	30	(1%)	0	(0%)	1	(3%)	\$0.3	(0%)
Courtyard, terrace or patio	30	(1%)	0	(0%)	2	(6%)	\$2.8	(3%)
Wall assembly or concealed space	20	(1%)	0	(0%)	0	(0%)	\$0.4	(0%)
Unclassified equipment or service area	20	(1%)	0	(0%)	0	(0%)	\$0.6	(1%)
Unclassified structural area	20	(1%)	0	(0%)	0	(0%)	\$1.8	(2%)
Garage or vehicle storage area	20	(1%)	0	(0%)	0	(0%)	\$0.9	(1%)
Crawl space or substructure space	20	(1%)	2	(72%)	0	(0%)	\$1.7	(2%)
Heating equipment room	20	(1%)	0	(0%)	1	(2%)	\$0.6	(1%)
Exterior balcony, unenclosed porch	20	(1%)	0	(0%)	0	(0%)	\$0.2	(0%)
Personal service area	20	(1%)	0	(0%)	0	(0%)	\$0.1	(0%)
Records storage room, or vault	10	(1%)	0	(0%)	1	(2%)	\$2.2	(2%)
Unclassified service facility	10	(1%)	0	(0%)	0	(0%)	\$0.2	(0%)
Interior stairway or ramp	10	(1%)	0	(0%)	1	(4%)	\$0.2	(0%)
Incinerator room or area	10	(1%)	0	(0%)	0	(0%)	\$0.2	(0%)
	10	(1%)	0	(0%)	0	(0%)	\$0.0	(0%)

**Table 13. Intentional Structure Fires in Stores or Offices  
2003-2006 Annual Averages (Continued)**

B. Store or Office, Area of Origin (cntd)	Fires		Civilian		Civilian		Direct Property	
			Deaths	Injuries	Damage (in Millions)			
Ceiling or floor assembly or concealed space	10	(1%)	0	(0%)	0	(0%)	\$0.7	(1%)
Construction or renovation area	10	(1%)	0	(0%)	0	(0%)	\$0.0	(0%)
Attic or ceiling/roof assembly or concealed space	10	(1%)	0	(0%)	0	(0%)	\$1.0	(1%)
Other known area	100	(5%)	0	(0%)	1	(2%)	\$2.7	(3%)
<b>Total</b>	<b>2,050</b>	<b>(100%)</b>	<b>2</b>	<b>(100%)</b>	<b>28</b>	<b>(100%)</b>	<b>\$91.5</b>	<b>(100%)</b>

C. Store or Office, Day of Week	Fires		Civilian		Civilian		Direct Property	
			Deaths	Injuries	Damage (in Millions)			
Sunday	330	(16%)	0	(0%)	4	(14%)	\$14.2	(15%)
Monday	330	(16%)	0	(0%)	2	(9%)	\$8.1	(9%)
Tuesday	270	(13%)	2	(74%)	6	(23%)	\$9.8	(11%)
Wednesday	260	(13%)	0	(0%)	3	(11%)	\$11.0	(12%)
Thursday	260	(13%)	1	(26%)	5	(18%)	\$15.8	(17%)
Friday	290	(14%)	0	(0%)	5	(20%)	\$21.7	(24%)
Saturday	310	(15%)	0	(0%)	2	(5%)	\$10.9	(12%)
<b>Total</b>	<b>2,050</b>	<b>(100%)</b>	<b>2</b>	<b>(100%)</b>	<b>28</b>	<b>(100%)</b>	<b>\$91.5</b>	<b>(100%)</b>
<b>Average</b>	<b>290</b>	<b>(14%)</b>	<b>0</b>	<b>(14%)</b>	<b>4</b>	<b>(14%)</b>	<b>\$13.1</b>	<b>(14%)</b>

D. Store or Office, Alarm Month	Fires		Civilian		Civilian		Direct Property	
			Deaths	Injuries	Damage (in Millions)			
January	180	(9%)	0	(0%)	4	(13%)	\$4.3	(5%)
February	150	(7%)	1	(26%)	1	(5%)	\$9.6	(10%)
March	150	(7%)	0	(0%)	1	(5%)	\$7.6	(8%)
April	180	(9%)	0	(0%)	1	(2%)	\$3.8	(4%)
May	170	(8%)	0	(0%)	2	(8%)	\$7.1	(8%)
June	170	(8%)	0	(0%)	5	(18%)	\$10.4	(11%)
July	220	(11%)	0	(0%)	4	(14%)	\$7.7	(8%)
August	190	(9%)	0	(0%)	3	(12%)	\$11.5	(13%)
September	170	(8%)	2	(74%)	1	(2%)	\$3.9	(4%)
October	150	(7%)	0	(0%)	1	(4%)	\$5.9	(7%)
November	160	(8%)	0	(0%)	3	(11%)	\$14.6	(16%)
December	170	(8%)	0	(0%)	2	(7%)	\$4.9	(5%)
<b>Total</b>	<b>2,050</b>	<b>(100%)</b>	<b>2</b>	<b>(100%)</b>	<b>28</b>	<b>(100%)</b>	<b>\$91.5</b>	<b>(100%)</b>
<b>Average</b>	<b>170</b>	<b>(8%)</b>	<b>0</b>	<b>(8%)</b>	<b>2</b>	<b>(8%)</b>	<b>\$7.6</b>	<b>(8%)</b>

**Table 13. Intentional Structure Fires in Stores or Offices  
2003-2006 Annual Averages (Continued)**

E. Store or Office, Alarm Time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Midnight-12:59 a.m.	120	(6%)	0	(0%)	0	(0%)	\$5.4	(6%)
1:00-1:59 a.m.	120	(6%)	1	(26%)	1	(2%)	\$5.3	(6%)
2:00-2:59 a.m.	100	(5%)	0	(0%)	0	(0%)	\$13.4	(15%)
3:00-3:59 a.m.	110	(6%)	0	(0%)	1	(2%)	\$7.9	(9%)
4:00-4:59 a.m.	100	(5%)	0	(0%)	1	(2%)	\$6.2	(7%)
5:00-5:59 a.m.	100	(5%)	0	(0%)	0	(0%)	\$9.2	(10%)
6:00-6:59 a.m.	70	(3%)	0	(0%)	1	(2%)	\$1.3	(1%)
7:00-7:59 a.m.	60	(3%)	0	(0%)	0	(0%)	\$0.9	(1%)
8:00-8:59 a.m.	60	(3%)	0	(0%)	0	(0%)	\$1.0	(1%)
9:00-9:59 a.m.	70	(3%)	0	(0%)	0	(0%)	\$1.5	(2%)
10:00-10:59 a.m.	40	(2%)	0	(0%)	2	(7%)	\$0.4	(0%)
11:00-11:59 a.m.	50	(2%)	0	(0%)	2	(7%)	\$0.5	(1%)
12:00-12:59 p.m.	50	(2%)	0	(0%)	2	(5%)	\$1.2	(1%)
1:00-1:59 p.m.	70	(4%)	2	(74%)	2	(8%)	\$1.1	(1%)
2:00-2:59 p.m.	70	(4%)	0	(0%)	1	(4%)	\$2.1	(2%)
3:00-3:59 p.m.	80	(4%)	0	(0%)	1	(5%)	\$2.9	(3%)
4:00-4:59 p.m.	100	(5%)	0	(0%)	1	(2%)	\$0.8	(1%)
5:00-5:59 p.m.	80	(4%)	0	(0%)	7	(24%)	\$5.3	(6%)
6:00-6:59 p.m.	100	(5%)	0	(0%)	2	(9%)	\$3.3	(4%)
7:00-7:59 p.m.	90	(4%)	0	(0%)	1	(5%)	\$2.1	(2%)
8:00-8:59 p.m.	90	(4%)	0	(0%)	2	(7%)	\$3.3	(4%)
9:00-9:59 p.m.	100	(5%)	0	(0%)	0	(0%)	\$7.4	(8%)
10:00-10:59 p.m.	110	(5%)	0	(0%)	1	(2%)	\$2.3	(2%)
11:00-11:59 p.m.	100	(5%)	0	(0%)	1	(4%)	\$6.7	(7%)
Total	2,050	(100%)	2	(100%)	28	(100%)	\$91.5	(100%)
Average	90	(4%)	0	(4%)	1	(4%)	\$3.8	(4%)

Note: These are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of fires with Cause of Ignition unreported, blank, or unknown before or after investigation. Intentional fires with unknown area of origin were proportionally allocated across fires with known area of origin.

Source: NFIRS Version 5.0 and NFPA Annual Survey

**Table 14. Intentional Structure Fires in Middle Schools, Junior Highs, and High Schools  
2003-2006 Annual Averages**

A. Middle School, Junior High, or High School, Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bathroom, lavatory, locker room or check room	1,370	(62%)	0	(N/A)	15	(93%)	\$0.6	(3%)
Hallway, corridor, mall	170	(8%)	0	(N/A)	0	(0%)	\$0.4	(2%)
Small assembly area, less than 100 person capacity	100	(4%)	0	(N/A)	1	(4%)	\$3.3	(19%)
Trash or rubbish chute, area or container	70	(3%)	0	(N/A)	0	(0%)	\$0.0	(0%)
Unclassified outside area	50	(2%)	0	(N/A)	0	(0%)	\$0.1	(0%)
Interior stairway or ramp	40	(2%)	0	(N/A)	0	(0%)	\$0.0	(0%)
Unclassified area	40	(2%)	0	(N/A)	0	(0%)	\$0.6	(4%)
Unclassified storage area	40	(2%)	0	(N/A)	0	(0%)	\$0.2	(1%)
Unclassified function area	40	(2%)	0	(N/A)	0	(0%)	\$0.3	(2%)
Unclassified means of egress	20	(1%)	0	(N/A)	1	(4%)	\$0.0	(0%)
Unclassified assembly or sales area,	20	(1%)	0	(N/A)	0	(0%)	\$0.0	(0%)
Lobby or entrance way	20	(1%)	0	(N/A)	0	(0%)	\$0.3	(2%)
Kitchen or cooking area	20	(1%)	0	(N/A)	0	(0%)	\$0.1	(1%)
Multiple areas of origin	20	(1%)	0	(N/A)	0	(0%)	\$1.6	(9%)
Unclassified equipment or service area	20	(1%)	0	(N/A)	0	(0%)	\$0.1	(0%)
Common room, living room, family room, lounge or den	10	(1%)	0	(N/A)	0	(0%)	\$0.0	(0%)
Exterior stairway, ramp, or fire escape	10	(1%)	0	(N/A)	0	(0%)	\$0.1	(0%)
Office	10	(1%)	0	(N/A)	0	(0%)	\$3.1	(18%)
Large open room without fixed seats	10	(1%)	0	(N/A)	0	(0%)	\$4.7	(27%)
Other known area	150	(7%)	0	(N/A)	0	(0%)	\$2.0	(11%)
Total	2,220	(100%)	0	(N/A)	16	(100%)	\$17.6	(100%)

**Table 14. Intentional Structure Fires in Middle Schools, Junior Highs, and High Schools  
2003-2006 Annual Averages (Continued)**

<b>B. Middle School, Junior High, or High School, Day of Week</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Sunday	90	(4%)	0	(N/A)	0	(0%)	\$8.8	(50%)
Monday	440	(20%)	0	(N/A)	7	(44%)	\$0.8	(4%)
Tuesday	440	(20%)	0	(N/A)	4	(24%)	\$2.7	(16%)
Wednesday	410	(18%)	0	(N/A)	0	(0%)	\$0.7	(4%)
Thursday	440	(20%)	0	(N/A)	2	(12%)	\$2.4	(14%)
Friday	350	(16%)	0	(N/A)	3	(20%)	\$1.1	(6%)
Saturday	70	(3%)	0	(N/A)	0	(0%)	\$1.0	(6%)
Total	2,220	(100%)	0	(N/A)	16	(100%)	\$17.6	(100%)
Average	320	(14%)	0	(N/A)	2	(14%)	\$2.5	(14%)

<b>C. Middle School, Junior High, or High School, Alarm Month</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
January	200	(9%)	0	(N/A)	4	(25%)	\$0.8	(5%)
February	230	(11%)	0	(N/A)	2	(12%)	\$2.1	(12%)
March	260	(12%)	0	(N/A)	2	(14%)	\$0.3	(2%)
April	260	(12%)	0	(N/A)	1	(4%)	\$4.7	(27%)
May	280	(13%)	0	(N/A)	1	(4%)	\$0.6	(4%)
June	120	(5%)	0	(N/A)	0	(0%)	\$0.8	(5%)
July	50	(2%)	0	(N/A)	0	(0%)	\$0.2	(1%)
August	50	(2%)	0	(N/A)	0	(0%)	\$0.9	(5%)
September	170	(8%)	0	(N/A)	1	(9%)	\$0.9	(5%)
October	220	(10%)	0	(N/A)	1	(8%)	\$3.1	(18%)
November	210	(10%)	0	(N/A)	3	(21%)	\$0.6	(4%)
December	160	(7%)	0	(N/A)	1	(4%)	\$2.5	(14%)
Total	2,220	(100%)	0	(N/A)	16	(100%)	\$17.6	(100%)
Average	190	(8%)	0	(N/A)	1	(8%)	\$1.5	(8%)

**Table 14. Intentional Structure Fires in Middle Schools, Junior Highs, and High Schools  
2003-2006 Annual Averages (Continued)**

**D. Middle School,  
Junior High, or  
High School,  
Alarm Time**

	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Midnight-12:59 a.m.	30	(1%)	0	(N/A)	0	(0%)	\$7.7	(44%)
1:00-1:59 a.m.	30	(1%)	0	(N/A)	0	(0%)	\$0.3	(2%)
2:00-2:59 a.m.	10	(1%)	0	(N/A)	0	(0%)	\$0.2	(1%)
3:00-3:59 a.m.	20	(1%)	0	(N/A)	0	(0%)	\$3.9	(22%)
4:00-4:59 a.m.	20	(1%)	0	(N/A)	0	(0%)	\$0.2	(1%)
5:00-5:59 a.m.	10	(0%)	0	(N/A)	0	(0%)	\$0.1	(1%)
6:00-6:59 a.m.	30	(1%)	0	(N/A)	0	(0%)	\$0.9	(5%)
7:00-7:59 a.m.	50	(2%)	0	(N/A)	0	(0%)	\$0.1	(0%)
8:00-8:59 a.m.	120	(6%)	0	(N/A)	3	(20%)	\$0.2	(1%)
9:00-9:59 a.m.	210	(10%)	0	(N/A)	1	(5%)	\$0.7	(4%)
10:00-10:59 a.m.	250	(11%)	0	(N/A)	5	(28%)	\$0.7	(4%)
11:00-11:59 a.m.	260	(12%)	0	(N/A)	5	(29%)	\$0.1	(0%)
12:00-12:59 p.m.	270	(12%)	0	(N/A)	1	(4%)	\$0.2	(1%)
1:00-1:59 p.m.	340	(15%)	0	(N/A)	1	(4%)	\$0.2	(1%)
2:00-2:59 p.m.	240	(11%)	0	(N/A)	1	(5%)	\$0.4	(2%)
3:00-3:59 p.m.	120	(6%)	0	(N/A)	0	(0%)	\$0.0	(0%)
4:00-4:59 p.m.	60	(3%)	0	(N/A)	1	(4%)	\$0.1	(1%)
5:00-5:59 p.m.	30	(1%)	0	(N/A)	0	(0%)	\$0.1	(0%)
6:00-6:59 p.m.	20	(1%)	0	(N/A)	0	(0%)	\$0.0	(0%)
7:00-7:59 p.m.	30	(1%)	0	(N/A)	0	(0%)	\$0.2	(1%)
8:00-8:59 p.m.	40	(2%)	0	(N/A)	0	(0%)	\$0.7	(4%)
9:00-9:59 p.m.	20	(1%)	0	(N/A)	0	(0%)	\$0.2	(1%)
10:00-10:59 p.m.	20	(1%)	0	(N/A)	0	(0%)	\$0.4	(2%)
11:00-11:59 p.m.	10	(1%)	0	(N/A)	0	(0%)	\$0.0	(0%)
Total	2,220	(100%)	0	(N/A)	16	(100%)	\$17.6	(100%)
Average	90	(4%)	0	(N/A)	1	(4%)	\$0.7	(4%)

Note: These are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of fires with Cause of Ignition unreported, blank, or unknown before or after investigation. Intentional fires with unknown area of origin were proportionally allocated across fires with known area of origin.

Source: NFIRS Version 5.0 and NFPA Annual Survey



**Table 15. Intentional Structure Fires in Public Assembly Facilities  
2003-2006 Annual Averages**

A. Public Assembly, Area of Origin	Fires		Civilian		Civilian		Direct Property	
			Deaths		Injuries		Damage (in Millions)	
Bathroom, lavatory, locker room or check room	440	(22%)	0	(0%)	2	(13%)	\$0.8	(2%)
Unclassified outside area	270	(14%)	0	(0%)	1	(4%)	\$2.8	(6%)
Kitchen or cooking area	140	(7%)	0	(0%)	0	(0%)	\$1.7	(4%)
Lawn, field or open area	110	(5%)	0	(0%)	0	(0%)	\$0.0	(0%)
Trash or rubbish chute, area or container	80	(4%)	0	(0%)	0	(0%)	\$0.0	(0%)
Exterior wall surface	70	(3%)	0	(0%)	0	(0%)	\$4.2	(9%)
Small assembly area, less than 100 person capacity	60	(3%)	0	(0%)	1	(5%)	\$2.1	(5%)
Unclassified area	60	(3%)	0	(0%)	1	(4%)	\$0.2	(1%)
Lobby or entrance way	50	(3%)	0	(0%)	1	(8%)	\$1.0	(2%)
Multiple areas of origin	40	(2%)	2	(50%)	1	(8%)	\$6.1	(13%)
Unclassified function area	40	(2%)	0	(0%)	0	(0%)	\$1.4	(3%)
Vacant structural area	30	(2%)	0	(0%)	0	(0%)	\$0.2	(1%)
Unclassified means of egress	30	(2%)	0	(0%)	0	(0%)	\$1.4	(3%)
Unclassified structural area	30	(2%)	0	(0%)	0	(0%)	\$1.9	(4%)
Courtyard, terrace or patio	30	(2%)	0	(0%)	0	(0%)	\$0.0	(0%)
Dining room, bar or beverage area, cafeteria	30	(1%)	1	(19%)	0	(0%)	\$1.9	(4%)
On or near highway, public way or street	30	(1%)	0	(0%)	0	(0%)	\$0.1	(0%)
Large open room without fixed seats	30	(1%)	0	(0%)	0	(0%)	\$1.6	(4%)
Unclassified storage area	30	(1%)	0	(0%)	0	(0%)	\$2.4	(5%)
Exterior stairway, ramp, or fire escape	30	(1%)	0	(0%)	0	(0%)	\$0.6	(1%)
Office	30	(1%)	0	(0%)	0	(0%)	\$2.9	(7%)
Living room, common room, family room, lounge or den	20	(1%)	0	(0%)	1	(8%)	\$1.2	(3%)
Storage of supplies or tools or dead storage	20	(1%)	0	(0%)	1	(8%)	\$0.4	(1%)
Exterior roof surface	20	(1%)	0	(0%)	1	(4%)	\$0.4	(1%)
Large assembly area with fixed seats	20	(1%)	0	(0%)	0	(0%)	\$0.2	(0%)
Storage room, area, tank, or bin	20	(1%)	0	(0%)	0	(0%)	\$0.5	(1%)
Unclassified assembly or sales area,	20	(1%)	0	(0%)	0	(0%)	\$1.8	(4%)
Wall assembly or concealed space	20	(1%)	0	(0%)	0	(0%)	\$0.4	(1%)
Hallway, corridor, mall	20	(1%)	0	(0%)	0	(0%)	\$1.6	(4%)
Crawl space or substructure space	20	(1%)	0	(0%)	0	(0%)	\$0.1	(0%)
Exterior balcony, unenclosed porch	10	(1%)	0	(0%)	0	(0%)	\$0.4	(1%)
Ceiling/floor assembly or concealed space	10	(1%)	0	(0%)	0	(0%)	\$0.8	(2%)
Bedroom	10	(1%)	0	(0%)	0	(0%)	\$0.1	(0%)
Other known area	110	(6%)	2	(31%)	6	(39%)	\$3.7	(8%)
<b>Total</b>	<b>1,990</b>	<b>(100%)</b>	<b>5</b>	<b>(100%)</b>	<b>15</b>	<b>(100%)</b>	<b>\$45.0</b>	<b>(100%)</b>

**Table 15. Intentional Structure Fires in Public Assembly Facilities  
2003-2006 Annual Averages (Continued)**

<b>B. Public Assembly, Day of Week</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Sunday	320	(16%)	3	(68%)	4	(30%)	\$8.7	(19%)
Monday	320	(16%)	0	(0%)	2	(12%)	\$7.6	(17%)
Tuesday	290	(14%)	0	(0%)	2	(11%)	\$8.3	(19%)
Wednesday	230	(12%)	0	(0%)	1	(4%)	\$4.4	(10%)
Thursday	250	(13%)	1	(12%)	2	(11%)	\$5.7	(13%)
Friday	260	(13%)	0	(0%)	1	(4%)	\$5.2	(12%)
Saturday	320	(16%)	1	(20%)	4	(27%)	\$5.1	(11%)
Total	1,990	(100%)	5	(100%)	15	(100%)	\$45.0	(100%)
Average	280	(14%)	1	(14%)	2	(14%)	\$6.4	(14%)
<b>C. Public Assembly, Alarm Month</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
January	130	(7%)	1	(20%)	4	(28%)	\$5.4	(12%)
February	120	(6%)	0	(0%)	0	(0%)	\$1.5	(3%)
March	160	(8%)	0	(0%)	0	(0%)	\$5.0	(11%)
April	160	(8%)	0	(0%)	0	(0%)	\$2.6	(6%)
May	180	(9%)	0	(0%)	1	(9%)	\$2.7	(6%)
June	210	(10%)	0	(0%)	2	(15%)	\$4.5	(10%)
July	210	(11%)	2	(46%)	1	(4%)	\$4.8	(11%)
August	200	(10%)	2	(34%)	2	(17%)	\$3.6	(8%)
September	150	(8%)	0	(0%)	0	(0%)	\$5.4	(12%)
October	180	(9%)	0	(0%)	1	(8%)	\$3.4	(8%)
November	150	(8%)	0	(0%)	2	(15%)	\$4.6	(10%)
December	120	(6%)	0	(0%)	1	(4%)	\$1.7	(4%)
Total	1,990	(100%)	5	(100%)	15	(100%)	\$45.0	(100%)
Average	170	(8%)	0	(8%)	1	(8%)	\$3.7	(8%)

**Table 15. Intentional Structure Fires in Public Assembly Facilities  
2003-2006 Annual Averages (Continued)**

D. Public Assembly, Alarm Time	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Midnight-12:59 a.m.	90	(4%)	0	(0%)	1	(4%)	\$2.2	(5%)
1:00-1:59 a.m.	100	(5%)	0	(0%)	2	(11%)	\$4.7	(11%)
2:00-2:59 a.m.	110	(6%)	0	(0%)	0	(0%)	\$7.4	(16%)
3:00-3:59 a.m.	100	(5%)	0	(0%)	0	(0%)	\$4.7	(11%)
4:00-4:59 a.m.	100	(5%)	3	(54%)	3	(23%)	\$5.0	(11%)
5:00-5:59 a.m.	70	(4%)	2	(34%)	2	(12%)	\$4.6	(10%)
6:00-6:59 a.m.	50	(2%)	0	(0%)	0	(0%)	\$2.1	(5%)
7:00-7:59 a.m.	60	(3%)	0	(0%)	1	(4%)	\$0.5	(1%)
8:00-8:59 a.m.	50	(2%)	0	(0%)	0	(0%)	\$0.7	(2%)
9:00-9:59 a.m.	70	(3%)	0	(0%)	1	(9%)	\$0.2	(0%)
10:00-10:59 a.m.	50	(3%)	0	(0%)	0	(0%)	\$0.6	(1%)
11:00-11:59 a.m.	60	(3%)	0	(0%)	0	(0%)	\$0.1	(0%)
12:00-12:59 p.m.	50	(2%)	0	(0%)	0	(0%)	\$1.7	(4%)
1:00-1:59 p.m.	70	(4%)	0	(0%)	1	(5%)	\$0.8	(2%)
2:00-2:59 p.m.	80	(4%)	0	(0%)	0	(0%)	\$0.3	(1%)
3:00-3:59 p.m.	80	(4%)	0	(0%)	1	(8%)	\$0.3	(1%)
4:00-4:59 p.m.	90	(4%)	0	(0%)	0	(0%)	\$0.3	(1%)
5:00-5:59 p.m.	100	(5%)	0	(0%)	1	(4%)	\$0.6	(1%)
6:00-6:59 p.m.	100	(5%)	0	(0%)	0	(0%)	\$0.7	(2%)
7:00-7:59 p.m.	100	(5%)	0	(0%)	0	(0%)	\$0.4	(1%)
8:00-8:59 p.m.	120	(6%)	1	(12%)	0	(0%)	\$1.4	(3%)
9:00-9:59 p.m.	110	(6%)	0	(0%)	1	(8%)	\$2.1	(5%)
10:00-10:59 p.m.	100	(5%)	0	(0%)	2	(13%)	\$2.8	(6%)
11:00-11:59 p.m.	90	(4%)	0	(0%)	0	(0%)	\$0.8	(2%)
Total	1,990	(100%)	5	(100%)	15	(100%)	\$45.0	(100%)
Average	80	(4%)	0	(4%)	1	(4%)	\$1.9	(4%)

Note: These are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are rounded to the nearest ten and direct property damage to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of fires with Cause of Ignition unreported, blank, or unknown before or after investigation. Intentional fires with unknown area of origin were proportionally allocated across fires with known area of origin.

Source: NFIRS Version 5.0 and NFPA Annual Survey

**Table 16. Intentional Fires as Share of  
2003-2006 Structure Fires, by Structure Status**

<b>Structure Status</b>	<b>Number and Percentage of All Structure Fires that are Intentional</b>		<b>Number and Percentage of All Structure Fire Civilian Deaths in Intentional Fires</b>		<b>Number and Percentage of All Structure Fire Civilian Injuries in Intentional Fires</b>		<b>Number and Percentage of All Structure Fire Direct Property Damage in Intentional Fires</b>	
Vacant and unsecured	8,900	57%	13	42%	21	43%	\$122.6	59%
Being demolished	800	43%	0	0%	5	44%	\$3.9	16%
Vacant and secured	4,400	32%	4	22%	14	16%	\$131.7	30%
Idle (not routinely used)	2,200	23%	6	58%	8	13%	\$31.5	22%
Under construction	700	16%	2	23%	5	7%	\$101.2	34%
Under major renovation	400	12%	0	0%	2	3%	\$17.9	16%
Occupied and operating	26,000	6%	367	12%	1,074	7%	\$565.5	7%
All structure statuses*	41,000	8%	389	12%	1,130	7%	\$916.0	10%

\*Does not include fires with unknown or unclassified structure status.

Note: these are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire.

Source: Data from NFIRS Version 5.0 and NFPA survey.

**Table 17. U.S. Intentional Structure Fire and Arson Offense Rates  
by Size of Community**

**A. Intentional Structure Fires per 100,000 Population**

<b>Size of Community</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
250,000 or more	36	32	34	30	31	26	26	26	28	27	21	21	16	15	15
100,000 to 249,999	27	29	31	29	25	24	16	19	20	20	15	15	11	15	13
50,000 to 99,999	20	20	17	16	15	18	12	15	14	15	13	11	11	9	9
25,000 to 49,999	15	14	14	14	12	11	8	10	11	12	9	9	10	9	9
10,000 to 24,999	11	13	12	11	14	11	10	9	10	13	8	8	7	7	6
5,000 to 9,999	11	12	15	13	11	10	14	10	8	11	8	7	7	7	8
2,500 to 4,999	16	14	19	12	16	15	13	17	7	8	9	8	6	7	9
Under 2,500	18	16	24	23	18	15	20	18	15	10	14	11	11	7	15

Note: FBI rates include non-structure fires (i.e., vehicles, outdoor fires). The FBI uses cities and other communities; the NFPA uses population coverage areas of fire departments. The FBI figures for cities under 10,000 population and rural counties may not correspond exactly to rates for communities of 2,500 to 9,999 and under 2,500 population, the definitions used in the NFPA survey. The FBI also reports rates for suburban counties and areas. As of 2003, FBI statistics replaced rural counties with non-metropolitan counties. NFPA statistics are for incendiary fires through 2000 and for intentional fires from 2001 on.

Source for Part A: NFPA survey and U.S. Census Bureau resident population statistics.

**Table 17. U.S. Intentional Structure Fire and Arson Offense Rates  
by Size of Community (Continued)**

**B. Arson Offenses in All Properties per 100,000 Population**

<b>Size of Community</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
250,000 or more	86	84	83	84	78	75	71	67	62	59	53	49	46	45	41
100,000 to 249,999	63	66	60	50	52	43	43	40	38	39	35	30	30	30	29
50,000 to 99,999	41	43	42	41	36	34	33	31	32	29	28	26	24	26	24
25,000 to 49,999	34	37	36	36	31	28	27	26	25	24	23	23	23	22	21
10,000 to 24,999	26	28	29	27	24	22	21	19	21	20	20	19	18	19	18
Cities under 10,000	28	31	35	30	28	28	26	24	27	25	22	22	21	22	21
Rural counties	19	19	21	19	18	18	18	18	19	17	18	17	17	16	16

Note: FBI rates include non-structure fires (i.e., vehicles, outdoor fires). The FBI uses cities and other communities; the NFPA uses population coverage areas of fire departments. The FBI figures for cities under 10,000 population and rural counties may not correspond exactly to rates for communities of 2,500 to 9,999 and under 2,500 population, the definitions used in the NFPA survey. The FBI also reports rates for suburban counties and suburban areas. As of 2003, FBI statistics replaced rural counties with non-metropolitan counties. NFPA statistics are for incendiary fires through 2000 and for intentional fires from 2001 on.

Source for Part B: FBI and U.S. Census Bureau resident population statistics.

**Table 18. Intentional Fires in Other Countries**

Year	<u>United Kingdom</u>		<u>Japan structures fires</u>			<u>Canada</u>	
	Buildings	Cars	Arson	Suspected arson	Total	Set fires	Percent of all fires
1990	23,600	19,800	2,600	2,000	4,700	10,400	15%
1991	24,900	33,100	2,700	2,100	4,800	11,000	16%
1992	26,300	41,000	2,700	2,300	5,000	12,100	18%
1993	27,700	39,800	3,300	2,300	5,600	11,400	17%
1994	36,100	34,300	3,100	2,400	5,400	10,900	16%
1995	35,700	35,400	3,100	2,400	5,500	11,900	19%
1996	35,600	38,300	3,300	2,500	5,800	12,000	20%
1997	32,700	36,400	3,600	2,500	6,000	9,600	17%
1998	30,500	42,700	3,600	2,400	6,000	10,600	18%
1999	31,800	56,200	3,700	2,300	6,000	10,200	18%
2000	32,200	63,000	3,800	2,500	6,300	8,200	15%
2001	34,600	70,200	3,800	2,500	6,300	10,900	20%
2002	31,300	68,700	3,900	2,600	6,500	10,000	19%
2003	32,100	62,600	4,000	2,500	6,500	NA	NA
2004	28,000	46,900	3,800	2,400	6,200	NA	NA
2005	24,500	39,600	NA	NA	NA	NA	NA
2006	22,900	34,400	NA	NA	NA	NA	NA

NA – Not available at press time.

Note: In 1994, the U.K. began including some late calls and some heat and smoke damage incidents not previously included. All U.K. figures include suspected set fires. The U.K. refers to intentional fires as “malicious” cause fires but includes other “deliberate” ignitions as well. Fires are estimated to the nearest hundred. Totals may not equal sums because of rounding.

Source: *Fire Statistics – United Kingdom* series; *White Book on Fire Service in Japan* series and additional statistics from Dr. Ai Sekizawa, National Research Institute for Fire and Disaster; *Annual Report – Fire Losses in Canada* series of the Canadian Fire Commissioners.

**Table 19. Civilian Deaths in Intentional Fires in Other Countries**

Year	<u>United Kingdom</u>		<u>Japan structure fires</u>		<u>Canada</u>
	Building	Cars	Suspected Arson	Arson	
1990	70	20	280	60	50
1991	70	20	290	50	40
1992	80	20	240	50	50
1993	70	20	250	70	40
1994	70	20	240	80	50
1995	90	20	200	50	50
1996	90	20	220	60	30
1997	70	20	260	70	60
1998	70	20	290	80	80
1999	70	20	290	70	80
2000	70	20	240	90	30
2001	60	10	250	120	70
2002	80	10	240	80	50
2003	60	20	260	90	NA
2004	60	10	NA	NA	NA
2005	80	20	NA	NA	NA
2006	80	20	NA	NA	NA

NA – Not available at press time or no longer available at source.

Note: In 1994, the U.K. began including some late calls and some heat and smoke damage incidents not previously included. All U.K. figures include suspected set fires. The U.K. refers to intentional fires as “malicious” cause fires but includes other “deliberate” ignitions as well. Deaths are shown to the nearest ten. Totals may not equal sums because of rounding.

Source: *Annual Fire Statistics – United Kingdom* series *White Book on Fire Service in Japan* series and additional statistics from Dr. Ai Sekizawa, National Research Institute, for Fire and Disaster; *Annual Report – Fire Losses in Canada* series of the Canadian Fire Commissioners.



**Table 20. Civilian Injuries in Intentional Fires in Other Countries**

<b>Year</b>	<b><u>United Kingdom</u></b>		<b><u>Canada</u></b>
	<b>Building</b>	<b>Cars</b>	
1990	1,970	30	220
1991	2,020	70	180
1992	2,300	110	260
1993	2,290	60	210
1994	2,760	70	190
1995	2,690	70	190
1996	2,850	100	220
1997	2,650	70	170
1998	2,720	100	180
1999	2,720	80	140
2000	2,980	110	170
2001	3,080	90	160
2002	2,850	100	200
2003	2,730	110	NA
2004	2,530	70	NA
2005	2,430	90	NA
2006	2,400	80	NA

Note: In 1994, the U.K. began including some late calls and some heat and smoke damage incidents not previously included. All U.K. figures include suspected set fires. The U.K. refers to intentional fires as “malicious” cause fires but includes other “deliberate” ignitions as well. Injuries are estimated to the nearest ten. Totals may not equal sums because of rounding.

Source: *Fire Statistics – United Kingdom* series; and *Annual Report – Fire Losses in Canada* series of the Canadian Fire Commissioners.

**Table 21. Direct Property Damage in Intentional Fires in Other Countries**

Year	Japan structures fires					Canada		
	in Billions of Yen		in Millions of U.S. Dollars			In Millions of Canadian Dollars	In Millions of U.S. Dollars	
	Arson	Suspected Arson	Total	Total	In 2004 Dollars		Total	In 2004 Dollars
1990	8.8	7.6	16.4	\$113	\$163	\$244	\$209	\$302
1991	8.3	7.9	16.2	\$120	\$166	\$236	\$206	\$285
1992	7.5	9.1	16.5	\$131	\$176	\$250	\$207	\$278
1993	11.6	8.7	20.4	\$183	\$239	\$232	\$180	\$235
1994	9.9	10.6	20.5	\$201	\$256	\$192	\$140	\$178
1995	12.1	10.5	22.6	\$240	\$297	\$199	\$145	\$179
1996	10.2	8.4	18.5	\$170	\$205	\$246	\$180	\$217
1997	12.0	11.2	23.2	\$192	\$226	\$182	\$131	\$154
1998	8.6	7.7	16.4	\$125	\$145	\$258	\$174	\$202
1999	12.9	8.9	21.8	\$191	\$216	\$222	\$149	\$169
2000	11.6	9.5	21.0	\$195	\$214	\$110	\$74	\$82
2001	10.1	9.7	19.7	\$162	\$173	\$252	\$163	\$174
2002	9.4	8.9	18.3	\$146	\$153	\$242	\$154	\$162
2003	7.3	10.7	18.0	\$155	\$159	NA	NA	NA
2004	8.3	8.2	16.5	\$153	\$153	NA	NA	NA

Note: Direct property damage is estimated to the nearest million dollars, Canadian or U.S., or the nearest hundred million Japanese yen. Totals may not equal sums because of rounding. “Billion” means a thousand million.

Source: *White Book on Fire Service in Japan* series and additional statistics from Dr. Ai Sekizawa, National Research Institute for Fire and Disaster; and *Annual Report – Fire Losses in Canada* series of the Canadian Fire Commissioners. Exchange rates taken from OECD website in August 2007, and adjustments to U.S. inflation based on consumer price index from *Statistical Abstract of the United States*.

## Firesetters and Criminal Justice

**In the U.S., typically one of every six arson offenses (18% in 2007) is cleared by arrest or “exceptional means.”**

“Clearance” means the law enforcement officials are satisfied that they have identified the perpetrator, even if no arrest has been made for that particular offense. (It is not unusual for an individual who is suspected of many offenses to be charged with only a few of them for which the evidence is the strongest. The officials will regard all the offenses as cleared.) A single clearance can mean several arrests if a fire was set by several persons. A single arrest can mean several clearances if one suspect is reliably associated with several arson offenses.

Clearance by “exceptional means” involves the following criteria: (1) identification of offender, (2) sufficient evidence to support an arrest, make a charge, and turn over the offender for prosecution, (3) identification of the offender’s exact location so that an arrest can be made, and (4) circumstances outside the control of law enforcement that prohibit arrest, such as death of the offender, denial of extradition because of simultaneous prosecution for another offense elsewhere, or refusal of victim to cooperate with prosecution after identifying the offender.

Table 22 indicates that the regional clearance percentages have also been fairly stable, except for a sustained improvement in the Northeast, which had the highest clearance rate in 2001 to 2007. The South had had the highest clearance rate in every year prior to 2001 and now ranks second, behind the Northeast. Clearance rates are higher for arsons in structures, where the loss is typically much greater, and lower in large cities (with at least 250,000 population), which also have the highest rates of arson offenses.

In 2007, 18% of arson offenses were cleared by arrest or “exceptional means” and in 40% of clearances only juveniles were involved. According to the Bureau of Justice Statistics, 46% of arson suspects in arson cases that took place between October 2003 and September 2004 were prosecuted. Of the cases that commenced during the same time period, 55% of defendants were released.<sup>2</sup>

**Juveniles have accounted for nearly half of all arrestees beginning in 1991.**

Table 23 shows the 2007 age breakdown of arrestees, when 47% of arrestees were under age 18. Table 23 also shows three-fifths (59%) of arrestees are under age 21. Table 24 shows the same breakdown by age from 1980 through 2007.

In 2007, 84% of arson arrestees were male and 75% were white.

**The percentage of arson arrestees under age 10 (3% in 2007) is much higher than for any other crime the FBI tracks.**

Table 22 shows that 3% of people arrested for arson were under 10 years of age. This has been holding steady since 2003 and is at the lowest point since 1980. Interestingly, the percentage under age 10 was higher in the 1980s, when the total percentage of arrestees under age 18 was lower than it has been in recent years. The only other offenses where the 2007 percentage of

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<sup>2</sup> Bureau of Justice Statistics, *Compendium of Federal Justice Statistics, 2004*, December 2006.

arrestees under age 10 was at least 1% include vandalism and runaways. There are no other offenses where the 2007 percentage of arrestees under age 10 was at least 1%.

**There is some diversity of opinion as to how to describe different types of youthful firesetters.**

As our understanding has grown regarding the many different circumstances that can lead to firestarting by children, there has also been a growing discomfort with the rigidity of the two traditional choices – “intentional” (formerly incendiary), with its close association with arson or other acts intended to cause harm to people or property, and “playing,” with its implications of both innocence and recklessness.

In NFIRS 5.0, it is now possible to code a fire as intentional or playing (not limited to children) or both, to indicate age of the firestarter was a factor or not, and to indicate the age of the firestarter if age was cited as a factor. This could permit the reckless fireplay of older youths to be distinguished from traditional curiosity firestarting by young children. The former could be coded as intentional and playing, the latter could be coded as unintentional and playing, and both could be coded with age as a factor.

However, it is not clear what should be done about so-called “crisis” firesetters – children whose firesetting behavior is a cry for help but may or may not represent a deliberate, intentional choice, and it does not fit well with either intentional or playing. Juvenile firesetters have diverse motives, including curiosity fireplay, anger and cries for help, fire as a form of juvenile delinquency, and severe emotional disturbance.

In 2006, an estimated 14,500 structure fires involving fire-play were reported to U.S. municipal fire departments. These fires resulted in an estimated 130 civilian deaths, 810 civilian injuries, and \$328 million in direct property damage. Half (50%) of people who start reported fires by playing are 5 years old and younger.<sup>3</sup>

An analysis of the 2003-2006 home non-confined structure fires in which age of victim was a factor was provided in Appendix A of NFPA’s *Children Playing with Fire Report, January 2009*

- 47 % were coded as playing but not intentional
  - 81% of these fires involved firesetters under age 10
- 52% were coded as playing and intentional
  - 77% of these fires involved firesetters under age 10
- 4% were coded as intentional, but not playing
  - 58% of these fire involved firesetters under age 10

**Less than 10% of intentional structure fires involve incendiary devices.**

From 1980 to 1998, the share of intentional (incendiary) structure fires started by incendiary devices fell in the range of 7-10% and showed a slight upward trend. The percentage fell to the 4-8% range in 1999-2006, which may be related to the changes in reporting and analysis associated with the advent of NFIRS Version 5.0. The slight upward trend appears to have resumed, but from a lower base. See Table 25.

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<sup>3</sup> Flynn, Jennifer D., *Children Playing with Fire*, NFPA Division of Fire Analysis and Research, January 2009.

**Table 22. U.S. Arson Clearances  
Percentage of Reported Crimes Cleared by Arrest or Exceptional Means**

<b>Year</b>	<b>Nation</b>	<b>Northeast</b>	<b>Midwest</b>	<b>South</b>	<b>West</b>	<b>Structures*</b>	<b>Percent of Clearances With Only Juvenile Offenders Involved</b>	<b>In Cities of At Least 250,000 Population</b>
1984	17	15	13	22	16	23	35	11
1985	17	13	16	22	15	23	36	11
1986	15	12	13	20	15	22	35	11
1987	16	13	13	20	15	22	36	11
1988	15	12	12	21	14	22	39	10
1989	15	11	14	20	14	21	39	10
1990	15	11	11	21	15	22	38	9
1991	16	12	13	21	16	22	40	10
1992	15	13	11	21	13	21	42	9
1993	15	13	12	20	15	22	44	10
1994	15	10	14	21	15	23	48	11
1995	16	11	16	20	15	23	47	12
1996	16	14	16	20	15	22	45	12
1997	18	16	16	22	15	24	46	12
1998	16	17	15	20	13	24	45	12
1999	17	17	18	19	14	23	48	12
2000	16	17	15	18	14	22	45	11
2001	16	20	15	18	14	22	45	11
2002	17	20	15	19	14	22	42	11
2003	17	21	16	19	14	22	41	11
2004	17	22	15	19	15	22	43	10
2005	18	22	17	19	16	22	42	13
2006	18	23	16	21	15	22	40	13
2007	18	24	16	20	16	22	40	14

\*Includes clearances by exceptional means, other than arrests, not included in other figures.

Source: FBI *Crime in the United States* series.

**Table 23. Age Profile of Persons Under Age 21 Arrested for Arson, U.S., 2007**

<b>Age of Arrestee</b>	<b>Percentage of All Arrests</b>	<b>Cumulative Percentage of All Arrests</b>
Under 10	3	3
10-12	9	12
13-14	16	28
15	8	36
16	6	42
17	5	47
18	5	52
19	4	56
20	3	59

Source: FBI *Crime in the United States* series.

**Table 24. Trends in Age Profiles of Juveniles Arrested for Arson, U.S.**

Age of Arrestee	Percentage of All Arrests									
	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Under 10	7	7	6	7	8	7	7	7	8	
10-12	7	8	7	7	8	7	7	8	9	
13-14	11	11	9	10	12	12	11	11	12	
15	7	5	5	5	6	6	6	6	6	
16	6	5	5	4	5	5	5	5	4	
17	6	6	5	4	4	4	4	4	4	
All under 18	44	42	37	37	43	41	40	41	43	
	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	
Under 10	8	7	7	6	6	7	6	7	6	
10-12	9	10	11	11	10	12	12	12	11	
13-14	13	12	14	15	16	18	17	17	16	
15	5	6	6	7	7	7	7	7	7	
16	4	5	5	5	5	6	5	6	6	
17	4	4	4	5	5	5	5	5	5	
All under 18	43	44	47	49	49	55	52	53	50	
	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	
Under 10	6	7	6	5	5	3	3	3	3	
10-12	12	12	13	11	11	10	10	9	9	
13-14	17	17	16	15	15	18	17	17	16	
15	7	8	7	7	7	9	8	8	8	
16	6	5	6	6	6	6	7	6	7	
17	5	5	5	5	5	5	5	5	5	
All under 18	52	54	53	49	49	51	50	49	49	
	<b>2007</b>									
Under 10	3									
10-12	9									
13-14	16									
15	8									
16	6									
17	5									
All under 18	47									

Source: FBI *Crime in the United States* series.

**Table 25. U.S. Intentional Structure Fires Involving the  
Use of Incendiary Devices  
(Limited to Non-Confined Fires From 1999 On)**

<b>Year</b>	<b>Fires</b>		<b>Direct Property Damage (in Millions)</b>	
1980	8,600	(7%)	\$106	(9%)
1981	8,400	(8%)	\$89	(7%)
1982	6,100	(7%)	\$74	(6%)
1983	5,000	(7%)	\$57	(6%)
1984	5,000	(7%)	\$68	(7%)
1985	5,800	(7%)	\$92	(9%)
1986	5,800	(8%)	\$61	(6%)
1987	5,600	(8%)	\$86	(9%)
1988	5,200	(8%)	\$85	(8%)
1989	5,100	(8%)	\$56	(7%)
1990	5,200	(9%)	\$85	(9%)
1991	5,600	(9%)	\$148	(12%)
1992	6,000	(9%)	\$115	(6%)
1993	4,900	(9%)	\$62	(7%)
1994	4,800	(9%)	\$97	(10%)
1995	4,500	(9%)	\$90	(10%)
1996	4,500	(9%)	\$135	(14%)
1997	3,800	(8%)	\$70	(9%)
1998	4,200	(10%)	\$75	(10%)
1999	1,600	(4%)	\$35	(4%)
2000	1,800	(5%)	\$85	(8%)
2001	1,700	(5%)	\$75	(10%)
2002	2,100	(6%)	\$41	(4%)
2003	1,600	(6%)	\$35	(4%)
2004	1,700	(6%)	\$48	(6%)
2005	2,000	(7%)	\$66	(7%)
2006	2,300	(8%)	\$71	(7%)

Note: These are national estimates of fires reported to U.S. municipal departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred and direct property damage to the nearest million dollars. Property damage has not been adjusted for inflation. Percentages shown are the percentages of total intentional (incendiary) structure fires. Statistics include a proportional share of structure fires with unknown Ignition Factor (1980-1998) or unknown Cause (1999 and after) and also intentional fires with heat source unknown.

Source: Data from NFIRS Version 4.1 (1980-1998) and Version 5.0 (1999-present) and NFPA survey.



# The Myths of Arson

By John R. Hall, Jr.

## **Myth #1: Arson is the fastest growing crime in America.**

As the earlier statistics showed, arson (or intentional fires) is not growing at all in the U.S. or Canada – the long-term trends are all down – so it can hardly be the fastest growing crime.

The perception that arson is growing in the U.S. may involve one or more of the following bases:

- Opinions formed in another time or another place. As noted, some parts of the world are experiencing growth in arson. Also, prior to 1980, there is some evidence that arson was growing for a considerable part of the 1970s. Unfortunately, the evidence available from that period is not as statistically sound as the evidence since 1977, so we cannot confirm that this perception was at least valid for its time.
- Opinions formed on the basis of a part of the problem. Trends can be different in particular communities or for certain types of properties. With an overall trend that has often been level for long periods, with many ups and downs, it would not be surprising for some communities to experience a substantial upward or downward trend. Also, a community or an agency that has substantially improved its investigative activity will find that it has a substantial increase in confirmed arson cases or confirmed intentional fires, and this may be mistaken for an increase in the problem rather than a better, clearer view of the same problem.
- Confusing under-reporting with a concealed upward trend. Many individuals believe the incidence of arson or intentional fires is under-reported. They may be concerned at the large number of set fires that are never officially determined as intentional, and they may be unaware of the statistical methods used to compensate for such cases, for intentional fires and every other cause. They may be concerned about the ability of professional or other highly skilled firesetters to conceal their crimes, and they may be unaware of the large fraction of fires, regardless of cause, that are controlled while still small enough to be easily and conclusively investigated. In other words, they may be concerned about a problem that, even under the worst scenario, cannot be common enough to dramatically alter the statistics.

But even if the incidence of arson or of intentional fire is under-reported – as all crimes and all types of fires are – that would not be sufficient to change a downward trend to an upward trend. Most likely, it would mean the same downward trend applies, but with higher rates in any particular year. In order for the direction of the trend to change, the degree of under-reporting would have to be growing – and growing substantially – over time. There is no evidence for this, and if anything, the many initiatives to address arson over the past two decades would be expected to reduce under-reporting and create the illusion of an increasing trend where the true trend was decreasing. That has not happened.

**Myth #2: Arson is hard to solve because it destroys all the evidence.**

Arson is hard to solve. The fraction of all offenses cleared (solved) by arrest ranges between 15% and 20%. However, this same solution rate applies to all other major property crimes — crimes where there usually are no witnesses.

Intentional fires typically do not destroy all the evidence. More than half of all intentional structure fires (56% in 2002-2005) have no flame damage outside the room of origin. Intentional fires are more likely to spread beyond the room of origin than most other fires, but the differences in likelihood are small. One-third of intentional structure fires (32% in 2002-2005) had no flame damage beyond the object of origin. If there was useful evidence available in these fires, the fire will often have left some of it untouched. Training in scene preservation can often improve this situation.

Unfortunately, the real problem, while less unique to arson, is no less difficult to solve. Readily trackable evidence is rare in any unwitnessed property crime, so there usually is no need for fire to obliterate it. Conversely, whatever methods work to increase crime-solving rates for crimes like burglary or motor vehicle theft may be effective with arson as well.

**Myth #3: Arson rises in bad economic times.**

One additional issue that keeps recurring is the question of whether there is a link between arson and trends in the economy, particularly recessions. In hard times, it is not unusual for local fire officials and insurance adjusters in some communities to report apparent jumps in some types of arson. The national statistics, however, do not show evidence of a significant link.

During the 26-year period covered by available statistics, there have been three recessions - one centered on 1982, one in 1991-1992, and one in 2001-2002. Intentional fires actually fell dramatically in 1982 in most categories and by most measures, despite the recession. The 1991-1992 recession occurred during a leveling off in the trend, but that leveling off was not notably different from the trend for the rest of the decade. And in 2001-2002, excluding the unique events of September 11, 2001, the trend in arson losses was level or down.

It is known from our statistical studies that overall fire incident or fire death rates tend to be correlated with poverty, but that need not mean that fire experience responds rapidly or dramatically to year-to-year shifts in economic conditions. The relationship appears to be more complex than that. Also, as noted, for arson in particular, most studies have shown (or at least estimated) that arson for profit ranks second as a motive for the less than half the arson problem involving adult offenders. Therefore, even if there were a statistically significant jump in arson for profit, the overall arson figure might not show the jump in measureable form and might even decline, under the influence of other factors affecting other, larger parts of the arson problem, such as juvenile firesetting.

Another variation of this myth is that there is a tendency of businesses to commit arsons at the end of the month in order to fix up an otherwise dismal balance sheet. An analysis was done to

see whether stores and offices had more incendiary and suspicious fires in the last three days of the month than at other times. Data from 1988-92 were used, and at first the answer seemed affirmative: Those days accounted for 10% of the days and 15% of the incendiary fires. On closer examination, this proved to be entirely an artifact of the Los Angeles civil disturbance, which went into the records as nearly 2,000 separate incidents at the end of April 1991. If those days are removed, the other days account for roughly 10% of the days and the fires, showing no distinctive pattern.

## Appendix A.

### How National Estimates Statistics Are Calculated

The statistics in this analysis are estimates derived from the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA's) annual survey of U.S. fire departments. NFIRS is a voluntary system by which participating fire departments report detailed factors about the fires to which they respond. Roughly two-thirds of U.S. fire departments participate, although not all of these departments provide data every year. Fires reported to federal or state fire departments or industrial fire brigades are not included in these estimates.

NFIRS provides the most detailed incident information of any national database not limited to large fires. NFIRS is the only database capable of addressing national patterns for fires of all sizes by specific property use and specific fire cause. NFIRS also captures information on the extent of flame spread, and automatic detection and suppression equipment. For more information about NFIRS visit <http://www.nfirs.fema.gov/>. Copies of the paper forms may be downloaded from [http://www.nfirs.fema.gov/documentation/design/NFIRS\\_Paper\\_Forms\\_2008.pdf](http://www.nfirs.fema.gov/documentation/design/NFIRS_Paper_Forms_2008.pdf).

NFIRS has a wide variety of data elements and code choices. The NFIRS database contains coded information. Many code choices describe several conditions. These cannot be broken down further. For example, area of origin code 83 captures fires starting in vehicle engine areas, running gear areas or wheel areas. It is impossible to tell the portion of each from the coded data.

#### **Methodology may change slightly from year to year.**

NFPA is continually examining its methodology to provide the best possible answers to specific questions, methodological and definitional changes can occur. *Earlier editions of the same report may have used different methodologies to produce the same analysis, meaning that the estimates are not directly comparable from year to year.*

#### **NFPA's fire department experience survey provides estimates of the big picture.**

Each year, NFPA conducts an annual survey of fire departments which enables us to capture a summary of fire department experience on a larger scale. Surveys are sent to all municipal departments protecting populations of 50,000 or more and a random sample, stratified by community size, of the smaller departments. Typically, a total of roughly 3,000 surveys are returned, representing about one of every ten U.S. municipal fire departments and about one third of the U.S. population.

The survey is stratified by size of population protected to reduce the uncertainty of the final estimate. Small rural communities have fewer people protected per department and are less likely to respond to the survey. A larger number must be surveyed to obtain an adequate sample of those departments. (NFPA also makes follow-up calls to a sample of the smaller fire departments that do not respond, to confirm that those that did respond are truly representative of fire departments their size.) On the other hand, large city departments are so few in number and

protect such a large proportion of the total U.S. population that it makes sense to survey all of them. Most respond, resulting in excellent precision for their part of the final estimate.

The survey includes the following information: (1) the total number of fire incidents, civilian deaths, and civilian injuries, and the total estimated property damage (in dollars), for each of the major property use classes defined in NFIRS; (2) the number of on-duty firefighter injuries, by type of duty and nature of illness; (3) the number and nature of non-fire incidents; and (4) information on the type of community protected (e.g., county versus township versus city) and the size of the population protected, which is used in the statistical formula for projecting national totals from sample results. The results of the survey are published in the annual report *Fire Loss in the United States*. To download a free copy of the report, visit

<http://www.nfpa.org/assets/files/PDF/OS.fireloss.pdf>.

### **Projecting NFIRS to National Estimates**

As noted, NFIRS is a voluntary system. Different states and jurisdictions have different reporting requirements and practices. Participation rates in NFIRS are not necessarily uniform across regions and community sizes, both factors correlated with frequency and severity of fires. This means NFIRS may be susceptible to systematic biases. No one at present can quantify the size of these deviations from the ideal, representative sample, so no one can say with confidence that they are or are not serious problems. But there is enough reason for concern so that a second database -- the NFPA survey -- is needed to project NFIRS to national estimates and to project different parts of NFIRS separately. This multiple calibration approach makes use of the annual NFPA survey where its statistical design advantages are strongest.

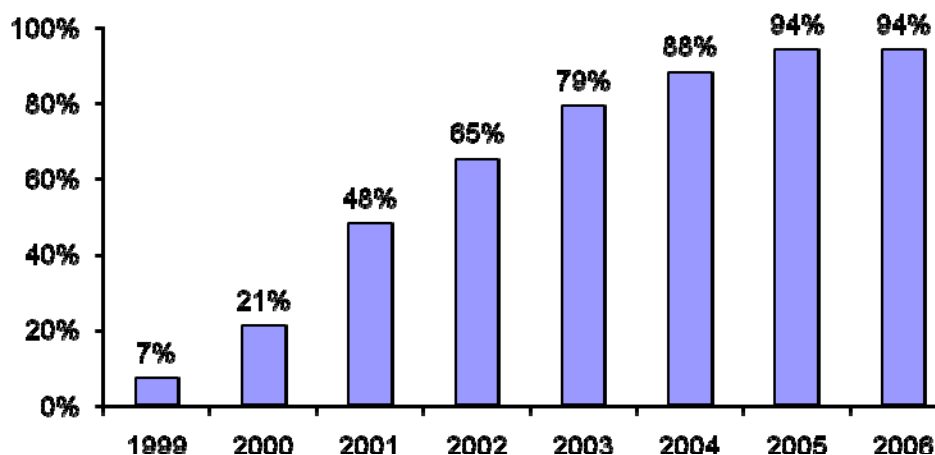
Scaling ratios are obtained by comparing NFPA's projected totals of residential structure fires, non-residential structure fires, vehicle fires, and outside and other fires, and associated civilian deaths, civilian injuries, and direct property damage with comparable totals in NFIRS. Estimates of specific fire problems and circumstances are obtained by multiplying the NFIRS data by the scaling ratios. Reports for incidents in which mutual aid was given are excluded NFPA's analyses.

Analysts at the NFPA, the USFA and the Consumer Product Safety Commission developed the specific basic analytical rules used for this procedure. "The National Estimates Approach to U.S. Fire Statistics," by John R. Hall, Jr. and Beatrice Harwood, provides a more detailed explanation of national estimates. A copy of the article is available online at <http://www.nfpa.org/osds> or through NFPA's One-Stop Data Shop.

Version 5.0 of NFIRS, first introduced in 1999, used a different coding structure for many data elements, added some property use codes, and dropped others. The essentials of the approach described by Hall and Harwood are still used, but some modifications have been necessary to accommodate the changes in NFIRS 5.0.

Figure 1 shows the percentage of fires originally collected in the NFIRS 5.0 system. Each year's release version of NFIRS data also includes data collected in older versions of NFIRS that were converted to NFIRS 5.0 codes.

**Figure 1. Fires Originally Collected in NFIRS 5.0 by Year**



For 2002 data on, analyses are based on scaling ratios using only data originally collected in NFIRS 5.0:

$$\frac{\text{NFPA survey projections}}{\text{NFIRS totals (Version 5.0)}}$$

For 1999 to 2001, the same rules may be applied, but estimates for these years in this form will be less reliable due to the smaller amount of data originally collected in NFIRS 5.0; they should be viewed with extreme caution.

NFIRS 5.0 introduced six categories of confined structure fires, including:

- cooking fires confined to the cooking vessel,
- confined chimney or flue fires,
- confined incinerator fire,
- confined fuel burner or boiler fire or delayed ignition,
- confined commercial compactor fire, and
- trash or rubbish fires in a structure with no flame damage to the structure or its contents.

Although causal and other detailed information is typically not required for these incidents, it is provided in some cases (typically 10-20%). Some analyses, particularly those that examine cooking equipment, heating equipment, fires caused by smoking materials, and fires started by playing with fire, may examine the confined fires in greater detail. Because the confined fire incident types describe certain scenarios, the distribution of unknown data differs from that of all fires. Consequently, allocation of unknowns must be done separately.

Some analyses of structure fires show only non-confined fires. In these tables, percentages shown are of non-confined structure fires rather than all structure fires. This approach has the advantage of showing the frequency of specific factors in fire causes, but the disadvantage of

possibly overstating the percentage of factors that are seldom seen in the confined fire incident types.

Other analyses include entries for confined fire incident types in the causal tables and show percentages based on total structure fires. In these cases, the confined fire incident type is treated as a general causal factor.

For most fields other than Property Use, NFPA allocates unknown data proportionally among known data. This approach assumes that if the missing data were known, it would be distributed in the same manner as the known data. NFPA makes additional adjustments to several fields. *Casualty and loss projections can be heavily influenced by the inclusion or exclusion of unusually serious fire.*

*In the formulas that follow, the term “all fires” refers to all fires in NFIRS on the dimension studied.*

**Factor Contributing to Ignition:** In this field, the code “none” is treated as an unknown and allocated proportionally. For Human Factor Contributing to Ignition, NFPA enters a code for “not reported” when no factors are recorded. “Not reported” is treated as an unknown, but the code “none” is treated as a known code and not allocated. Multiple entries are allowed in both of these fields. Percentages are calculated on the total number of fires, not entries, resulting in sums greater than 100%. Although Factor Contributing to Ignition is only required when the cause of ignition was coded as: 2) unintentional, 3) failure of equipment or heat source; or 4) act of nature, data is often present when not required. Consequently, any fire in which no factor contributing to ignition was entered was treated as unknown.

In some analyses, all entries in the category of electrical failure or malfunction (factor contributing to ignition 30-39) are combined and shown as “electrical failure or malfunction.” This category includes:

31. Water-caused short circuit arc;
32. Short-circuit arc from mechanical damage;
33. Short-circuit arc from defective or worn insulation;
34. Unspecified short circuit arc;
35. Arc from faulty contact or broken connector, including broken power lines and loose connections;
36. Arc or spark from operating equipment, switch, or electric fence;
37. Fluorescent light ballast; and
30. Electrical failure or malfunction, other.

**Type of Material First Ignited (TMI).** This field is required only if the Item First Ignited falls within the code range of 00-69. NFPA has created a new code “not required” for this field that is applied when Item First Ignited is in code 70-99 (organic materials, including cooking materials and vegetation, and general materials, such as electrical wire, cable insulation, transformers, tires, books, newspaper, dust, rubbish, etc..) and TMI is blank. The ratio for allocation of unknown data is:

(All fires – TMI Not required)  
(All fires – TMI Not Required – Undetermined – Blank)

**Heat Source.** In NFIRS 5.0, one grouping of codes encompasses various types of open flames and smoking materials. In the past, these had been two separate groupings. A new code was added to NFIRS 5.0, which is code 60: “Heat from open flame or smoking material, other.” NFPA treats this code as a partial unknown and allocates it proportionally across the codes in the 61-69 range, shown below.

61. Cigarette;
62. Pipe or cigar;
63. Heat from undetermined smoking material;
64. Match;
65. Lighter: cigarette lighter, cigar lighter;
66. Candle;
67. Warning or road flare, fuse;
68. Backfire from internal combustion engine. Excludes flames and sparks from an exhaust system, (11); and
69. Flame/torch used for lighting. Includes gas light and gas-/liquid-fueled lantern.

In addition to the conventional allocation of missing and undetermined fires, NFPA multiplies fires with codes in the 61-69 range by

All fires in range 60-69  
All fires in range 61-69

The downside of this approach is that heat sources that are truly a different type of open flame or smoking material are erroneously assigned to other categories. The grouping “smoking materials” includes codes 61-63 (cigarettes, pipes or cigars, and heat from undetermined smoking material, with a proportional share of the code 60s and true unknown data.

**Equipment Involved in Ignition (EII).** NFIRS 5.0 originally defined EII as the piece of equipment that provided the principal heat source to cause ignition if the equipment malfunctioned or was used improperly. In 2006, the definition was modified to “the piece of equipment that provided the principal heat source to cause ignition.” However, much of the data predates the change. Individuals who have already been trained with the older definition may not change their practices. To compensate, NFPA treats fires in which EII = NNN and heat source is not in the range of 40-99 as an additional unknown.

To allocate unknown data for EII, the known data is multiplied by

All fires  
-----  
(All fires – blank – undetermined – [fires in which EII =NNN and heat source <>40-99])



In addition, the partially unclassified codes for broad equipment groupings (i.e., code 100, - heating, ventilation, and air conditioning, other; code 200- electrical distribution, lighting and power transfer, other; etc.) were allocated proportionally across the individual code choices in their respective broad groupings (heating, ventilation, and air conditioning; electrical distribution, lighting and power transfer, other; etc.). Equipment that is totally unclassified is not allocated further. This approach has the same downside as the allocation of heat source 60 described above. Equipment that is truly different is erroneously assigned to other categories.

In some analyses, various types of equipment are grouped together. (Confined fire incident types are not discussed here)

<b>Code Grouping</b>	<b>EII Code</b>	<b>NFIRS definitions</b>
Central heat	132	Furnace or central heating unit
	133	Boiler (power, process or heating)
Fixed or portable space heater	131	Furnace, local heating unit, built-in
	123	Fireplace with insert or stove
	124	Heating stove
	141	Heater, excluding catalytic and oil-filled
	142	Catalytic heater
	143	Oil-filled heater
Fireplace or chimney	121	Fireplace, masonry
	122	Fireplace, factory-built
	125	Chimney connector or vent connector
	126	Chimney – brick, stone or masonry
	127	Chimney-metal, including stovepipe or flue
Wiring, switch or outlet	210	Unclassified electrical wiring
	211	Electrical power or utility line
	212	Electrical service supply wires from utility
	214	Wiring from meter box to circuit breaker
	216	Electrical branch circuit
	217	Outlet, receptacle
	218	Wall switch
Power switch gear or overcurrent protection device	215	Panel board, switch board, circuit breaker board
	219	Ground fault interrupter
	222	Overcurrent, disconnect equipment
	227	Surge protector
Lamp, bulb or lighting	230	Unclassified lamp or lighting

	231	Lamp-tabletop, floor or desk
	232	Lantern or flashlight
	233	Incandescent lighting fixture
	234	Fluorescent light fixture or ballast
	235	Halogen light fixture or lamp
	236	Sodium or mercury vapor light fixture or lamp
	237	Work or trouble light
	238	Light bulb
	241	Nightlight
	242	Decorative lights – line voltage
	243	Decorative or landscape lighting – low voltage
	244	Sign
Cord or plug	260	Unclassified cord or plug
	261	Power cord or plug, detachable from appliance
	262	Power cord or plug- permanently attached
	263	Extension cord
Torch, burner or soldering iron	331	Welding torch
	332	Cutting torch
	333	Burner, including Bunsen burners
	334	Soldering equipment
Portable cooking or warming equipment	631	Coffee maker or teapot
	632	Food warmer or hot plate
	633	Kettle
	634	Popcorn popper
	635	Pressure cooker or canner
	636	Slow cooker
	637	Toaster, toaster oven, counter-top broiler
	638	Waffle iron, griddle
	639	Wok, frying pan, skillet
	641	Breadmaking machine

**Item First Ignited.** In most analyses, mattress and pillows (item first ignited 31) and bedding, blankets, sheets, and comforters (item first ignited 32) are combined and shown as “mattresses and bedding.” In many analyses, wearing apparel not on a person (code 34) and wearing apparel on a person (code 35) are combined and shown as “clothing.” In some analyses, flammable and combustible liquids and gases, piping and filters (item first ignited 60-69) are combined and shown together

**Area of Origin.** Two areas of origin: bedroom for more than five people (code 21) and bedroom for less than five people (code 22) are combined and shown as simply “bedroom.”

**Rounding and percentages.** The data shown are estimates and generally rounded. An entry of zero may be a true zero or it may mean that the value rounds to zero. Percentages are calculated from unrounded values. It is quite possible to have a percentage entry of up to 100%, even if the rounded number entry is zero. The same rounded value may account for a slightly different percentage share. Because percentages are expressed in integers and not carried out to several decimal places, percentages that appear identical may be associated with slightly different values.

**Inflation.** Property damage estimates are not adjusted for inflation unless so indicated.

## **Appendix B. NFIRS Coding Changes from Version 4.1 to 5.0**

Prior to 1999, fire fighters had several choices for coding intentionally set fires. These codes included “incendiary,” “suspicious” “child playing,” and many other fire causes. A fire could be “incendiary or suspicious” or “child playing” (or neither) but not both. There was also an Ignition Factor code to use if mental impairment or drug or alcohol impairment led to misuse of the heat of ignition.

In NFIRS Version 5.0, the data element cause of ignition: intentional, is used to identify intentionally set fires. Now, “intentional” is identified on a different data element from the one used to identify playing, drug or alcohol impairment, or mental impairment. The second data element can accept multiple values as possible reasons for not being able to form legal intent. Also, a fire coded in Version 5.0 can ascribe “playing” as a factor but choose not to ascribe age as a factor (e.g., reckless fireplay by college students) or cite age as a factor for an older child – or even an older adult (e.g., a person with senile dementia whose condition leads to reckless fireplay without intention to harm).

This analysis includes all fires coded as Cause of Ignition: 1-Intentional in Version 5.0 for all years including and after 1999. Any estimates for years prior to 1999 are not for intentional fires, but rather for fires considered incendiary or suspicious.

### **Trend Analysis and the Disappearance of “Suspicious” as a Cause**

Tables B-1 to B-3 show 1980-1998 statistics for structure, vehicle, and outside and other properties for incendiary and suspicious fires.

It is reasonable to estimate that some fires that would have been coded as suspicious are now being coded as intentional, and the rest are being coded as unknown. The various trend analyses suggest that most are being coded as intentional and that this practice has a more dramatic and visible effect on property damage estimates where the suspicious share of incendiary and suspicious had been growing from 1980 to 1998.

**Table B-1. Trends in Incendiary and Suspicious Structures Fires  
1980-1998**

Structure	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Incendiary	Suspicious	Incendiary	Suspicious	Incendiary	Suspicious	Incendiary	Suspicious
1980	113,800	87,300	610	315	1,675	1,335	\$1,025.7	\$750.4
1981	100,600	90,200	515	296	2,180	1,606	\$1,074.1	\$920.3
1982	81,900	77,900	464	465	2,004	1,414	\$1,116.6	\$801.4
1983	69,500	69,300	476	387	1,771	1,387	\$767.3	\$907.4
1984	69,700	66,300	394	267	1,523	1,119	\$827.8	\$721.2
1985	73,100	70,400	430	295	1,582	1,255	\$909.9	\$1,009.9
1986	70,000	70,500	428	371	1,691	1,235	\$903.4	\$882.8
1987	64,800	64,400	408	324	1,503	1,200	\$877.5	\$925.4
1988	62,300	62,700	457	414	1,725	1,414	\$912.8	\$965.2
1989	57,400	59,700	469	374	1,485	1,505	\$732.6	\$851.8
1990	54,400	57,500	422	387	1,514	1,676	\$788.1	\$973.2
1991	56,500	57,500	456	238	1,885	1,510	\$1,030.9	\$1,135.8
1992	60,200	56,400	391	329	1,552	1,616	\$1,790.0	\$800.6
1993	51,900	52,400	464	378	1,776	1,553	\$840.3	\$826.3
1994	51,800	56,100	239	264	1,698	1,376	\$865.2	\$890.9
1995	48,400	50,900	379	360	1,351	1,195	\$820.9	\$1,323.7
1996	48,100	50,700	347	335	1,409	1,238	\$874.3	\$928.2
1997	43,100	41,900	338	320	1,165	929	\$685.5	\$764.3
1998	39,900	46,100	271	367	1,082	1,241	\$638.0	\$829.1

Notes: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. These estimates include a proportional share of unknown Ignition Factor. Fires are rounded to the nearest hundred.

Source: Data from NFIRS Version 4.1 (1980-1998) and NFPA survey.

**Table B-2. Trends in Incendiary and Suspicious Vehicle Fires  
1980-1998**

Vehicle	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Incendiary	Suspicious	Incendiary	Suspicious	Incendiary	Suspicious	Incendiary	Suspicious
1980	41,200	33,600	22	13	111	69	\$75.9	\$67.4
1981	34,400	31,100	8	15	114	79	\$65.4	\$64.8
1982	28,000	28,000	26	0	50	45	\$44.8	\$70.6
1983	26,700	28,600	15	177	76	61	\$87.7	\$77.9
1984	29,300	35,200	25	10	71	48	\$77.6	\$98.1
1985	31,200	41,700	21	24	72	69	\$52.4	\$75.3
1986	34,100	44,500	27	16	96	69	\$61.3	\$231.4
1987	33,700	42,800	35	22	87	92	\$80.8	\$104.0
1988	32,800	39,700	24	21	75	64	\$105.5	\$109.4
1989	32,000	38,000	31	23	97	55	\$106.0	\$116.1
1990	35,100	41,100	17	13	109	64	\$119.0	\$123.9
1991	36,300	40,500	26	9	78	51	\$129.2	\$138.7
1992	35,800	37,700	18	12	80	78	\$115.6	\$119.8
1993	31,500	36,700	19	20	50	53	\$108.2	\$98.4
1994	28,700	34,600	29	22	92	67	\$102.7	\$135.2
1995	30,900	35,400	27	40	53	79	\$126.2	\$141.2
1996	35,100	39,300	34	31	42	66	\$128.7	\$133.8
1997	30,600	33,900	25	19	77	46	\$136.9	\$155.9
1998	29,000	37,300	20	15	83	83	\$137.8	\$186.1

Notes: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. These estimates include a proportional share of unknown Ignition Factor. Fires are rounded to the nearest hundred.

Source: Data from NFIRS Version 4.1 (1980-1998) and NFPA survey.

**Table B-3. Trends in Incendiary and Suspicious Outside and Other Fires  
1980-1998**

Outside and Other	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
	Incendiary	Suspicious	Incendiary	Suspicious	Incendiary	Suspicious	Incendiary	Suspicious
	1980	259,100	324,800	18	0	97	60	\$11.4
1981	223,600	344,600	19	1	103	68	\$12.2	\$19.9
1982	173,600	277,300	13	0	81	45	\$9.5	\$11.2
1983	152,500	228,500	10	0	87	36	\$5.8	\$8.2
1984	149,600	220,900	12	2	99	69	\$6.4	\$6.5
1985	153,400	227,600	17	12	95	47	\$7.9	\$14.3
1986	154,400	219,200	11	0	59	51	\$7.0	\$9.1
1987	163,000	205,800	27	4	77	49	\$5.8	\$8.3
1988	169,600	216,300	9	4	84	56	\$6.6	\$14.3
1989	154,800	177,800	10	3	62	50	\$20.6	\$11.0
1990	162,200	189,200	7	5	66	48	\$24.9	\$12.3
1991	170,100	197,300	13	1	98	77	\$3.9	\$5.4
1992	167,500	187,600	9	1	118	54	\$43.5	\$19.3
1993	166,000	181,200	4	4	108	44	\$6.5	\$6.7
1994	178,100	198,300	3	3	125	95	\$15.0	\$18.4
1995	182,000	186,300	7	2	98	85	\$8.6	\$17.4
1996	177,300	174,200	7	6	84	78	\$8.3	\$20.4
1997	151,700	141,500	7	1	75	42	\$6.8	\$9.1
1998	146,000	148,900	4	3	152	66	\$18.6	\$67.7

Notes: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. These estimates include a proportional share of unknown Ignition Factor. Fires are rounded to the nearest hundred.

Source: Data from NFIRS Version 4.1 (1980-1998) and NFPA survey.