
ARSON IN THE UNITED STATES



FEDERAL EMERGENCY MANAGEMENT AGENCY
UNITED STATES FIRE ADMINISTRATION
NATIONAL FIRE DATA CENTER

**FEDERAL EMERGENCY MANAGEMENT AGENCY
UNITED STATES FIRE ADMINISTRATION
NATIONAL FIRE DATA CENTER**

ARSON IN THE UNITED STATES

FA 174 / August 1997

Prepared by:

**TriData Corporation
1000 Wilson Boulevard
Arlington, Virginia 22209**

This publication was produced under Contract EMW-95-C-4717 by TriData Corporation for the United States Fire Administration, Federal Emergency Management Agency. Any information, findings, conclusions, or recommendations expressed in this publication do not necessarily reflect the views of the Federal Emergency Management Agency or the United States Fire Administration.

TABLE OF CONTENTS

INTRODUCTION.....	1
PART I. THE MAGNITUDE OF THE U.S. ARSON PROBLEM	3
OVERVIEW.....	3
ARSON IN RESIDENTIAL STRUCTURES	6
TRENDS IN ARSON FIRES.....	9
CHARACTERISTICS OF THE ARSON PROBLEM.....	21
PART II. FACTORS CONTRIBUTING TO ARSON.....	24
WHERE ARSON HAPPENS.....	24
MOTIVATIONS FOR FIRESETTING	26
JUVENILES.....	28
THE RELATIONSHIP BETWEEN DRUGS AND ARSON.....	32
INADEQUATE SCREENING OF VOLUNTEER FIREFIGHTERS	33
CIVIL DISTURBANCES	34
PART III. BARRIERS TO COMBATING THE ARSON PROBLEM.....	35
PROSECUTOR RETICENCE.....	35
TRAINING IN ARSON DETECTION	36
STRUCTURE OF FIRE INVESTIGATION UNITS.....	37
TRAINING AND CERTIFICATION IN FIRE INVESTIGATION.....	37
CONCLUSION.....	38
REFERENCES	40

ARSON IN THE UNITED STATES

INTRODUCTION

Arson is a serious problem in the United States. It is the number one cause of all fires, and it annually kills hundreds of Americans, injures thousands more, and causes over \$3 billion in damage to property. In each of the past ten years there have been over 500,000 arson fires. During 1994, the most recent year for which information is available, the total number of arson fires in the U.S. was estimated at 548,500. Over 107,000 of these fires occurred in structures, both residential and non-residential. In 1994 arson fires accounted for an estimated 560 fire deaths, 3,440 fire injuries, and \$3.6 billion in property damage.¹

For many years the general populace has perceived arson as primarily an insurance concern -- an invisible "paper loss" crime with limited impact on anyone other than insurers. But for the firefighters who have been injured or killed responding to set fires and the hundreds of civilians killed each year in incendiary or suspicious building fires, arson looms as a significant issue that is anything but invisible or limited. The time has come to correct the public's perception so that arson is understood for what it is -- a violent crime that terrorizes, kills, and injures.

Investigators increasingly report that fire is chosen as a weapon by jilted lovers, delinquent youths, rival gang members, and drug pushers. Investigators are also becoming more aware of Molotov cocktails and pipe bombs being used as incendiary devices. Fires caused by explosives or motivated by spite and revenge tend to be more deadly because they often target residential structures, in keeping with the desire to inflict personal harm. As arson increasingly becomes a crime against persons, it becomes critical to have sufficient research and resources available to adequately address the magnitude of the arson problem in the U.S.

¹ While "arson" is technically a legal term, it is used here to refer to all fires of incendiary or suspicious origins.

This report deals with several different aspects of the arson problem and is divided into three sections. The first section presents data on the magnitude and characteristics of the arson problem. Data from both the National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association (NFPA) are included in this section. The second section of this report discusses factors known to contribute to the incidence of arson, including the motivations of firesetters. The final section addresses several of the challenges faced in dealing with the problem of arson.

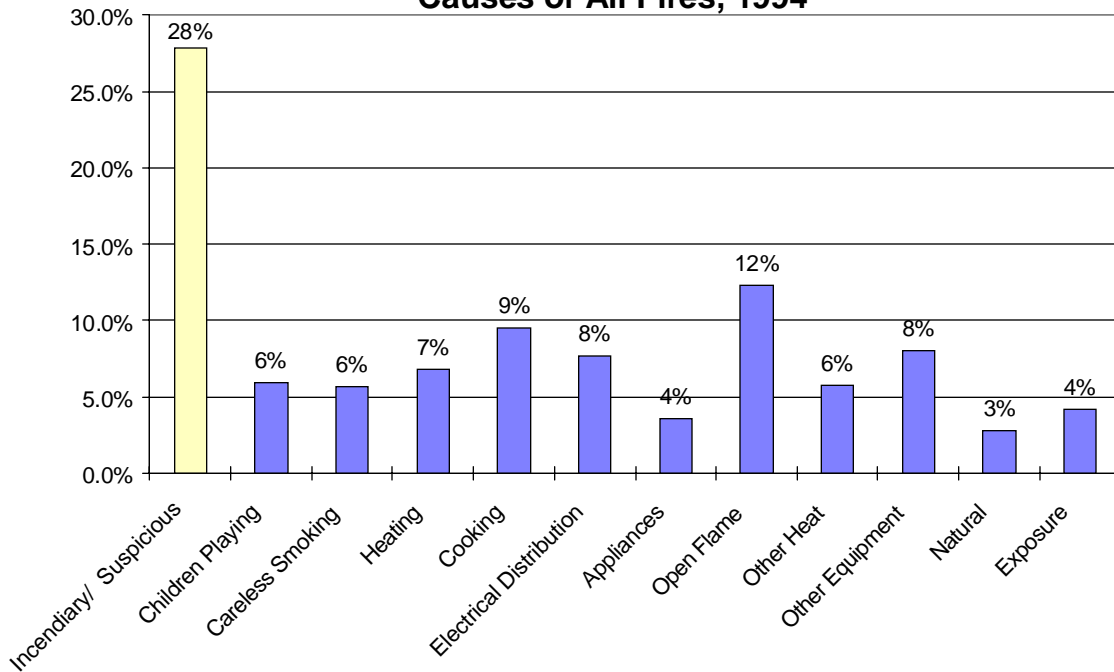
Part I. The Magnitude of the U.S. Arson Problem

Overview

This discussion of the magnitude of the U.S. arson problem is broken down into three parts. In the first part, an overview of the arson problem is presented. The second part provides additional information on arson in residential structures because these arson fires tend to be the most deadly. Finally, in the third part, trends in arson fires relative to other types of fires are discussed.

U.S. Arson Fires. According to NFIRS arson fires accounted for 28 percent of all fires that occurred in the U.S. during 1994, making arson the leading cause of fire (see Figure 1). In comparison the second leading cause, open flame fires, made up 12 percent of all fires, and cooking fires, the third leading cause, represented nine percent of all fires.

Figure 1
Causes of All Fires, 1994



Source: NFIRS

Each year approximately 65-70 percent of arson fires are set outdoors, 20-25 percent are set in structures, and 10-14 percent are set in vehicles.² Though outdoor arson fires do not kill or injure as many people as do structure fires, they are nevertheless cause for serious concern for at least two reasons. First, the proximity of occupied or unoccupied structures to vacant lots or other areas where outdoor arson fires are set increases the chance of exposure fires. Second, outdoor fires are often “gateway” fires for juvenile firesetters. They begin setting fires in trash cans, fields, or empty lots, but then move on to targets that bear increasing risk to persons and property. In one study, 70 inmates serving time in a California correctional facility for setting fires were interviewed. Sixty percent reported juvenile firesetting behavior, often before the age of ten, and trash cans were frequent early targets.³

Losses Due to Arson Fires. Each year arson accounts for a high proportion of all losses due to fire in the U.S., both in terms of lives and property. According to NFIRS arson fires were responsible for 16 percent of all fire deaths in 1994, making it the second leading cause of fire deaths and ranking behind only careless smoking as the most deadly cause of fire (Figure 2). Arson was also the second leading cause of fire injuries, accounting for 14 percent of all those injured in fires. Only cooking fires injured more people than arson fires (Figure 3). Looking at dollar losses, arson is by far the leading cause of property damage due to fire. In 1994 the dollar losses attributable to arson accounted for over 28 percent of all property fire losses (Figure 4). The second leading cause, electrical distribution fires, made up 14 percent of all dollar losses.

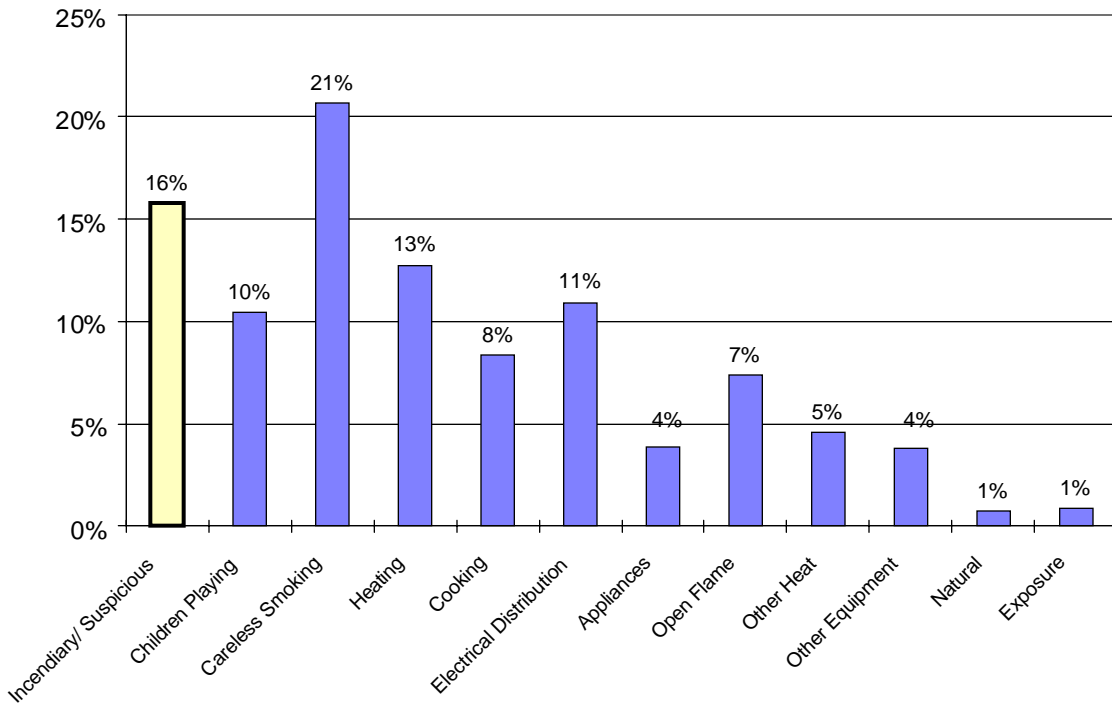
Arson Fires in Structures - All Types. According to the NFPA, 20-25 percent of arson fires each year occur in structures of all types. These structure arson fires account for a majority of all arson losses (deaths, injuries, and damage to property). In 1994, 20 percent of all arson fires occurred in structures, yet these fires accounted for 90 percent of all arson fire deaths, 89 percent of all arson fire injuries, and 89 percent of all arson dollar losses.⁴

² John R. Hall, Jr. 1996. *U.S. Arson Trends and Patterns - 1995*. Quincy, MA: National Fire Protection Association, p. 3.

³ Karchmer, Clifford L. “When Young Firesetters Come of Age.” *Firehouse*. August, 1996, p. 38.

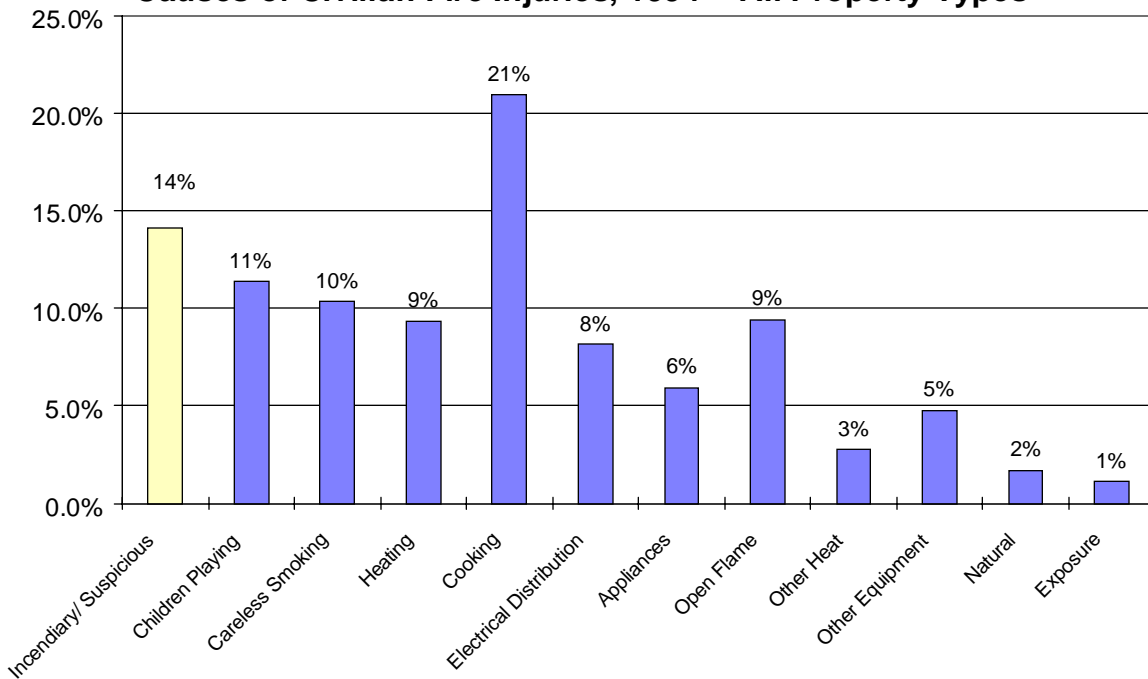
⁴ Hall, Jr., pp. 3-4.

Figure 2
Causes of Civilian Fire Deaths, 1994 -- All Property Types



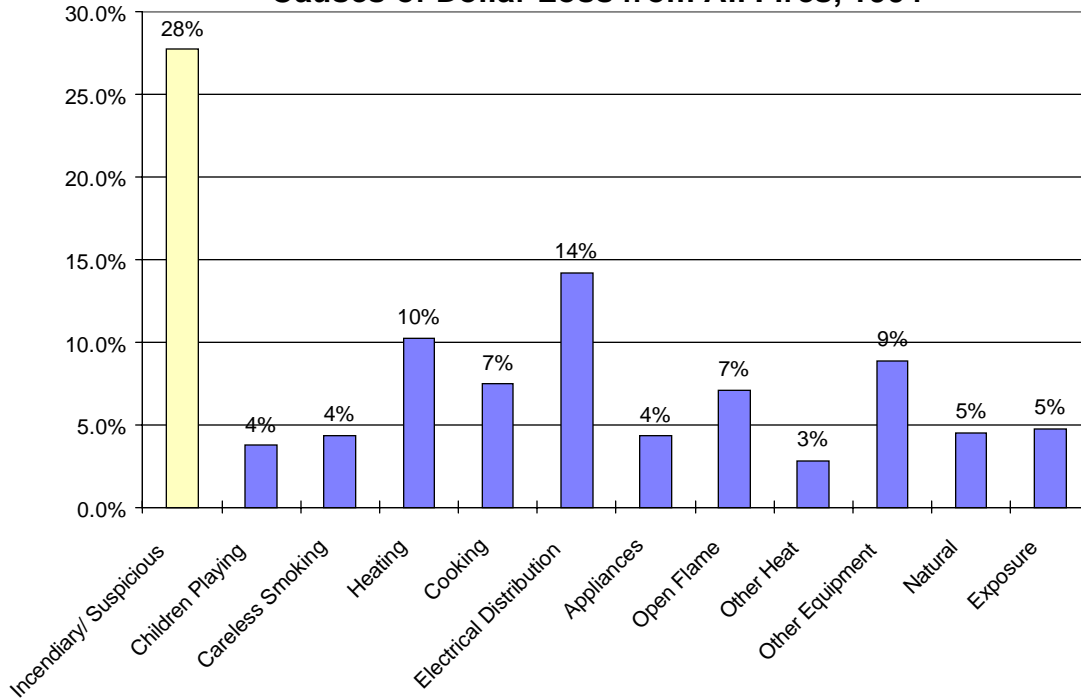
Source: NFIRS

Figure 3
Causes of Civilian Fire Injuries, 1994 -- All Property Types



Source: NFIRS

Figure 4
Causes of Dollar Loss from All Fires, 1994



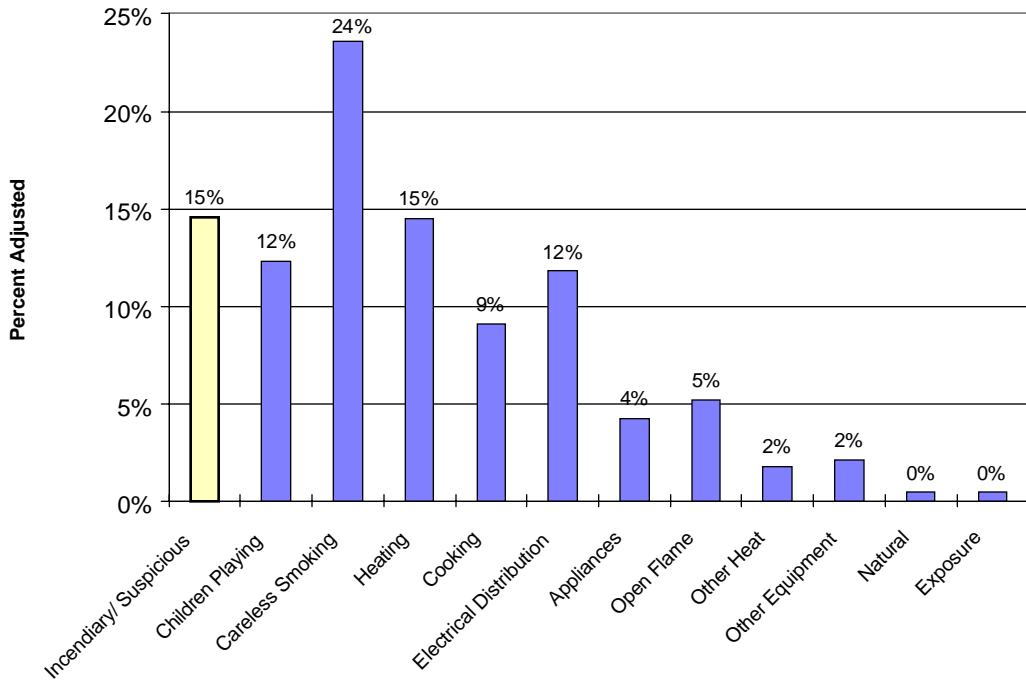
Source: NFIRS

Arson in Residential Structures

Arson Fires in Residential Structures. The category “structures” includes both residential and non-residential properties. Analyzing these property types separately reveals that, not surprisingly, arson fires in residential structures account for higher losses than non-residential structures in terms of both fire deaths and fire injuries. According to NFIRS, of those people killed in arson structure fires in 1994, 96 percent were killed in residential structures. Similarly, of those who were injured in structure fires caused by arson, 82 percent were injured in residential properties.

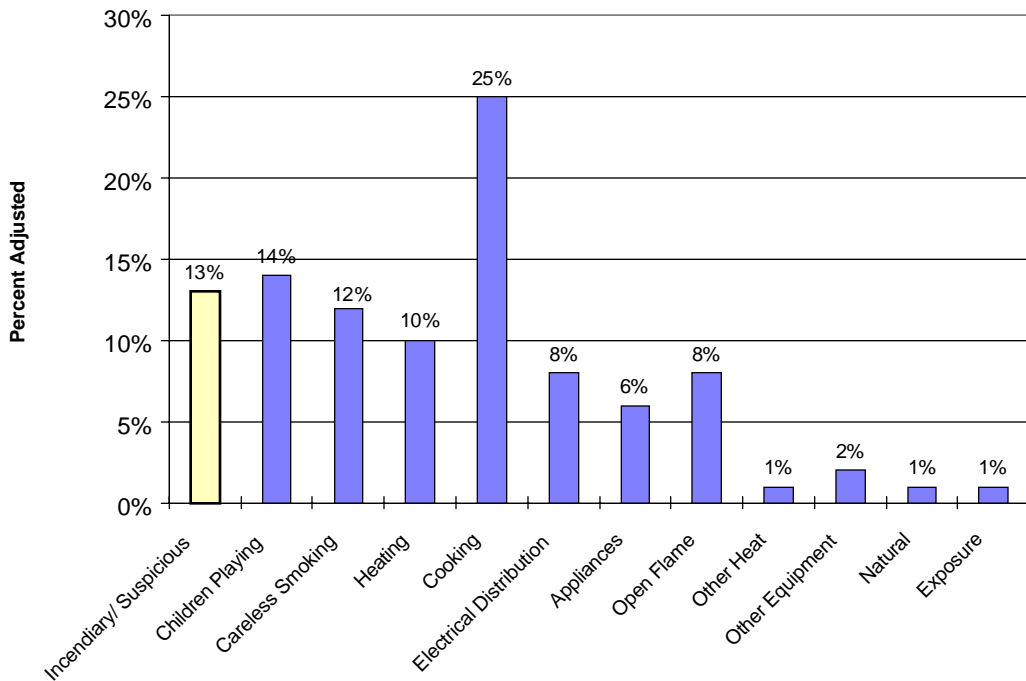
Arson Fire Deaths and Injuries. Arson is one of the leading causes of residential fire deaths. Figure 5 shows that arson fires tied with heating fires as the second leading cause of residential fire deaths in 1994, accounting for 14 percent of such deaths. Arson fires also accounted for 13 percent of residential fire injuries and represented the third leading cause, as is shown in Figure 6.

Figure 5
Causes of Residential Fire Deaths, 1994



Source: NFIRS

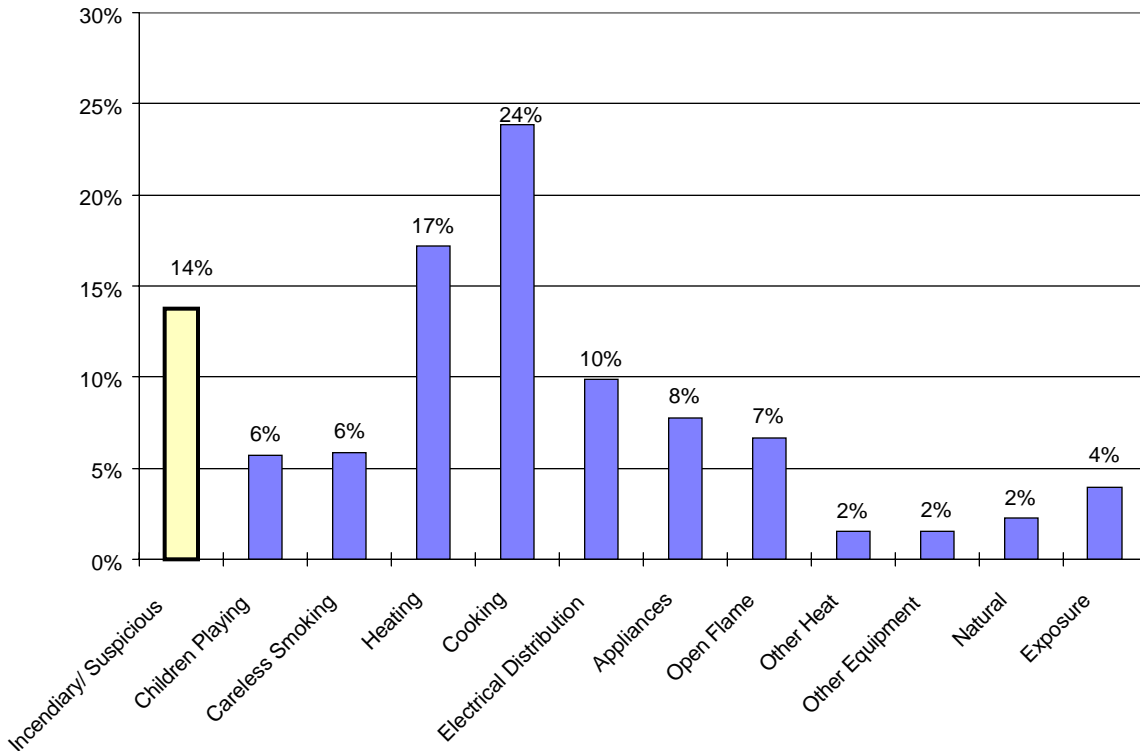
Figure 6
Causes of Residential Fire Injuries, 1994



Source: NFIRS

Arson Fires. Figure 7 shows that in 1994, arson accounted for 14 percent of all residential fires and was the third leading cause of such fires. The only two causes of residential fires that were more frequent than arson fires were cooking fires (24 percent of all residential fires) and heating fires (17 percent).

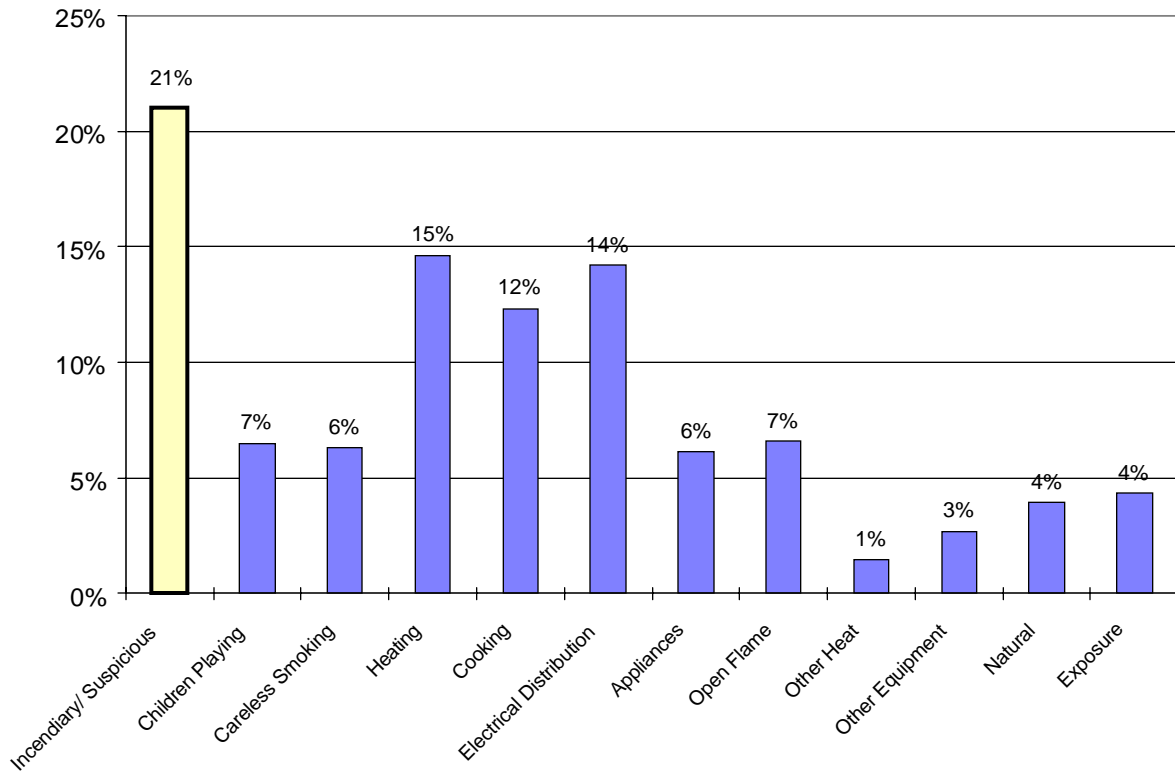
Figure 7
Causes of Residential Fires, 1994



Source: NFIRS

Arson Fire Dollar Losses. In 1994, arson fires accounted for 21 percent of all dollar losses attributable to arson in residential structures and were the leading cause of dollar loss (Figure 8). The next two leading causes in residential structures were heating fires (15 percent) and electrical distribution fires (14 percent).

Figure 8
Causes of Residential Fire Dollar Loss, 1994



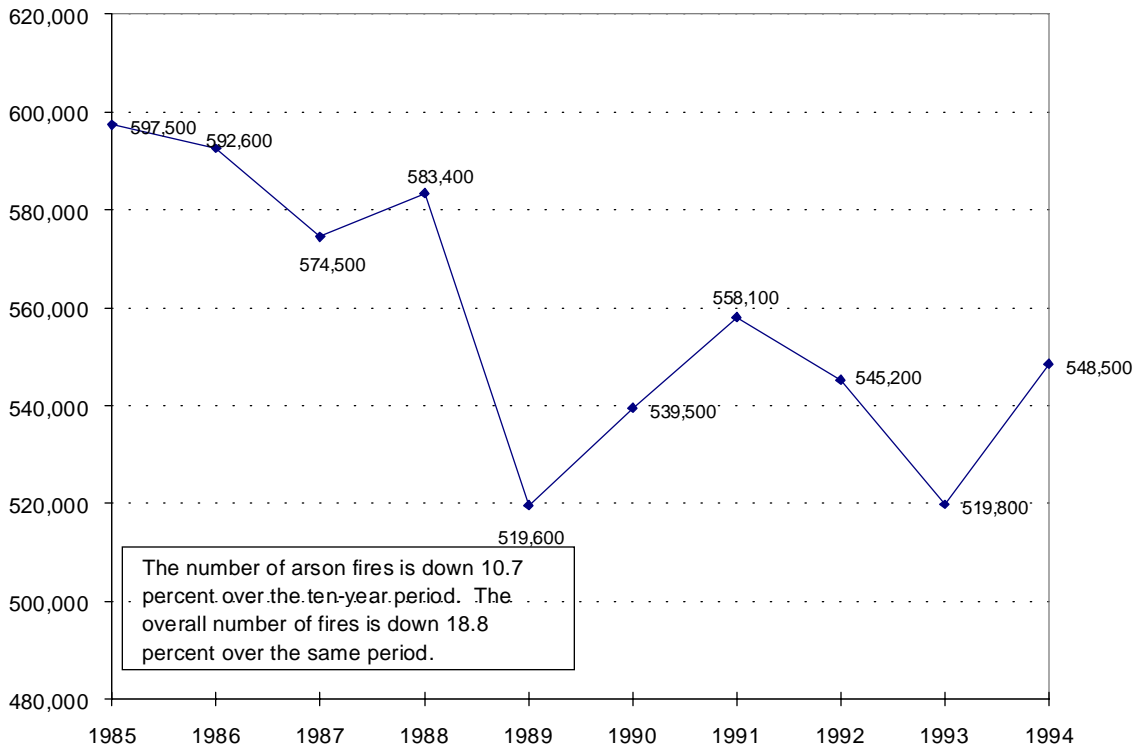
Source: NFIRS

Trends in Arson Fires

The data presented thus far present a snapshot of the magnitude of the arson problem. In this section, current trends in the number of arson fires and related losses are discussed.

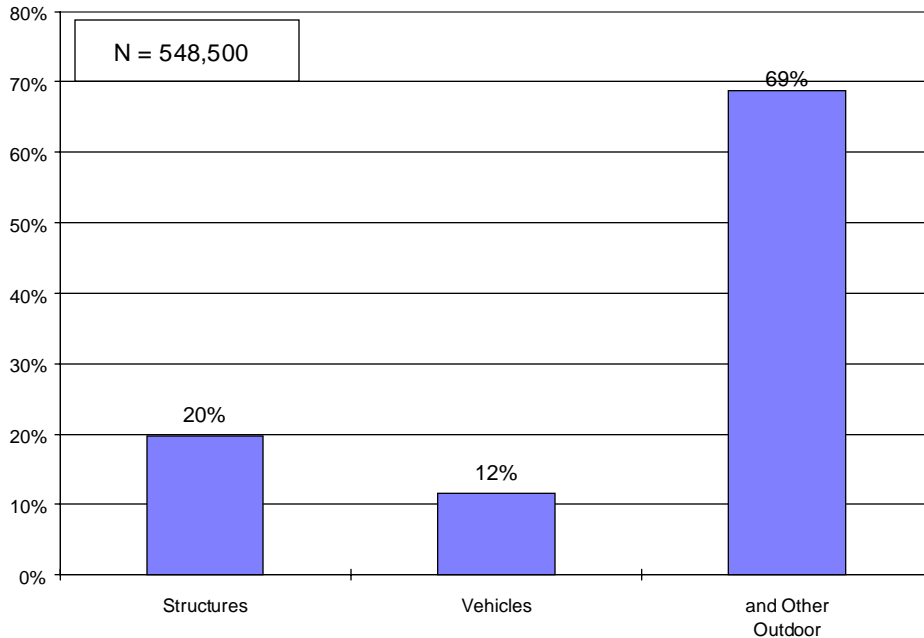
Trends in Overall Arson Fires. Overall, the number of fires occurring each year in the U.S. has fallen 19 percent over the past ten years. However, NFPA data reveal that the number of total arson fires is falling relatively slower than the number of all fires. While the trend has been inconsistent, between 1985 and 1994 the number of arson fires declined by 11 percent (Figure 9). Within the category of all arson fires there are three major occupancy types: structures, vehicles, and outdoor and other areas. Figure 10 displays the distribution of arson fires in these categories for 1994. Figure 11 shows the trends for these categories between 1985 and 1994. The most noteworthy decline has been the drop in the number of arsons in structures, which have fallen over 25 percent over ten years. The declines in vehicle fires and outdoor and other fires have been more modest, falling 11 percent and five percent respectively.

Figure 9. Arson Fires in the U.S., 1985-1994



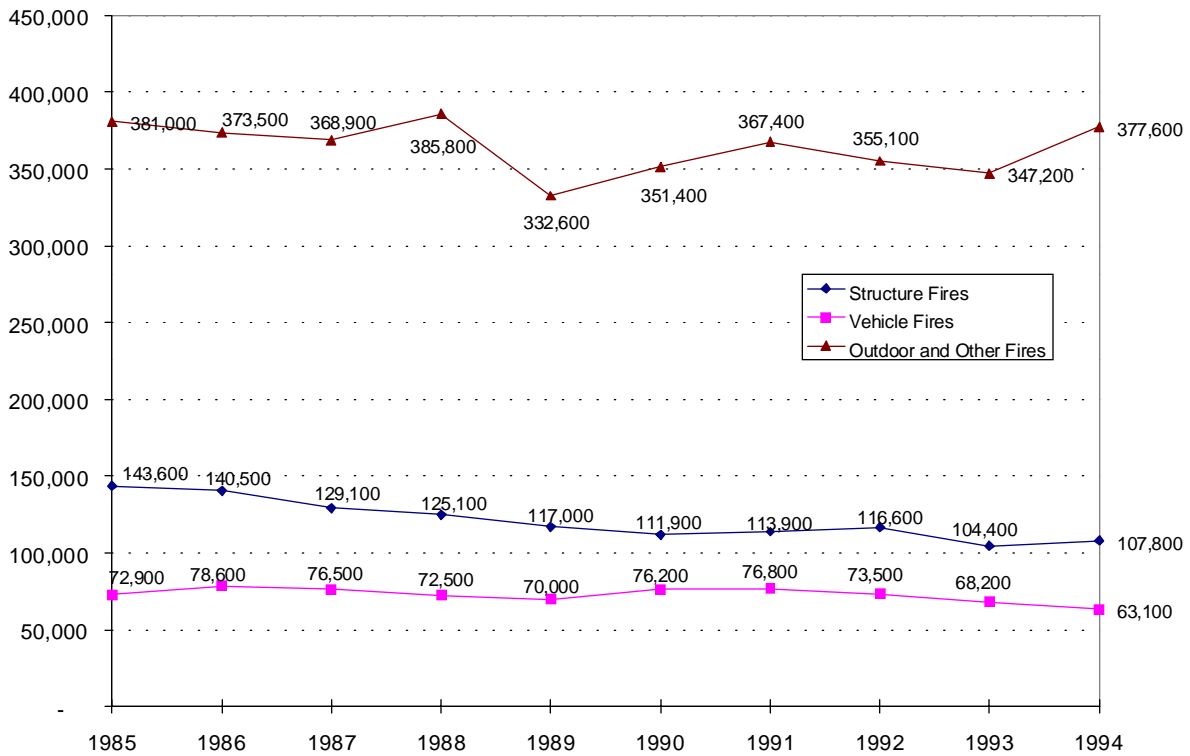
Source: NFPA, 1996

Figure 10. Arson Fires by Major Occupancy Type, 1994



Source: NFPA, 1996

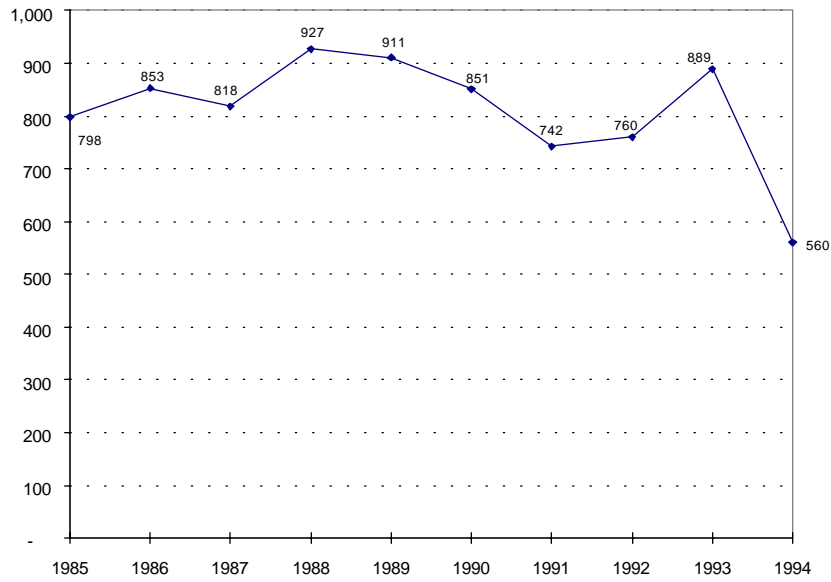
Figure 11. Arson Fires by Major Occupancy Type, 1985-1994



Source: NFPA, 1996

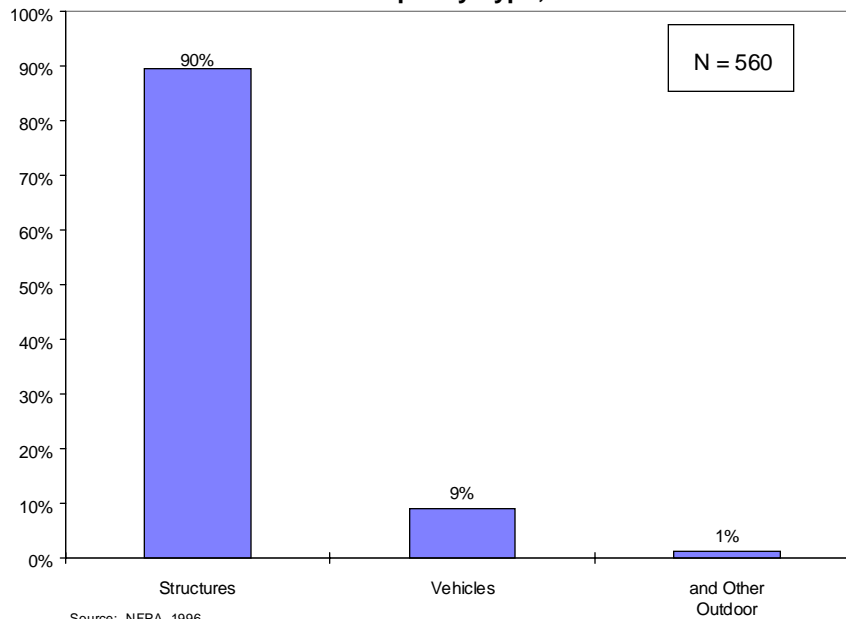
Trends in Overall Arson Deaths. Figure 12 displays NFPA data tracking the number of civilian arson deaths for the period 1985 to 1994. There were an average of over 750 deaths per year, and Figure 13 shows that they overwhelmingly occurred in structures.

Figure 12. Civilian Arson Deaths, 1985-1994



Source: NFPA, 1996

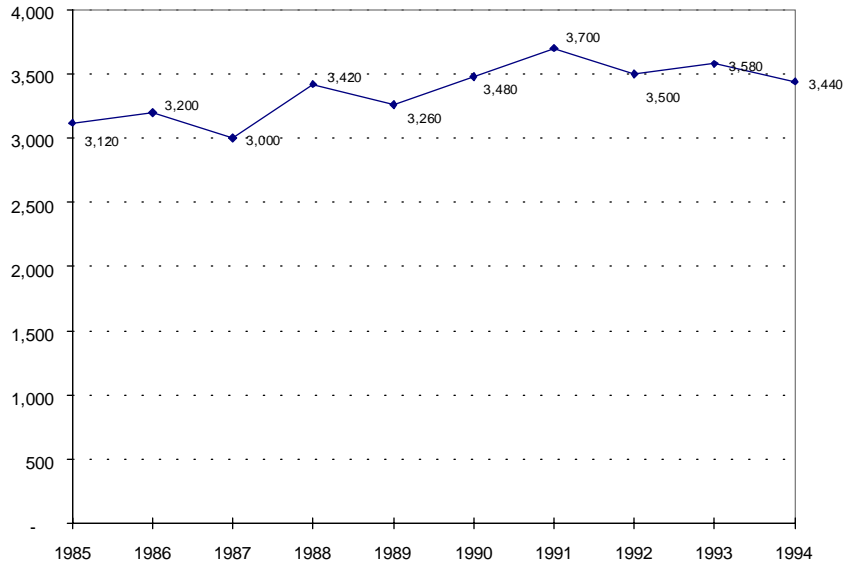
Figure 13. Percentage Civilian Arson Deaths by Major Occupancy Type, 1994



Source: NFPA, 1996

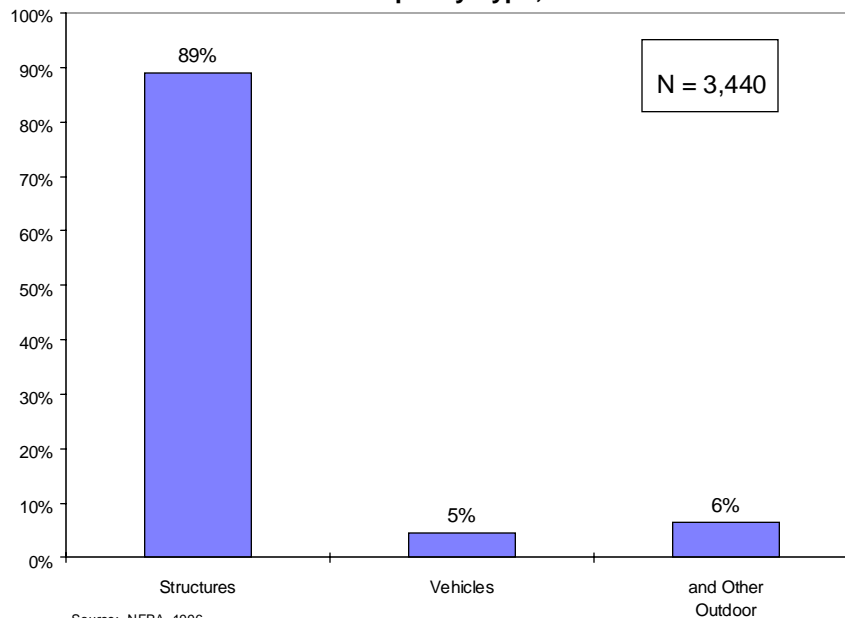
Trends in Overall Arson Injuries. The incidence of fire injuries in arson fires is charted in Figure 14. Between 1985 and 1994 there were an average of over 3,300 civilian arson injuries each year. As with arson deaths, almost all of these injuries occurred in structure arson fires (Figure 15).

Figure 14. Civilian Arson Injuries, 1985-1994



Source: NFPA, 1996

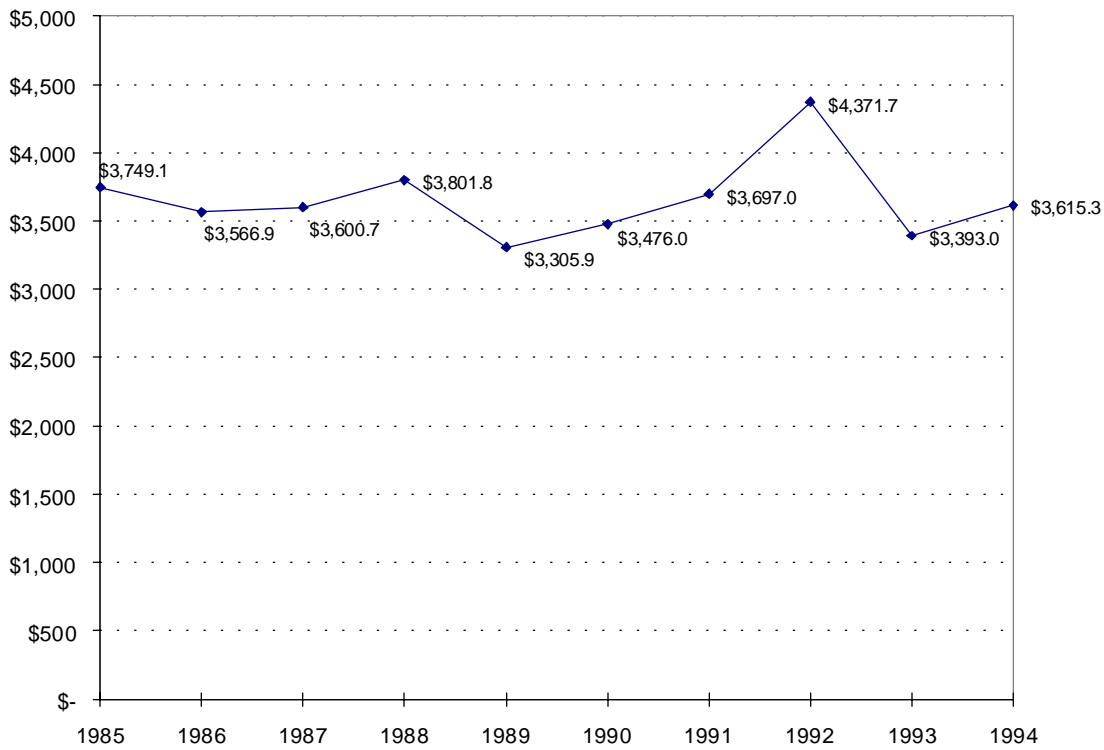
Figure 15. Percentage Civilian Arson Injuries by Major Occupancy Type, 1994



Source: NFPA, 1996

Trends in Overall Arson Dollar Loss. Figure 16 displays the dollar loss in millions due to arson fires occurring between 1985 and 1994. Losses, as expressed in constant 1994 dollars, were fairly stable from 1985 through 1990, ranging from \$3.3 billion to \$3.8 billion. Beginning in 1991, however, the incidence of several major arson fires in 1991, 1992, and 1993 make the loss estimates from these years problematic and the overall trend in arson losses uncertain. The methodology employed in calculating these estimates means that the figures for 1991 and 1993 are understated, while the estimate for 1992 is overstated (see Hall Jr., 1996 for a fuller explanation).

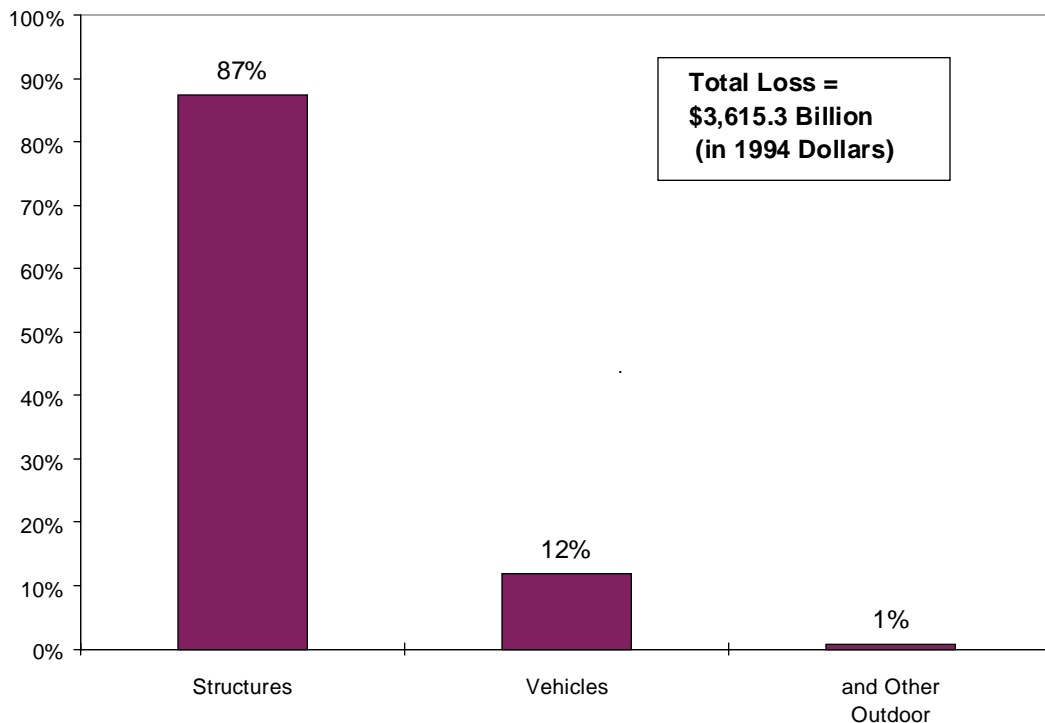
**Figure 16. Arson Dollar Loss (in Millions)
in 1994 Constant Dollars**



Source: NFPA, 1996

Figure 17 shows the distribution of arson dollar loss by major occupancy types. Not surprisingly, the majority of all dollar losses (87 percent, or an estimated \$3.1 billion) occur in structures. Vehicles account for 12 percent of dollar losses, and outdoor fires account for another one percent. The discrepancy between the proportion of all arson fires occurring in outdoor and other locations and the amount of total arson loss they represent is partly an artifact of how losses are assessed. It is difficult to assign a dollar loss amount to destruction of wildland vegetation. Regardless, these losses are still much lower than losses associated with arson in structures.⁵

Figure 17. Arson Dollar Loss by Major Occupancy, 1994

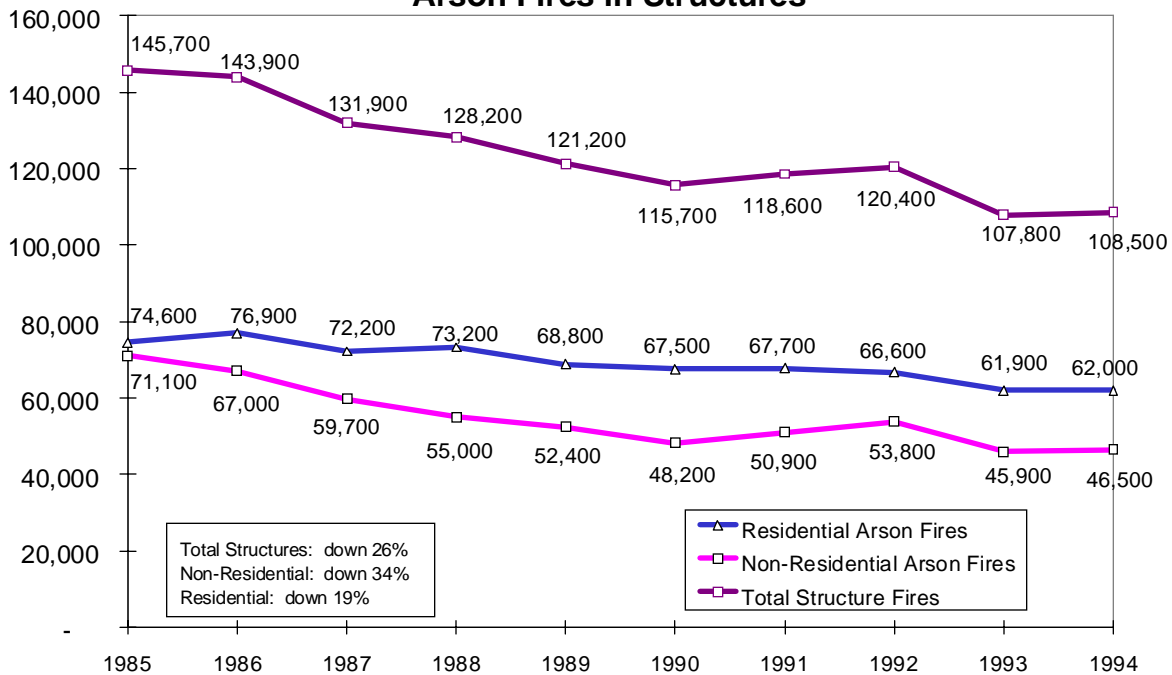


Source: NFPA, 1996

⁵ Hall Jr., 1996, p. 17.

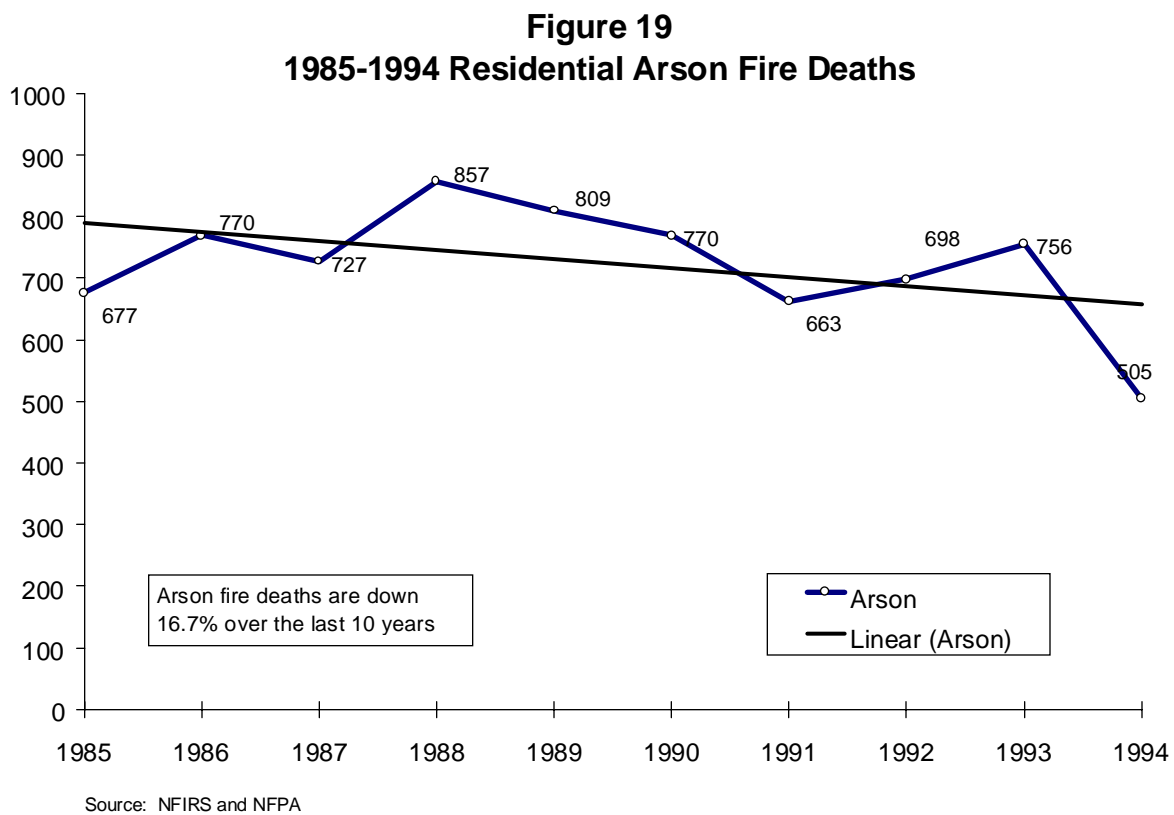
Trends in Arson Fires in Structures. Within the category of structures there are two property types: residential and non-residential structures. Figure 18 shows that the decrease in arson fires is different within these two categories. According to NFIRS data, arson in residential structures is decreasing much slower than arson in non-residential structures (a 19 percent decrease versus a 34 percent decrease over ten years). Consequently, the trend is for a gradually increasing *proportion* of arson fires in any given year to occur in residential structures. This is an important trend to watch given that higher losses, both in terms of lives and property, are associated with arson in residential structures than in non-residential structures such as commercial structures.

Figure 18
Arson Fires in Structures



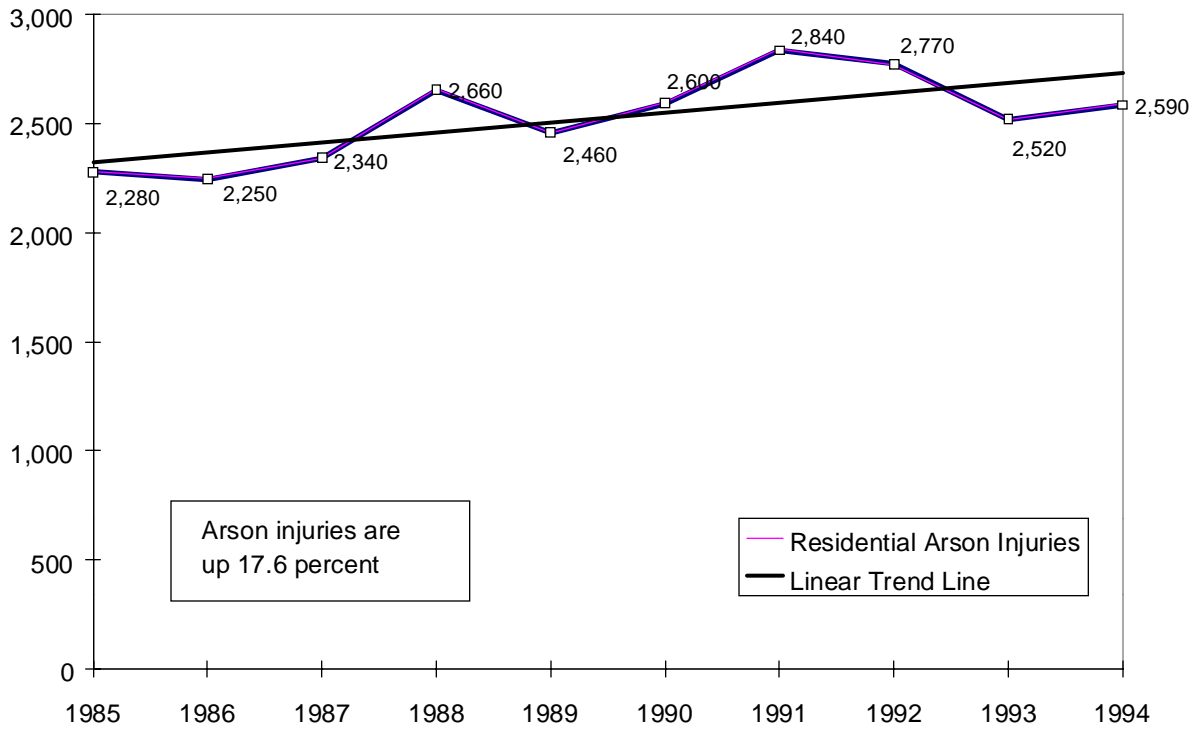
Source: NFIRS and NFPA

While the number of residential deaths due to arson each year can vary substantially, Figure 19 reveals that over the past ten years, the overall trend has been a decline of about 17 percent in the number of residential arson fire deaths. This is a significantly slower rate of decline than the 32 percent decline in the overall number of residential fire deaths over the same period. As with arson fires, the slower rate of decline in arson fire deaths means that these deaths represent an increasing proportion of all fire deaths. An encouraging sign, however, is that the number of deaths occurring in residential structures arson fires in 1994 was 502, a ten-year low.



In contrast to the downward trend in deaths, the trend in residential arson fire injuries is upward. Figure 20 shows that residential arson fire injuries have risen about 18 percent over the past ten years. This is over two times the increase in the overall level of residential fire injuries, which has increased 8 percent over the past ten years.

Figure 20
1985-1994 Residential Arson Injuries



Source: NFIRS and NFPA

Metropolitan vs. Non-metropolitan Residential Arson Fires. While arson is among the leading causes of all residential fires, NFIRS data suggest it represents a bigger problem in metropolitan areas than in non-metropolitan areas. In 1990, arson fires comprised 14 percent of all residential fires with known causes and were the third leading cause of all residential fires. However, in metropolitan areas, arson fires accounted for 24 percent of residential fires in metropolitan areas and were the **leading** cause of residential fires. Cooking fires were second, accounting for 21 percent of metropolitan residential fires.⁶

This relationship between the size of place and the incidence of arson is borne out in other studies. A 1995 study by the National Fire Protection Association (NFPA) shows that for the period 1990-1994, the rate for incendiary and suspicious fires in cities of 250,000 or more was greater than twice the rate for communities of 5,000 to 10,000 or 10,000 to 25,000. For rural areas with under 2,500 to 5,000 residents the rates were higher than for the medium-sized communities but lower than the rates for the largest places. Arson rates for areas with different sized populations appear in Table 1.⁷

Table 1. Incendiary/Suspicious Fire Rates by Area Population Size

Area Population	Incendiary/Suspicious Fire Rate per 100,000 Population
< 2,500 - 2,500	36
2,500 - 4,999	30
5,000 - 9,999	26
10,000 - 24,999	25
25,000 - 49,999	30
50,000 - 99,999	35
100,000 - 249,999	45
250,000 and over	52

Source: NFPA, 1996, pp. 17-18.

⁶ United States Fire Administration. *Fire in the United States, 1983 - 1990*. Washington, D.C.: Federal Emergency Management Agency, United States Fire Administration, 1990, p. 355. This information is intended to give readers a general idea of how metropolitan and national data compare, but it must be interpreted with care. Due to the way the data is collected and reported in the National Fire Incident Reporting System (NFIRS), data from some areas that are largely rural in character are included as metropolitan areas.

⁷ Hall Jr., pp. 17-18.

In the same study, NFPA reported that arson fires represented a higher proportion of all fires reported in large cities than in smaller cities for the period 1990-1994. The proportion of all fires attributable to suspicious and incendiary causes is more than two times higher in large cities than in smaller communities, as shown in Table 2.⁸

Table 2. Arson Fires as a Percent of All Reported Fires by Area Population

Area Population	Arson Fires as a Percent of all Reported Fires
< 2,500 - 2,500	10%
2,500 - 4,999	10%
5,000 - 9,999	10%
10,000 - 24,999	10%
25,000 - 49,999	14%
50,000 - 99,999	18%
100,000 - 249,999	21%
250,000 and over	23%

Source: NFPA, 1996, pp. 19-20.

⁸ Hall Jr., pp. 19-20.

For 1990-1994, the NFPA analyzed the types of structures that experienced arson fires and the distribution of arson losses. The results appear in Table 3.⁹

Table 3. 1989-1993 Incidence of Arson by Type of Structure and Distribution of Dollar Loss

Type of Structure	Percent of Arson Fires by Structure Type ^a	Percent of All Arson Dollar Losses ^a
Residential	56%	48%
Stores/Offices	6%	20%
Storage	10%	7%
Public Assembly	4%	6%
Educational	4%	3%
Institutional	3%	1%
Industrial/Manufacturing	1%	5%
Special	14%	6%
Unknown	2%	3%

^a may not add to 100% due to rounding

Source: NFPA, 1996, p. 31.

As indicated in Table 3, residential structures experienced the highest number of arson fires and accounted for the highest proportion of total arson dollar losses of all structure types. Important to note, however, is that while stores and offices experienced only six percent of all arson fires, they accounted for 20 percent of all dollar losses resulting from arson fires.

Characteristics of the Arson Problem

Time of Day. Table 4 shows the distribution of arson fires throughout the day for 1994. The two time periods with the highest proportion of arson fires are 4 p.m. to 8 p.m. and 8 p.m. to midnight. Looking at these two periods together, almost half of all arson fires occurred between 4 o'clock in the evening and midnight.

⁹ Hall Jr., 1996, p. 31.

Table 4. Time of Day, Incendiary and Suspicious Fires, 1994

Time of Day	Percent of All Arson Fires
12:00 a.m. to 4:00 a.m.	17.4%
4:01 a.m. to 8:00 a.m.	7.8%
8:01 a.m. to 12:00 p.m.	8.8%
12:01 p.m. to 4:00 p.m.	17.8%
4:01 p.m. to 8:00 p.m.	23.9%
8:01 p.m. to 12:00 p.m.	24.2%
Total*	100.0%

* figures may not add to 100% due to rounding

Day of the Week. Table 5 shows the distribution of arson fires throughout the week for 1994. While arson fires are fairly well distributed throughout the week, they occur slightly more frequently on Saturdays and Sundays.

Table 5. Days of the Week, Incendiary and Suspicious Fires, 1994

Day of Week	Percent of All Arson Fires
Sunday	16.5%
Monday	15.0%
Tuesday	13.5%
Wednesday	12.8%
Thursday	12.5%
Friday	13.4%
Saturday	16.2%
Total*	100.0%

* figures may not add to 100% due to rounding

Fixed Property Use. Table 6 shows the distribution of the types of properties that experienced arson fires in 1994 as coded in NFIRS. The six categories of fixed property that experienced the highest number of arson fires are identified. Together, these properties accounted for 80 percent of the fixed property use types that experienced arson fires.

Table 6. Fixed Property Use of Locations Experiencing Incendiary or Suspicious Fires, 1994

Fixed Property Use	Percent of All Arson Fires
Road Property *	25.1%
Outdoor Properties **	24.6%
One- and Two- Family Dwellings	17.0%
Apartments, Tenements, Flats	6.0%
Construction, Unoccupied Property	5.1%
Schools, Non-residential	2.2%
All Others Uses	20.0%
Total	100.0%

* refers to vehicle fires

** this is one of the NFIRS categories that refers to outdoor fires

Part II. Factors Contributing to Arson

This section addresses factors that contribute to the arson problem in the U.S. The discussion includes the special problem of vacant and abandoned buildings, the motivations of firesetters, the involvement of juveniles and juvenile gangs in firesetting, the relationship between drugs and arson, the problem of firefighters who set fires, and arson fires that result from civil unrest. The recent attention paid to suspicious church fires is also addressed.

Where Arson Happens

An arson fire can be set almost anywhere, but there are two particular types of locations that deserve special mention. The first is outdoor locations, where about two-thirds of all arson fires are set each year, as discussed in Part I. Juveniles typically are behind these fires which are set out of boredom, to vandalize, to attract help for psychological problems, or for other reasons. Another frequent arson target is vacant and abandoned buildings. Most fire investigators agree that these buildings are fodder for a large percentage of arson fires in structures. Sternlieb and Burchell (1973) found that abandoned buildings in general were four times more likely than other types of structures in Newark, New Jersey to have a severe fire, often one that was intentionally set.¹⁰

The problem of vacant and abandoned buildings is widespread in the U.S. In city after city, building owners have abandoned their properties and moved elsewhere -- either absorbing the loss or leaving a bank to deal with it. Banks, however, are usually reluctant to assume responsibility for property upkeep when the potential for resale is negligible, so many properties are simply left "as is". Frequently, while the building sits vacant it falls victim to "urban mining". The windows are smashed and vandals tear off the boarded up entrances to steal copper pipes, heating and plumbing fixtures, or anything else of value. Firesetters often finish the job.

Data from several cities highlights the problem of arson in vacant abandoned buildings. Lawrence, Massachusetts, a city of 70,000 population, faced a problem with 500 vacant or abandoned buildings -- many of them residential structures sandwiched between occupied dwellings in multifamily blocks. During the first six months of 1992, more than 90 structure fires were classified as incendiary or suspicious. Most of the buildings targeted in the arson epidemic

¹⁰ Sternlieb, George and Robert Burchell. "Fires in Abandoned Buildings." *Fire Journal*. Vol. 67, no. 2, 1973, p. 28.

were vacant or abandoned rental properties in a densely populated area of the city where high unemployment and crime fed the neighborhood arson problem. Indianapolis reported that in the same year, 36 percent of their structure fires occurred in vacant dwellings. Omaha's fire statistics for 1992 showed that they had 221 incendiary and suspicious fires in vacant or abandoned structures.

Intervention Strategies for Blighted Buildings. Although property disinvestment is a complex problem to solve, communities have undertaken initiatives that at least begin to turn the tide. For example Bridgeport, Connecticut passed an anti-blight ordinance that discourages property owners from allowing their buildings to become unsafe. Once their property is identified as blighted, owners are subjected to a daily fine until the structure is brought into compliance or demolished. The law is enforced by a special committee of representatives from city departments and community organizations that meets regularly to identify blighted buildings, act on cases, and initiate the process of rehabilitation or demolition. The City of Lawrence has helped curb their arson problem by implementing an aggressive nuisance abatement program, part of which directs the boarding up or demolition of vacant buildings.

The City of Saginaw, Michigan also has a problem with vacant, abandoned, and fire-damaged buildings. The city passed a Dangerous Building Ordinance (DBO) to identify and notify owners of substandard properties. Neighbors, the fire department, the police department and the water department all report delinquent owners. Water meter readers identify suspected vacant buildings and enter the addresses into hand-held computers. A computer-generated list of all the addresses is forwarded to the fire department, which then confirms the building's status and follows up by securing the structure to prevent additional deterioration, and then initiating the DBO process.

Neighborhood organizations have gone on the offensive to stem the tide of the arson blight in their communities. Some neighborhood groups have developed coalitions with government agencies, fire departments, banking and financial institutions, insurance companies, and other related agencies. These coalitions can help bring arson problems in their neighborhoods into sharp focus. Some of the approaches neighborhood organizations have taken include:

- finding new owners for abandoned buildings, and assisting them in renovating them for reoccupancy;

- acting as a developer in acquiring and renovating abandoned and deteriorating residential structures;
- providing financial advice and counseling for neighborhood home owners;
- organizing neighborhoods against block busting;
- researching the background of arson and incendiary fires in the neighborhood and organizing a media campaign to alert the public to the problem;
- participating in fire prevention education activities;
- installing smoke detectors and fire extinguishers in newly renovated housing units;
- monitoring abandoned buildings to ensure that they are and remain adequately secured; and
- building confidence in the neighborhood through collective action and organization.

Motivations for Firesetting

As with any crime, people set fires for varied and complex reasons. For criminals prosecuted for crimes where there is direct evidence, motive is often a secondary consideration and is not necessarily crucial for conviction. But because arson is a clandestine crime where witnesses are rare and some or most of the direct evidence burns in the fire, motive becomes a critical element in prosecuting firesetting cases. Pinpointing the motivation for setting a fire helps identify suspects and helps convince a jury of the accused's guilt.

The most common motives behind firesetting are :

- Vandalism
- Spite and revenge
- Intimidation
- Concealment of another crime
- Economic motives, including
 - ⇒ insurance fraud
 - ⇒ debt removal
 - ⇒ direct monetary gain
 - ⇒ elimination of unwanted ownership
 - ⇒ land assembly for development

⇒ removal of business competition

- Civil disorder and hate related crime
- Gang initiation
- Excitement
- Suicide
- Murder

In a U.S. Fire Administration (USFA)-sponsored management assistance project, investigators from over 60 state and local fire investigation units most frequently ranked spite and revenge as the most common motive behind incendiary fires. Both adult and adolescent firesetters are motivated by revenge. These fires tend to be the most dangerous in terms of casualties because they are targeted at people, not just at buildings or other physical objects. A fire set by someone bent on revenge is a premeditated act directed at an individual he or she knows and wants to hurt, such as a former spouse or business partner. Other spite and revenge arsons include gang-related fires that are set to exact revenge against rivals or their rivals' sympathizers.

Fires set for the sport of vandalizing property were also ranked high as motives in the USFA study. Juveniles are responsible for the majority of these incendiary fires.

Some arsonists use fire to conceal companion crimes such as murder, embezzlement, or burglary. There have been cases of fire death victims who were later discovered to have bullet wounds, which is why it is so important for autopsies to be conducted on all fire fatalities. Medical examiners can determine whether it was fire or another cause which was responsible for the death.

There is some debate at this time as to the relative frequency of fraud as a motive for arson. While arson committed for direct profit or to eliminate debt remains a problem, there are indications from the field that this motive is less frequently behind firesetting today than it had been previously. One of the complications in assessing the frequency of arson cases motivated by fraud is that they tend to be more complex than other types of cases, especially if the firesetter is a "professional" hired to make the fire appear accidental. Well-trained investigators are needed to uncover these fires which are sometimes overlooked or mislabeled.

Church Arsons. The recent spate of arson church fires in the U.S., predominantly in southern states, has once again brought the issue of arson to national attention. In response, the President allocated \$6 million to hire more police and security guards in areas considered at high risk for church fires. Congress passed legislation doubling the penalty for church arson from ten years to twenty years, and the Federal Emergency Management Agency (FEMA) was directed to create an interagency task force including the Justice and Treasury Departments to give the government more power to investigate and prosecute arson fires. More than 200 FBI agents and agents from the Bureau of Alcohol, Tobacco, and Firearms were assigned to work church fire investigations.

Arson targeted at churches represents only a small part of the overall arson problem, accounting for less than 1 percent of all arson fires. However, more than one of every four fires occurring in churches are caused by arson, making it the leading cause of church fires. In spite of the recent publicity surrounding church arsons, they are down from a total of 1,420 in 1980 to 520 in 1994. This is a 15-year low in church arsons.

A primary concern about incendiary fires in churches has been the suggestion that they were racially motivated. The evidence on this point is mixed. First, of 230 church burnings investigated (at the time of this project), 41 percent targeted black churches and 59 percent targeted white churches. Second, in the over 100 arrests made to date, racial hatred was found to be but one of several motivations for the firesetting, consistent with the picture for other types of arson scenarios. Other motivations included: juvenile vandalism, insurance fraud, and a firefighter seeking excitement. Of those arrested, 66 percent were white and 34 percent were black.

Juveniles

Of particular concern is the involvement of juveniles in intentionally set fires, not including those children who play with fire and are too young to understand the extreme danger inherent in it. The NFPA (1996) reports that in 1995, for the second year in a row, juvenile

firesetters accounted for a majority (52 percent) of those who were arrested on arson charges.¹¹ Likewise, Federal Bureau of Investigation (FBI) statistics show that half of all those arrested on arson charges in 1992 were under the age of 18; two-thirds were under the age of 25.¹² The growing involvement of youths in setting fires is cause for serious concern and deserves more attention from policymakers.

For 1992 the FBI reports that, based on arson arrests, juveniles were responsible for 40 percent of arsons in structures, 24 percent of vehicle arsons, and 59 percent of arson in all other property types. FBI crime statistics also show that arrests of juveniles for arson offenses increased eight percent from 1991 to 1992, while the rate of adult arrests decreased three percent.¹³

These statistics raise an important question: is the reported rise in arson fires set by juveniles an indication of growing involvement in misdemeanor and felony firesetting among juveniles--or are we just doing a better job of identifying this activity? If anecdotal reports from the field are any indication, it would appear that nationwide, juveniles have been increasingly using fire to vandalize structures and autos. This is in addition to the fact that some communities are doing a better job of documenting juvenile firesetting than they were previously.

Because juvenile firesetting is such a serious problem, more detailed information on these fires is needed at the local level. A common problem is that fire investigation agencies generally do not maintain much data on perpetrators, so profiling the ages, motives, and characteristics of those suspected or arrested for firesetting is difficult. Sometimes juvenile fire records are kept by a branch of government other than the fire department, such as the police youth division or the juvenile court. Their numbers typically are lower than those recorded by the fire department, because the police and the courts only become involved if the juvenile is arrested or brought before juvenile court.

Another complication is that localities do not necessarily distinguish between different types of fires started by juveniles, and their data may include accidental fires set by children of

¹¹Hall Jr., 1996, p. i.

¹²U.S. Department of Justice. *Crime in the United States, 1992: Uniform Crime Reports*. Washington, D.C.: Federal Bureau of Investigation, U.S. Department of Justice, 1993, p. 56. These FBI statistics refer to the distribution of those arrested on arson charges data and may or may not be representative of the proportion of all arson offenses committed by juveniles. Only fires with incendiary origins are included in the statistics, not those with suspicious or unknown origins.

¹³ *ibid.*, p. 55.

all ages, especially very young children who start fires by playing with lighters, matches, or other fire materials. It is important that separate numbers be maintained for largely “accidental” fires set by very young children and for fires set willfully and maliciously by older youths so that fire and law enforcement officials can determine where to put their focus -- on a preschool/early elementary school fire safety program, for example, or on a court-based intervention program.

At the national level, the National Fire Incident Reporting System (NFIRS) tracks arson fires separately from fires set by children playing. Child-playing fires differ from arson fires in that the children who set them are usually below the age of reasoning, about seven years old. Within the category of arson fires, NFIRS does not collect information on the age of perpetrators of incendiary or suspicious fires, so it is not possible to distinguish between arson fires set by juveniles and those set by adults. Information on juvenile arsonists is available through national crime data, yet the representativeness of this data is unknown since a majority of arson cases each year go unsolved. Hall (1996) reports that of the fires confirmed as incendiary, an estimated 80-85 percent are never solved or cleared by an arrest.¹⁴

The Role of Adults. Lack of adult supervision and care plays a significant role in firesetting behavior by juveniles of all ages. This finding is not unique to arson, but is a major factor in all types of misdemeanors and felonies involving juveniles. The Juvenile Firesetter Program of the Delaware State Fire Marshal’s Office has maintained exceptionally good data on the juveniles who have been involved in their program. Examining records from 1,462 juvenile firesetters over the period 1981-1994, Delaware’s Program reports that “parents (were) gone a lot” in 68 percent of the cases, 58 percent of the youths were unsupervised at the time of the fire, and 39 percent suffered from actual neglect.¹⁵

Parents, especially single mothers and other parents facing significant child care obstacles, should be provided with information verbally and in writing about the dangers of leaving children alone, the importance of keeping matches and lighters out of sight and out of reach, and the signs of firesetting behavior and stress in school-age children. In general, when addressing our country’s “juvenile” firesetting problem, we need to acknowledge the critical role **adults** play as well.

¹⁴ Hall Jr., 1996, p. 30.

¹⁵ Program statistics made available by the Office of the State Fire Marshal, State of Delaware, January, 1995.

Fire departments and State Fire Marshals Offices can not significantly reduce the incidence of juvenile-caused fires, including criminal fires, unless they have allies. With social problems underlying most of the firesetting incidents, resources from other sectors must be drawn into a partnership with public safety officials. Local mental health agencies, police juvenile crime officers, school officials, housing and community development leaders, social service agencies, and youth club directors all have a vested interest in controlling the rate of juvenile firesetting. Studies have shown that firesetting is often the “gateway” crime to other more serious crimes. Reason would have it that if kids can be reached at the beginning of this potential crime cycle, the overall level of juvenile crime, and adult crime as well, might be positively affected.

The most successful local juvenile firesetter control programs for older children are those directly tied to the juvenile court system. While a program based on voluntary participation is better than no program at all, to be truly effective with older juveniles the program should be one that is court-mandated. Juvenile court judges can rule that youths cooperate with counselors and educators as an alternative to incarceration. In Cobb County, Georgia juveniles who have been arrested for arson must participate in mediation sessions with the victim(s) of the crime to negotiate restitution and community service.

Juvenile Gangs. Youth gangs have been a serious problem in big cities for many years. Los Angeles, Philadelphia, Miami, and other urban centers have struggled with rising juvenile crime rates, including arson. Much of the criminal activity can be linked to gangs or to youths imitating gang behavior. While some juveniles operate crime syndicates to make money from the sale of illegal drugs and weapons, more often they organize to obtain power, control, and “respect”. Both types of gangs often resort to violence to accomplish their goals.¹⁶

The nexus between gangs and fire revolves around the gang’s desire to be respected. Gangs use fire and Molotov cocktail fire bombs, in particular, to send messages of domination and power over rivals, the neighborhood in general, and local businesses. For example, a business owner who removes gang graffiti from his building may find that structure burned. Neighbors who protect the gang’s enemies or talk to law enforcement officers may become victims of fire bombs. While juvenile gangs have mainly been associated with inner city

¹⁶ Telephone interview with Corporal Tony Avendorph, Prince George’s County Police Department, September 24, 1996.

neighborhoods, the problem has spilled over into suburban areas surrounding central cities, as well as into small communities. In Prince George's County, Maryland, a county contiguous to Washington, D.C., three juveniles set out to intimidate a woman who had witnessed them commit a crime. The youths returned at night and hurled a Molotov cocktail through a bedroom window. Tragically, a sleeping baby occupied that room and died in the ensuing fire. The intended victim was not even in the building at the time.¹⁷

The Relationship between Drugs and Arson

The increase in drug use by our society has spawned related criminal activity, including robberies, assaults, murder and arson. The illegal drug trade and drug use impacts the crime of arson in three ways: first, sometimes a firesetter is under the influence of alcohol or drugs when he or she commits the crime; second, methods of processing drugs sometimes cause explosions and fires; and third, dealers and gang members set property fires to retaliate when drug payments are overdue or to threaten rivals. There even have been cases of otherwise law-abiding citizens burning known "shooting galleries" in an effort to rid their neighborhoods of drug activity.

In a study of drug activity and arson conducted by Virginia Commonwealth University, it was found that 65 percent of arson fires occurred in violent crime areas, and that drug use or sale was indicated in 31 percent of arson targets. The study found that revenge was the motive for drug-related arson fires in 23 percent of the cases.¹⁸

In 1989, 12 percent of the total fires in New York City were labeled as drug-related arsons. A 1993 study of five U.S. cities found that roughly 22 percent of arson fires were drug related. Boston has reported that 20 percent of its drug-related arson cases resulted in fatalities because drug dealers intentionally set fires at building exits in order to trap people inside. Los Angeles, Philadelphia, Buffalo, and many other cities around the country have reported an increasing problem with gangs and drug-related arson. Gangs involved in drug dealing have burned locations where drugs are used or sold in order to eliminate a competitor's headquarters or production facilities. Sometimes they use fire in much the same way as they do drive-by

¹⁷ *ibid.*

¹⁸ Towberman, Thomas J. And Donna B. Towberman. *Final Report on the Relationship Between Drug Activity and Arson in Selected Cities*. U.S. Department of Justice, Bureau of Alcohol, Tobacco, and Firearms, September 1994, pp. 27-37.

shootings. They brazenly set fires in open daylight, in front of scores of witnesses, in order to instill terror.¹⁹

In Minnesota, the State Fire Marshal's Office is completing a two year study into the relationship between drug and alcohol use and set fires. Operating under a grant from the U.S. Fire Administration, the state expects results to be available in early 1998.

The State of Maryland has passed a law intended to provide more stringent consequences for fires caused during the commission of other crimes, especially drug-related crimes. Anyone involved in illegal drug activity, such as the sale, use, or production of drugs, and who as a consequence causes a fire -- even if willful intent can not be proven -- can be held responsible for the fire. The key section of the law reads:

Any person who, while perpetrating or attempting to perpetrate a crime, shall set fire to or burn any of the building enumerated in this subtitle, shall upon conviction thereof be sentenced to the penitentiary for not more than three years.

One of the reasons this type of law is so important is that the fires intentionally or unintentionally set by drug dealers and users predominately occur in vacant and abandoned structures that are contiguous to occupied residences. Clearly, innocent neighbors are at risk of being injured or killed in drug-related fires.

Another casualty of the drug problem is the increasing unavailability of police detectives to work criminal fires. In large part law enforcement resources for arson control have been shrinking because of the increased manpower required to pursue homicides and other crimes.

Inadequate Screening of Volunteer Firefighters

One of the most egregious situations is when a firefighter betrays the public's trust and turns to arson. The motives of firefighter arsonists often stem from a desire to experience the excitement that many firefighters feel in putting out fires. Related to this excitement is the opportunity to appear as a hero by successfully extinguishing a blaze. Other less common motives include profit and revenge. Sometimes firefighters turn to arson because they are frustrated by falling incident rates and want to get more hands-on experience fighting fires.

¹⁹ *ibid.*, pp. 4-5.

There was even a bizarre case in California where the mother of a volunteer firefighter wanted to “help” her son’s career, so she set multiple fires in his response area, giving him an opportunity to excel.

While it is not possible to predict a person’s behavior absolutely, warning signs of the propensity of a prospective fire service member to set fires might be discovered through proper screening and background checks. A routine procedure in paid departments, volunteer companies are also feeling pressure to investigate the appropriateness of firefighters for the job and the inherent public trust that goes with it. Many fire service leaders believe that all potential new employees should be formally screened through background checks, interviews with references and neighbors, and driving record histories.

The State of Delaware has taken a commendable, proactive approach to this problem, at a time when many fire departments would rather not talk about firefighter arson. The Delaware State Fire School, in cooperation with the Volunteer Fireman’s Association and the State Fire Marshal’s Office, provides a training course that addresses the problem of firefighter arson, why it occurs, and how offenders are arrested and prosecuted. The program, “Arson by Firefighters: A Program for Prevention,” is provided as in-service training to all fire service members.

Civil Disturbances

Massive property damage and dollar loss can occur when civil unrest turns to arson. This category of arson fires may be related to religious or political beliefs that use arson to vent anger, to intimidate, or to attract publicity for a cause. The riots which followed the criminal trial related to the Rodney King beating took a high economic toll. In the city of Los Angeles alone, 868 incidents of arson were documented, and the losses associated with these fires totaled \$462 million.²⁰ More recently, rioting following the shooting death of a black motorist in St. Petersburg, Florida resulted in dozens of arson fires being set.

²⁰ Los Angeles Fire Department, Fire Investigation Unit. Telephone interview, October, 1996.

Part III. Barriers to Combating the Arson Problem

This section addresses a number of issues that present barriers to reducing the incidence of arson in the U.S. or, at a minimum, to increasing the number of arrests and prosecutions of suspected arsonists. The topics include the reluctance of prosecutors to pursue arson cases, inadequate training in arson detection in some fire departments, and the structure of fire investigation units.

Prosecutor Reticence

A serious problem in countering the incidence of arson fires has been the reluctance of many local district attorneys to prosecute arson cases. Even the best investigation, the most thoroughly documented case file, and the best physical and circumstantial evidence go for naught if the local prosecutor is disinterested or unequipped to take on an arson case. The crux of the problem is that while physical evidence at the scene can directly prove incendiarism, the evidence linking the crime to the suspect is usually largely circumstantial. Thus, arson has been tagged “the most difficult crime to prove”. While some prosecutors would argue the point, this label has nevertheless become attached to the crime of arson, and it discourages prosecutors. This is especially true in less populated counties where there are too few arson cases for prosecutors to develop a level of comfort and expertise in this area. Lackluster prosecution efforts hamper the success of the State fire investigators who have jurisdiction in these unincorporated areas.

Urban areas are not necessarily spared from inadequate prosecutor support. Fifteen years ago, many district attorneys were rallying to the call for special prosecutors to handle all arson cases and to participate in an arson task force. Budget constraints and rising caseloads virtually put an end to this effort in many large cities, though there remain a few jurisdictions (e.g. Chicago) where this ideal solution remains intact.

In an effort to promote better prosecution and conviction rates for arson cases, the U.S. Fire Administration is co-sponsoring a series of prosecutor arson training courses with the Department of Treasury, Bureau of Alcohol, Tobacco and Firearms. Some states are also trying to work with prosecutors to make them more cognizant of fire behavior and more comfortable with the methods used to collect evidence. The Texas State Fire Prevention Commission, for example, helped produce a well-researched arson prosecution manual. They sent copies of the

manual to all criminal prosecutors in the state and urged that the document be used as a training tool. At the local level, prosecutors in some cities are participating in joint training with fire and police investigators. The public safety agencies teach the prosecutors about origin and cause and criminal investigation work, while the prosecutors instruct investigators on legal technicalities, courtroom procedures, and case presentation requirements.

A few prosecutors have placed a high priority on arson cases, building distinguished careers in part on their expertise and success in putting arsonists behind bars. Mary Galvin in Connecticut is a much sought after expert on the subject. Diane Gordon in Cook County, Illinois and Dan Mabley in Hennepin County, Minnesota gained significant recognition and public confidence for their work in arson, among other issues. Both are now judges.

Training in Arson Detection

The main factors that influence the “winnability” of an arson case rest with how the fire incident is handled at the beginning and the end of the case. If an otherwise good case is mishandled by a prosecutor (or not pursued at all), the investigator’s work goes for naught and the arsonist is free to strike again. Likewise, if fire department personnel do not properly identify a suspicious fire, then an investigation that could uncover arson never occurs. Many fire departments now routinely train department personnel on arson awareness. These courses typically detail the things firefighters should be aware of en route to and upon arrival at the scene, and why overhaul should wait until an investigator can process the scene. Safeguarding potential evidence is critical. Other important issues are call-out guidelines for notifying fire investigators, maintaining custody of the scene, and assisting investigators with lighting tools and manpower.

There remain many departments, especially rural fire departments with volunteer staff, that do not receive arson awareness training. Volunteer departments generally look to the State Fire Marshal’s Office for this type of training -- unfortunately, most of them have been hit comparatively harder with budget cuts than many cities, so the money needed to run field training programs is hard to come by.

The U.S. Fire Administration is responding by generating a new firefighter arson awareness course that will be made available to local fire departments. In addition, private sector sponsors should be tapped to work in partnership with the State and with local departments. Insurance companies, for example, could help pay for the development of course materials, offer

facilities for training, or underwrite the cost of trainers/instructors. Another resource is the Federal government, which in 1996 released over \$700,000 for arson training programs to increase state capabilities for investigating arson fires, particularly in rural areas.

Structure of Fire Investigation Units

It is widely held that arsonists stand more of a chance of getting caught and convicted if fire and police investigators work together on investigating fires. In fact, many U.S. cities formed such interagency investigation units in the late 1970s and early 1980s when Federal programs like the Law Enforcement Assistance Act provided seed money for these experiments. But rising homicide and drug-related crime rates coupled with declining tax bases in cities put fire and police teams into early retirement, even though by many accounts they had been successful. A few cities, like Indianapolis and Buffalo, maintained their teams. But in other communities, dual-agency investigation teams were dismantled. Bridgeport, Connecticut investigated 81 percent of all structure fires in fiscal year 1988-89, and officials felt they were able to identify virtually all of the incendiary cases. But in fiscal year 1991-92, only 57 percent of structures fires were investigated -- a direct result of a policy decision to remove the police detectives from the unit.²¹

Training and Certification in Fire Investigation

Training line firefighters to detect signs of criminal firesetting helps with the first leg of strengthening local arson control capabilities. Adequately training the fire investigators is the next step. Over the last ten years, the U.S. has made gains in the quality and availability of fire and arson investigation training courses. Investigators have access to program through the National Fire Academy, the FBI, and the Bureau of Alcohol, Tobacco and Firearms -- both through resident and field delivered courses. Many State Fire Marshals Offices use their field investigators to conduct basic investigation instruction for volunteer departments.

The International Association of Arson Investigation (IAAI) and their local and State chapters routinely provide seminars related to arson control. Investigators now can become certified through either IAAI's process and/or by meeting NFPA's certification criteria. The NFPA 921 Committee on Fire and Explosion Investigations also continues its research and work on the 1998 edition of the NFPA 921 Guide. The field has made great strides in becoming more professional.

²¹ U.S. Fire Administration. *Managing Arson Control: Ideas from Studies of State and Local Programs*. U.S. Fire Administration, January 1994, p. 16.

Today, the shortage of adequately trained investigators has been addressed, in part, through cross-training and by providing police powers to fire department investigators. While not as advantageous a situation as having police partners, the fire investigators are qualified and equipped to handle full arson investigations. Unfortunately, inadequate staffing levels and reticent police and fire chiefs who have not endorsed police powers for fire investigators have left some major cities with a dilemma: they have good origin and cause work that has nowhere to go. These situations make it more likely that arsonists will get away with their crimes.

Conclusion

Arson in the U.S. is characterized by increasing violence, fewer resources, and competing demands on law enforcement and prosecutors. It is the leading cause of all fires and the number two killer of fire victims in residential structures. Juveniles, as in other major crimes, increasingly are responsible for the casualties and property loss wrought by incendiary fires.

Two conclusions are evident at this point. First, better information is needed in order to more precisely define the arson problem in the U.S. Second, public safety agencies, community leaders, and the general public need to be made more aware of the extent and deadly nature of the arson problem. Then the political support needed to prevent further erosion of arson control initiatives can be generated.

Systematic research into the problem of arson in the U.S. is hampered by a lack of information. More data is needed on the incidence of arson fires and the motivations of arsonists in setting them. Currently the National Fire Incident Reporting System (NFIRS) has a classification for arson fires but does not collect data on individuals who set them. One possible solution is to develop a national protocol separate from NFIRS to collect data on incendiary and suspicious fires. This would allow collection of data critical to a better understanding of the nature of the arson problem in the U.S., including types of firesetters, firesetter motives, and prior histories of firesetting among firesetters. The Bureau of Alcohol, Tobacco, and Firearms is currently working toward this goal by establishing the Arson and Explosives Incident System 2000 (AEXIS 2000). The System is being designed as a national repository of information on the suspected criminal use of explosives and of arson incidents.

At the local level, all suspected cases of arson must be classified, reported, and pursued as incendiary or suspicious or our understanding of the extent of the arson problem in the U.S. will remain incomplete. Inadequate investigator training in some areas, particularly rural areas, means that many fires of an incendiary or suspicious nature currently are not identified and do not get fully investigated. Local prosecutors need to participate in training as well.

Political support for arson control at all levels of government would enable state and local governments to access new training and technical assistance designed to improve the extremely low two-percent conviction rate associated with arson. Currently, budgetary constraints and other demands on staff have *reduced* the level of fire and police resources available to investigate suspected arson cases in many cities throughout the U.S. These circumstances exist even though many are aware that closer cooperation between fire and law enforcement officials is critical to stemming the tide of arson fires.

In sum, better information, more training and technology, and stronger linkages among public safety agencies are needed to reduce the incidence of arson in our communities, a crime which bears extremely high costs both in terms of lives and property. Without improvements in these areas, little headway can be made in the effort to reduce the incidence and damage caused by arson fires in the U.S.

References

John R. Hall, Jr. 1996. *U.S. Arson Trends and Patterns - 1995*. Quincy, MA: National Fire Protection Association.

Karchmer, Clifford L. 1996. "When Young Firesetters Come of Age." *Firehouse*. (August) pp. 37-38.

Sternlieb, George and Robert Burchell. 1973 "Fires in Abandoned Buildings." *Fire Journal*. Vol. 67, no. 2 (March), pp. 24-31.

Towberman, Thomas J. And Donna B. Towberman. 1994. *Final Report on the Relationship Between Drug Activity and Arson in Selected Cities*. Washington, D.C.: U.S. Department of Justice, Bureau of Alcohol, Tobacco, and Firearms.

U.S. Department of Justice. 1993. *Crime in the United States, 1992: Uniform Crime Reports*. Washington, D.C.: Federal Bureau of Investigation, U.S. Department of Justice.

United States Fire Administration. 1993. *Fire in the United States, 1983 - 1990*. Washington, D.C.: Federal Emergency Management Agency, United States Fire Administration.

U.S. Fire Administration. 1994. *Managing Arson Control: Ideas from Studies of State and Local Programs*. Washington, D.C.: U.S. Fire Administration.