

# FBI Law Enforcement Bulletin

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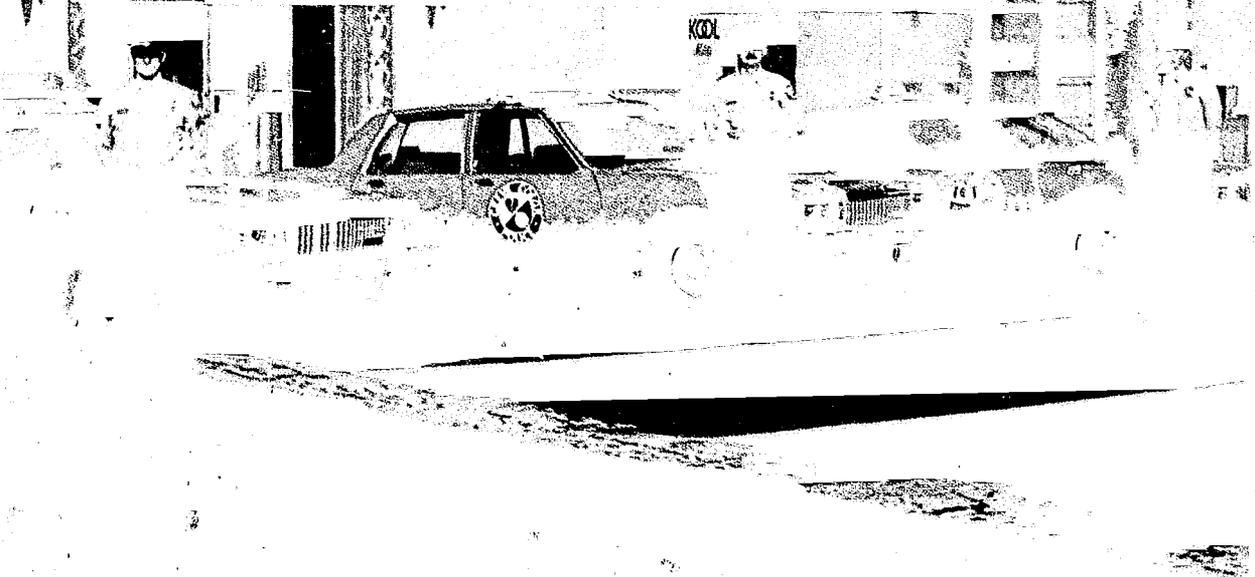
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April 1987, Volume 56, Number 4

**Thank You**

The newsletter *Crime Control Digest* announced "Outstanding Law Enforcement Publications" in its March 9, 1987, issue, including the *FBI Law Enforcement Bulletin*. The Bulletin staff noted in a reply to this recognition that "the real credit should go to the contributors because it is their cooperation that makes the Bulletin a professional journal—their ideas advance the progress of law enforcement toward professionalism." To all the Bulletin contributors over the years, thank you.

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**FBI**

**Law Enforcement Bulletin**



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**The Cover:**

The regionalization of police training is symbolic of the spirit of cooperation and commitment to excellence characteristic of the St. Louis Police Academy throughout its history. (See article p. 1.)

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# ***Motive-Based Offender Profiles of Arson and Fire-Related Crimes***

By

DAVID J. ICOVE, Ph.D, P.E.

*Senior Systems Analyst*

*Behavioral Science Investigative Support Unit  
National Center for the Analysis of Violent Crime*

*FBI Academy*

*Quantico, VA*

and

M. H. (JIM) ESTEPP

*Fire Chief*

*Prince George's County Fire Department  
Upper Marlboro, MD*

In the Washington, DC, metropolitan area, investigators from the Prince George's County, MD, Fire Department (PGFD) periodically meet with specialists from the FBI's National Center for the Analysis of Violent Crime (NCAVC). The subject of these conferences concerns a timely research project into the motivation of persons involved in fire-related crimes.

The study is based on the analysis of data from 1,016 interviews of juveniles and adults arrested for arson and fire-related crimes, primarily during the years 1980 through 1984, by the PGFD's Fire Investigations Division. The offenses include 504 arrests for arson, 303 for malicious false alarms, 159 for violations in bombing/explosives/fireworks laws, and 50 for mis-

cellaneous fire-related offenses. NCAVC researchers consider this the largest-existing comprehensive data base of interviews for arson and related offenses.

The overall purpose of this computer-assisted analysis was to create and promote the use of motive-based offender profiles of individuals who commit incendiary and fire-related crimes. Specifically, the study identifies and develops a statistically significant offender profile based on the motive for the crime as determined by experienced PGFD fire investigators.

Historically, the earliest large-scale scientific study detailing the motives of arsonists, published in 1951, used 1,145 subjects,<sup>1</sup> while the most recent, in 1984, studied 225 adults.<sup>2</sup> Prior re-

search on arsonists and fire-related criminal offenders, including that conducted by the FBI, failed to address completely the broad issues confronting modern law enforcement. Of primary concern are the efforts to provide logical, motive-based investigative leads for incendiary crimes. Furthermore, even though several common motives for arson exist, recent criminal justice literature taken from FBI studies repeatedly cites the profiles of the pyromaniac and professional arsonist.<sup>3</sup>

For purposes of this and previous FBI studies on firesetters and fire-related offenders, a motive is cited as an inner drive or impulse that is the cause, reason, or incentive that induces or prompts a specific behavior.<sup>4</sup> For legal purposes, the motive is often helpful in

***"The overall purpose of this computer-assisted analysis was to create and promote the use of motive-based offender profiles of individuals who commit incendiary and fire-related crimes."***



Dr. Icove



Chief Estep

explaining why an offender committed his or her crime.

To compound the problem, scientific literature and research on arsonists have been conducted largely from the forensic psychiatry viewpoint.<sup>5</sup> Many researchers do not necessarily assess the crime from the law enforcement perspective. They may have limited access to full adult and juvenile criminal data bases and case files, and they rely on the interviews of the offenders as being correct. They do this without the capabilities and time to validate the information through followup investigations. Other researchers have cited that methodological difficulties, with small sample sizes of interviews and skewed data bases, may also bias the previous studies.<sup>6</sup>

Therefore, fire and law enforcement communities have taken upon themselves the task of conducting their own independent research into violent incendiary crimes. One of the primary missions of the NCAVC is to participate in and perform such independent research, as well as to provide various academic and technical assistance otherwise unavailable to these agencies.<sup>7</sup>

#### Research Methods

Since 1977, the PGFD Fire Prevention Bureau's investigators have conducted their own research into the backgrounds of violent offenders by interviewing juveniles and adults arrested for arson and related offenses. These offenses include malicious false alarms, bomb threats, bombings, and even cross burnings. A PGFD fire investigator designed and implemented a code-for-computer interview research instrument to aid in the motivation study.

In 1985, the FBI's Technical Services Division keypunched the PGFD arrest interviews, which allowed NCAVC researchers in Quantico, VA, to then analyze the data.<sup>8</sup> This analysis approach safeguarded the confidentiality of the offender data.

#### Findings

The 1,016 offenders interviewed most frequently targeted five types of properties—residential properties (44%), educational properties (31%), fields/forests (10%), other structures (10%), and vehicles (6%). Revenge and excitement-motivated offenders predominantly targeted residential properties (26%), while vandals selected educational facilities (29%).

Table 1 lists the characteristic profile variables studied in this analysis, arranged by their logical categories of victimology, demographics, socioeconomic, alcohol/drug abuse and criminal history, and behavioral characteristics. Table 2 displays six categories of reported motives for these incidents, which include specific subcategories, with their relative percentages.

In the order of their occurrence, this study reports these arson and related crime motives as vandalism (49%), excitement (25%), revenge (14%), other (8%), crime concealment (2%), and profit (1%). Tables 3 depicts the cross-tabulations of the profile characteristics versus the six categories of reported motives.

After cross-tabulating the data and performing a chi-square analysis, the researchers of this study observed a statistical significance in these categories of reported motives. Their analyses indicate that relationships exist between the various profile characteristics and the reported motives. Table 3 shows the summary statistical analysis,

TABLE 1—Categories of Data Variables Studied

Category	Variable
Victimology	Targeted Property
	Time of Day
	Day of Week
	Season of Year
	Method of Operation
Demographic	Age in Years
	Sex
	Race
	Formal Education
	Occupational Status
Socioeconomic	Marital Status
	Type of Housing Resides
	Living with Whom
	Socioeconomic Status
Alcohol/Drug Usage and Criminal History	Alcohol/Drug Usage
	Prior Police/Fire Record
	Case Disposition
Behavioral	Presence at Fire Scene
	Distance from Residence
	Accompanied at Offense
	Post-Offense Presence at Scene
	Social Attitudes Professed

including the number of degrees of freedom and probability of the results being more than a chance occurrence.

#### Offender Profiles

As previously mentioned, the researchers aggregated the reported motives according to their local categories of victimology, demographics, socioeconomic, alcohol/drug abuse and criminal history, and behavioral characteristics. Based on these groupings, they have made the following observations on the motive-based offender profiles,

#### Vandalism

Juveniles (96%) most often committed vandalism-motivated crimes. Individuals in this category lived primarily in lower middle class homes (47%) with both parents (63%). Their crimes occurred during the morning (34%) and afternoon (56%) hours on the weekdays (89%) of the school year, with minimal activity reported during the summer months (14%). These young criminals most frequently ignited fires with materials on hand (46%), followed by causing malicious false alarms (25%) and violating various bombing/explosive/fireworks laws (19%).

The offenders interviewed did not report using alcohol or drugs; yet, some already had contact or were arrested by fire or police officials (29%). Many lived within 1 mile of the crime scene (51%), and a majority reported being accom-

panied by one or more individuals (73%) at the time of the offense. A large minority remained at the crime scene (41%).

#### Excitement

Mostly juveniles (69%) committed arson and fire-related crimes merely for the excitement. Offenders in this category no longer lived with both parents (55%). These offenders caused false alarms (50%) and ignited fires with materials on hand (32%) during the afternoon (42%) and evening (33%) hours. A majority denied using alcohol or drugs (69%); yet, a large minority had prior contact or arrests by fire or police officials (47%). These offenders often lived within 1 mile from the crime scene (72%) and most often committed the crime while alone (53%). The post-offense behavior of many excitement-motivated offenders showed that they remained at the crime scene (62%).

#### Revenge

Adults made up a large majority (81%) of the revenge-motivated offenders, with approximately one-half of them single (53%). Females also formed a significant part of this offender group (28%). Most of the offenders, who did not live with both their natural parents (75%), planned their revenge, targeting residential properties (72%). The revenge-motivated offender chose afternoon, evening, and early morning hours (91%) during the weekends (50%—Friday, Saturday, and Sunday) in the fall and winter months (61%). They most frequently ignited fires with materials on hand (50%) or flammable liquids (17%) and caused or reported malicious false alarms (20%).

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***"[The] FBI/PGFD research study ... provides new insights into the motive-based profile approach."***

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Slightly over one-half of these offenders (55%) used alcohol, drugs, or both prior to or during the offense. Most offenders had prior contact or arrests by the fire or police authorities (69%) and lived within 1 mile of the crime scene (63%). Most of these revenge-motivated offenders acted alone (64%), and many offenders left the crime scene, never to return (42%).

#### **Other Motives**

This study contains only limited interview data on the arrest of offenders motivated by crime concealment and profit. However, we included the results

here since the overall analysis demonstrated statistical significance when these motives were grouped together. Also, casual observations can also be made from this limited data.

The 18 offenders motivated by crime concealment were predominantly single (78%), adult (72%) males (72%) of marginal or less income (56%) who used arson and related crimes to conceal other offenses. A large number of them started fires with materials on hand (67%). Most of these events occurred during the evening or early morning hours (94%) during the summer or fall season of the year (78%).

While concealing crimes, a majority of the offenders were under the influ-

ence of alcohol and/or drugs when committing the arson or fire-related offense (78%). All of the crime concealers had prior contact or arrests by fire or police officials (100%), and most lived more than 1 mile from the crime scene (67%). One or more persons accompanied half of the offenders at the time of the offense, and a majority stayed away from the crime scene (67%).

The 11 offenders concerned with profit motives were predominantly juveniles (64%), all of whom committed their offenses during the evening or morning hours, on weekdays, and in the winter, spring, or summer months.

TABLE 2--Categories of Motives Studied

Motive	Specific Category	Subtotal N (Pct.)	Total N (Pct.)
Vandalism	Vandalism—General	364 (73)	502 (49)
	Children Playing with Fire	89 (18)	
	Peer Pressure	44 ( 9)	
	Harassment of Fire Dept.	5 ( 1)	
Excitement	Thrill Seeker	122 (47)	258 (25)
	Attention Seeker	110 (43)	
	Fire Fighter Wanting Action	78 ( 7)	
	Sexual Perversion	4 ( 2)	
	Pyromania	2 ( 1)	
	Heroic Fire Fighter	2 ( 1)	
Revenge	Revenge—General	56 (39)	145 (14)
	Revenge—Relationship Problem	54 (37)	
	Harassment of Victim	28 (19)	
	Jealousy	6 ( 4)	
	Terrorism	1 ( 1)	
Crime Concealment	Coverup—Breaking and Entering	13 (72)	18 ( 2)
	Coverup—Murder	4 (22)	
	Coverup—Other Crime	1 ( 6)	
Profit	Monetary Gain—For Hire	6 (55)	11 ( 1)
	Monetary Gain—Insurance Fraud	5 (45)	
Other	All Other Motives	27 (33)	82 ( 8)
	Undetermined Motives	55 (67)	
			1016

insights into the motive-based profile approach.

While past FBI studies have consistently shown that arson and related-crime offenders tend to be young, the PGFD data base further discriminates the age of offenders according to their motives for committing these various types of crimes. For example, they found generally that juveniles commit excitement crimes and vandalism, while adults tend to commit revenge and crime concealment offenses.

Some firesetters also report false alarms or bomb threats. In the PGFD data base, false alarms constitute the primary method of operation for excitement (50%) and the secondary cause of vandalism (25%) offenses. The study found that arson is a compulsive crime. For all motives, except profit, the offenders frequently used materials on hand to set their fires.

Males make up the majority of arson and fire-related offenders; however, the NCAVC researchers are beginning to study female offenders.<sup>10</sup> They are particularly interested in the frequency of female offenders (28%) that emerged from the PGFD data base in revenge-motivated crimes.

Race does not appear to be a correlate with arson and fire-related motives. However, the researchers intend to conduct additional research to determine what specific correlations occur in victim-offender relationships.

General research conducted by the FBI indicates that the use of alcohol and/or drugs appears to loosen an offender's inhibitions at the crime scene. The PGFD data base provides some support to this observation, with particular note to the revenge-motivated

They almost always (91%) used either flammable liquids, bombs, fireworks, or explosives in their incendiary crimes. A majority lived with both natural parents (55%) in marginal to upper income households (91%). A majority of these profit-motivated offenders had past contact or arrest by the authorities (55%), and a minority used drugs or alcohol prior to or while committing the crime (27%). Many lived more than 1 mile from the scene of the crime (73%)

and acted with someone else (73%). As for post-offense behavior, a little over one-half of the offenders left the crime scene and never returned (55%).

#### Discussion

In 1980, researchers from the FBI's Behavioral Science Services (formerly the Behavioral Science Unit) published a study of the common characteristics of offenders to aid in profiling arsonists.<sup>9</sup> Our FBI/PGFD research study not only highlights these common characteristics but also provides new

**“... generally ... juveniles commit excitement crimes and vandalism, while adults tend to commit revenge and crime concealment offenses.”**

crimes. Furthermore, previous studies may not have reflected the recent influx of drugs into our society.

The PGFD data base documents the offenders' prior contact with fire or police authorities. This observation underscores the importance of automated and complete records systems, as well as the desirability of joint cooperation among agencies.

Researchers raised the important issue of the distance an offender resides from the crime scene. The PGFD data base demonstrates that the offender often lives close to the crime scene, sometimes less than a mile away.

In the past, police and fire officials believed the majority of arson and related offenses to be solitary crimes—that most offenders committed these crimes alone. However, the PGFD data base disproves this broad assumption. Often, one or more participants or observers accompanied the offenders to the crime scene. This observation may explain the peer pressures associated with juveniles. It may also provide the incentive to look for other witnesses or defendants in what authorities initially consider a solitary crime.

This study also demonstrates the importance of documenting and photographing crowds at crime scenes. A large minority of the offenders admitted to either remaining at the crime scene or returning to it later. These actions may depict the conscious effort of the offenders to critique the fire suppression or investigation or to return to destroy or remove crucial physical evidence from the scene.

#### Future Research Plans

The FBI/PGFD team plans future joint research to address questions on the demographics of fire-related crimes. A study of the demographics

TABLE 3—Results of the Chi Square Analysis Grouped by Vandalism, Excitement, Revenge, and All Other Motives

Observed Category Variable	Vandalism	Excitement	Revenge	Conceal Crime	Profit	Others	Chi Square	Degrees of Freedom	Probability of Chance
<i>Targeted Property</i>							401.9	12	0.0000
Residential	141	159	104	5	2	41			
Educational	293	15			7	3			
Other Structural	15	38	16	5		11			
Fields and Forests	37	37	5	3	1	18			
Mobile and Vehicles	16	9	20	5	1	9			
<i>Time of Day</i>							286.7	9	0.0000
0000-0559	18	28	44	12	2	22			
0600-1159	168	35	13		7	7			
1200-1759	282	109	35	1		27			
1800-2359	34	86	53	5	2	26			
<i>Day of Week</i>							94.0	18	0.0000
Sunday	25	45	36	1		10			
Monday	72	34	12	4	2	21			
Tuesday	81	40	22	3	3	8			
Wednesday	115	33	21	6	1	7			
Thursday	92	42	15		4	13			
Friday	87	30	23	2	1	13			
Saturday	30	34	14	2		10			
Undetermined			2						
<i>Season of Year</i>							35.3	9	0.0002
Spring (Mar-May)	170	61	29	2	4	16			
Summer (Jun-Aug)	72	54	27	8	2	23			
Fall (Sep-Nov)	149	66	46	6		28			
Winter (Dec-Feb)	111	77	43	2	5	15			
<i>Method of Operation</i>							116.3	12	0.0000
Material on Hand	233	82	72	12	1	41			
Flammable Liquid	15	10	24	5	3	6			
Bomb/Explosive/Fireworks	95	30	16	1	7	10			
Malicious False Alarm	125	128	29			21			
Other	34	8	4			4			
<i>Age in Years</i>							404.7	3	0.0000
Juvenile	484	178	27	5	7	36			
Adult	18	80	118	13	4	46			
<i>Sex</i>							392.9	6	0.0000
Male	136	200	91	13	4	60			
Female	21	14	40			9			
Not Reported	345	44	14	5	7	13			
<i>Race</i>							318.2	6	0.0000
White	63	126	63	11	3	45			
Black	89	87	67	4	4	22			
Other & Not Reported	350	45	15	3	4	15			
<i>Formal Education</i>							217.1	9	0.0000
0-6 Years	156	78	6	3		18			
7-9 Years	235	71	22	6	6	14			
10+ Years	98	89	78	3	4	35			
Not Reported	13	20	39	6	1	15			
<i>Occupational Status</i>							368.5	6	0.0000
Unemployed	16	30	45	10	2	26			
Employed	11	46	67	3	2	19			
Not Working & Undet.	475	182	33	5	7	37			

Notes: 1. Based upon the alpha calculated for a Type I error rate, the probability of one false rejection of the null out of the 21 Chi Square tests performed in 66 percent.

Observed Category Variable	Vandalism	Excitement	Revenge	Conceal Crime	Profit	Others	Chi Square	Degrees of Freedom	Probability of Chance
<b>Marital Status</b>							235.3	6	0.0000
Single	489	243	77	14	8	67			
Married		4	22	1	2	5			
Separated, Divorced, Other, and Undef.	13	11	46	3	1	10			
<b>Type of Housing Resides</b>							26.8	6	0.0004
Single Family	324	154	85	10	11	47			
Multi-Family	172	83	48	5		30			
Other or None	6	21	12	3		5			
<b>Living with Whom</b>							241.5	9	0.0000
Father and Mother	317	117	36	5	6	38			
Father or Mother	148	85	19		2	13			
Relatives	14	19	16	5	1	5			
Spouse/Alone/Other	23	37	74	8	2	26			
<b>Socioeconomic Status</b>							81.7	12	0.0000
Poverty/Marginal	140	71	62	10	5	35			
Lower Middle	234	86	34	2	4	16			
Middle	99	74	35	2		21			
Upper Middle/High	13	23	6		1	4			
Undetermined	16	4	8	4	1	6			
<b>Alcohol/Drug Usage</b>							402.6	6	0.0000
Not Used	155	179	30			27			
Alcohol and/or Drugs	22	46	79	14	3	32			
Undetermined	325	33	36	4	8	23			
<b>Prior Police/Fire Record</b>							107.3	6	0.0000
Police or Fire Contact	87	89	78	12	3	31			
Police or Fire Arrest	60	32	22	6	3	13			
None or Undetermined	355	137	45		5	38			
<b>Disposition</b>							287.3	9	0.0000
Intake Closure	226	41	6	2	4	10			
Conviction	7	36	37	6	2	9			
Closed or Exceptional	139	53	4			22			
Other or Undetermined	130	128	98	10	5	41			
<b>Distance from Residence</b>							32.7	3	0.0000
Less than 1 Mile	258	187	92	6	3	55			
Greater than 1 Mile	244	71	53	12	8	27			
<b>Accompanied at Offense</b>							145.5	6	0.0000
Alone	129	136	93	9	3	47			
With Others	365	115	46	9	8	31			
Undetermined	8	7	6			4			
<b>Post-Offense Presence at Scene</b>							167.9	9	0.0000
Did Not Leave	204	159	55	5	4	63			
Returned Later	3	6	13	1	1	1			
Did Not Return	285	52	61	12	6	12			
Undetermined	10	41	16			6			
<b>Social Attitudes Professed</b>							236.4	12	0.0000
<i>Self:</i>									
<i>Others:</i>									
Likes Likes	112	112	49	7		34			
Likes Dislikes	7	19	25	1		4			
Dislikes Likes	19	19	2	1	1	2			
Dislikes Dislikes	3	19	12	3	2	12			
Undetermined	380	89	57	6	8	30			

2. For purposes of calculation, the above tables were collapsed to four motive categories of vandalism, excitement, revenge, and all others.

could compare urban growth housing, and land use patterns. For example, studies on the geography of violent crimes cite the micro-and macro-level analyses of arson as it relates to theories on urban morphology.<sup>11</sup> Previous research into the geographic patterns of arson fires in Prince George's County has demonstrated temporal (time-of-day, day-of-week, etc.) relationships within their fire incident data.<sup>12</sup>

Both the FBI and PGFD plan to continue updating and refining this study because, as with other research endeavors, new knowledge generates even more unanswered questions. They plan to address these and other questions in future joint FBI/PGFD research efforts.

FBI

#### Footnotes

<sup>1</sup>N.D. Lewis and H. Yarnell, "Pathological Firesetting (Pyromania)," *Nervous and Mental Diseases Monograph* 82, Coolidge Foundation, New York, 1951.

<sup>2</sup>G. Molnar, L. Keltner, and B.T. Harwood, "A Comparison of Partner and Solo Arsonists," *Journal of Forensic Sciences*, JFSCA, vol. 29, No. 2, April 1984, pp. 574-583.

<sup>3</sup>A.O. Rider, "The Firesetter: A Psychological Profile," *FBI Law Enforcement Bulletin*, vol. 49, Nos. 6-8, June-August 1980.

<sup>4</sup>Ibid.

<sup>5</sup>R.G. Vreeland and M.B. Waller, "The Psychology of Firesetting: A Review and Appraisal," National Bureau of Standards, Grant No. 7-9021, December 1978; supra notes 1-3.

<sup>6</sup>R.B. Harmon, R. Fosner, and M. Wiederlight, "Women and Arson: A Demographic Study," *Journal of Forensic Sciences*, JFSCA, vol. 30, No. 2, April 1985, pp. 467-477; supra note 2.

<sup>7</sup>R.L. Ault, Jr., "NCAVC's Research and Development Program," *FBI Law Enforcement Bulletin*, vol. 55, No. 12, December 1986, pp. 6-8.

<sup>8</sup>Computer analysis used the Statistical Analysis System (SAS) program: A.J. Barr, et al, *A User's Guide to SAS76*, SAS Institute, Raleigh, NC, 1976.

<sup>9</sup>Supra note 3.

<sup>10</sup>Vreeland and Waller, supra note 5.

<sup>11</sup>D.E. Georges, "The Geography of Crime and Violence: A Spatial and Ecological Perspective," *Resource Papers for College Geography*, No. 78-1, Association of American Geographers, Washington, DC, 1978.

<sup>12</sup>D.J. Icove and M.O. Soliman, "Arson Information Management System: Users Guide and Documentation," International Association of Arson Investigators, U.S. Fire Administration Agreement EMW-K-0812, Marlboro, MA, 1983; D.J. Icove, *Principles of Incendiary Fire Analysis*, Ph.D. dissertation, College of Engineering, University of Tennessee-Knoxville, 1979.