

Fatal fires: fire-associated homicide in Australia, 1990–2005

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The use of fire in homicide is a particularly heinous crime, involving burning of the victim before or after death. It is thought to be a relatively rare phenomenon and, as such, little is known about its nature and extent in Australia. Over a 16-year period there have been 4,943 homicide incidents in Australia; of these 100 have been identified as fire-associated. Analysis shows that, while homicide trends over this period have declined, the proportion of fire-associated homicides has increased significantly; a trend which has also been observed overseas. The majority of arson homicides occurred where fire was a direct weapon used to kill the victim (68%); a further 29 percent involved fire as a secondary element. This report identifies key differences in the characteristics of offenders and victims between these two forms of homicide. The increasing proportion of fire-associated homicide justifies continued monitoring of this phenomenon over time.

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Well-publicised incidents of homicide involving fire, such as the Childers Backpacker Hostel fire in 2000 in which 15 victims died, have drawn widespread attention to the phenomenon of fire-associated homicide in Australia. The use of fire in homicide can involve fire as a direct weapon to commit homicide, or to conceal a homicide. It can involve the additional crime of arson, the act of deliberately setting fire to property (Kocsis 2002). Overseas research indicates that the use of fire in crime is becoming more prevalent (Jayaraman & Frazer 2006; Lowenstein 2003). Despite relatively small numbers of fire-associated homicides compared with homicide by other means, fire-associated homicide is a significant and unique form of murder which is difficult to address (Drake & Block 2003). The presence of fire at a homicide crime scene, regardless of whether the fire caused the death or took place after it, hampers standard investigative procedures and makes investigation of the death much more complicated (Sapp & Huff 1994).

Given the lack of Australian research, this paper examines the involvement of fire, either directly or indirectly, in the commission of homicide in Australia. The term fire-associated homicide refers to victims of homicide where the primary cause of death is fire-related (e.g. burns, smoke inhalation, toxic gases), as well as homicide victims with some other cause of death, where the incident involved arson or post-mortem burning of the victim. The term arson is used in this study to refer to incidents of fire setting involving a structure or vehicle, irrespective of whether the offender has been charged or found guilty of arson. This excludes incidents where only the body is burned, either ante- or post-mortem. Although not strictly arson-related, incidents where the victim was set on fire ante- or post-mortem may easily turn into acts of arson, depending on the location of the victim.

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Prior research

Most relevant data on fire-associated homicide are based on international research with a focus on arson, specifically juvenile arson, not applicable to adult homicide incidents (Drake & Block 2003). An analysis of the Chicago Homicide Dataset (1965–1995) identified important differences between arson-homicide and homicide in general, such as arson-homicide being more likely to involve multiple victims compared with non arson-homicide incidents (Drake & Block 2003).

Another study examined US cases of arson-homicide between 1985 and 1994 using data from the Federal Bureau of Investigation’s Violent Criminal Apprehension Program (VICAP; Sapp & Huff 1994). Although the report has some methodological limitations (Drake & Block 2003), this study found a number of sex differences in arson-homicide victimisation. In relation to primary cause of death, male victims were more likely than females to die by gunshot or fire-related deaths, while females were more likely to die by asphyxia, blunt force trauma or bladed weapons. Female victims were more likely to be found indoors, while males were more likely to be found in a vehicle. In 80 percent of female victims, the burning was post-mortem, compared with 60 percent of male victims. Cases in which any injuries were inflicted after death were most frequent in outdoor or vehicular locations, while ante-mortem injuries were far more frequent in indoor locations. Notably, a significant number of arson-homicides involved an associated crime of burglary, sexual assault or robbery.

Another study based on post-mortem examinations of 40 burnt bodies conducted in Lyon, France, found that homicide represented the second leading cause of death (31%) after accidents (52%; Fanton et al. 2006). Post-mortem burning was found to be a means of covering up homicide, whereas ante-mortem burning was rarer and linked with reported tying of the victim, and administration of sedative

drugs prior to death. Particular characteristics of the victim and the crime scene were associated with different types of fire-associated deaths. For example, discovery of the body in unfamiliar outdoor sites exclusively involved homicide and occupational accidents.

Fire has been found to be a means of concealing homicide (Adair & Fisher 2006; Suarez-Penaranda et al. 1999), usually to cover up a murder or to eliminate evidence left at the scene (Sapp et al. 1999; Westveer 2002). Fire may be used to dispose of the body, destroy evidence, prevent identification of the victim, or delay establishment of the cause of death. Fires set for the purpose of concealing the primary criminal activity are termed ‘crime concealment motivated arson’ (Sapp et al. 1999; Kocsis 2002). In such cases arson is the means by which the offender hopes to conceal the original crime, as opposed to other motivations for fire setting (Kocsis 2002; Barker 1994). A primary indicator of crime concealment homicide is when fire injuries are received post-mortem. Lack of soot in the airway and absence of products of combustion in toxicological blood analysis indicate that the victim was already dead at the time of the fire, suggesting a high possibility the fire was started to cover up the crime (Mouzos & Houliaras 2006).

Present study

Informed by previous research, fire-associated homicides are conceptualised in this study as involving fire as a weapon to kill the victim (that is, ante-mortem burning or arson of a structure or vehicle to kill the victim), or fire as a secondary element (such as in the concealment

of evidence through arson or burning of the body after the victim is deceased: see Figure 1). Based on this conceptualisation, the aim of this study is to explore fire-associated homicides in Australia, and to identify the differences between the various types of fire-associated homicides.

Data sources

The National Homicide Monitoring Program (NHMP), established at the Australian Institute of Criminology in 1990, collects data on all homicides known to Australian police services. For NHMP purposes, this includes all cases resulting in a person being charged with murder or manslaughter, plus all other deaths classified by police as homicide although a suspect/offender has yet to be identified or apprehended.

The NHMP database was used to extract all homicide incidents between 1989–90 and 2004–05 where:

- the victim’s cause of death was attributed to smoke inhalation/burns
- the weapon was recorded as fire/explosives
- the incident was recorded as occurring in the course of arson.

A total of 92 homicide incidents matched these criteria in the NHMP. Each homicide incident report/narrative was examined to identify the circumstances surrounding the homicide. Incidents where only the murder weapon or clothing worn etc. were burnt were excluded, and incidents in which a victim died in a bushfire caused by arson were only included if the death was deemed a homicide by police (none identified). Three incidents were excluded from further analysis, as they involved scalding by hot water or electrocution. Four incidents were excluded due to a lack of information necessary

Figure 1: Conceptualisation of fire-associated homicide

Fire as a weapon	Fire as a secondary element
Ante-mortem burning	Post-mortem burning
Primary arson	Secondary arson
Unknown fire involvement	

to determine the nature of the homicide. An additional 15 relevant incidents were identified via a search for media articles containing the terms ‘murder’ or ‘homicide’ and ‘fire/ burn*/ arson’. These were cases of post-mortem burning, unknown fire involvement, or where arson had not been accurately recorded as the precipitating crime, so they did not meet the initial extraction criteria. Details of these additional incidents were also extracted from the NHMP for inclusion in the study.

Results

A total of 100 fire-associated homicide incidents (involving 149 victims and 105 offenders) were identified in the current study. Fire-associated homicide constitutes a relatively small proportion of annual homicide incidents in Australia (Figure 2), representing an average of approximately six incidents and nine victims per year over the 16 years from 1989–90 to 2004–05. Within this period, there has been a statistically significant upward trend in the incidence of fire-associated homicide (Kendall’s tau = 0.44, p<.02). Fire-associated incidents as a proportion of total annual homicide also appear to have gradually increased in recent years. While overall homicide rates are in decline (Mouzos & Houliaras 2006), fire-associated incidents, particularly those involving arson, are becoming more common.

Of the two main types of fire-associated homicides, 68 percent of incidents were classified as involving fire as a weapon. Within this category are two subtypes:

- **ante-mortem burning:** where the victim cause of death was attributed to the effects of fire, but no crime of arson was recorded (16%), e.g. victim doused with petrol and set alight (case no. 242/95)
- **primary arson-homicide:** where the cause of death of the victim was attributed to the effects of fire and the homicide was committed in the course of arson (52%), e.g. offender used accelerant to set fire to the house of the victim, who was unable to escape from the burning building (case no. 297/98).

The second main type of fire-associated homicide, accounting for 29 percent of fire-related homicides, involved fire as a secondary element. This includes two subtypes:

- **post-mortem burning:** where the victim cause of death was not attributed to the effects of fire and no crime of arson was recorded (6%), e.g. victim disembowelled and then burnt (case no. 224/02)
- **secondary arson-homicide:** where the victim cause of death was not attributed to the effects of fire and the homicide was committed in conjunction with arson (23%), e.g. offenders killed the victim with

a hammer and subsequently burned down the house (case no. 203/04).

In a further three percent of incidents the type of fire involvement was unknown. Such incidents may or may not have involved arson, but the victim cause of death was unknown or undetermined, e.g. victim’s remains were found burnt in a car and the post-mortem examinations were inconclusive as to cause of death (case no. 215/98). A comparison of the various types of fire-associated homicide can be found in Table 1.

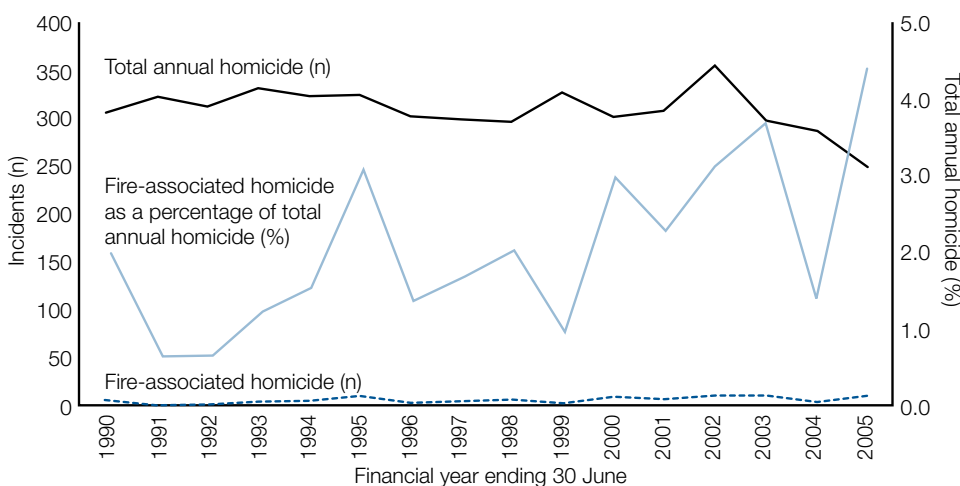
Fire as a weapon INCIDENTS

Sixty-eight incidents involved the use of fire as a direct weapon to kill the victim. Sixty-three of these incidents resulted from an act classified as murder (93%), while five incidents were deemed manslaughter (7%). The majority of incidents were cleared by the laying of charges against at least one suspect (68%). In a further 15 percent of incidents, the suspect committed suicide, either prior to or following arrest. One incident was cleared by other means (1%) and 16 percent remained unsolved.

Where fire was used as a weapon, the majority of incidents involved a single victim and a single offender (74%), followed by a single offender and multiple victims (16%). The maximum number of victims in a single incident was 15 (primary arson), while the maximum number of offenders was four (primary arson). Cases of ante-mortem burning did not involve more than two victims or more than two offenders. Five incidents involving fire as a weapon were associated with crimes other than arson, including one kidnapping (primary arson) and four robberies (two primary arson and two ante-mortem burning). In one of these incidents of ante-mortem burning, the approximate value of property stolen was more than \$100,000 (case no. 139/00).

Homicides involving fire as a weapon most often occurred in a residential setting (69%), followed by a vehicle (15%) or another location (12%).

Figure 2: Fire-associated homicide incidents, 1990–2005



Source: AIC, NHMP 1990–2005 [computer file]

Besides residential premises, a small number of ante-mortem burning incidents were located in a street/open area (n=2) or some other location (n=3).

VICTIMS

Sixty percent of the victims of homicide committed by fire were male (n=61) and 40 percent were female (n=41). The mean age of these victims was 37 years, although male victims tended to be older than female victims (mean age of 39 years and 34 years, respectively).

As expected in a study of fire-associated homicide, all victims of homicide where fire was used as a weapon died from the effects of fire (smoke inhalation/burns) (n=102). Where a motive for the homicide was apparent, revenge (34%) and domestic arguments (34%) were the most common, followed by other arguments (23%). In particular, revenge killings were more frequently found in primary arson-homicide (39%). Nearly half of the cases of ante-mortem burning with an identified motive were the result of a domestic argument (n=6, 46%), with five of these victims being female.

OFFENDERS

Offenders using fire as a weapon had a mean age of 32 years, with 83 percent being male (n=54) and 17 percent female (n=11). Female offenders using fire as a weapon tended to be older than male offenders (mean age of 39 years and 28 years, respectively). Ante-mortem burning was more often committed by a male offender (n=14) than a female offender (n=1).

Where information regarding the relationship between the victim and the offender was known, most homicides using fire as a weapon were committed by strangers (25%) or friends/acquaintances (22%). Family members and intimate partners were responsible for a further 19 percent each. For primary arson-homicides, strangers were responsible for 27 percent of deaths, followed by friends (21%) and family (20%). However, the Childers incident inflates stranger relationship numbers, as one stranger relationship

is recorded for each victim. For ante-mortem burning deaths, intimate partner relationships were most common and involved female victims only (n=6; 46%), followed by friends (23%), family (15%) or strangers (15%).

Fire as a secondary element

INCIDENTS

Twenty-nine incidents involved the use of fire as a secondary element to a homicide committed by other means. All these incidents were classified as murder. The majority of incidents were cleared by the laying of charges against at least one suspect (86%). One incident was unsolved, with no offender identified (3%). In a further 10 percent of incidents, the suspect committed suicide, either prior to or following arrest. No cases of post-mortem burning were associated with offender suicide.

Where fire was a secondary element, the majority of incidents involved a single victim and a single offender (54%), followed by a single offender and multiple victims (29%). The maximum number of victims was four (secondary arson), while the maximum number of offenders was six (secondary arson). Cases of post-mortem burning did not involve more than two victims or more than two offenders. Three incidents of secondary arson-homicide were associated with robbery offences.

Homicides involving fire as a secondary element most often occurred in a residential location (72%), followed by a street/waterway/open area (10%), recreational venue (7%) or other location (7%). Cases of post mortem-burning were found only in a residential setting (n=3) or a street/waterway (n=3).

VICTIMS

Sixty percent of the victims of homicide where fire was a secondary element were male (n=25), while 40 percent were female (n=17). The sex of one victim of post-mortem burning was unknown. The mean age of these victims was 33 years, although male victims tended to be older than female victims

(mean age of 35 years and 30 years, respectively).

Across victims where fire was used as a secondary element, 35 percent were killed by gunshot wound, 33 percent by stabbing, 19 percent by beating and 12 percent by strangulation/suffocation. Male victims were more likely than female victims to die from a stab wound (40% compared with 24%), while female victims were more likely than male victims to be strangled/suffocated (18% compared with 4%). Firearm deaths were evenly distributed by gender (36% of male victims and 35% of female victims). Four victims of post-mortem burning were strangled/suffocated (50%), two were beaten (25%), one was stabbed (13%) and another was shot (13%), prior to the remains being burned. The most frequent cause of death in secondary arson-homicide was a gunshot wound (40%) or a stab wound (37%). Although, by definition, secondary arson-homicide involves some other cause of death not attributed to the effects of fire, one secondary arson victim was recorded with cause of death as smoke inhalation/burns. In this incident the offender shot the first victim and then set fire to the residence; the second victim subsequently died of smoke inhalation/burns. The incident was classified as a secondary arson-homicide as the intent was to conceal the crime, even though the second victim's cause of death was attributed to the effects of fire (case no. 24/05).

A domestic or other argument was the most common motive identified in incidents using fire as a secondary element (41% each). Revenge (11%) and alcohol-related arguments (7%) were much less common for this type of fire-associated homicide.

OFFENDERS

Offenders using fire as a secondary element were mostly male (n=32, 84%), with six offenders being female (17%). The mean age of these offenders was 33 years, although male offenders using fire as secondary element tended to be older than female offenders (mean age of 34 years and 29 years, respectively).

Table 1: Selected characteristics of fire-associated homicide

	Fire as weapon						Fire as secondary element						All fire-associated ^a	
	Ante-mortem burning		Primary arson		Total		Post-mortem burning		Secondary arson		Total		n	%
	n	%	n	%	n	%	n	%	n	%	n	%		
Location (n=100)														
Residential	11	69	36	69	47	69	3	50	18	78	21	72	69	69
Recreation	0	–	1	2	1	1	0	0	2	9	2	7	3	3
Vehicle	0	–	10	19	10	15	0	0	1	4	1	3	12	12
Street/waterway	2	13	0	–	2	3	3	50	0	–	3	10	6	6
Other location	3	19	5	10	8	12	0	–	2	9	2	7	10	10
Cause of death^b (n=145)														
Gunshot	0	–	0	–	0	–	1	13	14	40	15	35	15	10
Stabbing	0	–	0	–	0	–	1	13	13	37	14	33	14	10
Beating	0	–	0	–	0	–	2	25	6	17	8	19	8	6
Strangulation	0	–	0	–	0	–	4	50	1	3	5	12	5	3
Smoke/burns	16	100	86	100	102	100	0	–	1	3	1	2	103	71
Motive^b (n=89)														
Revenge	2	15	19	39	21	34	0	–	3	13	3	11	24	27
Domestic	6	46	15	31	21	34	1	25	10	43	11	41	32	36
Alcohol	2	15	2	4	4	6	1	25	1	4	2	7	6	7
Other argument	3	23	11	22	14	23	2	50	9	39	11	41	25	28
Other motive	0	–	2	4	2	3	0	–	0	–	0	–	2	2
Victim–offender relationship^{b,c} (n=131)														
Intimates	6	46	11	15	17	19	2	29	14	42	16	40	33	25
Family	2	15	15	20	17	19	2	29	6	18	8	20	28	21
Friends	3	23	16	21	19	22	2	29	9	27	11	28	30	23
Strangers	2	15	20	27	22	25	0	–	3	9	3	8	25	19
Other	0	–	13	17	13	15	1	14	1	3	2	5	15	11

a: All fire-associated homicide includes four cases of unknown fire involvement

b: Excludes cases where information as to cause of death, motive or relationship was missing/unknown

c: Where multiple victims and offenders, victim–offender relationship refers to the relationship between each victim and the first offender only

– Nil or rounded to zero

Source: AIC, NHMP 1990–2005 [computer file]

Post-mortem burning was more often committed by a male (n=6) than a female offender (n=1).

Forty percent of homicides using fire as a secondary element involved intimate partners, 28 percent involved friends and 20 percent involved family members. Strangers were responsible for less than eight percent of these homicides. While cases of post-mortem burning were mostly committed by intimates (29%), family (29%) and friends (29%), secondary arson-homicide was more often associated with intimate partners (42%) and friends/acquaintances (27%).

Implications

While fire-associated homicide may be considered uncommon, the incidence of homicide involving fire, and particularly arson, has gradually increased in recent years. Tragedies such as the Childers Backpacker Hostel fire, in which 15 victims were killed, highlight the propensity of fire-associated homicide to kill multiple victims in a single incident. This study found that only fire-associated homicide incidents involving arson (primary or secondary) resulted in the death of more than two victims. Homicides involving fire as a secondary element were more likely

to involve multiple victims than incidents where fire was used as a weapon (33% compared with 18%). However, most incidents of fire-associated homicide were found to involve a single victim and a single offender (67%), indicating that incidents like Childers are uncommon. Although rare, mass homicide incidents may skew the profile of fire-associated homicide summarised in this paper. Despite this volatility, fire-associated homicide still merits further study, particularly comparison with homicide committed by other means.

Differences emerged between the subtypes of fire-associated homicide (fire as a weapon versus fire as a secondary element). For example, offender suicide was more frequent in homicide where fire was used as a weapon than where fire was used as a secondary element. This finding supports the secondary use of fire as a means to conceal homicide, as offenders who intend to commit suicide are unlikely to try and cover up their crime. Secondly, homicide involving fire as a secondary element tended not to be committed by strangers. Rather, victims of post-mortem burning or secondary arson were more likely to be killed by someone known to them. This may suggest that offenders close to the victim are more motivated to attempt to conceal the crime to avoid suspicion/detection. Other important differences between the subtypes of fire-associated homicide include:

- victims of fire as a weapon tended to be older than victims of fire as a secondary element
- fire as a weapon was most often used in revenge or domestic killings, while fire as a secondary element was most often used in domestic or other arguments
- while both types of fire-associated homicide were most likely to occur in a residential setting, outdoor areas were more often associated with fire as a secondary element, and homicide using fire as a weapon was more likely to occur in a vehicle or other location
- where fire was used as a secondary element, secondary arson victims were most likely to be shot or stabbed, while half of the victims of post-mortem burning were strangled.

It would be reasonable to expect that fire-associated homicides might be harder to solve than other forms of homicide

(Drake & Block 2003), given the investigation difficulties that fire presents at a crime scene. In this study, 13 percent of fire-associated homicides were unsolved, similar to clearance rates for all homicide incidents in Australia (Mouzos 2005). Homicide using fire as a weapon was more likely to be unsolved than homicide using fire as a secondary element. If the offender's motive was to conceal the crime or destroy evidence, hindering the likelihood of arrest, study results indicate otherwise. Higher clearance rates may be due to additional resources devoted to fire-associated homicides, including police, forensic and fire/arson investigators (as suggested by Drake & Block 2003).

This study provides insight into an under-researched topic in Australia, and in doing so serves to inform policy and assist investigative direction and procedure. The different characteristics identified in this study suggest diverse profiles for fire-associated homicide subtypes. Further research could investigate typologies of fire-associated homicide offenders by examining offending motivations, as done in previous arson research (e.g. instrumental, vindictive or cathartic) (Barker 1994). Another area for further research could explore elements of planning in fire-associated homicide – whether the use of fire was premeditated – and whether the offender had a previous history of fire setting. Attempted homicide (those cases in which a fire was set but the victim escaped) could also be examined.

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