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Foreword | *Arson homicides are rare, representing only two percent of all homicides in Australia each year. In this study, data was collected from the AIC's National Homicide Monitoring Program (NHMP) to build on previous research undertaken into arson-associated homicides (Davies & Mouzos 2007) and to provide more detailed analysis of cases and offenders.*

Over the period 1989 to 2010, there were 123 incidents of arson-associated homicide, involving 170 unique victims and 131 offenders. The majority of incidents (63%) occurred in the victim's home and more than half (57%) of all victims were male. It was found that there has been a 44 percent increase in the number of incidents in the past decade.

It is evident that a considerable proportion of the identified arson homicides involved a high degree of premeditation and planning. These homicides were commonly committed by an offender who was well known to the victim, with over half of the victims (56%) specifically targeted by the offender. This paper therefore provides a valuable insight into the nature of arson homicides and signposts areas for further investigation.

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Arson-associated homicide in Australia: A five year follow-up

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Setting fire at a crime scene, either before or after another offence, has the potential to destroy evidence and increase the likelihood of the crime remaining unsolved. When deliberately lit fires are used as a weapon in violent crimes, they have the potential to cause significant damage and to injure or kill victims, including unintended victims. The associated danger to the public from firesetting is much greater than if a more controllable criminal tool is used by the offender.

Despite the development of several theories of adult firesetting behaviour (Canter & Fritzon 1998; Dickens & Sugarman 2012; Doley et al. 2011; Fritzon 2012; Gannon & Pina 2010; Gannon et al. 2012), the topic of fire-setting as it relates to fatal fires or homicide has been the focus of little empirical investigation. This is surprising given that firesetters are often depicted in the literature as individuals with serious and versatile antisocial behaviours, and with offending histories that can run the gamut from minor property to serious violent offences (Doley et al. 2011; Jayaraman & Frazer 2006; Muller 2009; O'Sullivan & Kelleher 1987; Soothill, Ackerley & Francis 2004). These findings support the importance of studying the relationship between deliberate firesetting and other serious crime types such as homicide.

A fire may be maliciously set for reasons unrelated to homicide yet subsequently lead to death, as was seen in the Black Saturday bushfires in Victoria in 2009. Conversely, fire may be set to a building, or person, with the sole purpose of causing a death. A building or person may also be set alight after a homicide has occurred, in an attempt by the firesetter to prevent identification or delay discovery of the deceased, to stage the crime scene, or destroy evidence. Regardless of the specific intention, fire is a unique and powerful tool with the potential to hamper homicide investigations (Davies & Mouzos 2007; Drake & Block 2003; Sapp & Huff 1994). There is also some evidence to suggest that its use in association with homicide is increasing in Australia (Davies & Mouzos 2007), making it necessary to study in greater detail arson-associated homicide incidents and the offenders who perpetrate them.



Prior research

Aside from previous research by the Australian Institute of Criminology (AIC) into arson-associated homicide (AIC 2007; Davies & Mouzos 2007), all of the literature on arson-associated homicide comes from overseas. In the largest study ever published, Drake and Block (2003) examined 269 arson-associated homicides in Chicago from 1965 to 1995. The authors highlighted important victim characteristics, finding that children, females and the elderly were overrepresented compared with victims of other homicides. It was also found that arson was present in 1.2 percent of all homicides.

Consistent with Davies and Mouzos (2007), the present study differentiates between cases where firesetting was used as a primary murder weapon and those where it was used after the murder. Cases where arson was used as a murder weapon, where a fire was set to a structure containing a living victim or to the victim themselves, are termed 'ante-mortem' or 'primary' arson-associated homicides. Those cases where the arson was employed after the death to delay identification of the body, destroy evidence and/or stage the crime scene are referred to as 'secondary' or 'post-mortem' arson-associated homicides.

Drake and Block's (2003) study found that male offenders more often perpetrated secondary arson, whereas females made up a greater proportion of offenders in primary arson-homicides than for offences involving arson. Of particular note was the finding by Drake and Block (2003) that arson-associated homicides involved a higher clearance rate overall than homicides in general, most likely due to the increased resources of using both specialist fire and police investigators. However, when fire was used secondarily to destroy evidence and prevent identification, clearance rates were lower than homicides where arson was not involved.

Sapp and Huff (1994) studied a non-random sample of 183 cases of arson-associated homicide across the United States of America from 1985 to 1994. Their findings indicated that victims were more likely to be females who were younger than general

homicide victims. Most of the victims of arson-associated homicide died from fire-related injuries, although many arsons occurred post-mortem, with gunshots or sharp force injuries as the cause of death. Females were more likely to be set alight post-mortem, whereas men were twice as likely to die from fire-related injuries in ante-mortem fires. The majority of offenders (79%) perpetrated another offence alongside the arson and homicide, most commonly burglary, sexual assault or robbery. It was noted that in the majority of these cases, concealment of other crimes may have been the primary motive for the arson.

In Australia, the AIC study by Davies and Mouzos (2007) examined arson or fire-associated homicides from 1989 to 2005 using data captured by the National Homicide Monitoring Program (NHMP). One hundred incidents were examined, involving 149 victims and 105 offenders. Arsons were classified as either primary (fire as the murder weapon, 68% of incidents) or secondary (after the homicide incident, 29% of incidents). For primary arson cases, the firesetting was most likely to take place in an indoor area, such as the victim's home. Victims were most likely to be women around 37 years old, whereas offenders were often men with an average age of 32 years. In homicides involving arson after death, men with an average age of 33 years were most likely to be victims, with gunshots (35%) stabbing (19%) and beating (19%) as the causes of death. Unlike the Drake and Block (2003) study, Davies and Mouzos (2007) found that secondary arson cases were just as likely to be solved as other types of homicides where arson was not used.

Of particular note was the finding that cases where fire was the primary weapon were found to be less likely to be solved than those where fire was used secondarily (Davies & Mouzos 2007). Although this study said little about offender characteristics, it was reported that arson-associated homicides were increasing over the 16 years studied, although were still quite rare (accounting for about 6 cases or 2% of all homicides in Australia each year).

Overview of this study

As a follow up to the study conducted by Davies and Mouzos (2007), this analysis examined the use of fire in homicides in Australia to determine if trends indicating an increase in the frequency of these behaviours have been maintained in the last five years.

The aim was to explore arson-associated homicides in Australia to identify common incident, victim and offender characteristics, and to examine the details and context of firesetting. An examination of the characteristics of firesetters and fires, not explored previously, was also undertaken to examine the features of those responsible and the contexts in which arson-associated homicides occur.

Definition

In this study, the terms *arson* and *firesetting* are used interchangeably and are broadly defined as 'the act of intentionally and maliciously destroying or damaging property through the use of fire' (AIC 2004: 1). In some cases, classified here as 'arson-associated', no property was destroyed, but a fire was set to a person or corpse. The NHMP (Virueda & Payne 2010: 3) definition of homicide is used, which states the term

refers to a person killed (unlawfully); a homicide incident is an event in which one or more persons are killed at the same place and time.

The term *arson-associated homicide* is used to describe any homicide where a deliberate act of firesetting was also carried out by the offender, either in conjunction with, or to cause the death of, one or more people. As with other studies, this study examines the prevalence of arson-associated homicides based on when the arson took place in relation to the victim's death, either primary or secondary arson as defined above.

Data sources

This study proceeded by first identifying the cases in Australia that involved both arson and homicide. Information about cases was extracted from the NHMP database (maintained by the AIC), which is contributed to by all of Australia's

police services. The NHMP has collected information on victim, offender and incident variables for all homicide cases known to police from July 1989 to June 2010. The AIC also supplements data provided by police agencies with information obtained from coronial inquests, such as autopsy and toxicology reports. This information is extracted from the National Coronial Information System (NCIS) by AIC staff. The NCIS is a national database containing information about every case that has been reported to a coroner in Australia since 2000.

To identify homicide cases involving arson, the NHMP database was searched for:

- cases where the cause of death was burns or smoke inhalation;
- cases where the murder weapon was coded as fire; and
- cases where an associated crime was arson.

Data collection

Upon identifying all arson-associated homicide cases between 1989 and 2010, more detailed data collection was undertaken. Variables were extrapolated from the empirical literature explaining deliberate firesetting and firesetters, and each case was assessed against them. To provide a greater understanding of the circumstances and nature of these incidents, reviews of court transcripts and coronial findings were also undertaken. These sources were used to quantify the prevalence of certain incident characteristics, such as whether there was any evidence of planning and whether the offender had made prior threats to the victim(s), in addition to information about the offender and their personal history.

To ascertain whether arson-associated homicides were measurably different from other types of homicide, a control sample was extracted from the NHMP database.

The control sample was produced by first removing all of the arson cases that were previously identified, then removing cases where the name of the victim and/or offender was missing and then removing cases where the number of offenders was unknown. With the remaining cases, a random sample of 123 incidents was extracted and the same detailed data collection was undertaken. While the number of incidents was the same between the control and arson sample, the arson sample had slightly fewer known offenders (n=7) but considerably more victims (n=40; see Table 1).

The following section presents a comparison of the arson sample with two samples 1) all non-arson homicides recorded in the NHMP on variables relating to demographics, the relationship between the victim, location of the offence and cause of death and 2) with the control sample on a range of additional variables relating to incident and offender characteristics.

Figure 1 Arson associated homicides 1989–90 to 2009–10 (n)

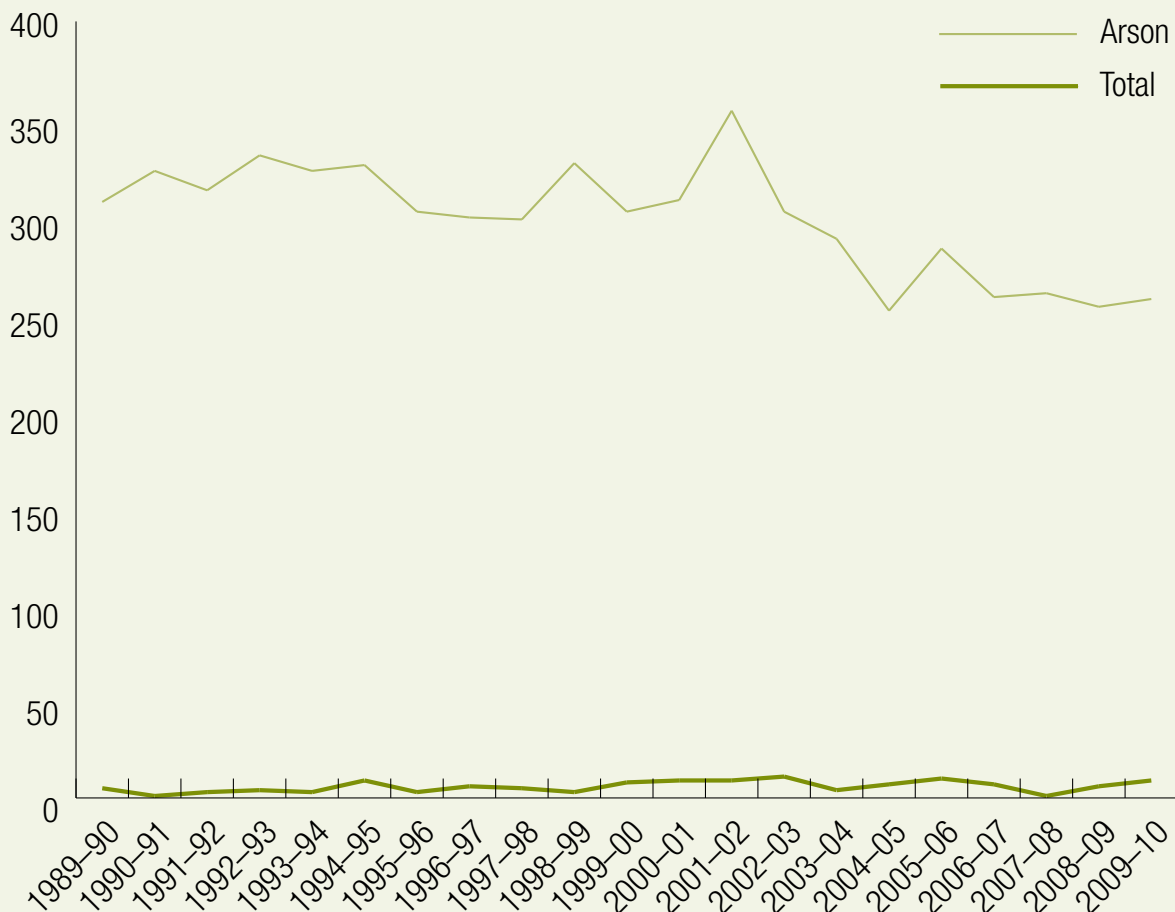


Table 1 Arson-associated homicides versus all homicides by incidents, victims, offenders, gender, Indigenous status, age and state/territory, 1989–90 to 2009–10

	Arson-associated homicides		All homicides	
	N	%	N	%
Incidents, offenders and victims				
Incidents	123		6,265	
Offenders	152		7,067	
Victims	170		6,706	
Gender				
Male victims	96	56.5	4,263	63.6
Female victims	74	43.5	2,436	36.3
Unknown gender	-	-	7	0.1
Total	170	100	6,706	
Male offenders	113	74.3	6,140	86.9
Female offenders	39	25.7	923	13.1
Unknown gender	-	-	4	0.1
Total	152	100	7,067	100
Indigenous status of victims				
Indigenous	11	6.5	869	13.0
Non-Indigenous	159	93.5	5,837	87.0
Total	170	100	6,706	100
Age				
Mean age of victims (median)	33.6 (32)		31.9 (32)	
Oldest victim	80		100	
Youngest victim	<1		<1	
Mean age of offenders (median)	35.6 (37)		38.5 (38)	
Oldest offender	78		100	
Youngest offender	16		10	
Incidents by state/territory				
New South Wales	33	26.8	2,057	32.8
Victoria	30	24.4	1,223	19.5
Queensland	26	21.1	1,302	20.8
South Australia	13	10.8	500	8.0
Western Australia	11	8.9	645	10.3
Northern Territory	2	1.6	359	5.7
Tasmania	7	5.7	130	2.1
Australian Capital Territory ^a	1	0.8	49	0.8
Australia	123	100	6,265	100

a: Includes two incidents that occurred on Norfolk Island

Note: Percentages may not sum to 100 due to rounding

Source: AIC NHMP database [1989–90–2009–10]

Arson-associated homicides vs all homicides recorded in Australia

Incidents, victims and offenders

Over the 21 years from 1989 to 2010, there were 123 incidents of arson-associated homicide involving 170 unique victims and 152 known offenders. There were 23 arson homicide cases in which an offender had not been identified.

Arson-associated homicides were rare, averaging only six cases per year, or approximately two percent of total homicide incidents. The most cases recorded in a single year occurred in 2002–03 with 11, followed by 10 cases in 2006–07. In all other years, the number of arson-associated homicides ranged between one and nine cases.

The arson homicides that occurred between 1989 and 2010 were not evenly distributed across the decades, in that just under two in five (38.0%) occurred between 1991 and 2000, and over half (54.9%) were recorded between 2001 and 2010. When comparing the number of arson homicides between the two full decades studied (1991 to 2000 and 2001 to 2010), the frequency of arson-associated homicides increased by 44.0 percent. In other words, data collected in this study show that arson-associated homicides appear to be increasing in frequency, while homicides in general have declined.

Gender

In relation to the gender distribution between the two samples, a greater proportion of arson-associated homicide victims (43.5% *cf* 36.3%) and offenders (25.7% *cf* 13.1%) were female when compared with all homicides. However, more than half of the victims (56.5%) and almost three-quarters of the offenders (74.3%) in arson-associated homicides were male. This finding does not align with international research (Drake & Block 2003), which found that women were overrepresented as victims.

Indigenous status

Indigenous Australians represent 2.5 percent of the Australian population (ABS 2010), yet they represented almost one in eight (13%) victims of all recorded homicides and one in 14 victims (6.5%) of arson-associated homicides. As such, Indigenous Australians are considerably overrepresented in both samples, although it is worth highlighting that Indigenous over-representation in arson-associated homicides is considerably lower than for the average of homicides in the NHMP.

Age

Victims of an arson-associated homicide were found, on average, to be slightly older than those in all recorded homicide cases (33.6 years *cf* 31.9 years). Conversely, offenders involved in arson homicide were found to be slightly younger than those in all recorded homicide cases (35.6 years *cf* 38.5 years).

The greatest proportion of victims were aged between 35 and 51 years (28.2%), although victims varied in age. Overall, 12.2 percent were below the age of 17 years, just over one-quarter (26.0%) were between the ages of 17 and 34 years, 19.1 percent were between 52 and 68 years, and 6.1 percent were between 69 and 85 years of age.

State/territory breakdown

A breakdown of the number of incidents in each sample by state/territory is provided in Table 1. The distribution of cases by state/territory was largely comparable between the arson sample and all homicides in Australia. As presented in Table 1, several states and territories—Victoria, Queensland, South Australia and Tasmania—recorded a higher proportion of arson-associated homicides than general homicides.

Overall, the proportion of arson-homicides in each state or territory is largely comparable with the distribution of Australia's population (ABS 2012).

Victim/offender relationship

Victims had a diverse array of relationships with perpetrators. As presented in Table 2, the largest proportion of arson homicide

victims were the current intimate partner of the offender (23.5%; *n*=40; ie spouse, de facto, girlfriend/boyfriend). The second most common relationship were family members of the victim (22.4%; *n*=38), which included sibling, parents or guardians of victim, as well as other family members (ie cousin, uncle, grandparent etc). Only a small percentage were ex-partners (2.9%; *n*=5).

Some differences were apparent between arson-associated homicides and homicides more generally. A higher proportion of offenders and victims in arson-associated homicides had a familial relationship (not including intimate partners) than did those in the general homicide sample (22.4% vs 15.7%). Notably, stranger-victim relationships were more likely to occur in the arson-associated homicides than in general homicides (14.1% vs 11.4%). Unclassified relationships—those that were unknown at the time of reporting—were more likely in the arson sample than general homicides (17.1% vs 12.5% respectively).

Overall, this analysis of arson-associated homicide data shows that more than half of all victims were killed by someone they knew quite well (57%, including intimate partners, other family members or close friends). Conversely, relatively few victims were killed by someone unknown or to them (17%).

Location

Most of the arson-homicides occurred at the victim's home (65.0%; *n*=80). Here, it should be noted that if the victim and offender shared the same residence, the location was recorded as being the victim's home. Data presented in Table 2 show that a greater proportion of the arson homicides occurred in the victim's home when compared with all homicides (65.0% *cf* 47.4%), while a smaller proportion occurred in the offender's home (4.1% *cf* 8.1%).

Almost one in six (15.4%) of the arson homicides occurred in public places—bushland, waterways or open area (8.1%); street, road or highway (4.9%); and commercial premises, which includes hotels, restaurants etc (2.4%).

Table 2 Arson-associated homicides versus all homicides, victim/offender relationship, location of incident and cause of death, 1989–90 to 2009–10

	Arson-associated homicides		All homicides	
	N	%	N	%
Victim/offender relationship				
Intimate partners	40	23.5	1,506	24.0
Other family	38	22.4	986	15.7
Close friend	3	1.8	424	6.8
Acquaintance <24 hours	2	1.2	157	2.5
Acquaintance other (neighbour, landlord etc)	2	1.2	505	8.1
Acquaintance (other)	20	11.8	1,110	17.7
Stranger	24	14.1	715	11.4
Other	12	7.1	81	1.3
Unknown	29	17.1	781	12.5
Total	170	100	6,265	100.0
Location of incident				
Victim's home	80	65.0	2,967	47.4
Offender's home	5	4.1	508	8.1
Other residence, hotel etc	6	4.9	411	6.6
Open area, waterway, bushland	10	8.1	674	10.8
Street, road, highway, car park	6	4.9	886	14.1
Pub, restaurant, commercial premises	3	2.4	390	6.2
Motor vehicle	5	4.1	129	2.1
Other n.e.c.	5	4.1	225	3.6
Missing	3	2.4	75	1.2
Total	123	100	6,265	100
Cause of victim's death				
Gunshot wound	3	1.8	1,315	19.6
Stab wound	6	3.5	2,212	33.0
Blunt force trauma	13	7.6	1,780	26.5
Strangulation/suffocation	1	0.6	542	8.1
Alcohol/drugs/poisons	0	-	113	1.7
Burns/effects of fire	129	75.9	135	2.0
Smoke inhalation	11	6.5	-	-
Other n.e.c.	3	1.8	444	6.6
Unknown/missing	4	2.4	165	2.5
Total	170	100.0	6,706	100

Note: Percentages may not sum to 100 due to rounding. n.e.c. not elsewhere classified

Source: AIC NHMP Database [1989–90–2009–10]

Table 3 Arson-associated homicides versus control sample, additional incident characteristics, 1989–90 to 2009–10

	Arson-associated homicides		Control sample	
	N	%	N	%
Evidence of planning				
Yes	51	41.5	54	43.9
No	22	17.9	54	43.9
Missing	50	40.7	15	12.2
Total	123	100	123	100
Incident preceded by threats to victim				
Yes	23	18.7	28	22.8
No	39	31.7	79	64.2
Missing	61	49.6	16	13.0
Total	123	100	123	100
Incident preceded by a victim-specific trigger				
Yes	45	36.6	67	54.5
No	23	18.7	42	34.2
Missing	55	44.7	14	11.4
Total	123	100	123	100
Argument or violence between victim(s) and offender prior to arson homicide				
Yes	45	36.6	69	56.1
No	21	17.1	39	31.7
Missing	57	46.3	15	12.2
Total	123	100	123	100
Victim(s) specifically targeted by offender				
Yes	69	56.1	99	80.5
No	7	5.7	10	8.1
Missing	47	38.2	14	11.4
Total	123	100	123	100

Note: Percentages may not sum to 100 due to rounding.

Source: AIC NHMP Database [1989–90 – 2009–10].

Cause of death

The vast majority of victims of arson homicide died as a result of burns or the effects of fire (75.9%; n=129) and a further 11 victims (6.5%) died from smoke inhalation. This finding suggests that the incident involved a primary arson, in that the fire was lit while the victim was still alive.

Deaths resulting from external injuries were quite rare; three victims died from gunshot wounds (1.8%), six died from stab wounds (3.5%), 13 died from blunt force trauma (7.6%) and one victim died from strangulation/suffocation (0.6%). The prevalence of these four causes of death was far higher among non-arson associated homicides, as can be seen in Table 2.

Arson-associated homicides vs control group

Incident characteristics

The majority of arson-homicides involved one victim (83.2%), 11.5 percent had two victims, 4.7 percent had between three to six victims and one case involved 15 victims (Childers Backpackers Hostel fire, July 2000).

Additional information was collected for each case regarding whether there was any evidence of planning prior to the homicide; for example, making preparations prior to the firesetting, such as bringing incendiary materials. Data presented in Table 3 indicates that a slightly smaller proportion of arson-associated homicides involved planning when compared with the

control group (41.5% *cf* 43.9%). However, a much larger proportion of the arson cases than the control cases were missing information about planning (40.7 *cf* 12.2).

In relation to there being evidence that the offender made prior threats to the victim, only 18.7 percent (n=23) of the arson-homicide victims were known to have been threatened, compared with 22.8 percent (n=28) among the control sample. This result, however, is heavily skewed by the significant number of cases for which evidence (or lack thereof) of prior threats could be confirmed. In fact, for arson homicides, information was either missing or not recorded in almost half of all cases and so these data should be interpreted with caution.

More than half of the offenders targeted the arson (56.1%), specifically seeking out victims for the offence, while just over one-third of the offenders (36.6%) were involved in incidents of violence or arguments prior to the arson homicide. Again, the number of arson homicides with missing or unknown

information was considerably higher than for non-arson homicides (44.7% *cf* 11.4%).

Over one-third (n=45) of the arson homicides were preceded by a victim-specific trigger, where the firesetting followed an emotional trigger and the fire was targeted at a specific person or their

property. This trigger may have been an argument, the ending of a relationship, or some kind of grievance. However, a victim-specific trigger was less prevalent in arson-homicides than in the control sample (36.6% *cf* 56.1%).

Table 4 Arson-associated homicides versus control sample, additional offender characteristics, 1989–90 to 2009–10

	Arson-associated homicides		Control sample	
	N	%	N	%
Offender had committed a previous offence^a				
Yes	20	13.2	26	16.4
No	59	38.8	104	65.4
Missing	73	48.0	29	18.2
Total	152	100	159	100
Offender alerted authorities				
Yes	3	2.0	11	6.9
No	95	62.5	104	65.4
Missing	54	35.5	44	27.7
Total	152	100	159	100
Offender to gain financially from homicide				
Yes	7	4.6	12	7.5
No	91	59.9	113	71.1
Missing	54	35.5	34	21.4
Total	152	100	159	100
Offender forced illegal entry to scene of the crime				
Yes	13	8.6	13	8.2
No	83	54.6	101	63.5
Missing	56	36.8	45	28.3
Total	152	100	159	100
Offender had a mental illness				
Yes	36	23.7	16	10.1
No	103	67.8	110	69.2
Missing	13	8.6	33	20.8
Total	152	100	159	100
Offender prior consumption of drugs/alcohol				
Yes	29	19.1	14	8.8
No	84	55.3	96	60.4
Missing	39	25.7	49	30.8
Total	152	100	159	100
Offender committed suicide following the homicide offence				
Yes	17	11.2	6	3.8
No	126	82.9	124	78.0
Missing	9	5.9	29	18.2
Total	152	100	159	100

a: For the arson sample, this variable captures previous arson offences only while for the control sample, this captures previous criminal offences

Note: Percentages may not sum to 100 due to rounding.

Source: AIC NHMP Database [1989–90 – 2009–10].

Offenders

Additional information was extracted from the records regarding the characteristics of the 129 known arson homicide offenders, which was compared with the control sample. This showed that most offenders acted alone (91.6%), with only 6.1 percent of offenders having one accomplice and 2.3 percent having two accomplices.

Over one-third (38.8%) of the offenders did not have records of previous arson offending (see Table 4). Although not presented in Table 4, further analysis revealed almost all of the offenders set only one fire (98.5%) in the 24 hours surrounding the homicide and less than one in 10 (8.6%) gained illegal entry into the location of the fire during their offence. An emotional outburst precipitating the arson homicide was reported for 13.0 percent of offenders, involving multiple fires/items lit in one location and a 'frenzied' attack. Few (1.5%) offenders had attention-seeking motivations, where they supposedly discovered the fire or exaggerated the injuries they ('innocently') sustained. Similarly, only 4.6 percent committed the arson homicide for reasons of financial benefit.

In terms of the personal characteristics of offenders, almost one-quarter (23.7%; $n=36$) were diagnosed with a mental illness at the time of the homicide although only 6.9 percent had previously received psychological treatment. The proportion of arson homicide offenders with a mental illness was more than double the proportion in the control sample (23.7% *cf* 10.1%); however, readers should interpret this finding with caution as the result may reflect a bias in the administration of mental health assessments, rather than an actual difference between arson and non-arson associated homicide offenders. It is possible, for example, that arson homicide offenders are more often subjected to psychological assessment given the unusual and extreme nature of their offending.

Prior consumption of drugs/alcohol by the offender was also considerably more prevalent in the arson homicides than in the controls (19.1% *cf* 8.8%). A small proportion of offenders were identified as suffering

alcoholism (9.2%), having substance use issues (22.1%) or having previously attempted suicide (5.3%).

Few arson homicide offenders resided with parents or guardians (6.9%) and tertiary level qualifications were rare (0.8%). Unfortunately, information on employment was often not available. Less than one in 10 arson homicide offenders committed suicide after the incident took place (11.2%).

A note on missing data

Although the findings presented in this report paint an interesting portrait of the victims, offenders and incidents of arson-associated homicides, it is important and necessary to reflect on the seemingly large number of cases for which information could not be identified or confirmed. In some situations for example, the volume of missing information approached 50 percent and the prevalence of missing data was in all cases higher for arson homicides than for the control sample.

Exactly why arson homicides are so poorly documented remains unknown. However, since the AIC's NHMP program triangulates three official data sources—police reports, court reports and coronial records—it is unlikely that the missing information was randomly or mistakenly overlooked during the compilation of the AIC's dataset. To the contrary, given the sophisticated quality control mechanisms that now exist in the NHMP program (Mouzos 2002), it is more likely that this information was simply not documented by the investigating authorities and therefore, unable to be coded by the AIC as definitively absent from the event in question.

Therefore, to the extent that investigators and judicial officers rarely mention those factors considered pertinent to a case, the absence of documented information (ie missing data) will more often than not reflect the absence or unimportance of those elements or factors in question. Consequently, in this largely descriptive report, the comparisons made between cases where factors were confirmed as present (ie those coded as 'yes') are still reasonably reliable indicators of those issues

considered pertinent to the commission of the arson and non-arson homicides examined in this report.

Despite this qualification, however, the large quantity of missing information, especially for arson homicides, necessarily requires that the information presented in this report be interpreted with some caution. As is typically the case with missing data, it remains unclear how these cases might have been distributed on the variables of interest had the relevant information (or its absence) been able to be documented by the NHMP.

Discussion

Davies and Mouzos (2007) noted that arson-associated homicides across Australia were increasing and that this behaviour warranted further monitoring. As such, this five year follow-up was undertaken to determine whether this trend has been maintained. Since arson-associated homicides are rare (comprising about 2% of total homicides annually in Australia), large fluctuations can be seen each year. This is especially pronounced in the years where one fire claimed many victims, such as in the Childers Backpackers Hostel fire in 2000 or the Black Saturday bushfires in Victoria in 2009. However, to lessen the effects of annual fluctuations, prevalence can be compared by decade. This showed that 44.0 percent more arson-associated homicides took place in the 2000s when compared with the 1990s. This supports the previous Australian findings that indicated that offenders may now be using fire in homicides more frequently than previously (Davies & Mouzos 2007). There is also international support for such an increase, where Jayaraman and Frazer (2006), and Lowenstein (2003) noted that the use of fire in crime in general is becoming more prevalent. Caution around the current analyses is needed as coronial data was only available from the year 2000 onwards, potentially increasing the likelihood of homicides being identified as arson-related after that time.

Although, on average, arson-associated events comprise a small proportion of the

total number of homicides, they are of particular interest given their propensity to become uncontrollable and claim more than one victim. This is evidenced by the fact that despite an equal number of incidents, there were 40 additional victims in the arson sample when compared with the control.

It is also important to note that while the prevalence of arson-associated homicides seems to be increasing, the general homicide rate is decreasing in Australia (Chan & Payne 2013) making this finding more significant.

In the arson homicide cases, many offenders purposefully attacked a target that was specific to their victim (usually the victim's home), although these locations were less likely to be targeted following an emotional trigger. Many offenders planned the arson homicide, making it specific to the person they were trying to target. Most fires did not follow an argument, which speaks to the premeditated nature of a number of these instances. Although emotional triggers and conflicts with the victim were sometimes present, these crimes did not usually take place as a result of the heat of moment. Indeed, it also seems that many cases were not opportunistically lit bushfires that eventually killed people, but rather were targeted and deliberate murders of specific individuals. For example, in a considerable proportion of arson homicides, there was evidence of planning by the offender (41.5% of cases), such as bringing petrol or other incendiary material to the scene. This conceptualisation of arson homicide is more in line with fire being used as a weapon, as opposed to a maliciously lit fire growing out of control and killing someone unintentionally.

Of note is the fact that only one-third of fires were lit after the victim was already dead, as an attempt to destroy evidence, stage the crime, or avoid detection. This proportion is in line with previous findings (Davies & Mouzos 2007; Drake & Block 2003) both domestically and abroad, and lends favour to the conceptualisation of arson-associated homicides as the deliberate use of fire as a murder weapon.

Implications for policy and practice

Since this analysis examined several offender characteristics that have not been studied previously, it is possible to come to some, albeit tentative, conclusions about the types of offenders likely to perpetrate arson-associated homicides. First, very few of these offenders (89.2%) had a previously known record of arson. This is not to say that these individuals had no history of deliberate firesetting, but rather they had not been apprehended for this behaviour. The absence of a record for arson may not be surprising. In an Australian prison sample, Doley (2009) found a number of offenders who admitted to firesetting but were never convicted of arson and of the 39 offenders who admitted to serial arson, only 46 percent had been convicted of any fire-related offence previously. While there was limited information available regarding prior arson offences by the offenders in this study, it may be the case that for many, the arson-associated homicide was not their first foray into firesetting. Harris and Rice (1996) found that arson traditionally has a very low arrest rate internationally (15.0%), as well as an even lower conviction rate (3.0%), meaning that many of these offenders may have lit fires without resultant court conviction.

The personal characteristics of the firesetters in this study seem surprisingly lacking in pathology. Less than one-quarter of the offenders had a known diagnosis of mental illness at the time of the offence and fewer still had received psychological treatment previously. Most did not have a history of alcoholism or substance abuse issues. This finding with respect to mental illness and diagnosis is particularly noteworthy given what is known about firesetters from previous research. In their discussion of the treatment of firesetters, Gannon et al. (2012) highlighted clinical features that are often present, including conduct disorder, antisocial personality disorder, borderline personality disorder and narcissism.

These findings may indicate that arson-associated homicide offenders, unlike other deliberate firesetters, do not have mental

health issues. Or it may indicate that many have simply not been diagnosed or received psychological treatment, despite the presence of potential psychopathologies. The latter is consistent with the finding that many offenders had not been arrested for firesetting previously, where an arrest may be accompanied by a psychological assessment or treatment.

Given that this category of offenders may not suffer from mental health issues, it is possible that for this sample, committing an arson-associated homicide was a conscious choice on the part of the offender. With very few offenders motivated by financial gain, this suggests that in most cases, the offender was intent on deliberate harm to their victim. This conclusion is supported by the planning and targeting of victims that was often seen.

It is considered that the source of the data used in this study (ie police homicide squads) may not lend itself to a comprehensive assessment of mental health issues in arson homicide offenders and this may be partly due to its collection early in an offender's entry into the criminal justice system where full psychological evaluation is yet to have taken place.

Also of note is the lack of attention-seeking motivations for committing homicide and lighting fires in this sample, with the offender rarely alerting authorities to the fire. Although certainly present in firesetting in general (see Fritzon 2012; Willis 2004), this may indicate that few of these homicide offenders were acting with the intention to gain recognition from discovering or extinguishing the fire. Indeed, the picture emerging of offenders involved in these homicides seems to be of someone who is seeking to air a grievance by targeting a specific known person who has wronged them in some way.

This study provides a glimpse into the under-researched area of arson-associated homicide in Australia. The study has shown that although explanations for how and why these types of homicides occur are few, the prevalence of arson-homicides is indeed increasing in Australia and this may also be the case internationally. The study has provided some insight into the

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types of people who may be responsible for arson-associated homicides and the contexts in which they occur. It highlights the necessity for more detailed analyses to be undertaken on the perpetrators of these crimes, including their criminal histories, mental health functioning, substance use and motivations. In future, interviews with offenders could include whether and how the arson-homicide was planned, who was targeted and why, and how fire was used as a weapon. It is hoped that this study, along with any future research, may be useful in informing policy, supporting investigative procedure and determining best practice treatments for these serious offenders.

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