

Trends & issues

in crime and criminal justice



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Foreword | *Across the spectrum of operational policing activities, one situation that poses a degree of risk to community safety is when an alleged offender chooses to flee in a vehicle. In the worst case, the offender, police members or other bystanders may be injured or killed. Every motor vehicle pursuit that ends in a death is a tragedy and one that impacts not only on the families and friends of the deceased, but also on the police members involved in the incident.*

In this analysis of data from the Australian Institute of Criminology's National Deaths in Custody Program, the National Coronial Information System and from police agencies across Australia, it was found that, although fluctuating, the number of pursuit-related crashes and fatalities has generally declined over the last 12 years with an average of 15 crashes and 18 deaths each year. Further, the rate of death has also remained relatively stable since 2004, with the exception of two small increases in the rate in 2006 and 2009. It was also found that fatal pursuits most commonly involved young males under the age of 25 years and that in almost nine out of every 10 cases, the alleged offender driving the vehicle being pursued had consumed alcohol, drugs or a combination of both prior to the incident. The authors conclude by identifying several areas in need of further research that would improve understanding of motor vehicle pursuits and provide policymakers with a stronger evidence base for reform.

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Motor vehicle pursuit-related fatalities in Australia, 2000–11

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The task of frontline policing is a difficult and dangerous one. Police officers respond to thousands of incidents each year where individuals are posing a threat to the safety of the community. In every incident, police members are required to continually assess the level of potential harm and to develop strategies to minimise or avert that harm. Arguably, one of the most challenging situations for police is when an alleged offender chooses to evade apprehension by fleeing in a motor vehicle. Motor vehicle pursuits are inherently dangerous and since they frequently occur on public roads, can pose serious risks to public safety. Occasionally, some motor vehicle pursuits end in a death—of those being pursued, of innocent bystanders, or of police members themselves.

Police agencies are acutely aware of the risks associated with motor vehicle pursuits and 'deciding whether to pursue a motor vehicle is among the most critical decisions made by law enforcement officers' (Bradford County Sheriff's Office 2009: 1). In an effort to reduce the risk of fatality during pursuits, some police agencies have recently engaged in coronial-led reviews and reforms of their pursuit policies. For example, throughout 2009, the Queensland State Coroner worked closely with the Queensland Police Service in reviewing the pursuit policy that had been in effect since 1 January 2008. The review produced 13 recommendations for reform (Barnes 2010), with the aim of re-focusing the pursuit policy on safety rather than law enforcement and discouraging officers from pursuing persons committing minor traffic and drink driving offences. Those recommendations were supported by the Queensland Police Service, who implemented a new 'more restrictive... police pursuits policy and associated training' in December 2011 (Qld Government & QPS 2010: 5). Similar reforms were undertaken by South Australia Police in cooperation with the State Coroner throughout 2011 and a more restrictive pursuit policy came into effect in January 2012. In Victoria, an Inspectorate Review of pursuits was conducted by Victoria Police in 2011, with the final report concluding that the 'Victoria Police policy is adequate and compliance by police members is high' (Victoria Police 2012: 5).

Previous research on police pursuits

The Crime and Misconduct Commission (2011) recently completed a review of the 'evade police' provisions in Queensland. While this study did not focus on fatal pursuits, it did find that

people who evade police in Queensland tend to be young, male and not to hold a current licence...they also tend to have a criminal history and an extensive traffic offence history (CMC 2011: xii).

This profile is similar to the characteristics identified in an earlier study by the Australasian Centre for Policing Research into pursuit offenders in South Australia (Brewer & McGrath 1990). The authors found that 97 percent of pursuit offenders were male, the average age was 22 years, 42 percent did not hold an appropriate drivers licence and 55 percent had prior convictions, commonly for traffic, licence/registration and drink driving offences (Brewer & McGrath 1990).

International research has demonstrated similar patterns. For example, research conducted by the Independent Police Complaints Commission in the United Kingdom found that 98 percent of the drivers in the sample were male... 'the average age of the pursued vehicle driver was 24 years old [and] 36 percent were disqualified drivers' (Docking et al. 2007:

14–15). A study using nine years of data from the Fatality Analysis Reporting System in the United States found that 'fleeing drivers were more likely to be male, were younger, and much more likely to be intoxicated or test positive for drugs' (Rivara & Mack 2004: 93). They also found that

the pursued drivers were more than twice as likely to have had previous convictions for driving under the influence [of alcohol], three times as likely to have had their licence previously suspended [and] they were 60 percent more likely to have had other motor vehicle convictions (Rivara & Mack 2004: 93).

Finally, a much larger US study conducted by Hutson et al. (2007), using 22 years of data on fatal pursuits between 1982 and 2004, found that males accounted for 82 percent of all fatalities, 93 percent of driver fatalities in the chased vehicle and that the median age of all deaths was 24 years.

Aims of this research

This research was undertaken to address the following key research questions:

- How many deaths have occurred in motor vehicle pursuits over the last 12 years in Australia?
- What is known about the characteristics of those persons who died in a police pursuit?

- What does the available data show about the characteristics of those pursuits that resulted in a fatality?
- How many police pursuits are there each year in Australia and what is the rate of death?

This study concludes by outlining other gaps in the research that, when addressed, should greatly improve the evidence available to inform the pursuit reform debate.

This research does not provide a jurisdictional comparison of pursuit outcomes due to definitional differences in what constitutes a pursuit and a lack of consistent counting rules for collecting pursuit data between police agencies.

Methodology

The primary source of data for this research was the AIC's National Deaths in Custody Program (NDICP), which monitors deaths in custody, including those that occur in situations where police officers are attempting to place an alleged offender into custody, such as in a motor vehicle pursuit. The NDICP holds information about alleged offenders involved in fatal motor vehicle pursuits between 1 January 2000 and 31 December 2011. In total, there were 136 deaths resulting from motor vehicle pursuits recorded in this database.

The NDICP does not monitor the deaths of innocent passengers and other road users in motor vehicle pursuits because these persons are not in the process of being taken into custody. Therefore, in the interests of providing a comprehensive assessment of the impact of motor vehicle pursuits on the community, the scope of this research was expanded to include all deaths in pursuits that are monitored by the NDICP (ie alleged offenders) as well as the following deaths, which are excluded from the NDICP but available from the National Coronial Information System:

- the deaths of innocent passengers;
- all innocent third party deaths, including pedestrians;
- police officers who died during a motor vehicle pursuit; and

Table 1 Motor vehicle pursuit deaths in Australia, by year and role in the pursuit crash, 2000–11 (n)

	Alleged offender		Innocent party		Totals	
	Driver	Passenger	Passenger	Other road user	Total deaths	Total crashes
2000	9	2	2	6	19	17
2001	15	4	2	4	25	21
2002	9	4	3	4	20	17
2003	6	3	10	2	21	16
2004	11	0	1	3	15	14
2005	7	5	0	6	18	16
2006	9	3	4	5	21	21
2007	8	2	6	1	17	12
2008	15	1	1	5	22	17
2009	7	1	6	5	19	17
2010	8	0	0	3	11	8
2011	6	1	2	1	10	9
Total	110	26	37	45	218	185

Source: AIC NDICP dataset [2000–11]

- any death occurring within 10 minutes of a pursuit being terminated.

Information was subsequently collected for deaths of persons in these categories. over the same 2000–11 period using keyword searches of the National Coronial Information System database. In all, 80 deaths of innocent passengers and third parties were identified.

Finally, a combined list of motor vehicle pursuit deaths was compiled for each jurisdiction and forwarded to police agencies for verification and quality control. This process resulted in the identification of two additional cases, both of which involved innocent parties.

An important note on definition

There is currently no standard Australia-wide definition of a motor vehicle pursuit. Moreover, there are situations where the chain of events is open to differential interpretation. For example, in one coronial inquest in New South Wales in 2008 (Inquest 717/07), the definition of a pursuit was closely examined by the Deputy State Coroner. In that matter, it was argued by counsel representing the police that ‘there was no pursuit because the police had never decided to commence a pursuit... although he conceded that they had been following...’ (Dillon 2008: 129). Consequently, in handing down his findings, the Deputy State Coroner recommended that the definition of a pursuit be amended to remove the ambiguities and ‘provide for a clear and objective guideline in plain English’ (Dillon 2008: 133–134).

This research applied a common definition of a pursuit across all jurisdictions to collect data on pursuit-related fatalities. The definition drew on the work of academic Professor Geoffrey Alpert, who outlined what was then considered to be a standard definition of a pursuit in the United States:

A police pursuit is an active attempt by a law enforcement officer operating a motor vehicle with emergency equipment to apprehend a suspected law violator in a motor vehicle, when the driver of the vehicle attempts to avoid apprehension (Alpert 1987: 299).

Under this definition, three events must occur in sequence for the situation to be considered a pursuit, in that:

- there must be an indication by a police officer that they want an alleged offender to stop their vehicle;
- the alleged offender, by their actions, indicates an intention to avoid apprehension; and
- the police officer then seeks to apprehend the alleged offender by attempting to intercept using their motor vehicle.

For this research, it was decided that a death would be regarded as pursuit-related if it resulted from a vehicle crash during or shortly after the police attempted to apprehend the alleged offender. Incidents where the death resulted from a cause other than injuries sustained in a vehicle crash, such as drowning or a gunshot, were excluded from this research. In total, there were seven cases that were excluded.

Pursuit-related deaths

Between 1 January 2000 and 31 December 2011, there were 185 fatal pursuit-related vehicle crashes resulting in 218 deaths. This equals an average of 15 crashes and 18 deaths per year (see Table 1).

Of the 218 deaths throughout this period, 110 (50%) were of alleged offenders who were driving the vehicle being pursued, while 26 (12%) were of alleged offenders who were passengers in the vehicle being pursued. The identification of passengers as alleged offenders was based on information contained in police reports and coronial findings. Overall, alleged offenders comprised 62 percent of all motor vehicle pursuit deaths.

Innocent persons comprised 38 percent (n=82) of deaths throughout the period. Seventeen percent (n=37) were innocent passengers in the vehicle being pursued, while 21 percent (n=45) were other innocent bystanders or road users, of which 13 percent (n=6) were police members killed in pursuits.

There have been fewer crashes and fewer deaths in recent years compared with historical numbers, with an overall decline over the last 12 years. The decrease in recent years is associated with fewer deaths of passengers (whether innocent or alleged offenders) in the vehicle being pursued.

Frequency of police pursuits per year

It is important to place the number of pursuit-related fatalities in the context of the number of pursuits each year for the purpose of calculating the rate at which pursuits end in death. Data on the number of motor vehicle pursuits in each state and territory was provided by police agencies (see Table 2). However, it was not possible for data to be provided by some agencies over the entire period of analysis.

Complete national data were only available for the last three years and during this period, there was a 10 percent (n=369) increase in the total number of pursuits. However, there were jurisdictional differences in the number of pursuits (see Table 2). For example, since 2004, there has been an overall decline in the number of pursuits in both New South

Table 2 Number of motor vehicle pursuits, by jurisdiction and year, 2004–11 (n)

	2004	2005	2006	2007	2008	2009	2010	2011
New South Wales	2,227	2,079	2,113	1,882	1,837	1,803	1,617	1,781
Victoria	484	719	548	597	649	630	659	721
Queensland	560	619	630	525	357	285	309	286
Western Australia ^a	–	–	–	–	–	228	320	535
South Australia	538	413	602	734	614	581	616	616
Northern Territory	–	–	–	155	198	182	253	161
Tasmania	–	–	–	9	8	1	10	2
Australian Capital Territory	–	–	85	130	92	96	81	73
Australia	3,809	3,830	3,978	4,032	3,755	3,806	3,865	4,175

a: The increase over the last 3 years is largely due to changes in internal reporting requirements, not a substantial increase in pursuit numbers
Source: Unpublished data supplied by police agencies.

Wales and Queensland (20% and 49% respectively). Whereas, in both Victoria and South Australia, the number of pursuits have fluctuated, with a moderate increase in both

jurisdictions in recent years. Finally, following a peak of 130 pursuits in 2007, the number of pursuits each year in the Australian Capital Territory has declined, with the total recorded

in 2011 (n=73) representing a 44 percent reduction compared with five years ago.

Table 3 Rate of motor vehicle pursuit-related fatal crashes, by jurisdiction and year, 2004–11 (rate per 1,000 pursuits)

	2004	2005	2006	2007	2008	2009	2010	2011
New South Wales	1.8	2.4	3.3	3.2	1.1	2.2	0.6	1.1
Victoria	4.1	4.2	7.3	1.7	1.5	3.2	0.0	2.8
Queensland	1.8	1.6	9.5	0.0	11.2	17.5	3.2	7.0
Western Australia	-	-	-	-	-	13.2	6.3	5.6
South Australia	1.9	4.8	1.7	2.7	1.6	3.4	0.0	0.0
Northern Territory	11.0	0.0	8.0	6.5	5.1	5.5	4.0	0.0
Tasmania	-	-	-	0.0	125.0	0.0	200.0	0.0
Australian Capital Territory	-	-	0.0	0.0	0.0	0.0	12.3	0.0
Australia ^a	2.3	2.8	4.6	2.5	2.7	4.5	2.1	2.2

a: National rate calculated using only those jurisdictions where both the numerator and denominator were available

Note: While all police agencies have a clear definition of a motor vehicle pursuit and there are common elements across these definitions, there are some differences which may result in variations in counting rules that are likely to impact the overall number of pursuits

Source: Numerator—AIC NDICP dataset [2004–11]; Denominator—unpublished data supplied by police agencies.

Table 4 Age, Indigenous status and gender of persons dying in motor vehicle pursuits, 2000–11 (n)

	Male		Female	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
Less than 15yrs	2	9	2	2
15–19yrs	9	39	2	8
20–24yrs	10	28	2	3
25–29yrs	3	23	2	4
30–34yrs	2	22	1	0
35+ yrs	2	33	1	7
Total ^a	28	154	10	24

a: 2 non-Indigenous cases have been excluded due to missing information about age at time of death

Source: AIC NDICP dataset [2000–11]

Figure 1 National rate of death in pursuits, by year, 2004–11 (rate per 1,000 pursuits)



Source: Numerator—AIC NDICP dataset [2004–11]; Denominator—Unpublished data supplied by police agencies.

Rate of fatal pursuits

The prevalence of fatal pursuit-related crashes is best understood in the context of the number of pursuits each year. Rates were calculated by dividing the number of fatal crashes by the number of pursuits and multiplying the result by 1,000. Rates were only calculated for those jurisdictions where both the numerator and denominator was available (see Table 3).

Caution should be taken when interpreting rates in those jurisdictions with low numbers of pursuits, such as Tasmania and the Australian Capital Territory, as small increases in the number of fatal crashes result in considerable fluctuation in the overall rate.

In both New South Wales and Victoria, there has been a reduction in the rate of pursuit-related fatal crashes, with the recorded rate at its lowest level in 2010, followed by a small increase in both jurisdictions in 2011. There were greater fluctuations in Queensland and South Australia, although the rate has dropped in both jurisdictions since a peak in 2009.

Nationally, the rate of fatal pursuit-related crashes fluctuated between a low of 2.1 per 1,000 pursuits in 2010 to a high of 4.6 per 1,000 in 2006 (see Figure 1). Since 2004, between one in 217 pursuits and one in 476 pursuits across Australia have ended in a fatal crash.

In the last eight years, there have been two distinct ‘spikes’ in the rate of fatal pursuit-related crashes (in 2006 and 2009) but overall, the rate has remained relatively steady, in spite of the increasing number of passenger vehicles (up 16%) and motorcycles (up 66%) on Australian roads since 2004 (ABS 2011).

Demographic characteristics of persons dying in pursuits

Information about the deceased’s age, sex and Indigenous status were collected as part of the study.

Across the six age categories, young people aged 15 to 19 years accounted for the

greatest proportion of people who died during a motor vehicle pursuit (27%, n=58), followed by those aged 20 to 24 years (20%, n=43). Overall, 148 pursuit fatalities (68%) were of persons aged 29 years or younger (see Table 4).

Of the alleged offenders who were driving the vehicle being pursued (n=110), one in four were aged 15–19 years (26%, n=29), one in five were aged 20–24 years (21%, n=23) and approximately one in three (32%, n=35) were aged 30 years or older.

Males were overrepresented as both alleged offenders and innocent parties. For example, of the 110 alleged offenders who were driving the vehicle being pursued, 105 were male (95%). Among the deaths of innocent people (n=82), males accounted for around two-thirds (68%, n=56).

Analysis of age and sex showed that of persons aged 15–19 years who died in pursuits, males accounted for 83 percent of deaths (n=48). For those aged 20–24 years, males accounted for 88 percent (n=38)

and among deaths of persons aged 25–29 years, 81 percent (n=26) were male. Overall, almost half (47%, n=52) of the deaths of alleged offenders driving the vehicle being pursued involved young males under the age of 25 years.

Finally, Indigenous Australians were overrepresented among the pursuit deaths, with 38 (17%) of the 218 total deaths being of Indigenous persons, while the remaining 180 (83%) were non-Indigenous persons.

Offences that led to these fatal pursuits

Information about the most serious offence committed prior to the fatal pursuit crashes in this study was available in 160 of the 185 incidents (87%; see Table 5). Available offending data were disaggregated across eight different categories, namely *serious violence*, *break and enter*, *motor vehicle theft*, *justice procedures*, *drug offences*, *drink driving*, *other traffic offences* and *other offences* (see Table 5). The most prevalent type of offence committed prior to a fatal pursuit was traffic related (38%, n=60), such as speeding, dangerous driving, or registration and roadworthy offences.

The next most prevalent offence committed prior to a fatal pursuit was motor vehicle theft (31%, n=50), followed by drink-driving offences (19%, n=31). The total for all other categories of offending was relatively low (12%, n=19). Overall, available data indicated that 141 of the 160 (88%) offences that resulted in a fatal pursuit were related to the improper or unsafe operation of a motor vehicle.

The role of drugs and/or alcohol

There is an abundance of literature that illustrates the harmful effects drugs and/or alcohol can have on a person's cognitive functions when operating a motor vehicle (eg see Calhoun, Pekar & Pearson 2004; CARRS-Q 2012; Mann et al. 2006; Mills et al. 2008; National Institute on Drug Abuse 2010; Queensland Government 2009; Quillian et al. 1999; Sela-Shayovitz 2008). Alcohol affects most parts of the brain, but particularly the ability to observe, interpret and process information. When a driver is affected by alcohol and/or drugs, reaction time, decision-making abilities and driver-

Table 5 Most serious offence committed prior to a fatal pursuit in Australia, by year, 2000–11 (n)

	Serious Violence ^b	Break & Enter	MV Theft	Justice Procedures	Drug Offences	Drink Driving	Other Traffic	Other	Total
2000	0	0	8	1	0	1	2	0	12
2001	0	0	11	0	0	2	7	0	20
2002	1	1	3	0	0	3	7	0	15
2003	1	0	5	0	0	4	5	0	15
2004	0	3	3	0	0	1	4	0	11
2005	0	0	6	1	1	3	3	0	14
2006	0	1	5	1	2	2	8	0	19
2007	2	0	3	0	0	3	2	1	11
2008	0	0	2	0	0	6	8	1	17
2009	1	0	1	0	0	4	6	0	12
2010	1	0	1	0	0	0	5	0	7
2011	0	0	2	0	0	2	3	0	7
Total ^a	6	5	50	3	3	31	60	2	160

a: 25 cases have been excluded due to missing information about the offence committed

b: Includes homicide, serious assault and robbery

Source: AIC NDICP dataset [2000–11]

Table 6 Toxicology results for fatal pursuits, by category and year, 2000–11 (n)

	Alcohol	Drugs	Alcohol & Drugs	Nothing Detected	Total
2000	0	3	1	4	8
2001	4	3	3	6	16
2002	5	2	2	5	14
2003	9	3	2	3	17
2004	6	2	2	2	12
2005	3	3	3	2	11
2006	5	6	2	4	17
2007	6	3	6	0	15
2008	5	5	5	3	18
2009	4	3	3	1	11
2010	2	5	1	0	8
2011	1	1	2	0	4
Total ^a	50	39	32	30	151

a: 67 cases have been excluded due to no toxicology result being available

Source: Data extracted from NCIS, AIC NDICP dataset [2000–11]

related skills can be significantly impaired (Kelly, Darke & Ross 2004; Moskowitz & Florentino 2000; Stough & King 2010). It has also been shown that combining both drugs and alcohol can further increase the risk of a fatal collision (Stough & King 2010).

With regards to evading police, alcohol can induce a sense of false confidence, which heightens risk-taking behaviour (NSW Government 2011). Similarly, the use of illegal drugs can significantly increase risk-taking characteristics, including aggressive driving behaviour leading to police pursuits (Sutherland & Burns 2011). That is, prior consumption of alcohol and/or drugs may increase the likelihood that an alleged offender chooses to flee from police and reduces the ability of that person to safely operate a motor vehicle.

For this study, post-mortem toxicology results were collected to provide an indication of whether prior consumption of drugs and/or alcohol contributed to these fatal pursuits. Of the 218 pursuit-related deaths, the toxicology results were available for 151 individuals (69%). Available toxicology results were disaggregated between those indicating the presence of alcohol, the presence of drugs, a combination of both, or no substance detected (see Table 6).

It should be noted that it is not possible based on toxicology screening alone to determine the level of intoxication prior to death and this is because people have different tolerance levels and metabolise substances at different rates.

For all persons who died during a pursuit, and where toxicology results were available, alcohol was the most prevalent substance (33%, n=50), followed by drugs (26%, n=39), then a combination of both alcohol and drugs (21%, n=32). In the remaining 30 cases (20%), there were no substances detected. Overall, available data indicated that in 121 of the 151 deaths (80%), the deceased had consumed alcohol, drugs or both prior to death. Data have been presented in the aggregate for all deaths, including those of passengers, because the prior consumption of intoxicants may have increased the risk of fatality during

the incident. One example is where an intoxicated passenger encourages the driver to continue to flee from police.

Limiting the analysis of available toxicology results to alleged offenders who died while driving the motor vehicle being pursued (n=89) showed that 28 had consumed alcohol (32%), 27 had consumed drugs (30%), 23 tested positive for both alcohol and drugs (26%), and in the remaining 11 cases (12%), no substances were detected. This suggests that almost nine in every 10 (88%) alleged offenders operating the vehicle being pursued and who died as a result, had consumed alcohol, drugs

or both prior to the incident. This finding is consistent with other research. For example, using a sample of police detainees from the AIC's Drug Use Monitoring in Australia program, Adams, Smith and Hind (2008) found that 74 percent of the detainees who had been the driver in a high-speed pursuit had been under the influence of drugs and/or alcohol at the time.

Time and location of fatal pursuit-related crashes

Information about the precise time of day and day of the week was available for 171 (92%) of the 185 fatal pursuit-related crashes (see Figure 2). There were

Table 7 Speed and duration of fatal motor vehicle pursuits, 2000–11^a

	Average speed (km/h)	Top speed (km/h)	Average pursuit time (mins: secs)	Pursuit time (mins: secs)		Number of cases
				Min	Max	
New South Wales	122.4	187	3:20	0:18	12:00	52
Victoria	136.4	210	8:20	0:04	81:00 ^c	31
Queensland	126.5	180	3:41	0:09	15:00	20
Western Australia	139.6	198	4:02	0:24	14:00	28
South Australia	124.5	190	5:56	1:00	32:00	15
Tasmania	110.0	160	3:30	2:00	5:00	4
Northern Territory	124.7	160	4:13	1:30	7:00	7
Australian Capital Territory	146.8	180	4:15	1:00	8:00	4
Australia ^b	129.2	210	4:47	0:04	81:00	161

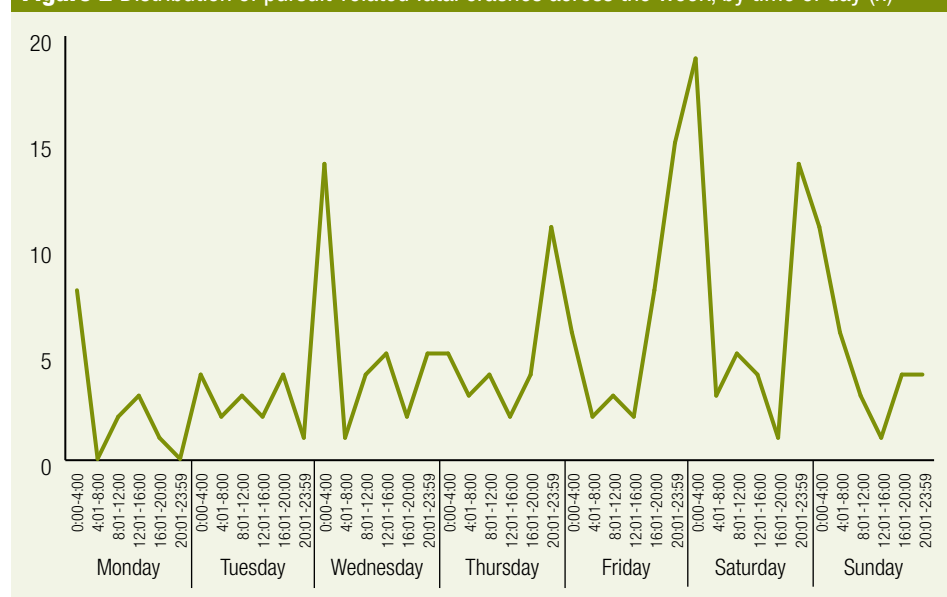
a: Averages were calculated using the total number of cases for which top speed and length of pursuit data were available

b: 24 cases have been excluded due to missing data

c: After 2 vehicle pursuits were initiated and subsequently abandoned by police, the deceased was being pursued by a police helicopter at the time of the vehicle crash. Excluding this case reduces the average pursuit time in Victoria to 5:58

Source: AIC NDICP dataset [2000–11]

Figure 2 Distribution of pursuit-related fatal crashes across the week, by time of day (n)



Source: AIC NDICP dataset [2000–11]

noticeable peaks in the number of fatal pursuit-related crashes during the early hours of the morning (midnight to 4 am) on Mondays, Wednesdays, Fridays, Saturdays and Sundays. At all other times during the week, the numbers of fatal crashes were relatively low. Overall, more than one in three fatal pursuit crashes (35%, n=60) occurred between midnight and 4 am, and a further 21 percent (n=36) occurred between 8 pm and midnight.

With regard to the location, incidents were divided between those that occurred in a capital city (ie Sydney, Perth, Darwin), those in regional centres (ie Bendigo, Cairns, Launceston) and those in rural/remote areas (ie highways between regional centres or other remote locations). Overall, 65 (35%) pursuit-related fatal crashes occurred in a capital city, 35 (19%) occurred in a regional centre and the remaining 85 crashes (46%) occurred in a rural/remote location.

In summary, more than half (54%, n=100) of all fatal pursuit-related crashes occurred in urban environments (capital cities or regional centres) and more than half (56%, n=96) occurred between 8 pm and 4 am.

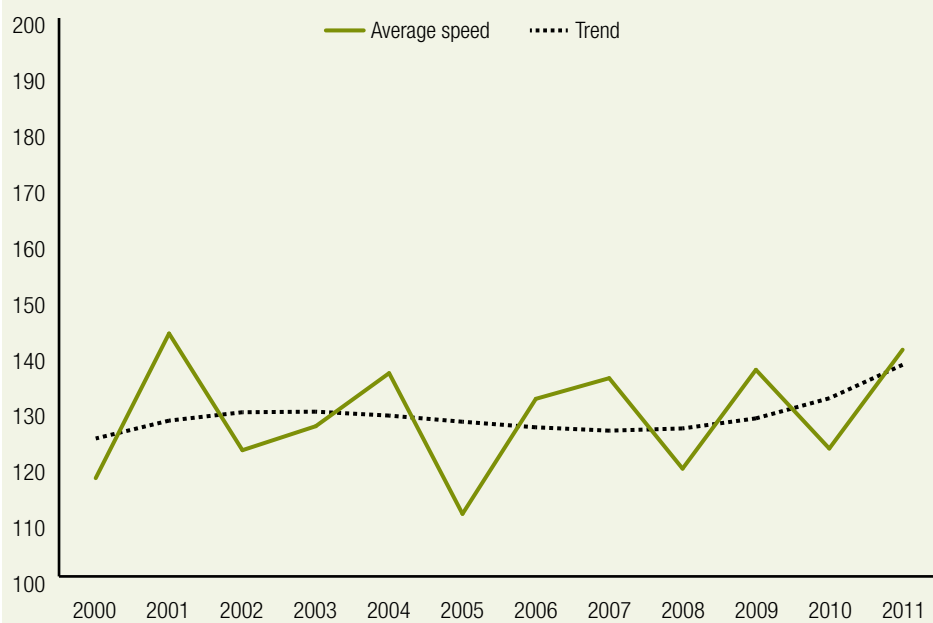
The speed and duration of fatal pursuits

It is not currently possible to determine whether these fatal incidents were measurably different from all pursuits in terms of speeds reached and/or duration of the pursuit. It is, however, important to analyse these data for fatal pursuits to build a better profile of such incidents.

Information was available on the speeds reached in 161 fatal crashes (87%) and the duration of the pursuit for 156 crashes (84%). Average and top speeds reached in fatal pursuits, as well as the average duration and the minimum and maximum duration were calculated (see Table 7).

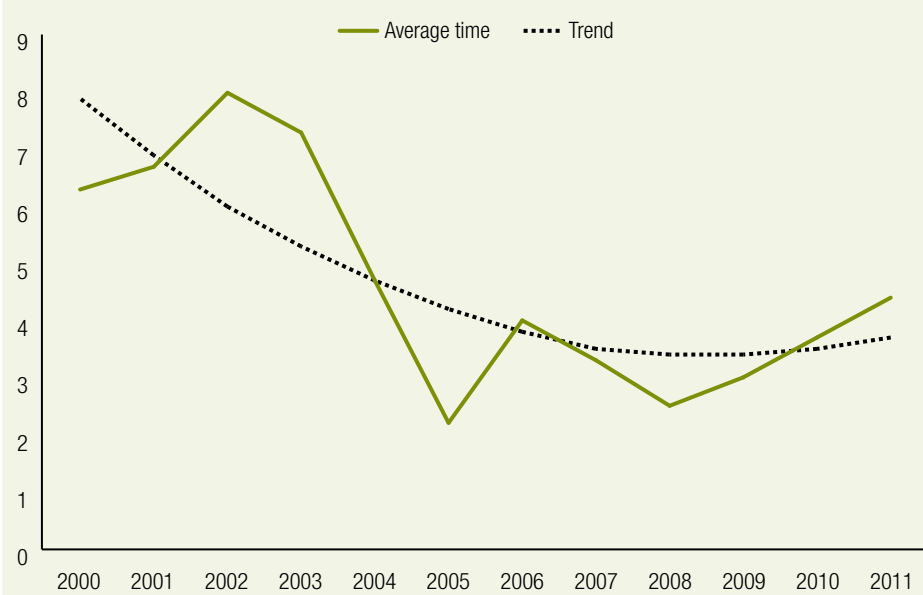
Consideration should be given to the number of cases being analysed when interpreting the results in Table 7. The average speeds range from 110km/h in Tasmania (4 cases) to 147km/h in the Australian Capital Territory (4 cases). The average speed in New South Wales was 122km/h (52 cases) and in Victoria it

Figure 3 Average speeds reached in fatal pursuits, by year, 2000–11 (km/h)



Source: AIC NDICP dataset [2000–11]

Figure 4 Average duration of fatal pursuits, by year, 2000–11 (mins)



Source: AIC NDICP dataset [2000–11]

was 136km/h (31 cases). Nationally, the average speed reached across all fatal pursuit-related crashes was 129km/h. An examination of maximum speeds showed that some pursuits reached speeds as high as 210km/h.

The duration of these fatal pursuits was calculated from the time when police officers began pursuing to the time when the crash occurred and was taken from electronic GPS tracking systems fitted to all police vehicles. Analysis of the duration of these pursuits indicated that, on average, they ranged from three minutes and 20 seconds

in New South Wales to over eight minutes in Victoria. The average length of time across all fatal pursuits was four minutes and 47 seconds.

Between 2000 and 2008, the average speed fluctuated between 111km/h and 144km/h each year but overall, the trend was fairly stable. In the last three years, the average speed of fatal pursuits has increased slightly, with the average recorded in 2011 representing the second highest point in 12 years (141km/h; see Figure 3). With regard to the duration of fatal pursuits,

there has been a decline from a high of eight minutes in 2002 to a low of two minutes in 2011 (see Figure 4). That is, average speeds have increased slightly while the duration of pursuits ending in a fatality has declined.

Approaches to reducing the risk of fatality in pursuits

In an effort to reduce the risks of a pursuit ending in fatality, police agencies in Australia and overseas have introduced restrictive pursuit policies that limit the discretion of officers in the decision to pursue. For example, in a report commissioned by the International Association of Chiefs of Police in the United States, Lum and Fachner (2008: 24) found that

for the most part, police agencies have leaned towards restrictive policies, believing that the costs (injury, damage, death, liability suits, loss of legitimacy with the community, financial costs of fleet repairs etc) far outweigh the benefits (arrest of the subject, deterrence, crime control).

The introduction of such restrictions has been shown to reduce the number of pursuits. For example, an evaluation of changes to the pursuit policy in Miami found that

when Miami-Dade introduced a violent felony only policy for pursuits in 1992, there was a reduction in the number of pursuits of 82 percent within one year, with a consequent reduction in collisions and injuries (Alpert 1997 cited in Best & Eves 2005: 39).

Similar reductions in pursuit numbers have been observed in Queensland (see Table 2). Following the introduction of the first restrictive policy in January 2008, the number of pursuits in Queensland declined from 525 in 2007 to 357 in 2008; a reduction of 32 percent, with a further drop of 25 percent (n=72) in 2009.

As well as limiting the types of offences for which police members should pursue, pursuit policies encourage members to undertake regular assessments of the risks associated with the decision to pursue an alleged offender. A review of the NSW Police pursuit policy by the NSW Ombudsman between May 2005 and December 2006

recommended that police members receive regular training in pursuit driving and that 'duty officers and radio supervisors are provided with the skills to continually assess and manage the risk posed by pursuits' (NSW Ombudsman 2007: 65).

There may be a range of incident characteristics that police members consider before commencing a pursuit, such as the types of vehicles involved, warning devices available, whether other units are in the area and whether the offending driver's identity is known. Research has identified

four critical factors on which officers and supervisors must base decisions, to pursue or not to pursue...the known violation, the area in which the chase occurred, traffic conditions, and weather conditions (Alpert 2006: 348).

In both South Australia and Queensland, the new, more restrictive policies dictate that it is the initial offence committed by the alleged offender that should be used to justify a pursuit and that the continuation of a pursuit should not be justified by subsequent (traffic and other minor) offending (Qld Government and QPS 2010; South Australia Police 2011).

Yet some jurisdictions have taken a different approach in trying to reduce the number of high-speed pursuits. For example, Victoria Police reviewed their pursuit policy and found that 'it aligns with the practices and policies of other law enforcement agencies both nationally and internationally' (Victoria Police 2012: 5). However, the Victorian Government amended the *Road Safety Act 1986* on 1 November 2012 to:

- increase the powers available to Victoria Police members with regard to seizing and impounding the motor vehicles of dangerous drivers; and
- to further deter would-be offenders from fleeing from police by increasing the penalties for such actions (Road Safety Amendment Bill 2012).

Similar to Victoria, the Parliament of Western Australia recently introduced reforms (in November 2012) to the *Road Traffic Act 1973*, which increase the penalty for offenders who flee from police. Under the new provisions

a minimum of six months' jail will apply [to] offenders charged with reckless or dangerous driving causing bodily harm while being pursued by police...the toughest penalty in Australia (Trenwith 2012: np).

Finally, the Australian and New Zealand Policing Advisory Agency has worked with all police agencies to draft nationally agreed principles for police pursuits, which will assist police agencies across Australia and New Zealand in reviewing and reforming their pursuit policies. These principles identify the need for police members to know and understand their pursuit policy, to be well-trained in the conduct of pursuits, to undertake regular risk assessments when initiating and engaging in a pursuit, and recognise the important role that supervisors and pursuit controllers can play in managing the risks (ANZPAA forthcoming).

Further research

This paper represents the first of its kind in Australia to combine jurisdictional statistics on all police pursuits with detailed national data on fatal incidents. It signifies an important step towards a national dialogue about how best to manage pursuit activities. Despite this, efforts to inform future developments in motor vehicle pursuit policy in Australia will require a commitment to the ongoing collation of more detailed national statistics of this kind.

In particular, more detailed information is needed about non-fatal pursuits, such that the characteristics of fatal pursuits can be better understood within a broader pursuits context. For example, the Independent Police Complaints Commission in the United Kingdom collects comprehensive statistics about pursuits ending in either injury or fatality, as well as undertaking mandatory reviews of incidents (Best 2002; Docking et al. 2007). With the regular collection of similar data in Australia, it would be possible to conduct more detailed jurisdictional comparisons, better identify the impact of pursuits on the community and more accurately identify those factors that increase the risk of serious injury or death (Alpert 2012). Conversely, analysis of data on all pursuits could be

used to identify factors that are related to 'successful' pursuits (ie those that result in the apprehension of the offender being pursued) and therefore circumstances in which pursuits might be best utilised. Clearly, this would have implications for the pursuit policies that govern policing activity in this area.

There is also a need for qualitative research with operational traffic police who have been in pursuits, to better understand the factors that influence police decision making with regard to pursuing alleged offenders.

Similarly, qualitative research involving persons who were the driver of a vehicle being pursued would also enhance understanding of why people choose to flee and assist in the development of strategies that discourage people from making such decisions. For example, one qualitative study with alleged offenders who had been in pursuits in South Australia found that 'young men pursued at high speed overwhelmingly privilege their own life over those of the police, other motorists, or bystanders,' with one respondent stating 'we just think about getting away from them... we don't think about who we're going to hurt' (Halsey 2008: 113).

Much of the debate around pursuits focuses on resolving the tension between community expectations that police should endeavour to uphold the law, with the risks to community safety of pursuing alleged offenders at high speed. Using surveys, it would be possible to gauge the level of community support for the pursuit of alleged offenders by the police and if so, in what circumstances. One such attitudinal study conducted in the United States by MacDonald and Alpert (1998: 193) found that

the public overwhelmingly supports pursuits for serious criminal offences [but this] support for pursuits diminishes with the seriousness of the offence for which the pursuit was initiated.

Finally, the financial cost of pursuits to police forces and the community (eg repairing vehicles and infrastructure, hospitalisations) also requires examination. Using data already collected by police, as well as that available from local and state government

departments, it would be possible to quantify the financial cost of pursuits.

The debate on the need to reform pursuit policy in Australia would also be greatly assisted by:

- a comparative review of current pursuit policies in each jurisdiction and the evidence or experiences that have informed these policies;
- the development of national guidelines around best practice in pursuits (ANZPAA will soon publish national pursuit policy guidelines); and
- the evaluation of significant reforms to pursuit policies to assess the impact of changes on pursuits, crime and the broader community.

Conclusion

Analysis of data collected in this study showed that between 2000 and 2011, there were 185 pursuit-related crashes resulting in 218 fatalities, producing an average of 15 crashes and 18 deaths per year. However, in the context of the number of pursuits that occurred each year, the proportion that ended in fatality was very low. Since 2004, less than one percent of pursuits, or between one in 217 and one in 476 pursuits, ended in fatality.

It was discovered that males under the age of 25 accounted for a large proportion of individuals who died as a result of a police pursuit and it was found that almost nine in every 10 alleged offenders who died driving the vehicle being pursued had consumed alcohol, drugs or both prior to the incident. Findings also highlighted that pursuit fatalities were more likely to have occurred late at night and in urban areas. While the average speeds of vehicles involved in fatal pursuits have increased slightly, the average duration of fatal pursuits has declined considerably.

Finally, this study revealed that police agencies are very aware of the risks associated with pursuits and restrictive reforms to pursuit policies have been introduced in some jurisdictions. It is concluded that there are several important gaps in the evidence that, once filled, would greatly assist police agencies across

Australia in achieving the right balance between the imperative to apprehend alleged offenders and dangerous road users, while minimising the risks to community safety from motor vehicle pursuits that result in injury or death.

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