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Managing editor: Geoff Horne, PO Box 198, Mawson ACT 2607, Australia; tel: +61 (0)2 6290 2509; fax: +61 (0)2 6290 0914; email: journaleditor@acrs.org.au

Contributed articles editor: Colin Grigg, PO Box 1213, Armidale NSW 2350; tel/fax: +61 (0)2 6772 3943; email: colin.grigg@bigpond.com

Peer-reviewed papers editor: Prof. Raphael Grzebieta, Chair of Road Safety, NSW Injury Risk Management Research Centre, Bdg G2, Western Campus, University of NSW, NSW 2052; tel: +61 (0)2 9385 4479; fax: +61 (0)2 9385 6040; email: r.grzebieta@unsw.edu.au

Cover photo: Dynamic energy absorption is the key to reducing injuries in vehicle crashes. In this edition of the Journal Kim Heglund describes progress being made in Europe with sign post design.

Road Crashes Involving Stolen Motor Vehicles in South Australia

by EN Ziersch* and S Ransom*

*National CARS Project, Office of Crime Statistics and Research, GPO Box 464, Adelaide 5001, South Australia

Abstract

This study examined the incidence of road crashes involving motor vehicle theft in South Australia over a 12-year period. The study found that 3,774 crashes involved a stolen vehicle, equating to an average of almost one crash per day. These crashes resulted in 835 casualties including 24 fatalities. The estimated cost of damage to property in crashes involving vehicle theft in 2006 was $2 million with an average cost of $7,330 per crash. When the additional human, vehicle and general costs are considered, the true price of collisions involving vehicle crime is estimated at around $17 million per year (based on crashes in 2004). Data on offenders' age, sex and license status was missing. Further research which captures the demographics of the offenders involved in road crashes in South Australia would provide additional insight and better inform policies developed to tackle the issue.

Notation

ADR	Australian Design Rule
CARS	Comprehensive Auto-theft Research System
DTEI	South Australian Department for Transport Energy and Infrastructure
NMVTRC	National Motor Vehicle Theft Reduction Council

Acknowledgement

The National Comprehensive Auto-theft Research System (CARS) is funded by the National Motor Vehicle Theft Reduction Council (NMVTRC) to provide comprehensive and timely data upon which effective crime prevention strategies can be developed and evaluated. The views expressed in this paper are those of the authors and do not necessarily reflect the views of the NMVTRC.

Special thanks to Steve Lippett and Terrie Baker from the Department for Transport, Energy and Infrastructure (DTEI) for their assistance and providing the crash data for this study.

Introduction

Motor vehicle theft is not a victimless crime. The impact is felt by not only the vehicle owner but also the insurance industry, criminal justice system and the community, who bear the costs of this crime. Considerable effort and resources are directed into combating both profit-motivated and short term theft including developing strategies to prevent vehicles from being stolen in the first place. The successes that such strategies have had are measured in theft numbers, recovery rates and insurance premiums and yet these figures cannot possibly capture the most significant costs associated with vehicle theft - that of injury and loss of life.

A number of overseas studies have looked at the issue of road crashes involving stolen vehicles including a Canadian study [1] which examined newspaper articles from 1999 to 2001 on fatalities and injuries incurred through motor vehicle theft. They found that during the 3-year period, 81 people died as a result of vehicle theft. Around 40% of those who died were in the third party vehicle while 54% were offenders or occupants in the stolen vehicle. Where the collision resulted in a fatality, 71% of occupants in the stolen vehicle were under the age of 25. The study also found that 29% of all injuries sustained were serious, ranging from life threatening to paralysis, with the medical costs alone of treating persons with sustained head trauma, paraplegia and quadriplegia at well over CAD$1 million per year, per person injured.

A United States study [2], used inpatient records to determine the medical and economic impact of caring for patients injured

after crashes involving stolen cars. The study examined inpatients treated at a university trauma centre in New Jersey over a 2-year period and found that crashes involving stolen vehicles accounted for 8% of motor vehicle crash admissions. Over half (57%) were occupants of the stolen vehicle with offenders significantly more likely to be young and male than victims. The study found that both speeding and police pursuits were related to the severity of the crashes and that the average cost of treatment was over US$34,000 per patient.

Marshall, Boyd and Moran [3] also used hospital records in their study of the 'joy-riding epidemic' and the associated injuries that have occurred through vehicle crime. The study was based on an investigation of patients admitted to the Newcastle General Hospital in the United Kingdom over a 9-month period as a result of a road crash involving a stolen car. Patients' injuries and any treatment were recorded and estimates were made of cost using hospital figures (based on bed occupancy, expenditure on investigations and treatment). The study found that around 13% of hospital admissions for a road traffic accident were the result of a stolen vehicle with 40% of these crashes resulting in severe injury or death. The majority of those injured were innocent members of the public with 20% of in-hospital road traffic accident deaths attributable to vehicle crime. The average cost to the hospital was £5,200 per patient with the study concluding that the associated costs were likely to be underestimated as it did not account for those treated through out-patient services or cases where the victim was declared dead at the scene.

Despite newspaper headlines regularly featuring crashes involving stolen vehicles, no research has been carried out in Australia on the incidence of road crashes involving motor vehicle theft. In South Australia during 2007, two road crashes each resulted in a fatality following a police pursuit, although in both instances the pursuits were abandoned by police over safety concerns before the crashes occurred. In one incident [4] a 17-year old was reported responsible for the death of his 18-year old female passenger, and serious injury of a second passenger when the stolen Holden he was driving slammed into another car, seriously injuring the second driver. In the second crash a 30-year old man was killed after his vehicle was hit by a 23-year old driver of a stolen Holden while waiting to turn right at an intersection [5].

These examples indicate the tragic consequences of motor vehicle theft and the dangers that stolen vehicles present on our roads. With this in mind the objectives of the current study are to:

- Examine the relationship between motor vehicle crashes and vehicle theft in South Australia.
- Report on the number of fatalities and injuries for all crashes involving motor vehicle theft
- Assess the economic and social costs of motor vehicle crashes which involve stolen vehicles.

Methodology

The study was based on data provided by the South Australian Department for Transport Energy and Infrastructure (DTEI) on vehicle crashes that occurred between 1995 and 2006. This data comprised all casualty crashes, all tow-away crashes and property only crashes where the aggregated damage value was greater than or equal to $3,000. For the purpose of this study, crashes which did not involve at least one motorised vehicle were removed from the data. The data was matched with CARS data on motor vehicle thefts in South Australia based on the following conditions:

- A match on registration plate, and
- a recorded crash date/time between the earliest possible theft incident date/time (minus 10 minutes to allow for differences in time estimates) and theft recovery date/time (plus 10 minutes), **or**
- a recorded crash date/time on or after the earliest possible theft incident date/time (minus 10 minutes) where the stolen vehicle remained unrecovered.

DTEI also provides CARS with data on all motorised vehicles currently registered in South Australia bi-yearly. This study is based on the June 2006 registration snapshot.

Approximately 4.3% of the motor vehicles in the crash data did not have a valid registration plate to allow a join with the CARS vehicle theft data. This means that the number of stolen vehicles involved in road crashes may be slightly under-represented in this study. Manual checks of the crash data were also carried out. Any crashes in the crash data which involved a duplicate registration plate and the same date/time details were excluded as they were considered likely to be duplicate records, but which of the two was the correct record could not be established. These accounted for 0.1% of records. Likewise, for crashes involving stolen vehicles, crashes with duplicate registration plates were removed where the date/time details were exactly the same or contained conflicting information (e.g. where the crashed vehicle was reportedly towed away following the first of two crashes). These accounted for 0.5% of records.

Findings

Crashes involving stolen vehicles

Since 1995, the number of road crashes in South Australia has risen by approximately 4.5%, however, as Figure 1 shows, there has been a gradual decline in the number of crashes since 2001. The proportion of crashes which involved a stolen vehicle follows a similar, if somewhat exaggerated, pattern to that of crashes overall. In 1995, approximately 1.7% of road crashes involved a stolen vehicle with the proportion falling slightly, to 1.4% by 2006. Over the 12-year period, 1.5% of crashes involved a stolen vehicle. These resulted in a total of 835 casualties including 24 fatalities.

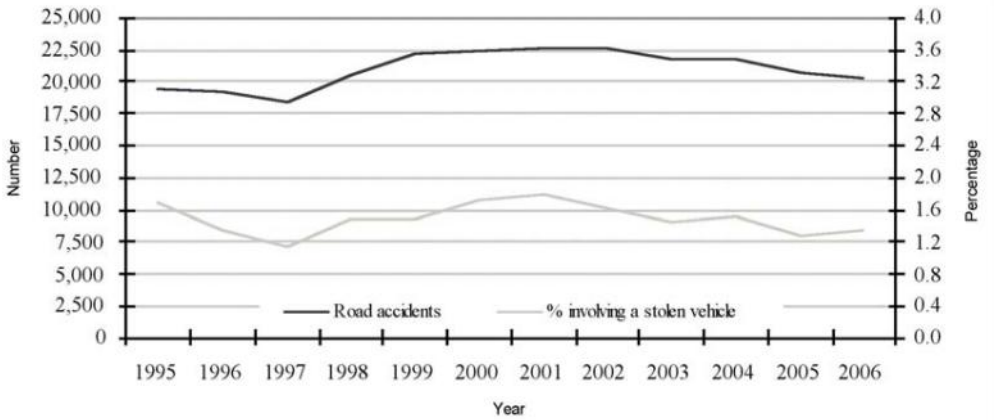

Figure 1. Number of road crashes and percentage involving a stolen vehicle, 1995 – 2006

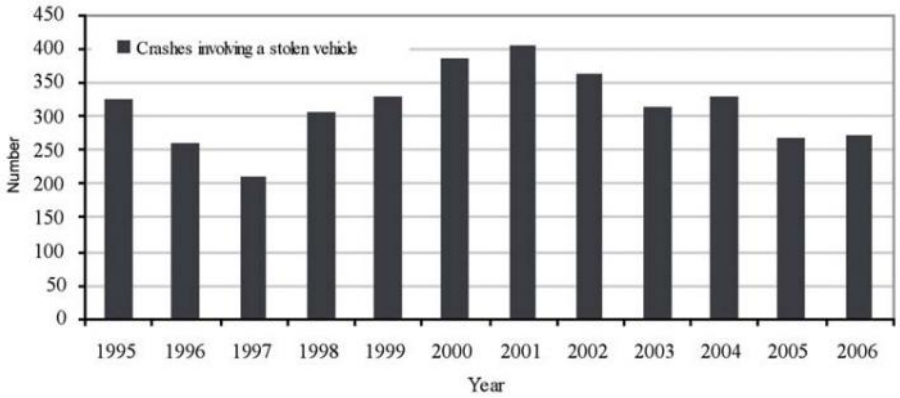

Figure 2. Number of crashes involving a stolen vehicle, 1995 – 2006

Figure 2 shows the number of crashes involving stolen vehicles per year since 1995. Over the past 12 years an average of 315 crashes per year have involved stolen vehicles. In 2006 there were 272 such crashes. In terms of the proportion of stolen vehicles which were involved in a road crash, in 2006, one in every 28 vehicles stolen, crashed.

Severity of crashes

A severity rating of either property damage, injury or fatal is applied to all recorded crashes and they are defined as follows:

- Property damage refers to a crash resulting in property damage in excess of the prescribed amount ($3,000) in which no person is injured or dies within 30 days of the crash.
- Injury involves a non-fatal crash in which at least one person sustains either minor or serious injuries, and does not die from those injuries within 30 days of the crash. The person may be admitted to hospital or require medical or surgical treatment, either by a doctor or in a hospital.
- Fatal refers to a crash for which there is at least one fatality (based on death within 30 days of a crash as a result of injuries sustained in that crash).

The majority of all road crashes result in property damage. Over the 12-year period, 84.3% of crashes involving stolen vehicles involved property damage only compared with 67.1% for crashes which did not involve a stolen vehicle. These crashes recorded a larger proportion of injuries (32.2% compared to 15.1% for stolen vehicle crashes) and in both crash types, fatality crashes made up less than 1% of crashes. While less casualties are noted in stolen vehicle crashes it should be noted that in some cases an offender may have been injured but not remained at the scene of the crash for assistance or did seek medical help but did not admit that it related to a road crash.

Figure 4 shows the number of fatalities in crashes involving stolen vehicles over the 12-year period. During the peak of 2001 there were 5 deaths associated with crashes involving stolen vehicles. No fatalities were recorded in 2006 however, in 2007, 2 fatalities have already been recorded in the first six months [4,5]. The findings of this study do not include these 2 fatalities.

Historically, fatality rates for crashes involving stolen vehicles have varied widely due to the small numbers involved. In the 12-year period to 2006, the fatality rate was 6.4 deaths per 1,000 crashes involving stolen vehicles. In comparison, road crashes which did not involve a stolen vehicle had a rate of 7.4 fatalities over the 12-year period and showed a reduction over time, from 9.4 fatalities per 1,000 crashes in 1995 to 5.9 in 2006.

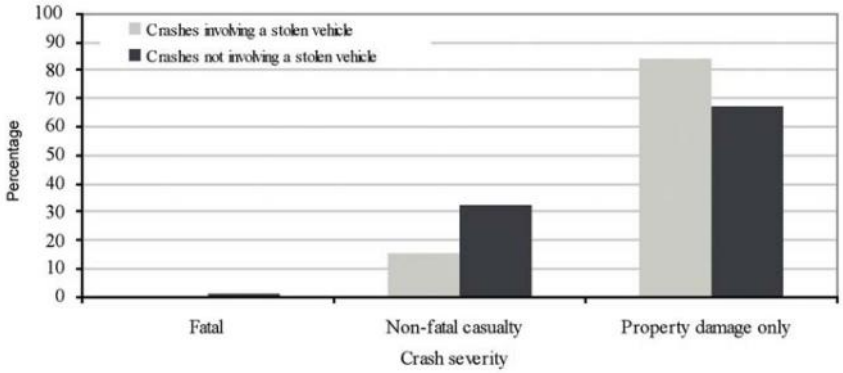

Figure 3. Crash severity rating of road crashes over the 12-year period, 1995 – 2006

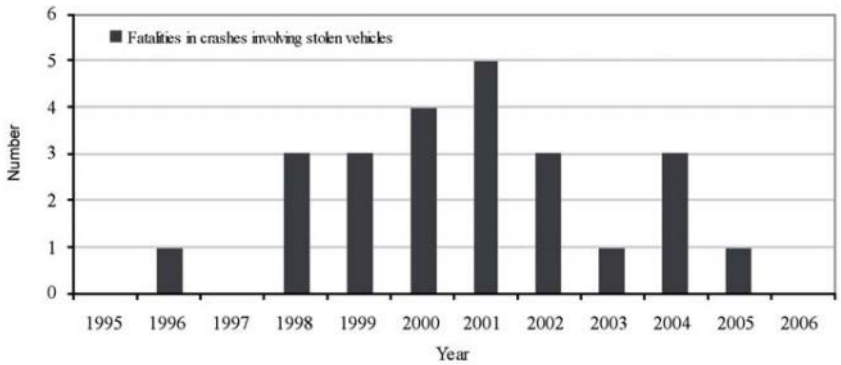

Figure 4. Number of fatalities in crashes involving a stolen vehicle, 1995 – 2006

Casualties refer to crashes in which either an injury or a fatality were recorded. The pattern of casualties resulting from crashes involving a stolen vehicle shows a similar trend to that of road crashes overall, with over 100 casualties recorded in 2000 and 2001 after which the graph shows a gradual decline in the number of casualties (see Figure 5). In 2006 there were 53 casualties associated with stolen vehicle crashes.

The rate of casualties per crash type shows a very different pattern to that of fatalities with stolen vehicle crashes recording a small rise in casualty rates from 186.5 casualties per 1,000 crashes in 1995, to 194.9 in 2006. Casualty rates for crashes not involving vehicle theft are much higher but show a downward trend, falling from a rate of 430.8 per 1,000 in 1995, to 391.3 in 2006. Once again, it is not clear whether these differences are true or are possibly the result of a reporting bias.

In most crashes involving stolen vehicles over the 12-year period, the greatest number of casualties was incurred by the occupants of the stolen vehicle (59.6%). Of those casualties outside the stolen vehicle, on average, 85.2% were occupants in another vehicle, 13.4% were pedestrians and 1.5% were cyclists.

Property damaged

Table 1 outlines the types of property damaged (in addition to the vehicle at fault) in crashes in 2006 where a motor vehicle was considered to be at fault. Crashes involving a stolen vehicle

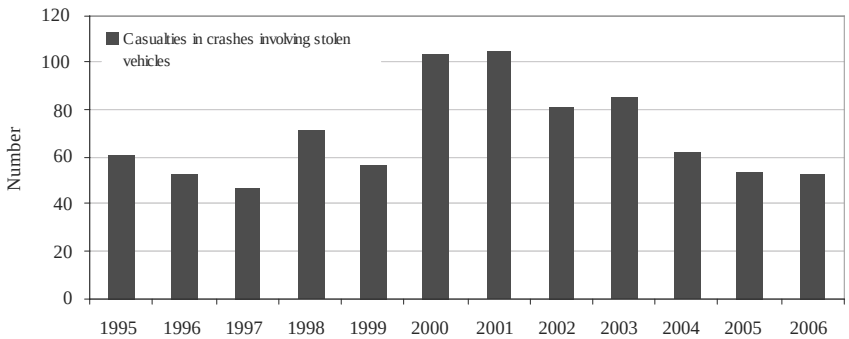

Figure 5. Number of casualties in crashes involving a stolen vehicle, 1995 – 2006

Property	Stolen motor vehicle at fault Number	%	Motor vehicle at fault Number	%
Motor Vehicle	102	32.4	16,614	77.7
Property - Other	91	28.9	1,888	8.8
Property - Pole/Sign Post	63	20.0	976	4.6
Tree	49	15.6	1,143	5.3
Property - Bridge/Guard	6	1.9	173	0.8
Pedestrian	3	1.0	215	1.0
Animal	1	0.3	16	0.1
Cycle	0	0.0	335	1.6
Railway Vehicle	0	0.0	9	0.0
Total	**315**	**100.0**	**21,369**	**100.0**

Table 1. Types of property damaged in road crashes involving a motor vehicle at fault, 2006

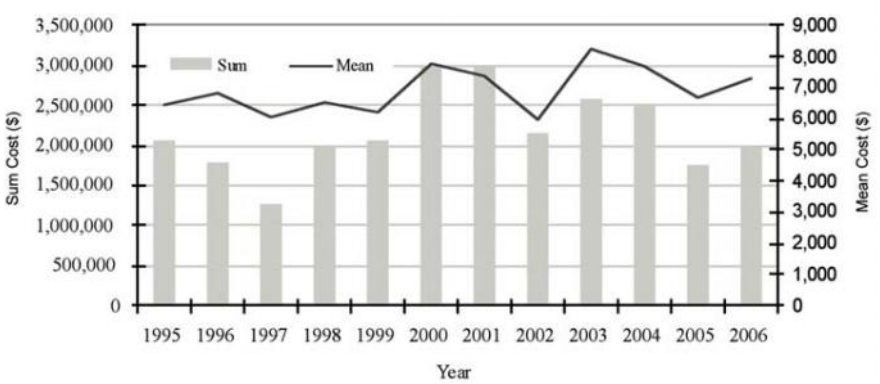

Figure 6. Total estimated property damage cost of crashes involving stolen vehicles, 1995 – 2006

at fault were more likely to result in damage to poles and sign posts (20.0%), trees (15.6%) and other fixed obstructions (28.9%) than crashes not involving vehicle theft (4.6%, 5.3% and 8.8% respectively). These differences were partly explained by the timing of stolen vehicle crashes, which were more likely to occur at night, as outlined in a later section. The most common form of damage in crashes where a motor vehicle was at fault was damage to another motor vehicle (77.7% compared with 32.4% in crashes involving a stolen vehicle at fault).

Costs of crashes

Road crash data includes an estimate of the damage value of property involved in a road crash. The total cost of road crashes involving stolen vehicles showed some fluctuation over the 12-year period. In 2006, the total property damage cost of crashes involving stolen vehicles was around $2 million with an average cost of $7,330 per crash. On average, costs have increased by 14.1% since 1995 despite the total number of stolen vehicle crashes falling during this period (down 16.8%).

To provide a more holistic picture of the cost, the Centre for Automotive Research produced a paper on the estimated costs of road crashes in South Australia [6]. The paper, adapted from a report by the Bureau of Transport Economics [7], included an estimate of the 'human costs' (e.g., lost labour, ambulance, coroner), 'vehicle costs' (e.g., repairs, towing) and 'general costs' (e.g., police, non-vehicle property damage) associated with road crashes based on 2002 crash data. Using prices as at March 2004, they estimated the costs to be nearly $1.18 billion or an average of $52,000 per crash. If we relate this cost to crashes involving stolen vehicles, in 2004, there were 330 such crashes which at an average of $52,000 per crash would roughly amount to a cost of $17 million. While this is merely a very crude calculation[1], it does highlight the enormous cost of crashes involving stolen vehicles.

Individuals involved in crashes

Analysis of the sex of individuals involved in crashes (either as drivers, riders or pedestrians) which did not involve vehicle theft revealed that 60.8% of individuals involved in road crashes in 2006 were male. Around one-quarter (26.2%) of the individuals were aged 25 and under and a further 18.3% were aged 26 to 35. Individuals aged over 65 made up 7.3% of crashes not involving vehicle theft.

Age data on individuals in crashes involving stolen vehicles is not summarised due to a high proportion of missing data (54.4%). Nearly three-quarters (72.2%) of the missing age data related to the drivers of the stolen vehicles which may not have been possible to collect due to the offender fleeing the scene of the crash. South Australian data on apprehensions for vehicle theft in 2006 [8] revealed that a number of apprehensions involved juveniles, some of whom would not be old enough to

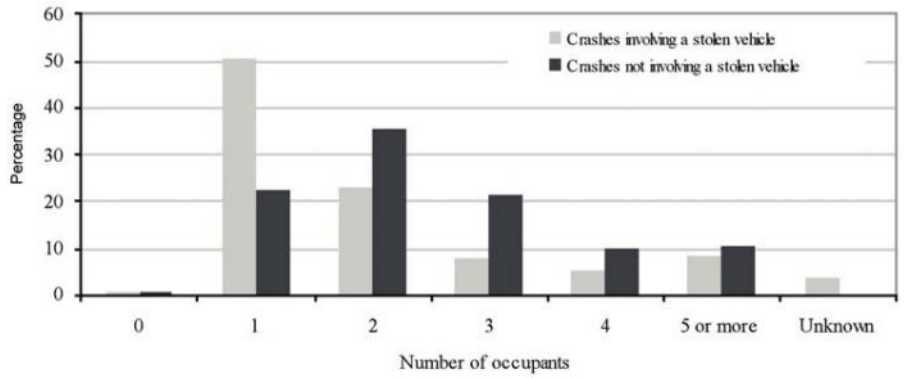

Figure 7. Number of occupants involved in road crashes, 2006

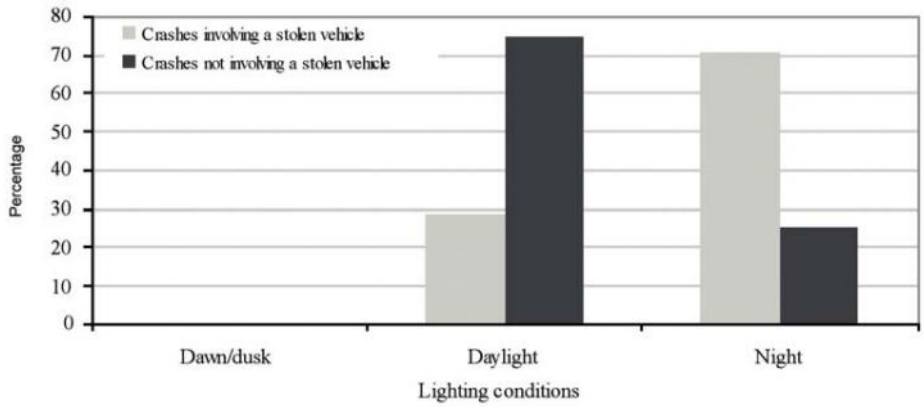

Figure 8. Lighting conditions for road crashes, 2006

even have their learner's permit. Likewise, recent police statistics from Western Australia [9] indicated that juveniles as young as 10 and 11 were charged with driving stolen cars in the past financial year and that the number of vehicle theft charges for children aged 16 or less had doubled in the past two financial years. It should be noted that while offence statistics are useful in providing information about vehicle theft offenders, they do not represent all offenders, only those who have been caught.

A large proportion of data on the sex of individuals in crashes involving stolen vehicles was also missing. In one-third of crashes involving stolen vehicles the sex of the driver was unknown with 43.3% of the unknown data on sex relating to the driver of the stolen vehicle.

Figure 7 shows that in 2006, half (50.7%) of crashes involving stolen vehicles involved only one occupant in the motor vehicle and a further 22.8% involved two occupants. In comparison, crashes not involving a stolen vehicle were more likely to involve multiple occupants. Approximately 35.2% of crashes involved two occupants, 21.2% involved three occupants and a further 20.6% involved four or more occupants. Whilst there is some discrepancy between the two crash groups, it is possible that in some incidents one or more passengers in the stolen vehicle fled the scene, reducing the number of occupants reported in the crash.

When crashes occur

Crashes involving stolen vehicles were most likely to occur on Saturdays (22.3%) and Sundays (17.9%) with stolen vehicles most commonly taken on Fridays (16.5%) and Saturdays (22.7%).

Figure 8 shows that seven out of every ten (71.0%) crashes involving a stolen vehicle occurred at night. This is almost the complete opposite pattern to crashes not involving vehicle theft in which three-quarters (74.7%) of these crashes took place during daylight hours. With presumably less cars and general traffic on the road at night it makes sense that stolen vehicles which crash at this time are less likely to hit other vehicles or pedestrians and more likely to hit some form of property.

In 18.7% of crashes involving stolen vehicles, the vehicle crashed within one hour of being stolen and nearly half (48.7%) crashed less than 5 hours after the vehicle was taken. This suggests that the potential risk to road users is apparent from the minute the vehicle is stolen.

Where crashes occur

Around half (50.9%) of the stolen vehicles involved in crashes were taken from the street with a further one-fifth taken from the driveway of a home.

The figure below shows the distance between the theft and crash suburbs for stolen vehicles involved in crashes in 2006.

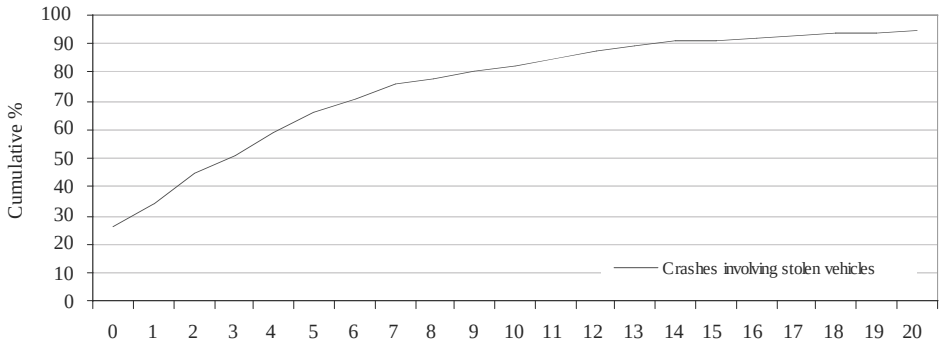

Figure 9. Distance between centroids of theft and crash suburbs, 2006

	Stolen vehicle at fault		Motor vehicle at fault (in crashes not involving vehicle	
Local Government Area	Number	%	Number	%
Inattention*	169	64.0	8,429	44.6
Dangerous Driving*	24	9.1	80	0.4
Excessive Speed*	23	8.7	176	0.9
Disobey - Traffic Lights	6	2.3	422	2.2
Fail to Give Way*	6	2.3	2,364	12.5
Reverse Without Due Care	6	2.3	908	4.8
Follow Too Closely*	5	1.9	1,560	8.2
Driving Under the	4	1.5	456	2.4
Change Lanes to Endanger	3	1.1	747	3.9
Fail to Stand	2	0.8	1,285	6.8
Disobey - Give Way Sign	1	0.4	497	2.6

Table 2. Top causes of crashes for motor vehicles at fault, 2006

* Indicates where chi-square tests revealed statistically significant differences between crash groups ($p < 0.001$).

The analysis is based on the Euclidean (or 'straight-line') distance between the centroid of the theft and crash location suburbs. Therefore a vehicle that is stolen and crashes within the same suburb will be recorded as having crashed 0 kilometres from the theft location. This gives a rough indication of the distance between the two locations, but it does not take into account any driving that occurred between the vehicle being stolen and the crash. **Figure 9** shows that the vehicles were most likely to crash a short distance from the suburb from which they were stolen with 59.3% crashing less than 5 kilometres from the theft suburb.

Why crashes occur

In crashes involving stolen vehicles, the stolen vehicle was considered at fault in 97.1% of cases. The cause of the crash for these cases is compared with crashes not involving stolen vehicles in which a motor vehicle was considered at fault. In both crash groups the most common cause of the crash was inattention accounting for a greater proportion of stolen vehicle crashes than those not involving vehicle theft (64.0% compared with 44.6%). Dangerous driving and excessive speed were the next most common cause of crashes involving stolen vehicles, accounting for 9.1% and 8.7% of crashes respectively. This proportion was far greater than for crashes not involving stolen vehicles in which less than 1% involved these factors. The involvement of police pursuits in crashes is not recorded in the data (and not publicly available from South Australian Police) so it is not possible to establish whether high-speed chases were associated with findings on excessive speed and dangerous driving amongst stolen vehicles.

Vehicles involved in crashes

Of the 20,217 road crashes in 2006, 272 involved a stolen vehicle with one crash involving two stolen vehicles. The characteristics of the 273 stolen vehicles are outlined below and where appropriate, comparisons are made to stolen vehicles not involved in road crashes and the registered vehicle fleet in South Australia.

Figure 10 shows that compared to the registered fleet, stolen vehicles involved in crashes were most likely to be manufactured in the 1980s. This decade accounted for nearly half (46.9%) of crashes involving stolen vehicles and yet made up less than one-fifth (18.7%) of the registered fleet. The over-representation of this age group of vehicles is cause for concern. These ageing vehicles are far less likely to have associated safety features than more recently manufactured vehicles which meet more stringent safety standards. With a high proportion of these older, less safe vehicles being involved in these types of collisions, there is the potential for even greater casualties.

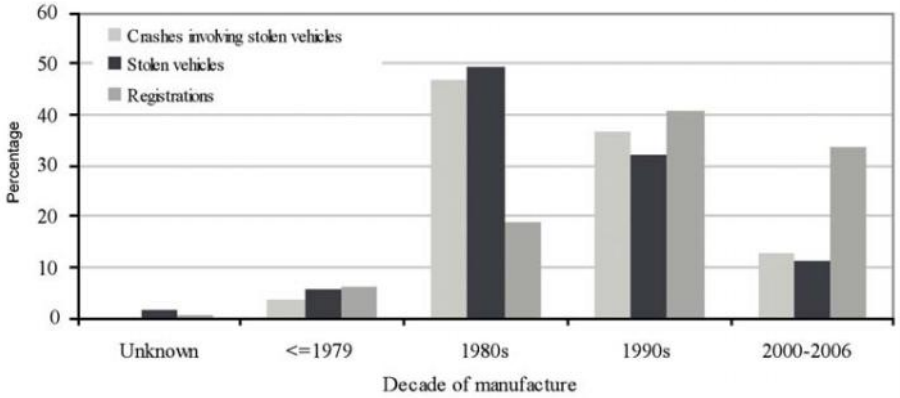

Figure 10. Motor vehicles by decade of manufacture, 2006

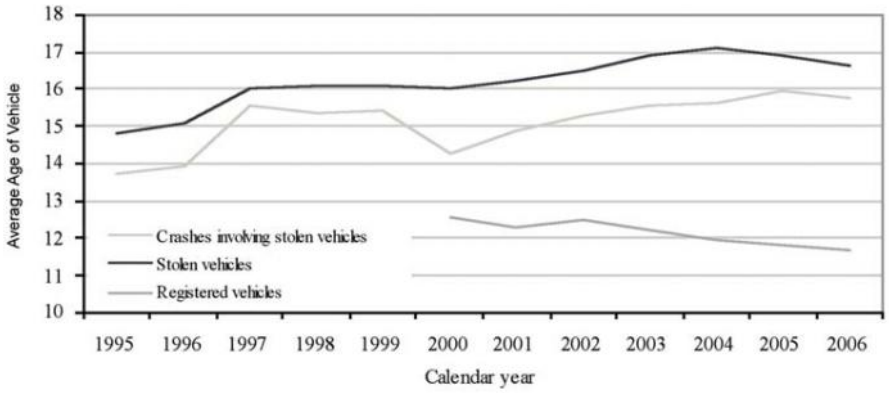

Figure 11. Average vehicle age, 1995-2006

Security is another issue with vehicles manufactured in the 1980s. Very few of these models are likely to have any form of immobilisation to prevent a would-be thief from stealing the vehicle. In 2006 nearly three-quarters (73.5%) of the stolen passenger/light commercial vehicles involved in crashes did not have a factory-fitted immobiliser. This proportion was below that of the passenger/light commercial vehicles stolen in 2006 in which 83.5% were non-immobilised, most likely due to these vehicles being slightly older. Up until the early 1990s very few vehicles were fitted with immobilisers until high theft rates prompted Holden and Ford to begin fitting the devices in their passenger vehicles. Gradually, over time the proportion of immobilised vehicles in the registered fleet has increased and since July 2001 all new cars sold in Australia are required to be fitted with an Australian standard immobiliser under the Australian Design Rule (ADR). In 2006, half (49.5%) of the registered fleet did not have an immobiliser which is much lower than the proportion noted amongst stolen vehicles involved in crashes (73.5%).

Figure 11 shows the age profile of stolen vehicles involved in road crashes over time. The age of these vehicles shows a steady increase from an average of 13.7 years in 1995, to 15.7 in 2006. Interestingly, the registration data (from 2000 onwards) shows the opposite trend with the fleet becoming younger with each year. The average age of the registered fleet was 12.6 in 2000 and 11.7 by 2006.

Registration data is based on the June snapshot for each year. Data only available from 2000 onwards.

An analysis of vehicle characteristics revealed that passenger/light commercial vehicles made up the bulk of both stolen vehicles overall and of those stolen and involved in crashes, with sedans being the most common body type (70.1% and 78.0% respectively). Holden Commodores proved the most popular in 2006 with the VN series accounting for 7.3% of the vehicles stolen in 2006 and 11.4% of crashes involving vehicle theft. Motorcycles made up a greater proportion of stolen vehicles overall (6.8%) than of those involved in a crash (1.5%) in 2006. This may be because stolen motorcycles are more likely to be transported away than ridden and are less likely to be stolen for short-term gain.

Analysis of the number of cylinders in both stolen vehicle groups was also carried out to determine whether the passenger/light commercial vehicles that crashed were more likely to be larger, more powerful ones (categorised as those with 6 or more cylinders). Where the number of cylinders was recorded, a significantly higher proportion of the stolen passenger/light commercial vehicles that crashed had six or more cylinders (69.2%) compared to stolen vehicles which did not crash (54.7%, $\chi 2 = 19.26$, $p<0.001$). This proportion was also far greater than that found in the registered fleet in which 44.0% of passenger/light commercials had six or more cylinders.

Conclusion

The findings of this paper indicate that stolen vehicles play a small but by no means insignificant role in the number of crashes on our roads each year. Over the 12-year period in the study 1.5% of road crashes involved a stolen vehicle resulting in 835 casualties, of which, 24 were fatal. While the proportion of stolen vehicles involved in road crashes is small it is worth noting that the problem remains despite the significant decline in vehicle theft that has occurred since 2000. One in every 28 vehicles stolen in 2006, crashed.

There were a number of characteristics which distinguished stolen vehicle crashes from road crashes generally. Stolen vehicles were more likely to involve property only damage, in part because of the time of day in which the crashes occurred. Seven-in-ten crashes involving stolen vehicles occurred at night in complete contrast to road crashes not involving stolen vehicles. Lighter traffic and fewer pedestrians on the road at night along with fewer occupants in the stolen vehicle may partly explain the lower casualty rate found in crashes involving vehicle theft. A possible reporting bias may also be a factor with offenders less likely to remain at the scene of a crash for assistance due to the criminal component of the crash.

In nearly all cases, the stolen vehicle was considered at fault in the crash. Where this was the case, inattention was the most common cause of the crash (64.0%). Of concern is the finding that stolen vehicle crashes were significantly more likely to be caused by excessive speed and dangerous driving (each accounting for approximately 9% of crashes) than crashes not involving stolen vehicles (accounting for <1%).

Stolen vehicles involved in crashes were most likely to be manufactured during the 1980s with this decade accounting for nearly half of crashes despite making up less than one-fifth of the registered fleet. The over-representation of this age group of vehicles raises questions about safety. These aging vehicles are less likely to be as robust as newer vehicles that must comply with increasingly strict safety standards and many of which now feature crumple zones, anti-lock brakes and airbags. With a significant proportion of these older vehicles being involved in collisions the potential for injury is considerable.

Related to vehicle age is the finding that three-quarters of the stolen passenger/light commercial vehicles which crashed did not have an immobiliser, making it very easy for thieves to steal these vehicles. As with stolen vehicles generally, older non-immobilised vehicles are most popular among joy-riders because of the lack of security features in the vehicles.

The estimated cost of property damage in crashes involving vehicle theft in 2006 was $2 million with an average cost of $7,330 per crash. A rough approximation of the additional costs associated with stolen vehicle crashes was calculated based on a cost estimate of road crashes in 2004 [6] and the proportion of crashes that involved a stolen vehicle. Taking into account the human, vehicle and general costs, crashes involving stolen vehicles equate to roughly $17 million per year.

With regard to future research, it would be useful to identify the characteristics of occupants of stolen vehicles to provide additional insight and better inform policies developed to tackle the issue. In the current study, age and sex indicators were not available for the majority of these records and it is assumed that this is because the offender(s) fled the scene of a crash. Similar studies on stolen vehicle crashes have revealed that the majority of the offenders are young males [1,2] and apprehensions data from South Australia on motor vehicle theft support these findings [8]. While these statistics do not represent all car thieves (only the ones who were caught) they do contribute to our understanding of this group of offenders, and suggest that targeting young males may be helpful in preventing stolen vehicle crashes. There are many risks associated with vehicle crime, particularly with young, inexperienced drivers behind the wheel of powerful vehicles, so it would be very useful to know if this inexperience is a factor in crashes involving stolen vehicles.

Finally, although police pursuits are at times mentioned by the media in association with stolen vehicle crashes, it was not possible in the current study to determine how many of the crashes involving stolen vehicles were related to high-speed pursuits by police. Two crashes from the first six months of 2007 each involved a fatality that occurred moments after a police pursuit was terminated and between 1995 and 2005, 9 people died in South Australia as a result of a motor vehicle pursuit [10]. While there can be no doubt that some police pursuits involve stolen vehicles, without data relating to stolen vehicle crashes in particular, it is not possible to determine whether or not such pursuits are in fact an issue of concern in this context.

References

1 Miceli M.J., A report on fatalities and injuries as a result of stolen motor vehicles (1999-2001), Canada, National Committee to Reduce Auto Theft, 2002.

2 Livingston D.H., Merritt S., Callori S., and Vanek S., Auto theft-related trauma, The Journal of Trauma, Vol.45, No.4, 2001, pp. 780-783.

3 Marshall C., Boyd K.T., and Moran C.G., Injuries related to car crime: the joyriding epidemic, Injury: International Journal of the Care of the Injured, Vol.27, No.2, 1996, pp. 79-80.

4 Way B., Lower G., and Kelton G., 'Gang of 49 driver in fatal chase crash', The Advertiser, 21 June 2007, pp.9.

5 Way B., 'Speeding driver on bail kills newlywed', The Advertiser, 13 February 2007, pp.1.

6 Baldock M.R.J., and McLean A.J., The economic cost and impact of the road toll on South Australia, Adelaide, Centre for Automotive Safety Research, 2005.

7 Bureau of Transport Economics, Road crash costs in Australia (Report 102), Canberra, Australian Capital Territory, Bureau of Transport Economics, 2000.

8 CARS (Unpublished annual report), 2006/2007 Annual Statistical Report CD-ROM. Adelaide, National Comprehensive Auto-theft Research System (CARS) Project.

9 Cox N., 'Drivers 10, 11 charged', The Sunday Times, 8 July 2007, pp.17.

10 Joudo J., Deaths in Custody in Australia: National Deaths in Custody Program Annual Report 2005, Technical and Background Paper Series, 21, Canberra, Australian Institute of Criminology, 2006

Australasian College of Road Safety Inc.

ACRS, PO Box 198, Mawson ACT 2607 Australia
Tel 02 6290 2509
Fax 02 6290 0914
Email eo@acrs.org.au

Head Office
Pearce Centre, Collett Place, Pearce ACT Australia

Visit the College website at www.acrs.org.au

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