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Counting the costs of crime in Australia: A 2011 estimate

Russell G Smith, Penny Jorna, Josh Sweeney & Georgina Fuller

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Preface

This report updates previous cost of crime research undertaken for the Australian Institute of Criminology in 1992 and 1997 by John Walker, in 2003 by Pat Mayhew and in 2008 by Kiah Rollings. Data were obtained not only from the many published sources referred to, but also from a number of unpublished agency and organisational datasets.

The authors are indebted to the anonymous reviewers whose suggestions were carefully considered and where possible, taken into account when preparing the final version of this report. Any errors or omissions that remain are entirely the authors' responsibility.

Funding for this research was provided by the Indigenous Justice and Community Safety Branch, Social Inclusion Division, Australian Government Attorney-General's Department.

This report estimates the costs of crime for the calendar year 2011, but includes some data in relation to the financial year 2011–12, where 2011 calendar year data were unavailable. All other information is current at 30 June 2013 unless otherwise indicated.

The views expressed in this report do not necessarily reflect the policy position of the Australian Government or its agencies.

Foreword

In 1992, the Australian Institute of Criminology (AIC) published a paper in its *Trends & Issues in Crime and Criminal Justice* series that presented a summary of the results of research undertaken by John Walker that sought to estimate how much crime cost the Australian economy in 1990. It was estimated that the total costs of crime for that year were $27b or 6.7 percent of national Gross Domestic Product (GDP (ABS 2016); Walker 1992). The methodology underpinning this calculation was developed by Walker (1992) and included the costs of various specific criminal offences, the costs of responding to crime through the criminal justice system, as well as the cost of crime prevention measures. Walker's estimate was updated for the year 1996 with an estimated cost of $18b or over 3.4 percent of national GDP (Walker 1997).

In 2003, the AIC released two companion reports that sought to update and improve on Walker's original research, using a revised and extended methodology. It was estimated that crime cost the Australian economy nearly $32b for 2001 or 4.5 percent of national GDP (Mayhew 2003a, 2003b).

In 2008, the AIC again updated the earlier reports, now estimating the cost of crime for the calendar year 2005 at $35.8b or 3.9 percent of national GDP. The largest components of this amount were costs associated with administering the criminal justice system including police, courts, corrections and other criminal justice-related government agencies. Fraud was identified as the most costly crime category in both the 2003 and 2008 reports.

The present report provides a further update on the cost of crime in Australia for the calendar year 2011—the most recent year for which baseline official statistics and survey data were available. The estimated costs for 2011 were $47.5b or 3.4 percent of national GDP.

The methodology used in this report is, for the most part, similar to that employed in previous reports. This allows for a broad comparison between the three estimations, with some specific variations being described below. In terms of overall trends in the costs of crime over the preceding decade, it is apparent that the cost of both specific crime types and the cost of the criminal justice system have both grown since 2001. However, while the growth in the cost of specific crime types has been relatively small when considered as a proportion of national GDP, the level of change of preventing and responding to crime has been more pronounced. Indeed, a number of crime categories have shown a reduction in their incidence and cost since 2001. It should be acknowledged that the 2011 calculations include some cost elements that were not included in previous reports. In particular, these elements explain some of the increase in criminal justice expenditure.

The costs of crime to any community are considerable and it is of value to policymakers, politicians, the general public and researchers to increase knowledge about how the cost of crime can be estimated and how costing methods may be improved. In particular, it is important to understand the relationship between the direct costs of individual crime types and the cost of responding to them. Some policy responses to crime are extremely costly to implement, particularly those that require police action and the use of correctional services. Governments need to be able to assess whether the benefits of relying on particular responses are greater than the benefits of adopting alternative strategies that might be less costly, but more effective in reducing the harms associated with individual crime types. The present and previous cost of crime reports should assist policymakers in assessing the financial and other implications of adopting particular crime control measures and in choosing the most cost-effective measures to use in Australia.

Adam Tomison
Director

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Acronyms

ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
AFP	Australian Federal Police
AIC	Australian Institute of Criminology
AIHW	Australian Institute of Health and Welfare
ASIAL	Australian Security Industry Association Limited
ATO	Australian Taxation Office
BITRE	Bureau of Infrastructure, Transport & Regional Economics
CARS	Comprehensive Auto-theft Research System
CDPP	Commonwealth Director of Public Prosecutions
CPI	consumer price index
CSS	*Crime and Safety Survey*
CVS	*Crime Victimisation Survey*
DHI	Drug Harm Index
GDP	Gross Domestic Product (current price ABS 2016)
MURAC	Monash University Accident Research Centre
NMVTRC	National Motor Vehicle Theft Reduction Council
PPP	Purchasing Power Parities
PSS	*Personal Safety Survey*

Executive summary

This report seeks to estimate how much crime costs the Australian economy by calculating the number of crimes that come to the attention of the authorities and, using crime victimisation survey data, the number of crimes that are not recorded officially. A dollar figure is then calculated for each estimated crime event and an indication given of the total cost of each specific crime type in terms of actual loss, intangible losses, loss of output caused through the criminal conduct and other related costs such as medical expenses, where relevant. Added to these costs are the costs of preventing and responding to crime in the community including the costs of maintaining the criminal justice system agencies of police, prosecution, courts and correctional agencies, as well as a proportion of the costs of Australian and state and territory government agencies that have crime-related functions. Finally, a deduction is made for the value of property recovered in the case of property crime, as well as the amount of funds recovered from criminals under federal, state and territory proceeds of crime legislation. More detailed information about how each of these estimates was derived is provided in the main body of the report.

Official attention paid to specific crime types, particularly drug-related crime and organised crime, affects both the reporting rate and also the cost of policing and correctional responses. In this sense, individual crime type costs and prevention and response costs are not mutually exclusive. Arguably, as individual crime types attract more attention, reporting rates increase and prevention and control of the crimes in question are seen as being deserving of increased resources.

Police-recorded crime

Table 1 presents data on estimates of the number of crimes recorded by police for each of the categories of crime examined in this report. Data are shown for 2011 and by way of comparison, for 2001 as reported by Mayhew (2003a, 2003b) and for 2005 as reported by Rollings (2008). Official police statistics from each state and territory were also used to provide counts of thefts from vehicles, shop theft, criminal damage, arson and fraud. These were extracted from official police publications and may not follow the same counting rules as those used for the ABS *Recorded Crime* collection (ABS 2013b). Assault data are not nationally available and so an estimate of what police-recorded assaults might have been for 2011 has been calculated based on crime victimisation survey data (ABS 2013a). This estimate of police-recorded assaults has not, however, been used in the calculation of the costs of assault. No data are presented in Table 1 in respect of drug offences, as the costs of crime perpetrated to fund drug addiction are included within other crime categories. Instead, an estimate is provided of the human cost of drug-related crime, principally dealing with the costs of various health consequences of addiction. Similarly, the costs of alcohol-related crime are included in individual crime categories and because alcohol consumption is generally legal, the human cost of alcohol consumption has not been included in this report.

Table 1 Officially recorded crime statistics by crime type and data source, 2001, 2005 and 2011

Crime type	Source of the recorded data	Recorded crime victims (n)			% change 2001–11
		2001	2005	2011	
Homicide	ABS Recorded crime	600	496	463	-23
Attempted murder	ABS Recorded crime	458	295	185	-60
Assault	Estimation derived from ABS crime victimisation survey data for 2011	151,573 (excluding attempted murders)	161,000 (excluding attempted murders)	169,903 (excluding attempted murders)	+12
Sexual assault	ABS Recorded crime	17,000	18,000	17,592	+3
Robbery	ABS Recorded crime	27,000	17,000	13,617	-50
Burglary	ABS Recorded crime	435,000	197,000	218,193	-50
Thefts of vehicles	ABS Recorded crime	140,000	85,000	55,382	-60
Thefts from vehicles	Individual police jurisdictions[a]	266,000	188,000	168,666	-37
Shop theft	Individual police jurisdictions[a]	73,000	70,000	80,625	+10
Other theft	ABS Recorded crime	390,000	261,000	269,000	-31
Criminal damage	Individual police jurisdictions[a]	319,000	294,000	249,220	-22
Arson	Individual police jurisdictions[a]	17,500	20,000	14,975	-14
Fraud	Individual police jurisdictions, AFP and AIC data	111,320 (including 920 AFP cases)	99,367 (including 367 AFP cases)	97,611 (including 61 AFP cases)	-12

a: Data were received from New South Wales, South Australia, Victoria and Tasmania and have been inflated to give an Australia-wide estimate of recorded crimes. ABS *Crime Victimisation Survey* data have been used for costing calculations where possible (ABS 2013a)

Source: ABS 2012b; AFP 2012; New South Wales, South Australian, Victorian and Tasmanian police jurisdictions unpublished data

Some crimes have not been included specifically because of lack of data on their incidence or cost. These include kidnapping, extortion, blackmail, abduction, criminal defamation, environmental crime, good order offences, regulatory offences, illegal immigration, road traffic offences, human trafficking, corporate crime, tax evasion, cybercrime, identity crime, child exploitation offences and organised crime. Many criminal acts that comprise aspects of these crime types are, however, captured within the crime categories included in this report. The discussion of fraud offences, for example, includes a number of types of cybercrime, identity crime, tax evasion and organised crime. These crime types were also omitted from the previous estimates of Mayhew (2003a; 2003b) and Rollings (2008). Future iterations of this report will seek to explore these using alternative data sources.

The incidence of crime in the community

In order to estimate the number of crimes that actually occur in the community, as opposed to

those that come to the attention of the authorities, reference was made to crime victimisation survey data. For each crime category, a so-called multiplier was calculated, which could be used to estimate the number of crimes that take place, including both officially recorded crimes and an estimate of undetected and unreported crimes.

Multipliers help to adjust for levels of underreporting to provide more accurate estimates of how frequently a particular crime occurs. As a general rule, the higher a multiplier, the less that crime type is reported. Determining an accurate multiplier is of critical importance, as some crime types are infrequently reported to police for a variety of reasons. Others are often reported in order to facilitate insurance claims and recovery of losses.

Table 2 shows the multipliers and the corresponding estimated number of crimes for each crime category for the years 2001, 2005 and 2011. Most multipliers have changed very little between this report and those of Mayhew (2003a; 2003b) and Rollings (2008). In the United Kingdom, however, the Home Office (2011) has published a report that has updated the unit costs and multipliers used to calculate the costs of crime in 2011 in the United Kingdom. Some of the changes made to the multipliers are relevant to the present assessment and reference is made to these in the discussion of each crime type as appropriate, noting the different criminal environment that is present in the United Kingdom.

Table 2 Multipliers and estimates of crime incidence by crime type

Crime type		Multipliers			Estimated number of crime incidents		
		2001[a]	2005[b]	2011	2001[a]	2005[b]	2011
Homicide		1.0	1.0	1.0	600	496	463
Assault	Assault[c]	5.3	5.2	6.9	809,542	832,000	1,172,333
	Attempted murder	1.0	1.0	1.0	458	295	185
	All	5.3	5.2	6.9	810,000	832,295	1,172,518
Sexual assault		5.6	5.3	11.3	93,000	96,000	198,109
Robbery	Individual	7.5	7.2	6.2	162,300	96,000	69,872
	Organisational	1.1	1.2	1.2	5,700	3,000	2,893
	All	6.3			168,000	99,000	72,765
Burglary	Residential	3.0		4.3			667,600
	Non-residential	1.1		1.3			85,680
	All	3.0	3.4	3.5	994,000	777,000	753,280
Thefts of vehicles		1.1	1.0	1.2	147,000	85,000	65,600
Thefts from vehicles	Commercial						56,880
	Private						322,320
	All	3.6	2.8	2.3	956,000	527,000	379,200
Shop theft		100.0	100.0	16.1	7,304,000	7,000,000	1,298,063
Other theft		4.5	2.7	3.0	1,769,000	705,000	807,117
Criminal damage		6.0	4.3	5.9	1,914,000	1,265,000	1,470,398
Arson		3.0	3.0	3.0	52,500	60,000	44,925

Table 2 Multipliers and estimates of crime incidence by crime type cont.

Crime type		Multipliers			Estimated number of crime incidents		
		2001[a]	2005[b]	2011	2001[a]	2005[b]	2011
Fraud	Personal			4.8		453,100[e]	713,600
	Serious			2.2	155	1,500	438
	Commonwealth[d]	4.0		1.2	3,684		104,755
	Other fraud			2.3	440,000	397,000	228,392
	All	4.0	4.9	2.6	443,839	398,500	1,047,185

a: See Mayhew 2003b

b: See Rollings 2008

c: Assaults for 2011 are derived from *Crime Victimisation Survey* data for 2011–12 (ABS 2013a) inflated to include victims under 15 years of age

d: See Jorna & Smith unpublished Commonwealth fraud—number of incidents, and losses reported by agencies to AIC in annual survey

e: Number of victims of personal fraud in 2007 who lost money (ABS 2008)

Note: A multiplier of 1.0 means that all incidents are recorded in police statistics; a multiplier of 5.0 means that only 20 percent of incidents are recorded in police statistics

Estimated costs of crime

Table 3 presents the total estimated costs of crime to the Australian economy in 2011, with comparative data for 2001 and 2005. As in previous reports, fraud offences easily account for the highest dollar value of all crime types (12.7% of total costs in 2011), as might be expected for crimes that involve direct economic consequences. The next most costly crime types in 2011 were drug abuse and assault. The least expensive crime in terms of total dollar value was shop theft in 2011.

Table 3 Summary of the costs of crime

Cost type	2001[a]		2005[b]		2011		% change 2001–11
	Estimated cost ($m)	Percentage of total costs	Estimated cost ($m)	Percentage of total costs	Estimated cost ($m)	Percentage of net total costs	
Crime types							
Homicide	930	2.9	950	2.7	1,250	2.6	+34.4
Assault	1,440	4.5	1,411	3.9	3,021	6.4	+109.8
Sexual assault	230	0.7	720	2.0	775	1.6	+237.0
Robbery	600	1.9	225	0.6	267	0.6	-55.5
Burglary	2,440	7.7	2,229	6.2	1,645	3.5	-32.6
Thefts of vehicles	880	2.8	597	1.7	421	0.9	-52.2
Thefts from vehicles	530	1.7	529	1.5	691	1.5	+30.4
Shop theft	810	2.5	861	2.4	124	0.3	-84.7
Other theft	640	2.0	282	0.8	605	1.3	-5.5
Criminal damage	1,340	4.2	1,582	4.4	2,725	5.7	+103.4
Arson	1,350	4.2	1,624	4.5	2,269	4.8	+68.1

Table 3 Summary of the costs of crime cont.

Cost type	2001[a]		2005[b]		2011		% change 2001–11
	Estimated cost ($m)	Percentage of total costs	Estimated cost ($m)	Percentage of total costs	Estimated cost ($m)	Percentage of net total costs	
Crime types cont.							
Fraud	5,880	18.5	8,516	23.8	6,052	12.7	2.9
Drug abuse	1,960	6.2	1,816	5.1	3,161	6.7	+61.3
Subtotal crimes	19,030	59.9	21,342	59.6	22,995	48.4	+20.8
Other costs							
Criminal justice	6,400	20.1	9,808	27.4	16,256	34.2	+154.0
Victim assistance	880	2.8	1,073	3.0	1,877	4.0	+113.3
Security industry	3,140	9.9	2,999	8.4	3,400	7.2	+8.3
Insurance administration	500	1.6	580	1.6	670	1.4	+34.0
Household precautions	1,830	5.8	Not included	0.0	2,360	5.0	+29.0
Subtotal other	12,750	40.1	14,460	40.4	24,563	51.7	+92.7
Total crime and other costs	31,780		35,802		47,555	100.1	+49.7
Less assets confiscated	Not included	-	Not included	-	63.6	0.1	-
Total	31,780	100.0	35,802	100.0	47,505	100.0	+49.5

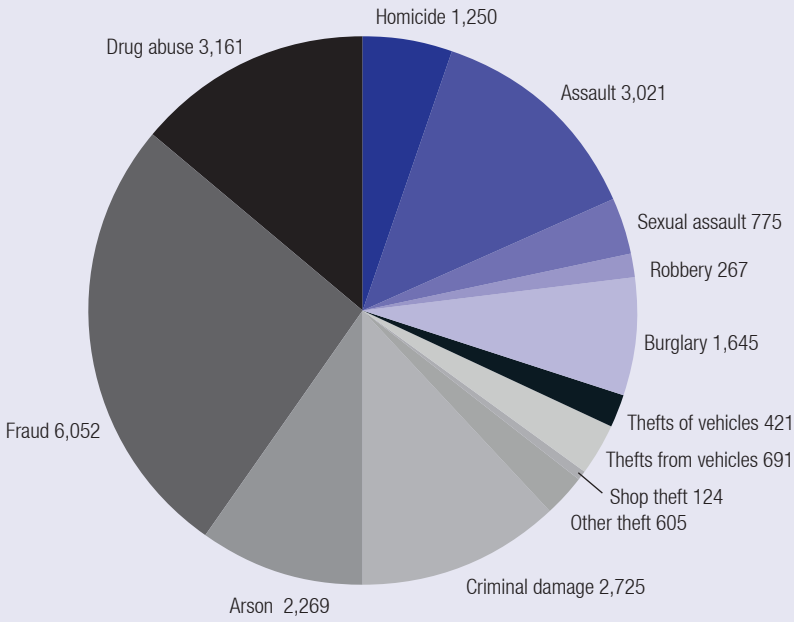
a: See Mayhew 2003b

b: See Rollings 2008

The total costs for 2011 are estimated to be approximately $47.5b (3.4% of national Gross Domestic Product; GDP). Rollings (2008) estimated the total costs of crime in 2005 to be around $36b (3.9% of GDP), while Mayhew (2003b) estimated the total costs of crime in 2001 to be around $32b (4.5% of GDP).

For the 2011 calculation, however, account has been taken of the amount of funds recovered from criminals under proceeds of crime legislation. In 2010–11, $63,041,487 was recovered in the states and territories, excluding Tasmania and the Northern Territory for which data were unavailable. This number was inflated by 0.84 percent, which is the percentage of fraud incidents recorded by police in the Northern Territory and the Australian Capital Territory out of the total number of fraud offences recorded by police in Australia in 2010–11. Using the proportion of fraud offences to estimate the value of confiscated assets in the Northern Territory and the Australian Capital Territory is appropriate as fraud represents the principal offence category in respect of which assets are confiscated. The estimated total amount of funds recovered in 2010–11 was $63,571,035 for the Australian states and territories as a whole.

Figure 1 Estimated cost of individual crime types ($m)



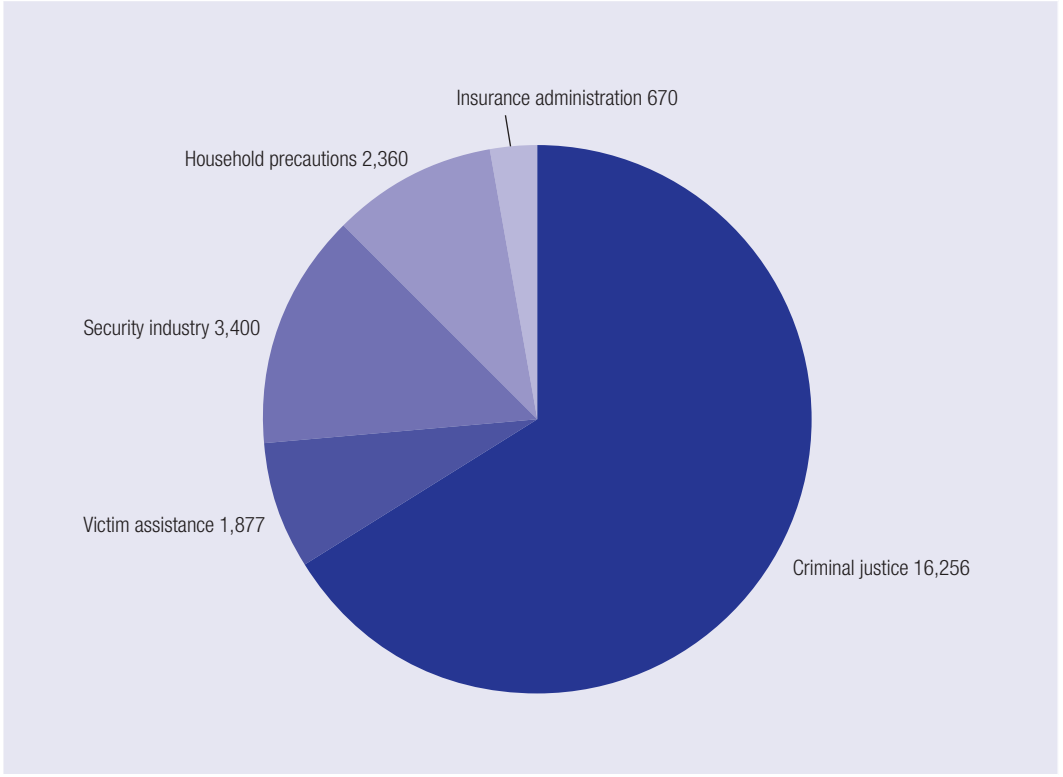
In addition, in 2010–11, $13,946,311 was recovered federally, although this has already been taken into account as part of the calculated losses in respect of Commonwealth fraud. As such, it is appropriate to deduct from the total crime losses the sum of $63.6m.

Clearly, there have been minor variations in the methodology used to estimate the cost of crime between the analyses conducted by Mayhew (2003b), Rollings (2008) and the present study. Bearing these differences in mind, it can be said that over the last decade it appears that the costs of crime have increased by almost 50 percent. As a percentage of national GDP, however, there has been a decline of 1.1 percent. Since Rollings' (2008) estimate for 2005, the costs of crime have increased by a third (33%), or a decline of 0.7 percentage points of GDP. Between 2001 and 2011, inflation has increased by 33 percent and between 2005 and 2011, inflation has increased by 19.6 percent (RBA 2013).

Figure 1 shows the estimated cost of each crime type for 2011 in millions of dollars.

In total, the costs of individual crime categories represented 48 percent of the total net cost of crime, with the remaining 52 percent being allocated to criminal justice response and victim assistance costs and crime prevention and security measures, and insurance administration. On the basis of the present calculations, in 2011, Australia spent approximately $1,500 more on preventing and responding to crime than the actual cost of criminal acts themselves. Figure 2 shows the individual components of these latter prevention and response to crime cost components.

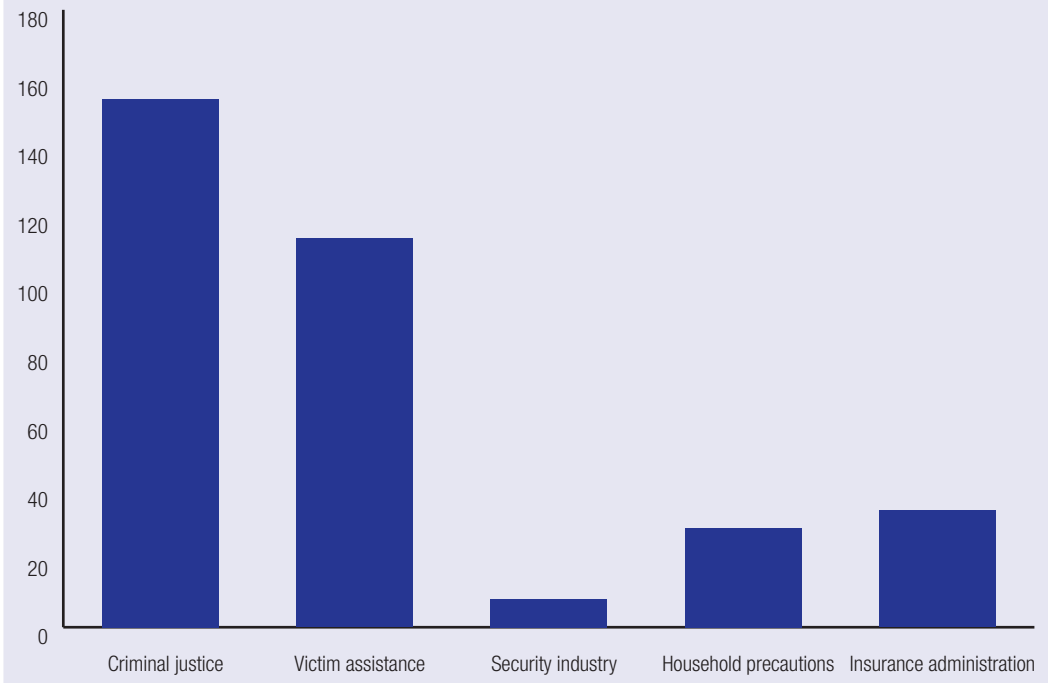
Figure 2 Estimated criminal justice and other costs ($m)



Over the decade between 2001 and 2011, the costs of individual crime types and criminal justice responses have changed, with the cost of some crime types increasing while others declined. The largest increases were in the cost of sexual assault, assault and criminal damage offences, while the greatest declines occurred in connection with shop theft and theft of vehicles. Substantial increases also occurred in connection with criminal justice system costs and the cost of victim assistance. Figure 3 shows the variations in the cost of crime between 2001 and 2011 for each crime type, while Figure 4 shows the variations in the cost of crime between 2001 and 2011 for each of the other cost of crime components.

Figure 3 Changes in cost of crime by crime type, 2001–11 (% change)

Figure 4 Changes in cost of crime by criminal justice and other cost categories, 2001–11 (% change)



Future directions

The estimates in this report should be considered approximate and are not designed to reflect exact costs of crime for each of the categories examined. The difficulties associated with estimating the costs of crime have been explained in previous AIC publications (Mayhew 2003a, 2003b; Rollings 2008; Walker 1992, 1997), as well as in a number of academic papers (see Centre for Criminal Justice 2008 for a review). Further research is needed to quantify the costs of crime associated with new and emerging crime types such as cybercrime, identity crime, organised crime, environmental crime and corporate crime. Although some aspects of each of these have been included in the cost estimates included in this report, other specific costs have not been explored owing to limitations in the available data. In addition, the evidence base in respect of some of the crime types included in this report is somewhat unsatisfactory. Examples include some aspects of fraud as well as arson, including bushfire arson.

A major area of costing that has not been explored in this report relates to lost productivity of criminals due to their involvement in crime. For example, the extent to which criminals participate solely in the criminal world, how economically productive they might be if not engaged in criminal activities and the gross number of individuals involved in criminal activities are not known with certainty. This report accounts for the lost productivity of the victim of crimes (time spent away from work, time spent fixing any damage, time spent in hospital etc), but does not attempt to quantify the lost productivity to society of those individuals who are engaged in illegal activities rather than in legal ones.

Other areas of costing such as the cost of crime to business, the costs of lost business output, intangible losses, and the health and medical cost for victims of personal crime all require further research and analysis in Australia. In the absence of local data, some reliance has been placed on estimates from the United States and the United Kingdom. Ideally, local Australian data should be used in preference.

Finally, there is a need for detailed comparative analysis of the findings of the current research with similar exercises conducted in other countries. This would help to identify areas in which Australia has made achievements in crime control and areas in which further work is needed to help to contain the costs of crime in Australia.

Introduction

In 1992, the Australian Institute of Criminology (AIC) published a paper in its *Trends & Issues in Crime and Criminal Justice* series that presented the results of research that sought to estimate how much crime cost the Australian economy in 1990. It was estimated that the total costs of crime for that year were $27b or 6.7 percent of GDP (Walker 1992). Similar costing exercises were undertaken for the years 1996 (Walker 1997), 2001 (Mayhew 2003a, 2003b) and 2005 (Rollings 2008). The present report provides a further update on the cost of crime in Australia for the calendar year 2011—the most recent year for which baseline official statistics and survey data were available. The costs for 2011 are estimated to be approximately $47.5b (3.4% of national GDP). Over the preceding decade, therefore, the estimate costs of crime have increased by 49.5 percent. As a percentage of national GDP, the costs over the decade have declined by 1.1 percentage points.

The methodology underpinning these calculations includes both the costs of various specific criminal offences, as well as the costs of responding to crime through the criminal justice system and crime prevention measures. While estimating the costs of crime is a particularly difficult task—as many of the costs associated with different crimes cannot be conclusively determined or ascertained—it is, nonetheless, important to attempt to estimate what both individual crime types cost and what the community spends in preventing and responding to crime. Given the sizable financial investment made to fight crime, both in terms of direct investment from governments and investments made by individuals on preventative measures, seeking to understand which crimes cost more and whether there has been change over time would allow a better appreciation of where sizable resources might best be directed.

As in previous research, the categories of crime costed in this report are:

- homicide;
- assault;
- sexual assault;
- robbery;
- burglary;
- thefts of vehicles;
- thefts from vehicles;
- shop theft;
- other theft;
- criminal damage;
- arson;
- fraud;
- drug abuse; and

- other costs (which include costs of the police, prosecutions, courts and other government spending on crime, the prevention of crime and dealing with offenders).

The costing methodology used to calculate costs has been based on the methodology employed by the Home Office in the United Kingdom (Brand & Price 2000, Dubourg, Hamed & Thorns 2005; Home Office 2011) adapted to Australian conditions. The current costings are for the calendar year 2011. Although the most recent ABS *Recorded Crime* statistics were available for the year 2012, the most recent ABS *Crime Victimisation Survey* (CVS) data were only available for 2011–12. As explained below, in order to account for the survey reference period being 12 months prior to data collection, it would have been necessary to use the CVS survey for 2012–13 in conjunction with the 2012 recorded crime statistics. In addition, other government agency data were only available for the 2011 calendar year or the 2010–11 financial year.

For ease of use and comparability with previous reports, this report is presented in a similar fashion to the previous technical report (Mayhew 2003b), with the detailed methodology and costings associated with each major category of crime explained in detail in its own section. The headline results are set out in the *Executive summary,* which includes comparable findings for the years 2001 and 2005, by way of comparison.

Prior research

Australian Bureau of Statistics reports

Recorded crime—Victims, Australia 2011

The Australian Bureau of Statistics (ABS) compiles annual data provided by state and territory police jurisdictions to produce national counts of a select number of crimes that are reported to police. Data from ABS *Recorded Crime—Victims, Australia* 2011 (ABS 2012b, as revised in 2012—ABS 2013c) has been used in this report for the categories of homicide, sexual assault, robbery, break and enter, motor vehicle theft and other theft. The ABS does not compile complete national police figures on the other categories examined in this report (assault, thefts from vehicles, shop theft, criminal damage, arson, fraud and drug offences) and in most cases, data held by state and territory police services were used in conjunction with other victimisation survey information.

The reference period used by ABS (2012b) was offences that have been reported to police between 1 January and 31 December 2011. Of course, these offences may have taken place at some time prior to 2011. In 2010, certain changes occurred in police recording practices as part of the completion of the National Crime Recording Standard. Accordingly, comparisons may not be appropriate between data published prior to the *Recorded Crime—Victims 2010* publication and subsequent publications (see ABS 2011b).

Crime victimisation, Australia 2011–12

The ABS' *Crime Victimisation, Australia 2011–12* (ABS 2013a) is compiled from data collected by the ABS 2011–12 CVS. The CVS data are collected on a financial year basis (eg July 2011 to June 2012), while the *Recorded Crime—Victims* data are collected on a calendar year basis (eg January 2011 to December 2011).

Questions within the CVS ask respondents to report their experiences for the 12 month period prior to participating in the survey. For example, for survey interviews conducted in September 2011, the respondent is asked to report any incidents of physical force or violence they have experienced since September 2010. This means that the potential span of data from the survey ranges from July 2010 (the earliest offence date for respondents who were interviewed in July 2011) to June 2011. The centre point to the survey recall period is June 2011. June 2011 is also the centre point of the *Recorded*

Crime—Victims data. As such, the 2011–12 data from the survey and the 2011 *Recorded Crime—Victims* data are considered a suitable approximation for comparison (ABS 2011b).

Mayhew (2003b) and Rollings (2008) relied on data reported in the ABS *Crime and Safety Survey* (CSS), the precursor to the CVS. The ABS (2011b) warns that different crime statistics collections can yield different results and that caution should be taken when comparing data from different surveys and administrative by-product collections that relate to crime and justice issues. The specific methodological differences between the CVS for 2000–01 and 2004–05 and the CVS 2011–12 are discussed in ABS (2011b) and noted where relevant below.

The importance of crime victimisation survey information lies in its ability to reflect actual victim experiences of crime, unlike recorded crime statistics that only deal with matters reported to or detected by police. For most crime types, multipliers indicate the difference between crime victimisation data and police recorded crime data, although account also needs to be taken of crimes that are undetected by victims and hence not included in victimisation survey responses, and also crimes for which there is no individual victim.

Personal safety, Australia 2012

The ABS' *Personal Safety, Australia 2005* datasets (ABS 2013b, 2006b) are compiled from data collected in the ABS *Personal Safety Surveys* (PSS). The latest PSS was conducted from February to December 2012 and collected information from men and women aged 18 years and over about their experience of violence since the age of 15 years in the 12 months prior to the survey. This included their experience of physical assault, sexual assault, physical threat and sexual threat by male and female perpetrators, providing information on the prevalence of the different types of violence by different perpetrator types. Where a person had experienced any of these types of violence, more detailed information was then collected for their most recent incident of each of the types of violence—physical assault, sexual assault, physical threat and sexual threat by a male and by a female perpetrator. It also collected detailed information about men's and women's experience of current and previous partner violence, lifetime experience of stalking, physical and sexual abuse before the age of 15 years and general feelings of safety. The previous PSS was conducted in 2005. The findings were of use in the present study to determine the prevalence of sexual assault in a more precise way than had previously been available.

AIC fraud against the Commonwealth report 2010–11

The AIC conducts annual surveys of all Australian Government agencies' experiences of fraud. These are in the nature of fraud victimisation censuses that seek to obtain data from the entire population of agencies and with a mandatory obligation to respond in accordance with the *Commonwealth Fraud Control Guidelines* (AGD 2011). Using a broad definition of fraud, agencies report their experience of fraud including not only incidents that would fall within the definition of 'recorded crime' by police agencies, but also suspected fraud, incidents under investigation and completed incidents, whether the fraud was proved or not, and whether the incident was dealt with by a criminal, civil or administrative remedy. Estimates are also provided of losses sustained and amounts recovered.

In 2011, an invitation to complete the questionnaire was sent to all 192 Commonwealth agencies. Of those invited, 154 agencies provided responses, which represented a response rate of 82 percent. Of those who responded, 40 percent (61 agencies) reported that they had experienced a fraud incident in 2010–11, totalling 91,091 incidents worth $118,878,181, although 20 percent of agencies that experienced fraud were unable to specify a loss. Losses were defined as the total amount, in whole dollars, thought to have been lost to the agency from fraud incidents, prior to the recovery of any funds, and excluding the costs of detection, investigation or prosecution (Jorna & Smith unpublished).

Monash University Accident Research Centre study (1997)

Some time ago, the Monash University Accident Research Centre (MURAC) undertook a comprehensive study that examined the nature, extent and cost of injury to the state of Victoria for the period of 1993–94. The study drew on a number of sources including, but not limited to, the Victorian Coroners Facilitations System, the Victorian Inpatient Minimum Dataset, the Victorian Emergency Minimum Dataset and the Extended Latrobe Valley Injury Surveillance. Importantly, MURAC were able to calculate the short and long-term costs of injury sustained during interpersonal violence, including where an individual was hospitalised, received non-hospitalised medical treatment or where fatalities occurred. Values calculated included direct costs relating to actual expenditure and certain types of indirect costs (being the value of lost output due to reduced productivity). The costs associated with interpersonal violence were based on a sample of 20,877 victims; less than one percent of whom involved a fatality and 14 percent of whom were hospitalised.

Although focusing on Victoria, the MURAC study is the only one of its kind available in Australia. In the absence of national research, the values associated with interpersonal violence were used in this report to estimate the medical and injury costs around offences such as assault, sexual assault and robbery.

Bureau of Infrastructure, Transport & Regional Economics: Cost of road crashes in Australia (2010)

In 2010, the Bureau of Infrastructure, Transport & Regional Economics (BITRE; formerly the Bureau of Transport and Economics) released an updated report regarding the cost of road crashes in Australia for 2006. As with Mayhew's methodology (2003b), actual cost data produced in the Bureau of Transport and Economics' report were not used, but rather the ratio of lost output to intangible losses was applied to data from the MURAC study (Watson & Ozanne-Smith 1997). In the absence of more recent research, the BITRE findings were used.

Benefits of theft reform (MM Starrs)

Produced in 2005, the MM Starrs (2005) report is the second review of the National Motor Vehicle Theft Reduction Council (NMVTRC) and provided an independent assessment of the costs and benefits of vehicle theft reform and the NMVTRC's performance in overseeing the reform process. Section 4 of the report deals with the unit costs of stolen vehicles and provided detailed estimates for 2004–05. Specifically, the MM Starrs cost estimates for property losses for stolen vehicles for which an insurance claim has not been made have been included in this report. Additional data in connection with motor vehicle theft were obtained from the NMVTRC.

The costs of tobacco, alcohol and illicit drug abuse in Australian society in 2004–05 (Collins & Lapsley)

Collins and Lapsley (2008) produced their fourth report, which estimated the total value of the costs of tobacco, alcohol and illicit drug abuse to Australian society for 2004–05. They defined costs as

> the value of the net resources which in a given year are unavailable to the community for consumption or investment purposes as a result of the effects of past and present drug abuse, plus the intangible costs imposed by this abuse (Collins & Lapsley 2008: 2).

Some data from their publication has been used in the drug abuse section of this report and a more comprehensive description of their findings is also available in that section. Collins and Lapsley's (2008) methodology has been criticised by Crampton, Burgess and Taylor (2011) who reviewed the methods and assessed the policy influence of a series of publicly funded cost of illness studies. Their

analysis showed that headline cost estimates, including Collins and Lapsley's (2008) work, depended on an incorrect procedure for incorporating real world imperfections in consumer information and rationality, producing what was argued to be a substantial overestimate of costs. Other errors were identified that further inflated these estimates, resulting in headline costs that they found to be unrelated to either total economic welfare or GDP and therefore of no policy relevance. It was argued that counting only external, policy-relevant costs not only deflated overall figures substantially but also resulted in rank-order changes among cost categories. These views have been taken into consideration in the current costing exercise.

UK Home Office reports

The economic and social costs of crime against individuals and households 2003–04

The study by Dubourg, Hamed and Thorns (2005) was an update of the original Brand and Price (2000) work completed by the Home Office in 2000. The original study looked at the detailed costs of crime in England and Wales in 1999. Mayhew's (2003a, 2003b) work relied heavily on the methodology (with some small differences) employed by Brand and Price (2000) and the updated estimates in the current report are used mainly for comparison purposes, but the overall methodologies are still similar.

In 2011, the UK Home Office released updated unit costs and multipliers to reflect those used in the Integrated Offender Management Value for Money Toolkit (Home Office 2011). Where appropriate, these updated figures were used as the base for some of the Australian estimates presented in this report.

Crime against businesses: Detailed findings from the 2012 Commercial Victimisation Survey (2013)

In 2012, the British Home Office conducted its CVS in which representatives of 4,000 businesses and premises were interviewed from four major commercial sectors—manufacturing, wholesale and retail, transportation and storage, and accommodation and food. The interviews were conducted by telephone and participants were asked questions regarding experiences of crime that occurred at their premises during the preceding 12 months (Home Office 2011). Questions covered a range of topics including the nature of the crime, crime prevention and the costs incurred as a direct response to victimisation as well as in prevention.

Currently, there is no comparable report available in Australia. Victimisation surveys such as the ABS' *CVS* do not include business as victims meaning that this population if often overlooked. While the AIC's *Small Business Crime* survey did examine the nature of crimes against business in Australia, it was conducted in 1999 and therefore was not used in this report.

Understanding organised crime: Estimating the scale and the social and economic costs (2013)

In 2013, the British Home Office published a research report that sought to estimate the social and economic costs of organised crime to the United Kingdom for the year 2010–11 (Mills, Skodbo & Blyth 2013). The study examined certain specific types of organised crime including organised acquisitive crime, organised child sexual exploitation, counterfeit currency, drugs supply, organised environmental crime, firearms supply, organised fraud, types of organised immigration crime, organised intellectual property crime and organised wildlife crime. Other types of organised crime such as identity fraud and cybercrime were excluded owing to risks of double counting and the paucity of available data. The research also identified a range of limitations in the estimations that make the total an underestimate of the actual costs involved. The study reached the following conclusions that have relevance to the costing methodology used in the present Australian study:

- Drugs supply (£10.7b social and economic costs) is associated with substantial amounts of drug-related acquisitive offending as well as health costs and drug-related deaths, impacting on individuals, families and communities.
- Organised fraud costs to the United Kingdom are estimated to be substantial (£8.9b) and

these, along with the costs of counterfeit currency (£7m) and organised intellectual property crime (£0.4b), damage the prospects and reputation of UK businesses and financial services, as well as reducing tax revenue.

- The suffering caused by human trafficking for sexual exploitation (£890m) is extensive, despite our ability to capture only a small proportion of those harms in this report and the further work needed to map the costs of people smuggling (£140m) and abuse of legitimate entry (£11m).
- The damage caused by organised child sexual exploitation is well evidenced. Quantitative data are limited but the harms are still extensive (£1.1b).
- The six types of organised acquisitive crime (from £27m to £920m) cause damage to individuals, communities and businesses, whether through the physical and emotional harms caused to victims, the financial losses incurred through disruption of business or the direct losses incurred.
- The costs of organised violence and homicide have not been included in the current work, nor have we been able to capture the violent offending associated with the supply of illicit drugs. However, an estimate of the social and economic costs of firearms supply (£160m) illustrates a small part of the damage by violence caused by organised crime.
- Organised environmental crime and organised wildlife crime cause pollution and damage communities and businesses in the United Kingdom. There are insufficient data to currently estimate costs, but there is clear evidence on the types of damage caused.
- 'We estimate that the total social and economic costs of organised crime are at least £24b per year' (Mills, Skodbo & Blyth 2013: 11).

The authors of the report noted the limitations on the available data and included information only where there was a strong degree of confidence in its accuracy. Should further research be undertaken in Australia to estimate the cost of organised crime, the Home Office methodology and findings will be an invaluable source of guidance.

European Parliament report

The economic, financial and social impacts of organised crime in the European Union (2013)

In 2013, the European Parliament published the results of a study into the economic, financial and social impacts of organised crime in the European Union (Levi et al. 2013). The study sought to generate a best estimate for the economic, financial and social costs of organised crime in and against the European Union and to inform an evidence-based understanding of the associated issues. An aggregate figure for the costs of organised crime and responses to it in the European Union as a whole was not able to be calculated, but instead estimates were given for selected offences, including some of those dealt with in the present Australian study such as homicide, drug abuse, fraud and motor vehicle crime. The European study also examined other organised crime types including human trafficking, intellectual property theft, environmental crime and cybercrime that provide useful information for future Australian estimates of the cost of these crime types. As was the case with the recent Home Office Report (Mills, Skodbo & Blyth 2013), the limitations of the study were clearly apparent:

> Unfortunately, there are so many gaps in the data available that this short scoping study was unable to fulfill our (and the European Parliament's) loftier ambitions and produce actual estimates for most offenses. However, the data and analysis presented makes a notable step forward and identifies some important gaps that must be filled if organised crime control policies are to take account of good evidence (Levi et al. 2013: 9).

Nonetheless, the report was able to indicate the minimum identifiable direct economic costs of selected organised crime types as follows (Levi et al. 2013: 10–11):

- Human trafficking—€30b
- Fraud against EU (cigarette smuggling)—€11.3b
- Fraud against EU (VAT/MTIC fraud)—€20b
- Fraud against EU (agricultural and structural funds)—€3b

- Fraud against EU individuals—€97b
- Unrecovered motor vehicle theft—€4.25b
- Payment card fraud—€1.16b
- Insurance fraud—€1.0b (in UK alone).

Added to these costs are the costs of responding to organised crime in the European Union that are in excess of €210m.

In concluding, the authors of the report stressed the need to help to differentiate between three different costs of crime categories that future research needs to address:

- private costs: which impact upon individuals directly connected to the victim;
- parochial costs: that are born through community ties, for example extortion threats or Ponzi fraud against a particular business community or ethnic group; and
- public costs: are where the impacts are shared between citizens who are not directly connected to each other (Levi et al. 2013: 12).

Both the Home Office and the European Parliament reports provide useful conceptual and methodological insights into how costs of crime could be measured in Australia in the future, particularly with respect to some of the more problematic crime types that involved organised criminal activity.

Methodology

This report has sought to replicate the costing methodology developed in previous AIC publications by Walker (1997, 1992), Mayhew (2003a, 2003b), and Rollings (2008). Reference should be made to these previous publications to understand the development of the methodology over time and where improvements and variations have been made to earlier approaches. Where more recent and authoritative sources of information have been located, these have been used in preference to the sources relied on in the earlier AIC reports. In addition, where a strong theoretical or practical case could be made for diversion from earlier approaches, then a variation in the methodology was undertaken. The magnitude of multipliers was also reassessed and where more accurate information was available, the multiplier was varied as indicated below. Finally, where no updated or better data were available, the original 2005 figure was taken and inflated by the consumer price index (CPI) to 2011 values using the Reserve Bank of Australia's inflation calculator (RBA 2013).

The complexities associated with attempting to quantify the cost of crime are examined by Mayhew (2003b) and a review of the cost of crime literature was undertaken as part of the *Mainstreaming Methodology for Estimating Costs of Crime* project as presented by the Centre for Criminal Justice (2008). The material presented in these publications has not been reproduced here.

Reference period

Data used in this report relate to the 2011 calendar year (1 January to 31 December), the most recent for which official crime statistics were available. However, some data are reported for financial years only (1 July to 30 June) and in this case, the financial year 2011–12 data were used where they were available. In addition, where regular survey data have been used, such as crime victimisation and business surveys, these results were used where the respondent reference period was the 2011–12 year, or where the reference period extended for shorter or longer periods, the results recalculated to approximate the 2011 calendar year.

It is also important to determine whether an 'incidence-based' or a 'prevalence-based' approach should be used (see Centre for Criminal Justice 2008). An 'incidence-based' cost of crime estimate is based on individual crime episodes that may have cost implications for many years following the commission of the crime. Thus, 'incidence-based' approaches count both present and future costs in the year in which the crime occurred. A 'prevalence-based' approach, however, examines costs actually incurred during the reference period in question including all costs incurred during the reference period, regardless of when the crime was committed. 'Incidence-based' estimates indicate

how much could be saved by preventing future crime and therefore, are relevant for criminal justice policy analysis and are used in the present report.

Multipliers and their use

To estimate the cost of a particular crime, the frequency with which the crime occurs needs to be established. A major difficulty in attempting to assess the costs of crime is the 'unknown' frequency of many types of crimes. There are several reasons why the number of crimes that occur may be unknown, in that they have not been detected or not reported officially. First, some victims of crime might not be aware that a crime has taken place (eg in the case of charity fraud where donations are made to an ostensibly legitimate organisation that is actually non-existent). Not all crimes may be reported to the police. This is especially the case if the nature of the crime is considered too trivial to report (eg the case of an attempted break and enter where nothing was stolen), or in the case of a 'victimless' crime, where it is not clear a crime has taken place (eg shoplifting). There are also incidents in which more serious crimes are not reported to the police for fear of the consequences of reporting due to concern about reprisals or because the victim is uncomfortable or scared to report the crime (as with sexual assault or domestic violence-related assault). This 'gap' between the number of reported crime incidents and the actual number of incidents that occur makes the costing of crime difficult.

Secondly, not all crimes reported to police are necessarily recorded by police as a crime, although under the national crime recording standard this should be rare. The non-recording of crimes by police may occur for a number of reasons, including complying with victims' wishes not to proceed, the police may feel the report is mistaken or dishonest, or the police may feel there is insufficient evidence to proceed with a charge (Mayhew 2003b).

For the purposes of costing crime, the 'gap' between recorded and actual crimes is addressed through the use of so-called 'multipliers' for each crime type. This is an estimate of how much police-recorded crime (as presented in ABS 2012b) should be inflated to estimate the 'true' number of crimes that have occurred. For example, this paper assumes that all homicides are known to police; therefore, homicide is assigned a multiplier of '1.0'. However, it is well documented that not all instances of sexual assault are reported to police (eg Daly & Bouhours 2009), so a multiplier of 6.2 was used to adjust the recorded crime figures to obtain an estimate of the actual number of sexual assaults. A multiplier of 6.3 means that only 16.2 percent of sexual assaults were recorded by police.

Where possible, the multiplier is calculated using the nationally representative data collected in the ABS' 2011–12 *Multipurpose Household Survey*. Respondents were asked whether they had been the victim of selected offences in the previous 12 months and those responses were taken at 'face value'. It should be noted that the calculation of the estimated number of crimes in this report is not necessarily the figure presented in ABS *Crime Victimisation* data because this does not include victims under the age of 15 years, whereas recorded police figures include victims of all ages. To address this issue, the relevant crime victimisation survey data have been inflated to reflect an estimated number of crimes that would have been experienced by persons under 15 years of age. Although this results in an estimated total only, in the absence of better data it has been adopted to provide a similar estimation to that previously undertaken by Mayhew (2008b).

There are also the many limitations that self-report victimisations surveys carry. These include the difficulties associated with seeking information from victims of crime about complex crime types such as fraud. Problems of telescoping information (ie including events outside the survey reference period), exaggerating facts or reporting selectively—all common problems with surveys and personal interviewing—can affect the accuracy of information gathered using conventional techniques. There may also be problems of veracity, where a manager may be reluctant to report circumstances that may be personally incriminating or that may attract negative publicity for the organisation. There may also be problems arising from organisational incentives associated with how criminal behaviour is classified. For example, some financial crime losses are characterised by organisations as bad debt rather than fraud, leading to under-reporting of criminal acts of dishonesty. In the case of large corporations or revenue collecting government agencies,

considerations of this nature can massively affect the accuracy of the estimates of fraud arrived at.

Finally, ABS crime victimisation survey data cannot fundamentally include undetected crimes of which victims are unaware and conduct that might not fall within technical definitions of criminality (see in relation to fraud Levi 2008 and Levi & Burrows 2007). This is particularly relevant in the case of financial crimes involving revenue fraud, corporate and personal credit-related fraud and charity fraud, which are not always apparent to victims and therefore not reported officially.

The multiplier is calculated by comparing the number of crimes as reported in the relevant crime victimisation survey with those reported in ABS *Recorded Crime—Victims*. It is important to match the crime victimisation survey data reference period (2011–12) with the same period used for police recorded crime. As noted above, this was not always possible as police data for some jurisdictions related to calendar years rather than financial years. There is also the difficulty that police data often refer to crimes recorded during the period in question, regardless of when they were perpetrated. Crime victimisation surveys, however, ask participants to recall their experiences of incidents that occurred during the 12 months prior to the reference period in question. For present purposes in determining multipliers, the reference period of the calendar year 2011 has been be used, or where this is impossible, then the financial year 2011–12. On occasions when data for 2011–12 were not yet available, the year 2010–11 was used as the best alternative.

For some property crimes, reporting rates differ according to the seriousness of the offences, whether the offence was completed or attempted and the degree of loss suffered. These differences need to be reflected by applying different multipliers for each subcategory of offence. In the case of fraud, for example, extremely large-value commercial frauds are more likely to be reported to police than the many small-value frauds experienced by consumers, such as losses suffered as a result of minor credit card fraud. Often, such incidents are reported to credit card issuers or banks, who will usually refund the losses to the card holder and charge the losses back to merchants. In such cases, it is the merchant that may ultimately bear the burden of the fraud. Reporting of such crimes to police is very low. The AIC's annual consumer fraud survey for 2012, for example, found a reporting rate to police of 17.3 percent of victims of scams in 2011—which would equate to a multiplier of 5.8 (Jorna & Hutchings 2013). However, in the case of serious fraud, KPMG (2013) found that 46 percent of major fraud incidents reported in the survey were referred to the police, which would equate to a multiplier of 2.2. There are similarly wide variations in reporting rates for individual and commercial robbery and burglary where commercial incidents are more likely to be reported for insurance purposes.

Intangible costs

Intangible costs are those costs not usually 'exchanged private or public markets, such as fear, pain, suffering, and lost quality of life' (Cohen 2005: 25). The methodology used by Mayhew (2003b) for assessing the intangible costs of crime was used, based on the more recent study conducted for the Home Office for the year 2003–04 in the United Kingdom by Dubourg, Hamed and Thorns (2005). Mayhew (2003b) describes in detail the various approaches that can be used to the estimation of intangible costs and it is unnecessary to repeat these here. These estimates were adjusting for inflating in the United Kingdom between 2004 and 2011, and for pricing and purchasing power parity differences between the United Kingdom and Australia.

Purchasing power parities and inflation figures

Cost estimates from both the United States and the United Kingdom have been used in this report, as Australian data were not available. In both cases, Purchasing Power Parities (PPP) issued by the Organisation for Economic Co-operation and Development (OECD 2013) were used to convert costs given in US$ or UK£ to AU$. This gave conversion rates of A$2.20 to £1.00 and A$1.49 to US$1.00 for 2011, which were applied in this report.

There were several places in the report where costs estimated by Mayhew (2003b) and Rollings (2008) or

where US and UK figures needed to be inflated to 2011 figures. This was done using the CPI inflation rates reported by the Reserve Bank of Australia using their online inflation calculator (RBA 2013). For example, the calculator shows that $100 in 2005=$119.64 in 2011. Inflation rates were applied as the last stage of the conversion process.

Where baseline data were published in £stg prior to 2011, these were revised to account for changes in inflation in the United Kingdom using the Bank of England calculator (Bank of England 2013) and then converted to A$ using the OECDs PPP conversion rate for 2011 (OECD 2013).

Exclusions from the current estimates

Some costs have not been included in the estimates presented in this report. These include the social costs of fear of crime, costs of supporting offenders and their families, local government crime prevention activity, community defensive action, 'second-generation' costs of offending (including the costs of victims of crime committing crimes in the future and the costs to the families of offenders through disruption, guilt and dysfunction) and damage to the reputation of victims and offenders (in the case of a financial crime; Gilligan 2007) and costs associated with disinvestment in high-crime areas, which can be substantial. The nation-wide lost productivity of those individuals committing crimes has not been costed and included in estimates due to lack of available data.

Notes when reading this report

Table totals may not add to sub-components due to rounding.

Medical costs have not been estimated for the categories of burglary, thefts of motor vehicles, thefts from motor vehicles, shop theft, other theft, criminal damage, arson or fraud due to lack of available data.

Intangible losses have not been estimated for shop theft, arson, or drug abuse due to lack of available data.

All dollar values reported have been adjusted to 31 December 2011 AU$.

Homicide

The number of homicides

The term *homicide* for the purposes of this report includes cases of murder, manslaughter and driving causing death (an unlawful killing through culpable, dangerous or negligent driving). It does not, however, include cases of attempted murder, which have been included in the estimates for assault.

In 2011, there were an estimated 463 homicides in Australia. This figure includes 274 cases of murder and manslaughter as recorded by the ABS (ABS 2012b) and 189 estimated cases of driving causing death. Since 2006, the ABS has been unable to provide the information on driving causing death as not all jurisdictions were able to provide data (ABS 2012b). In the absence of other available data, the 2011 figures were proportionally estimated by using the average decrease (2.3%) in the number of cases of driving causing death from 1998 to 2005, as reported by the ABS (ABS 2007). This decrease is consistent with the average decline (2.5%) in fatal road crashes in Australia from 2002 to 2011 (BITRE 2012). While these two measures are not directly comparable, the decrease in fatal road crashes in Australia supports the current estimate as reasonable.

In line with both Australian and International costs of crimes studies (Brand & Price 2000; Dubourg, Hamed & Thorns 2005; Mayhew 2003b; Rollings 2008; Smyth 2011) it is assumed all homicides were known to police, so a multiplier of 1 was applied. However, as noted by Mayhew (2003b), it is possible that the number of homicides may be slightly underestimated because of instances where missing persons may have been murdered and no body or bodies have been recovered or cases where the cause of death may have been incorrectly assigned (eg Sudden Infant Death Syndrome). Both instances are examples of where a murder may have occurred and not been recorded.

Medical costs

Consistent with Mayhew's (2003b) approach, figures on the medical cost of homicide were obtained from an Australian study on the costs of injury (Watson & Ozanne-Smith 1997) and inflated to 2011 costs. The estimated medical cost of a homicide in Australia in 2011 was $10,100 (see Table 4). Overall, the total medical cost of homicide in 2011 was $4.7m.

Lost output and intangible losses

Using the same approach as Mayhew (2003b), lost output included the present value of foregone lifetime earnings. The total cost excludes any costs of supporting the surviving dependents of victims and offenders, and any intangible costs for family and friends of homicide cases. Also excluded are the costs of investigation, prosecution, trial and imprisonment of homicide offenders, which are included in criminal justice system costs. BITRE (2010) estimated the cost of lost output (in the workplace and household) for a fatal road accident in 2006 and this cost was then inflated to 2011 costs. BITRE's (2010) calculations of the value of intangible losses based on compensation payments for road accident fatalities were used as the starting point. Using Mayhew's (2003b) approach, the ratio of BITRE's quality of life figure to BITRE's lost output figure for fatal road accidents (0.24) was applied to MUARC's lost output figure for homicide. This discounts the fact that the circumstances and consequences of road accident fatalities and homicides may differ, although the present category of homicide does include cases involving driving causing death. The cost per homicide of lost output in 2011 was estimated to be $2.17m and $1.04b overall. Applying this ratio to the lost output figure for fatal road accidents, the intangible cost per homicide in 2011 was $520,000 or $241m overall.

Total costs

As shown in Table 4, the total cost for homicide is estimated at $2.7m per incident, or $1.25b overall. Not surprisingly, the largest component in the costs of homicide was the losses due to lost output of victims.

Table 4 Costs of homicide[a]

Category	Per incident cost ($)	Total cost ($m)
Medical costs	10,100	4.7
Lost output[b]	2,170,000	1,004
Intangible losses	520,000	241
Total[c]	2,699,000	1,250

a: Based on 463 homicides in Australia in 2011

b: Based on a 3% social discount rate

c: Totals may not add to sub-components due to rounding

Assault

Assaults recorded by police

The ABS defines assault as

> the direct (and immediate/confrontational) infliction of force, injury or violence upon a person or persons, or the direct (and immediate/confrontational) threat of force, injury or violence where there is an apprehension that the threat could be enacted (ABS 2012b).

In 2011, the ABS did not present aggregated national results for assault but rather a breakdown by state/territory was provided. However, data were only available for New South Wales, South Australia, the Northern Territory, Western Australia and the Australian Capital Territory in 2011. For these jurisdictions only, the total number of recorded assaults was 117,873. In the absence of available data for the other jurisdictions, these official statistics were not used for the current costing calculations. Official recorded crime statistics for attempted murder were, however, available nationally and indicated that there were 185 attempted murders in Australia in 2011 for persons of all age categories. This number was revised in 2012 in respect of the 2011 year (ABS 2013c).

Crime Victimisation Survey, Australia 2011–12

The CVS reported that in 2011–12, there were 1,093,400 victims of physical assault or threatened assault, aged 15 years and over (ABS 2013a). The CVS provided a breakdown of whether the individual had been physically assaulted and/or threatened with physical assault. In total, the CVS reported that 539,800 individuals had been physically assaulted and 667,700 individuals had been threatened with physical assault (either face-to-face or not face-to-face; ABS 2013a). The CVS also provided data for victims aged 18 years and over who had experienced physical assault as to whether they experienced physical injury and whether or not they had sought medical treatment. In total, 44.9 percent of individuals assaulted were physically injured and 55.1 percent not physically injured. Of those physically injured, 39.3 percent sought medical treatment (17.7% of all assault victims). The remaining 60.6 percent of those physically injured did not seek medical treatment (27.2% of all victims of assault). These proportions have been applied to the overall number of physical assaults, although age differences could not be accounted for due to data aggregation.

No information was available on whether individuals were hospitalised, so to account for this, the proportion of individuals hospitalised was taken from the 1997–98 CSS (ABS 1999) and applied to the proportion injured and seeking medical treatment as reported in the CVS. It was necessary to use these estimates, as individuals requiring medical treatment did not necessarily require the treatment in hospital. In addition, the costs for individuals with injuries severe enough to require hospitalisation are far higher and the impact on the individual is much greater than if hospitalisation is not required. Data on hospitalisation were not available from more recent ABS PSS.

Estimating the number of assaults

There were 1,093,400 victims of assault aged 15 years and over reported in the CVS for 2011–12 (ABS 2013a). Mayhew (2003b) noted that crime victimisation survey counts of assault may be inflated relative to police figures, even taking account of non-reporting. One reason is that although threats are, in principle, included in police figures, the police probably take a conservative approach to recording all threats brought to their attention. Another reason concerns multiple victimisation, which can be very pronounced in relation to assault. Thus, while victims may say they have been victimised several times (by the same person in all probability), it is likely that if they go to the police, the police will not record every separate incident, especially if they believe that the incidents are closely related to each other (Mayhew 2003b). On balance and in the absence of more precise data, the present study used the number of victims of assault recorded in the CVS for 2011–12 without applying any multiplier or other correction.

In order to account for the number of assaults of victims aged under 15 years that are not captured by the CVS, a multiplier of 7.2 was applied. This was calculated by averaging the percentage of victims aged under 15 years out of all victims of assault identified in police recorded crime data for New South Wales, South Australia, Western Australia, Northern Territory and the Australian Capital Territory. In New South Wales, for example, there were 5,631 victims of assault aged under 15 years recorded by police in 2011 out of 71,169 assault victims of all ages (7.9%). The average of these percentages for the jurisdictions for which data were available was 7.2 percent. Applying this resulted in an estimated total number of victims of assault of all ages nationally of 1,172,333.

The additional 185 attempted murders from ABS *Recorded Crime* data resulted in a total of 1,172,518 that was used for the costing exercise.

By way of comparison with other police recorded crime data set out in Table 1, it is possible to estimate the number of assaults that might have been recorded by police nationally by dividing the CVS total (and attempted homicides) by a multiplier of 6.9. This yields an estimate of 169,903. This multiplier is based on the average of Mayhew's 5.3 (2003b) and Rollings' 5.2 (2008), adjusted to take account of the latest UK multiplier for common assault of 7.9 (Home Office 2011). This estimation will not be further used for the purposes of the costing calculations, and is only included to enable a comparison between police recorded crimes over the last decade (see Table 2).

Table 5 shows the total estimated assaults by injury type. As indicated above, the proportion of the total number of assaults resulting in injury and whether medical treatment was sought came from the 2011–12 CVS (ABS 2013a). The rate of hospitalisation was based on the proportion of victims of assault hospitalised in the 1997–98 CSS (ABS 1999).

Table 5 Estimated number of assaults

Category	Percentage of all victims of assault[a]	Number of estimated victims of assault[b]
Hospitalised[c]	1.83	21,639[d]
Injured, medical treatment without hospitalisation	15.82	185,463
Injured, no medical treatment	27.21	318,992
No injury	55.13	646,307

a: Including victims under 15 years of age

b: Based on the proportions of respondents who reported being injured and whether they sought medical treatment in the 2011–12 CVS

c: This breakdown is based on the proportion of those injured who sought medical treatment in the 1997–98 CSS

d: It is assumed that all attempted murders required hospitalisation and so this number includes the 185 attempted murders

The estimated figure for the number of assaults resulting in a hospital stay can be validated against the number of hospitalisations where the principal diagnosis was assault. While 2011–12 figures were unavailable, there were approximately 24,500 hospitalisations where the principal diagnosis was assault in 2009–10 (Tovell et al. 2012). In 2011–12, hospitalisations due to assault, based on CVS data, were estimated to be 21,639. While the two figures are not directly comparable, hospitalisation data indicate that the current figure may be slightly underestimated.

Medical costs

Using the approach Mayhew (2003b) followed using data from the Australian study conducted by the MURAC (Watson & Ozanne-Smith 1997), the estimated medical costs of assault requiring hospitalisation was $11,600 in 2011 (see Table 6). The estimated cost of an injury requiring medical treatment without hospitalisation was $690. The average cost for treating an injured person medically was $1,800. Overall, the average cost per incident of assault was $320 and the total medical costs due to assault were $379m.

Lost output

In keeping with Mayhew's (2003b) methodology, MURAC's costs for lost output are applied to those who had medical treatment. Of those who were injured, but not medically treated, their lost output was set at a quarter of the cost of those individuals treated outside a hospital (eg in a doctor's office). This accounts for loss of productivity through disruption to work or through having to take time off work. The UK estimate adopted by Mayhew (2003b) for assaults that did not result in injury was also used here and adjusted to 2011 prices.

The lost output for an assault, averaged across all incidents, was $1,200. It is clear, however, that incidents of assault that resulted in hospitalisation or medical treatment were clearly more expensive (see Table 6). Overall, the cost of lost output using this methodology was $1.44b.

Table 6 Costs of assaults—medical, lost output and intangible losses

Category	Per incident cost ($)			Total cost ($m)		
	Medical	Lost output	Intangible	Medical	Lost output	Intangible
Hospitalised[a]	11,600	32,300	13,100	251	699	283
Injured, medical treatment without hospitalisation	690	2,700	2,800	128	500	519
Total—injured, medical treatment	1800	5,700	3,900	379	1,199	802
Injured, no medical treatment	-	670	670	-	214	214
Not injured	-	40	400	-	26	259
Average per incident cost	320	1,200	1,100	-	-	-
Total	-	-	-	379	1,439	1,275

a: Includes attempted murders

Intangible costs

In keeping with the methodology employed in Australian costs of crime reports (Mayhew 2003b; Rollings 2008; Smyth 2011), the ratio of BITRE's intangible losses for non-fatal road accidents to their lost output figures was applied (BITRE 2010; 2000). The previous ratio for hospitalised injuries was able to be revised from 0.66 to 0.40 due to newly released data (see BITRE 2010). The remaining ratios were, however, unable to be revised as the data were not sufficiently disaggregated among the other categories and as such, the original ratios used in Mayhew (2003b) have been maintained.

Per incident, intangible losses for assault are estimated to be $1,100. This figure was considerably higher for those individuals who were injured and received some form of medical treatment, at $3,900 an incident. Overall, intangible losses due to physical assault totalled $1.28b.

Total costs

The estimated total cost for assault is $2,600 per incident and $3.03b overall (see Table 7). The largest component of assault costs was lost output, followed by the intangible losses, which differed from previous reports where the reverse was the case. This is likely due to the revised ratio of intangible losses to lost output (see above).

Table 7 Overall unit and total costs of assaults, 2011

Category	Per incident cost ($)	Total cost ($m)
Hospitalised	57,000	1,233
Injured, medical treatment without hospitalisation	6,100	1,147
Total injured, medical treatment	11,400	2,380
Injured, no medical treatment	1,300	428
Not injured	440	285
Average per incident cost	2,619	-
Total	-	3,021

Sexual assault

Sexual assaults recorded by police

Sexual assault is defined by the ABS (2013a: np) as

> physical contact, or intent of contact, of a sexual nature directed toward another person where that person does not give consent, gives consent as a result of intimidation or deception, or consent is proscribed (i.e. the person is legally deemed incapable of giving consent because of youth, temporary/permanent (mental) incapacity or there is a familial relationship).

In Australia, there were 17,592 sexual assaults recorded by the police in 2011, with 85 percent committed against females (ABS 2013a).

Estimating the number of sexual assaults

The most recent survey data collected by the ABS concerning sexual assault comes from the PSS 2012 (ABS 2013b). This survey found that 124,800 persons reported experiencing sexual assault in the 12 months preceding interviews that were conducted from February to December 2012. Sexual assault was defined as

> an act of a sexual nature carried out against a person's will through the use of physical force, intimidation or coercion, and includes any attempts to do this. This includes rape, attempted rape, aggravated sexual assault (assault with a weapon), indecent assault, penetration by objects, forced sexual activity that did not end in penetration and attempts to force a person into sexual activity. Incidents so defined would be an offence under State and Territory criminal law (ABS 2013b: np).

Only persons over 18 years of age were interviewed.

In order to estimate the number of victims of sexual assault aged under 18 years, the ABS (2013c) *Recorded Crime* data on age of victim was used. This provided a general indication only and is less robust than the ABS PSS Survey data (ABS 2013b) for victims of sexual abuse aged under the age of 15 years who were unavailable at the time of writing.

ABS *Recorded Crime—Victims* records the age of victims at the time they become known to police rather than the age that the person became a victim. For example, if a victim was sexually assaulted at age 14 years but did not report the offence until they were 18 years of age, their age as presented in the data in this publication would be 18 years. Therefore, it is not possible to derive an accurate count of victims at the age when they were

victimised. In the absence of other data, the proportion of victims aged under 18 years out of the total recorded crime victims was used. In 2011, there were 11,226 persons who were victims of sexual assault in age categories 0–19 years. Proportionally adjusting this for those aged 0–18 years, results in 10,332 persons out of a total of all victims of sexual assault of 17,589 (58.7% aged 0–18 years; ABS 2013c). Using this percentage to inflate the PSS data results in a total estimated number of sexual assault victims of all ages of 198,109. This represents a multiplier of 11.26 times the number of recorded crime victims in 2011. Although this multiplier is much higher than Rollings' (2008) 5.3 and Mayhew's (2003b) 5.6, it is in line with the 2011 Home Office revised multiplier for sexual offences of 13.6 published following changes to the methodology used by the Home Office (Home Office 2011).

In terms of injury, estimates of the proportion of sexual assaults that result in an injury, although collected for the PSS are publicly unavailable. In the absence of other available information, data from the CSS were used, which estimated that nearly 28 percent of sexual assaults resulted in an injury (ABS 2003). This yields an estimated 55,471 sexual assaults that involved an injury for 2011.

Medical costs

Following the approach taken by Mayhew (2003b) and Rollings (2008), the average medical costs for assault were applied to sexual assault. The average medical cost for those injured was $950 per incident. Applying this to the 55,471 sexual assaults that were estimated to have involved an injury, the total medical cost is $52.7m.

Lost output

Using Mayhew's (2003b) approach for lost output, figures for assault were inflated by one-third based on the ratio of people who consider sexual assault 'very serious' to those who consider assault 'very serious' from the ICVS (see van Kesteren, Mayhew & Nieuwbeerta 2001).

The lost output per incident costs for sexual assault are $53 for incidents where the person was not injured and $6,400 for incidents where the person was injured. The total cost of lost output due to sexual assault is an estimated $363m.

Intangible losses

The same approach used for calculating lost output due to sexual assault was used to estimate intangible losses. The estimated per incident costs of intangible losses due to sexual assault are $530 for incidents where the person was not injured and $5,100 for incidents where the person was injured (see Table 8). In total, the cost of intangible losses is estimated to be $359m.

Table 8 Costs of sexual assaults—medical, lost output and intangible losses[a]

	Per incident cost ($)			Total cost ($m)		
	Medical	Lost output	Intangible	Medical	Lost output	Intangible
Injured	950	6,400	5,100	53	355	283
No injury	-	53	530		8	76
Average per incident cost	500	1,800	1,800	-	-	-
Total	-	-	-	53	363	359

a: Totals may not add to sub-components due to rounding

Total costs

The estimated total cost of sexual assault was $775m in 2011 (see Table 9). This is an average incident cost of approximately $3,912. The largest components of sexual assaults costs were the lost output and intangible costs, which were almost identical in cost.

Table 9 Total costs of sexual assault

	Per incident cost ($)	Total cost ($m)
Injury	12, 450	691
No injury	583	84
Total	3,912	775

Costs of child sexual abuse

Other costs that may need to be attributed to costs of sexual assault in future *Costs of Crime* reports, include those associated with child sexual abuse. The ABS PSS examined the incidence of sexual abuse, which was defined as

> abuse experienced by a person before the age of 15 years from any adult (male or female), including the person's parents, but excluding emotional abuse.

Sexual abuse included

> any act by an adult involving a child (before the age of 15 years) in sexual activity beyond their understanding or contrary to currently accepted community standards (ABS 2013b: np).

Data on sexual abuse were not available for the current research and would need to be considered in any future costs of crime report. Evidence presented to the Royal Commission into Institutional Responses to Child Sexual Abuse may also be useful in calculating the costs associated with the various elements of sexual abuse in the future (see Morgan & Carbonnell 2013).

Robbery

Estimating the number of robberies

The Australian and New Zealand Standard Offence Classification (ANZSOC) defines robbery as

> [t]he unlawful taking of property, with intent to permanently deprive the owner of the property, from the immediate possession, control, custody or care of a person, accompanied by the use, and/or threatened use, of immediate force or violence (ABS 2011a: 45).

Figures presented in this chapter include armed, unarmed and attempted robbery.

Recorded crime statistics

According to ABS recorded crime statistics there were 13,617 victims of robbery in Australia in 2011. For the purposes of estimating property losses, it is necessary to know the number of robberies in which an organisation was the victim and the number in which an individual was victimised. Recorded crime statistics show that 11,206 victims of robbery were either male or female (82.3%) while 2,411 were non-individuals (17.7%). It may be assumed that these latter crimes were against organisations (ABS 2012b).

Crime victimisation survey data

In order to capture the number of robberies not recorded by police, data from the ABS' Crime Victimisation, Australia 2011–12 (ABS 2013a) have been used. However, the ABS CVS records only victimisation experienced by persons aged 15 years and over, unlike recorded crime statistics in which victims of all ages are recorded. In 2011, there were 598 victims of robbery aged under 15 years (5.3%) using the same proportion of recorded crime victims under the age of 15 years.

In 2011–12, the CVS estimated there to be 66,400 victims of robbery aged 15 years or over. Adding 5.3 percent to this for those aged under 15 years, gives an estimated total of 69,872. This represents a multiplier of 6.2 times the number of officially recorded robberies against individuals in 2011.

In the case of robberies against organisations, ABS recorded crime statistics show that there were 2,411 non-individual victims in 2011 (ABS 2012b). Using the same multiplier of 1.2 for organisational robberies that Rollings (2008) used, it may be estimated that there were 2,893 organisational robbery victims in 2011.

In total, there were an estimated 72,765 victims of robbery in 2011—69,872 individuals and 2,893 organisations.

This figure represents a 24 percent decrease from the 99,296 reported by Rollings (2008). However, it should be noted that recorded counts of robbery have decreased by 21 percent since 2005 and thus the current figure reflects the general downward trend in robbery victimisation.

Estimating property loss

As in previous AIC cost of crime reports, the lack of a definitive figure for the average property lost in robberies across Australia makes estimation of the total cost of robbery difficult. Further, many of the sources used by Rollings (2008) were unavailable or have not been updated since 2008. The UK Home Office has, however, recently released the findings from its *Commercial Victimisation Survey 2012* (Home Office 2013) that have been used where relevant. Unfortunately, the content of the *Commercial Victimisation Survey 2012* has less detail than the previous 2002 survey making some calculations impossible. Accordingly, many of the current estimates were based on costs determined in earlier Home Office reports—*The Economic and Social Costs of Crime Against Individuals and Households 2003/04* (Dubourg, Hamed & Thorns 2005) and *Crime Against Retail and Manufacturing Premises: Findings from the 2002 Commercial Victimisation Survey (*Shury et al. 2005a, 2005b).

It is estimated that robbery cost organisational victims a total of $6.4m in 2011; an average of $2,210 per incident. This total was calculated by averaging the cost to organisations estimated in the UK commercial victimisation survey ($2,212 to retailers and $3,702 to manufacturers), and from NSW police data provided to AIC previously ($718). All costs presented have been inflated to 2011 Australian prices and represent the cost of lost property only, excluding consequential losses.

The cost of robbery to individuals was similarly difficult to quantify and undertaken mainly by inflating previous estimates to the equivalent 2011 values in Australian dollars. It is therefore estimated that robbery cost individuals $377 per incident and a total of $26.3m in 2011.

Combining the costs of organisational and individual robberies, the total estimated property loss cost in 2011 was $32.7m or $449 per victim.

Medical costs

Research indicates that injury as a result of robbery is quite rare (Smith, Dossetor & Borzycki 2011). In 2005, the ABS estimated that 35 percent of victims were injured as a result of robbery. As there has been no research to suggest a change in the nature of robbery in the past six years, this proportion was used to estimate the number of victims who were physically injured in 2011. Specifically, it is estimated that 24,455 individuals were injured as a result of robbery in 2011.

To determine the proportions that required medical attention or hospitalisation, an average of the previous estimates from Mayhew (2003b) and Rollings (2008) was used. It is therefore estimated that 39 percent of victims required medical attention but were not hospitalised, while 10 percent were hospitalised.

The cost per average hospital stay and non-hospital stay presented in the assault section of this report were used to calculate the medical costs of robbery. These were an average of $11,600 per hospitalisation and $690 per incident requiring medical attention but not hospitalisation. In total, the medical costs of robbery were $35m or $2,917 per injured victim, or $481 per any victim of a robbery (see Table 10).

Table 10 Costs of robbery—medical, lost output and intangible losses, 2011

Category	Per victim cost ($)			Total cost ($m)		
	Medical	Lost output	Intangible	Medical	Lost output	Intangible
Hospitalised	11,600	32,300	12,920	28.4	79.0	31.6
Injured, medical treatment	690	2,700	2,835	6.60	25.7	27.0

Table 10 Costs of robbery—medical, lost output and intangible losses, 2011 cont.

Category	Per victim cost ($)			Total cost ($m)		
	Medical	Lost output	Intangible	Medical	Lost output	Intangible
Total treated	2,917	8,750		35.0	104.7	58.6
Injured, no medical treatment	-	675	670	-	8.1	8.4
Not injured	-	40	400	-	1.8	18.2
Average for all victims	481	1,575	1,171	-	-	-
Total	-	-	-	35.0	114.6	85.2

Lost output

In the absence of updated data, the MURAC figures used by Mayhew (2003b) were inflated to 2011 prices. The resulting lost output cost of an incident with injury requiring hospital treatment was estimated to be $32,300 and for medical treatment outside hospital about $2,700. This gives an average lost output cost of robberies requiring medical treatment of about $8,750. A quarter of the lost output costs for those treated outside hospital is set for incidents involving injury but no medical treatment, which amounted to $675. A further $40 was allocated for lost output where the victim was not injured. Averaged across all victims, the lost output for robbery was $1,575 per victim.

Applying these unit costs to the number of individual victims, the total estimate for lost output as a result of robbery in 2011 was $114.6m.

Intangible losses

The intangible costs associated with robbery in 2011 were calculated based on the ratios used previously to estimate the intangible losses associated with assault. Although the motivations behind assault and robbery differ and accordingly, the physical harms may be different, in the absence of more precise data it is assumed that intangible losses can be estimated in a similar way for assault and robbery. As explained in the *Assault* chapter, the ratio for hospitalised injuries was revised to 0.40 as a result of newly released data from the BITRE.

In 2011, the intangible losses associated with robbery totalled $85.2m; equating to approximately $1,171 per robbery victim.

Total costs

The total cost of robbery in Australia for 2011 was $267.5m, of which the largest component was lost output at $114.6m. On average this represents approximately $3,676 per victim (see Table 11).

Table 11 Overall unit and total costs of robbery, 2011

	Unit cost per victim ($)	Total cost ($m)
Property loss and damage	449	32.7
Medical	481	35.0
Lost output	1,575	114.6
Intangible	1,171	85.2
Total	3,676	267.5

Burglary

Burglaries recorded by police

Burglary is defined as the 'unlawful entry of a structure with the intent to commit an offence where the entry is either forced or unforced' (ABS 2011a: 56). Unlawful entry with intent offences include burglary, break and enter, and some theft (AIC 2013). This included break and enter offences where property was taken as well as where property was not taken, but did not include trespass where there was no intent to steal. In 2011, ABS *Recorded Crime—Victims* separated 'burglary' into 'actual burglaries or break-ins' and 'other' burglaries, which the ABS defined as 'attempted burglaries' (ABS 2013a). In total, in 2011, there were 154,726 residential burglary victims recorded by police (ABS 2012b). Most of those (70%) were actual break-ins, while the remainder (30%) were attempts. The ABS distinguished residential burglaries from non-residential burglaries, the latter of which consisted of burglaries that occurred in community areas, in retail and business areas and other unspecified areas. There were 63,467 non-residential burglaries recorded by police in 2011. Of those, 70 percent were actual break-ins and the remainder were attempts (30%). In total, there were 218,193 residential and non-residential burglary victims recorded by police in 2011 (ABS 2012b).

Crime Victimisation Survey, Australia 2011–12

The ABS CVS for 2011–12 provided data on the number of victims and the number of incidents of attempted break-in and break-in for households, and combines the number of overall victims (victims of one incident are not double counted if they have been the victims of another), for the 12 months prior to the survey collection. There were 372,400 break-ins and 295,200 attempted break-ins recorded in the CVS, totalling 667,600 incidents for 2011–12 (ABS 2013a).

Estimating the number of burglaries

Residential burglary

The CVS (ABS 2013a) estimated 667,600 incidents of burglary and attempted burglary for 2011–12, similar to the number of incidents reported for 2005 (664,800; Rollings 2008), yet considerably lower than for 2001 (819,000; Mayhew 2003b). AIC trend data of recorded crime over the past several years has seen a continual decline in rates of victimisation of property crime between the years 2005 and 2011, with a 23 percent reduction in recorded

property crime (AIC 2013). Comparing the difference between police recorded burglaries and crime victimisation data, yields a multiplier for residential burglary of 4.3 (see Table 12).

Table 12 Multipliers for residential burglaries

Category	CVS residential burglary incidents 2010–11 (n)	Residential burglary victims recorded by police (n)[a]	Multiplier
Break-ins	372,400	108,370 (70%)	3.3
Attempted	295,200	46,356 (30%)	7.1
Total	667,600	154,726 (100%)	4.3

a. Estimated breakdown of break-ins and attempts for residential burglaries

Non-residential burglary

ABS Recorded crime reported that there were 63,467 victims of non-residential burglaries in 2011 (ABS 2012b), although a breakdown of these in terms of completed or attempted burglaries was not provided. ABS Recorded Crime does, however, categorise all unlawful entry with intent offences as 'involving the taking of property' (which can be equated to an actual burglary) and 'other' (which can be equated to an attempted burglary). Using the proportions of 70 percent actual taking of property and 30 percent other attempted unlawful entry with intent, it is possible to estimate the number of non-residential break-ins and attempts (see Table 13).

Because CVS (ABS 2013a) provides data for incidents of household (residential) victimisation only, it is necessary to estimate the number of non-residential burglary incidents and hence the relevant multiplier, by other means. The CVS provides data on whether victims reported the most recent event to the police, which for actual break-ins was 79.5 percent and for attempted break-ins was 45.8 percent. These data, however, only relate to the most recent event and not to all reported cases. Preliminary findings of the UK *Commercial Victimisation Survey for 2012* showed 88 percent of completed non-residential burglaries were reported to police, while only 60 percent of attempted burglaries of non-residential areas were reported to police (Home Office 2013). The earlier UK *Commercial Victimisation Survey for 2002* provided separate reporting to police rates for burglary in a retail setting (92%) and burglary in a manufacturing setting (85%; Shury et al. 2005a, 2005b). Estimates used by Rollings (2008) were based on those developed by Mayhew (2003b) that 80 percent of attempts and 95 percent of actual break-ins are reported to police. This difference is due to the requirement to report break-ins to claim insurance. On the basis of these various estimates of reporting rates for non-residential burglary, it is reasonable to assume that 85 percent of actual non-residential burglaries are reported to police and that 60 percent of attempted non-residential burglaries are reported to police. Summary data are presented in Table 14, which shows a total estimated number of burglaries for 2011 of 753,280. This is only three percent fewer than Rollings' (2008) estimate for 2005 and eight percent fewer that Mayhew's (2003b) estimate for 2001.

Table 13 Multipliers for non-residential burglaries

Category	Estimated non-residential burglary incidents 2010–11 (n)	Non-residential burglary victims recorded by police (n)[a]	Multiplier
Break-ins	53,312	44,427 (70%)	1.2
Attempted	32,368	19,040 (30%)	1.7
Total	85,680	63,467 (100%)	1.3

a. Estimated breakdown of break-ins and attempts for residential burglaries

Table 14 Estimated number of burglaries

Category	Non-residential burglaries recorded by police	Residential burglaries recorded by police	Total estimated non-residential burglaries	Total estimated residential burglaries	Total estimated burglaries
Burglary	44,427	108,370	53,312	372,400	425,712
Attempted burglary	19,040	46,356	32,368	295,200	327,568
Total	63,467	154,726	85,680	667,600	753,280

Estimating property loss

Estimates of property loss due to burglary are made by both police and victims. The extent to which police and individuals can accurately estimate property losses due to burglary is not known. The estimates provided below have been compiled using the best available sources of information.

Attempted and completed burglaries

In estimating the cost of burglaries, account needs to be taken of the fact that losses differ for attempted and completed crimes. There is, however, little evidence to determine what the cost differential actually is. The results of the UK survey of *Crime Against Retail and Manufacturing Premises* in 2002 (Shury et al. 2005a) found that 40 percent of lost output occurred with attempted burglaries and 60 percent for completed burglaries. In the absence of other data, this proportion has been used to allocate costs of attempted and completed burglaries for property damage, lost output and intangible costs. Actual property loss was only calculated in respect of completed burglaries. The unit value of property recovered was applied only to the number of completed burglaries.

Residential burglaries

Updating the data presented by Rollings (2008) and inflating to 2011 prices yields a range of estimates of the cost of residential burglaries.

UK estimates of residential burglary property loss were £846 in 2005 (Dubourg, Hamed & Thorns 2005). Using a UK inflation rate of 3.3 percent per year between 2005 and 2011 (Bank of England 2013), this would result in an estimate of £1,097. Converting this to Australian dollars using the OECDs pricing and purchasing power parities rate of A$2.20 to £1.00, gave an estimated loss of A$2,413.

Using data provided by New South Wales Police, the median property loss for a residential burglary in 2005 was $800, with a mean loss of $2,700, reflecting the highly skewed nature of the data towards a small number of high-value crimes. Using the median price of $800 inflated to 2011 prices results in an estimate of $957. Victoria Police statistics for 2011 (Victoria Police 2011), recorded a median value of $1,830 for residential burglaries with a mean value of $4,661. Tasmania Police reported a mean value of $1,170 for residential burglaries (Rollings 2008), or $1,400 in 2011 prices. Mayhew (2003b) used an estimate of $1,100 in 2001 which in 2011 prices would be $1,463. Taking the average of these Australian median estimates results in a figure of $1,413 as the

unit loss for residential burglaries in 2011. It was decided to use the estimate based on Australian data, rather than the much higher UK estimate as it more accurately reflected the local situation.

Non-residential burglaries

Mayhew (2003b) estimated the cost of an average non-residential burglary in 2001 to be $2,400. This was based on an average of the following data sources. Victoria Police's average loss for non-residential burglary was $2,290, while the loss in New South Wales was just over $1,630. The UK *Commercial Crime Survey* showed average losses of the equivalent of $1,710, rather lower than the Scottish *Business Crime Survey* of the equivalent of $2,990 and the Australian *Small Business Crime Survey* of $2,480. Since the police figures were not consistently higher than the survey estimates, an average of all figures was taken. None differentiated loss and no-loss incidents (Mayhew 2003b).

Rollings (2008) used the following data upon which to base the unit cost of a non-residential burglary in 2005. New South Wales Police indicated a mean loss of $3,200 and a median loss of $600, while Victoria Police reported a mean of $1,800 and a median of $500. The UK Crime Retail and Manufacturing Premises Survey (Shury et al. 2005b) reported a unit cost of the equivalent of $6,200 for a burglary. Rollings (2008) estimated unit cost for non-residential burglary in 2005 was $2,400. Inflating this estimate to 2011 prices results in a unit cost of $2,871.

Property damage

The cost of burglaries also includes estimates of property damage that may occur when burglaries are committed. Dubourg, Hamed and Thorns (2005) estimated the cost of damage per residential burglary to be £187 which, inflated to 2011 prices, results in a cost of £243. Converting this to Australian prices using the OECD PPP results in an estimate of $535. Estimates of the cost of property damage resulting from non-residential burglaries are based on figures from the UK *Crime Retail and Manufacturing Premises Survey* (Shury et al. 2005b), which reported a cost of the equivalent of $1,412 in 2011 prices.

Recoveries

When estimating the cost of burglaries, account need to be taken of the value of property that is recovered by victims. Dubourg, Hamed and Thorns (2005) estimated that for each completed residential burglary, £19 worth of property was recovered. Inflating that amount to 2011 and converting to Australian dollars results in an estimated $63 per residential burglary of property recovered. In the absence of an estimate of the amount recovered for non-residential burglaries, the recovery figure of $63 for residential burglaries was inflated by 2.0 to reflect the fact that total non-residential property loss was twice the cost of residential losses. This results in a unit cost of recoveries for non-residential burglaries of $126.

Lost output

As with the previous AIC reports, Australian data on lost output are still not available. Accordingly, UK estimates of lost output due to burglaries were used (Dubourg, Hamed & Thorns 2005), with adjustments made for inflation and pricing and purchasing power parities (OECD 2013). Lost output costs for residential burglaries, derived from UK estimates of victims' time off work were the equivalent of $100 per incident in 2001 (Mayhew 2003b). Inflating this to 2011 prices results in a loss of $133 per incident.

Lost output for non-residential burglary was based on the results of the UK survey of *Crime Against Retail and Manufacturing Premises* in 2002 (Shury et al. 2005b) and was calculated on the average hours lost due to a burglary. The average lost hours were multiplied by the Australian average hourly wage in 2011 taken from the ABS *labour force* statistics of $25.83 hourly rate (ABS 2012c). This resulted in an average loss of $250 per incident. This can be broken down into lost output for an attempted burglary of $145 per incident and for a successful burglary of $364. This is considerably lower that Mayhew's (2003b) estimate of $1,200 for average lost output for non-residential burglaries.

Intangible costs

The only estimate available for intangible losses is that of Dubourg, Hamed and Thorns (2005) who estimated that the cost of physical and emotional impact on direct victims of residential burglary in 2003 was £646 per incident. Adjusting for inflation and pricing and purchasing power parities resulted in an estimate of $1,746 for 2011. This has been applied both for residential as well as non-residential burglaries. As in the case of lost output, the estimate of $1,746 for intangible costs has been allocated as to 40 percent for attempted burglaries and 60 percent for completed burglaries (see Table 15).

Table 15 Costs of burglaries—property loss, property damage, lost output and intangible losses

Category		Per incident cost ($)				Total cost ($m)			
		Property loss	Property damage	Lost output	Intangible	Property loss	Property damage	Lost output	Intangible
Residential	Complete	1,425	321	80	1,048	531	120	30	390
	Attempt[a]	Nil	214	53	698	nil	63	16	206
	All					531	183	46	596
Non-residential	Complete	2,871	847	364	1,048	153	45	19	56
	Attempt[a]	nil	565	145	698	nil	18	5	23
	All					153	63	24	79
Total	Complete					684	165	49	446
	Attempt[a]					nil	86	21	229
	All					684	251	70	675

a: Using a rate of 40 percent for property damage and lost output of attempts and 60 percent for completed burglaries

Total costs

The overall costs of burglary are presented in Table 16.The total cost was calculated by adding the total property loss, property damage cost, lost output and intangible costs set out in Table 15 and deducting an estimate of the value of property recovered for completed burglaries. The total cost of burglary in 2011 was $1.6b.

Table 16 Overall costs of burglary

Category	Total losses ($m)	Total recovered[a] ($m)	Total ($m)
Residential	1,356	23	1,333
Non-residential	319	7	312
Total	1,675	30	1,645

a: Unit costs for recoveries were $63 for residential and $126 for non-residential burglaries

Thefts of vehicles

Vehicle thefts recorded by police

Motor vehicle theft is defined as

> the taking of another person's motor vehicle illegally and without permission, with the intent of temporarily or permanently depriving the owner/possessor of the use of the motor vehicle

including illegal use of a motor vehicle (ABS 2011a: 53). The ABS (2011a) definition excludes the taking of property from a motor vehicle and the taking of motor vehicle parts, whether or not the thefts involve the taking of the vehicle.

A motor vehicle is defined as 'any self-propelled vehicle that runs on the land surface and is eligible for registration for use on public roads' (ABS 2011a: 53). Motor vehicles may include, but are not limited to, cars, motorcycles, campervans, trucks, buses and plant/equipment vehicles. Thefts from a motor vehicle are excluded from this section; these are addressed in the following section.

In 2011, there were 55,382 motor vehicle thefts recorded by police (ABS 2012b). This was a substantial reduction from recorded motor vehicle thefts in 2001, when approximately 140,000 vehicles were reported stolen (Mayhew 2003b) and in 2005 where 84,900 motor vehicles were reported to police as stolen (Rollings 2008).

Theft of vehicles reported in the Crime Victimisation Survey

The CVS for 2011–12 (ABS 2013a) provided data on the number of incidents of vehicle thefts experienced by households. While it is possible there were some vehicles stolen where the owner was under the age of 16 (and thus excluded from participating in the CVS), it is assumed this number will be small, so no adjustment has been made. There were an estimated 65,600 incidents of motor vehicle theft reported in the CVS, with respondents indicating that 91 percent of the most recent vehicle thefts were reported to police (ABS 2013a).

Estimating the number of vehicle thefts

The difference between the number of reported thefts of vehicles in the CVS (65,600; ABS 2013a) and the number recorded by police (55,382; ABS 2012b) was relatively small. Respondents to the CVS indicated that 91 percent of victims of vehicle theft had reported the latest incident (if they were the victim of multiple vehicle thefts in the previous 12 months) to police (ABS 2013a). Rollings (2008)

assumed that almost all vehicle thefts were reported and applied a multiplier of 1 to the 85,200 vehicles reported in the CSS as stolen in 2005. Mayhew (2003b) adopted a different approach to estimate the number of vehicle thefts, taking the ABS recorded crime statistic of 140,000 thefts reported to police in 2001 and applying a multiplier of 1.05 to allow for the five percent of vehicle thefts not reported to police, which resulted in an estimated total of 147,000 vehicle thefts for 2001.

For the purposes of this report, the CVS figure of 65,600 incidents of vehicle theft for 2011 (survey period 2011–12) has been used (ABS 2013a), which represents a multiplier of 1.2 times the number of victims recorded by police. No account has been taken of undetected incidents as it is assumed that all vehicle thefts would be known to victims.

Estimating property loss

The Comprehensive Auto-theft Research System (CARS) is a statistical and research service designed to inform effective vehicle theft reduction strategies in Australia. CARS is funded by the NMVTRC and forms part of the Strategic Policy and Organisational Performance Division of the South Australian Attorney General's Department. CARS integrates millions of records from more than 40 sources across Australia. This includes police incident and recovery details, currently registered vehicle information, policy and claim details from participating insurers, detailed vehicle specifications purchased from Polk Automotive Intelligence, passenger and light commercial vehicle value estimates from Glass' Guide and ABS demographic and spatial data (NMVTRC 2011).

A number of factors are relevant to the calculation of financial loss suffered through motor vehicle theft. The highest costs occur where a vehicle is stolen and not recovered. The National Motor Vehicle Theft Reduction Council (NMVTRC 2011) found that 25 percent of the 56,779 motor vehicles recorded on CARS in 2011 had not been recovered (NMVTRC 2011). Insurance claims include

> the total outgoing cost incurred by the insurer in finalising a claim, minus any revenue received from the salvage of the recovered vehicle and or any of its parts. The costs may include (but are not limited to) the settlement payment to the policyholder, hire car fees, towing fees, external assessor fees, external investigator fees, police report fees, auctioneer fees, crash repairer fees etc. It excludes the costs of any company-employed staff such as the cost of claim staff, in-house assessors or in-house investigators (NMVTRC 2011: 52).

Using insurance claim data, the NMVRTC (2011) estimated a mean cost per incident of vehicle theft in 2008 to be $20,610 for vehicles that were not recovered and $11,500 for vehicles that were recovered (these estimates varied according to various victim characteristics). Overall, the cost to insurers of the 17,265 theft claims supplied to CARS and finalised during 2010–11 was $182,397,584, with an average cost per claim of $10,565 and a median cost of $6,200. Added to this is the sum of $606 for a basic insurance policy excess, based on the average of basic policy excesses for vehicle insurance from four of the 16 insurance agencies that participated in CARS data collection (NMVTRC 2011). Insurance claim costs reflect the total outgoing cost incurred by the insurer in finalising a claim, minus any revenue received from the salvage of the recovered vehicle and or any of its parts (NMVTRC 2011).

By way of comparison, Victoria Police statistics for 2011 (Victoria Police 2011) showed that of the 11,256 motor vehicle thefts recorded by police in Victoria, the total value of the stolen vehicles was $107,373,149 which represented a mean loss per incident of $9,549 and a median loss per incident of $4,000—somewhat lower than the CARS data.

In calculating the cost of motor vehicle theft, it is also important to include the cost of vehicles stolen where their owners either have no insurance or choose not to make an insurance claim. Some victims may not make an insurance claim; for instance, if their vehicle is recovered quickly with little or no damage or the property loss value is less than the insurance policy basic excess costs.

Research conducted in 2005 by MM Starrs (2005) based on data from the CARS database found that victims had no insurance in 20 percent of motor vehicle thefts; in a further 35 percent the victim had insurance but made no claim and in the remaining 45 percent an insurance claim was made. The report

estimated that in 2004–05, the average value of an insured vehicle where no insurance claim was made was $1,010 and the value of an uninsured vehicle was $2,020 (MM Starrs 2005), which in 2011 prices would be $1,208 and $2,417 respectively.

Accordingly, using the total estimated number of vehicle thefts of 65,600 for 2011 and the percentages of thefts in which insurance was claimed, not claimed, or the loss not covered and applying the mean losses to each category of $6,806 (claimed), $1,208 (not claimed) and $2,417 (not covered), the total loss is $261m in 2011 or a per incident average of $3,969 (see Table 17).

Table 17 Property loss and damage costs for vehicle theft

Category	Incidents (n)	Estimated loss per incident ($)	Total loss ($m)
Insured—claim made (45%)	29,520	6,806	201
Insured—no claim made (35%)	22,960	1,208	28
Uninsured (20%)	13,120	2,417	32
Average per incident cost	-	3,969	-
Total	65,600	-	261

Note: Totals may not add to sub-components due to rounding

Medical costs

Although it is possible that a stolen vehicle may be involved in a road accident or a vehicle owner might have sustained injuries as a result of the theft, there is insufficient information available to estimate the cost of medical treatment arising from motor vehicle theft.

Lost output

The cost of lost output differs according to whether the theft occurred in a private or commercial context, Figures obtained by Rollings (2008) from the NSW Police indicated in 2005 that commercial victims of vehicle theft made up eight percent of all vehicle thefts.

In the case of non-commercial thefts, the UK estimate for lost output was £47 in 2003 (Dubourg, Hamed & Thorns 2005). Inflating this to 2011 prices and converting to Australian dollars using the OECDs pricing and purchasing power parities rate of A$2.20 to £1.00, gives a mean loss of output of $134, Applying this to the 92 percent of non-commercial thefts results in a total lost output of $8.1m.

In the case of commercial thefts, it is possible to calculate lost output using the results of the *UK Commercial Victimisation Survey 2002* (the categorisations used in the more recent *UK Commercial Victimisation Survey 2012* (Home Office 2013) were not comparable with the 2002 survey and therefore unable to be used for present purposes). The 2002 survey found that the average number of working hours spent dealing with a theft of a vehicle to be 20 hours in respect of retail thefts and 16.5 for manufacturing thefts (Shury et al. 2005b). Taking an approximate number of hours spent as being 18 and applying Australian average hourly rate in 2011 of $25.83 gives an estimated lost output of $465 for a theft of a vehicle in a commercial setting, which totals $2.4m for all such thefts.

The total estimated lost output from both commercial and non-commercial vehicle theft is $10.5m.

Intangible costs

The only estimate available for intangible losses is the UK estimate of $2,283 for 'physical and emotional impact on direct victims' arising from each vehicle theft (Dubourg, Hamed & Thorns 2005: 7). In 2011 prices (using the same conversion process detailed above), this equates to almost $139m for intangible costs for motor vehicle theft.

Total costs

The total cost of motor vehicle theft is estimated at $6,413 per incident, or $421m overall (see Table 18). The largest component of costs of motor vehicle theft was property loss and damage (almost 62%). While this is a decrease from Rollings' (2008) estimate of $600m, it is indicative of the continued decline in reported motor vehicle thefts in Australia (ABS 2012b).

Table 18 Overall unit and total costs of motor vehicle thefts

Category	Per incident cost ($)	Total cost ($m)
Property loss and damage	3,969	260
Lost output	161	11
Intangible	2,283	150
Total	6,413	421

Thefts from vehicles

Estimating the number of thefts from vehicles

Vehicle thefts recorded by police

ABS *Recorded Crime—Victims Australia 2011* does not report specific data on 'theft from vehicles' but rather this type of theft is included under 'other thefts' along with theft from a person (excluding the use of force), theft from a retail premises, theft not elsewhere covered and illegal use of property (except motor vehicles) (ABS 2012b). As a result, no specific police recorded crime data were available on theft from a motor vehicle from the ABS. Instead, data were available from a number of police jurisdictions that recorded incidents in their annual reports or police crime statistics. New South Wales, Victoria, Queensland, South Australia, Tasmania and the Northern Territory all provided data on the number of thefts from vehicles, which totalled 139,993 for 2011–12. Missing data from the Australian Capital Territory and Western Australia were estimated by calculating the number of other thefts that occurred in these two jurisdictions as a proportion of all other thefts and applying the same proportion to gross-up the total from the remaining jurisdictions. This resulted in a national estimated total of 168,666 for all states and territories in Australia.

Theft from vehicles in the Crime Victimisation Australia survey

As with many other types of crime, there is a certain level of under-reporting of thefts from vehicles. The ABS *CVS* 2011–12 (ABS 2013a) included questions about any incidents of theft from a motor vehicle that may have occurred to any member of their household in the previous 12 months. The CVS only included household members aged 15 years and older and ideally, it would have been appropriate to have inflated the number of incidents to account for victims under 15 years of age. However, owing to the fact that the police recorded crime statistics were not disaggregated by age categories, it was impossible to inflate the CVS data by the proportion of police recorded incidents of thefts from vehicles that involved persons under 15 years of age. The CVS defined theft from a motor vehicle as involving

> the theft of property owned by any member of the household from a motor vehicle owned (for private use) by any member of that household (ABS 2013a: np).

The participants were asked to exclude property that belonged to someone from outside the household, any property that belonged to a business or employer, or property stolen from commercial vehicles. Also excluded were attempted break-ins to a vehicle if no property was stolen.

During the 12 months prior to interview, respondents indicated that they had experienced 379,200 incidents of theft of property from a motor vehicle (ABS 2013a). Around half (51%) of victims of theft of property from a motor vehicle had reported to police the most recent incident they had experienced. When the 2008 AIC report on costs of crime was undertaken, data were unavailable from the CSS (ABS 2006a) on theft from a motor vehicle. At that time, Rollings (2008) estimated the number of thefts from motor vehicles using UK figures, which indicated that slightly more than one-third of thefts from motor vehicles were reported to police, producing a multiplier of 2.8 (Dubourg, Hamed & Thorns 2005: 10). The UK Home Office (2011) recently updated that multiplier based on the *British Crime Survey* and recorded crime data to 3.5 for thefts from motor vehicles. For present purposes, however, it is safe to rely on the actual number of thefts from motor vehicles reported by respondents to the 2011–12 CVS (n=379,200), which produces a multiplier of 2.3 times the number of officially recorded thefts.

Estimating property loss

In order to estimate the value of losses arising from theft from motor vehicles, it is necessary to distinguish between thefts from private and commercial vehicles, as different mean losses apply to each of these categories. Rollings (2008) presented data from New South Wales that indicated that 15 percent of thefts from motor vehicles involved commercial vehicles and 85 percent related to private vehicles. In the absence of more recent data, this would mean that of the 379,200 thefts from motor vehicles in 2011–12, 56,880 would have involved commercial vehicles and 322,320 private vehicles.

Arguably, it would also have been beneficial to have estimated the value of losses arising from thefts from motor vehicles that were not stolen and theft from motor vehicles that were stolen. Estimates of the latter category could also be made for thefts from vehicles that had been recovered and thefts from vehicles not recovered as the unit cost is likely to be different for these various situations. Unfortunately, the available data did not permit such disaggregation of the results.

Updated estimates of property loss were available for only two state police jurisdictions, New South Wales for 2007 (Varshney & Fitzgerald 2008) and Victoria for 2011 (Victoria Police Crime Statistics 2011). These figures are likely to represent the higher end of the spectrum of crimes, as high-value crimes are more likely to be reported. In New South Wales, research was conducted by the New South Wales Bureau of Crime Statistics and Research into 150 randomly selected incidents of theft from a motor vehicle that occurred in the first six months of 2007. It was found that the average cost of a theft from a private vehicle was $603 in 2007 (Varshney & Fitzgerald 2008); which in 2011 prices would equate to $680 (RBA 2013). Varshney and Fitzgerald (2008) found that money was the most frequently stolen item from a private vehicle, followed by the vehicle number plates; however, the most costly item stolen from vehicles was laptop computers, with a mean loss of $2,333.

Victorian police statistics (Victorian Police 2011) reported an average value lost from theft from any type of motor vehicles of $805 for 2011, somewhat higher than the New South Wales estimate.

Earlier estimates from the United Kingdom showed a mean loss of $685 for individuals (Dubourg, Hamed & Thorns 2005) and estimates from the *Crime Against Retail and Manufacturing Premises Survey* showed a median loss of $571 for retailers per incident and $713 for each incident for manufacturers (Shury et al. 2005b). Mayhew (2003b) estimated costs of $600 for a theft from a commercial vehicle and $250 for theft from a non-commercial vehicle, which in 2011 prices would be $775 for a theft from a commercial vehicle and $323 for a theft from a private vehicle (RBA 2013).

Rollings (2008) estimated the cost of a theft from a commercial vehicle to be $555 and theft from a private vehicle to be $315, which inflated to 2011 prices would be $664 (commercial) and $377 (private). Rollings' (2008) inflated cost of theft from a

commercial vehicle seems reasonable and in line with Mayhew's (2003b) estimate in 2001 and other estimates. In the case of theft from private vehicles, there are wide variations in previous estimates from $200 in New South Wales in 2005 to $685 in the United Kingdom in 2005. Arguably, the most recent and authoritative estimate is that provided by Varshney and Fitzgerald (2008) of $603 for New South Wales in 2007, which in 2011 prices would be $680.

Using Rollings' (2008) mean cost of theft from a commercial vehicle, inflated to 2011 prices of $664, and Varshney and Fitzgerald's (2008) cost of a theft from a private vehicle inflated to 2011 prices of $680, it is possible to obtain a total cost of thefts from all vehicles of $256.9m (see Table 18).

Damage caused in connection with thefts from vehicles

Varshney and Fitzgerald (2008) examined 150 incidents of theft from a vehicle and found that 35 percent of incidents involved a smashed window, a further 13 percent had locks tampered with or damaged and another seven percent involved some other structural damage to the vehicle. Varshney and Fitzgerald (2008) also found that in nine percent of thefts from vehicles, the vehicles were unlocked and no damage was sustained. Accordingly, it is appropriate to add 90 percent of the estimated damage costs when calculating the total cost of theft from motor vehicles.

The property damage amount per incident was derived from Dubourg, Hamed and Thorns (2005) who estimated that in 2003, £126 was recovered from each theft from a vehicle. This figure was inflated to 2011 UK prices and converted to Australian dollars using the OECD PPP for 2011, which resulted in an amount of $359. As no equivalent figures could be found for damage incurred from theft of a commercial vehicle, the $359 has been applied to both commercial and private vehicles. The total cost of damage caused in connection with thefts from motor vehicles is $136m (see Table 19).

Table 19 Costs of thefts from vehicles—property loss, lost output and intangible losses[a]

Category	Per incident cost ($)				Total cost ($m)[b]			
	Property loss	Damage	Lost output	Intangible	Property loss	Damage	Lost output	Intangible
Commercial vehicles	664	359	65	759	38	20	4	43
Private vehicles	680	359	57	759	219	116	18	245
Average per incident cost	678	359	58	759	-		-	-
Total	-		-	-	257	136	22	288

a: Medical costs are not estimated

b: Totals may not add to sub-components due to rounding

Lost output

The UK research into crime against retail and manufacturing premises conducted as part of the 2002 *Commercial Victimisation Survey* estimated that a median of two working hours were spent dealing with theft from vehicles in a retail setting and three hours spent dealing with such theft in a manufacturing setting (Shury et al. 2005b). Taking an approximate number of hours spent as being 2.5 and applying Australian average hourly rate in 2011 of $25.83 gives an estimated lost output of $64.60 per incident for theft from a commercial vehicle in Australia. The UK estimate for crimes against individuals and households estimated the lost output from each incident of theft from a vehicle as being the equivalent of $57; this figure being derived by inflating the 2003 cost in the UK report, inflating to 2011 UK prices and then converting to Australian dollars based on the OECDs pricing and PPP rate of $A2.20 to £1.00 (Dubourg, Hamed & Thorns 2005). Applying these estimates to the number of offences gives an estimate of $22m for lost output arising from theft from vehicles in Australia in 2011 (see Table18).

Intangible costs

The estimate for intangible costs from the UK 2002 *Commercial Victimisation Survey* report has been used in the absence of Australian data. As with all figures presented in this paper, the figure used was based on the UK price in 2003 inflated to 2011 UK prices and then converted to Australian dollars using the OECDs PPP as detailed above. This gave an estimated $759 per incident for intangible costs, which has been applied to thefts from commercial and private vehicles, giving a total of $288m for intangible costs.

Recoveries

Dubourg, Hamed and Thorns (2005) estimated that for each theft from a private vehicle, £11 worth of property was recovered. Inflating that amount to 2011 prices and converting to Australian dollars using the OECD PPP conversion results in a recovered property amount of $31 per incident. There were no equivalent Australian figures available and the amount of property recovered was only available for private vehicles. Nonetheless, it is reasonable to assume that recoveries from commercial vehicles would be similar to those from private vehicles and so the same recovery amount of $31 per incident has been applied to all thefts from vehicles. Applying this amount to the 379,200 thefts from vehicles in 2011 produces a total amount recovered of $11.8m.

Total costs

The total cost of thefts from vehicles is estimated to be $691m, or $1,823 per incident (see Table 20). The estimated cost of actual property loss and damage, less the value of goods recovered, represents slightly more than half of the total.

Table 20 Overall unit and total costs of theft from vehicles[a]

Category	Per incident cost ($)	Total cost ($m)
Property loss	678	257
Damage	359	136
Lost output	58	22
Intangible	759	288
Sub-total	1,854	703
Less recovered property	31	12
Total	1,823	691

a: Medical costs are not estimated

Shop theft

Defining shop theft

The ABS category of 'theft and related offences' is defined as:

> The unlawful taking or obtaining of money or goods, not involving the use of force, threat of force or violence, coercion or deception, with the intent to permanently or temporarily deprive the owner or possessor of the use of the money or goods, or the receiving or handling of money or goods obtained unlawfully (ABS 2011a: 52).

For present purposes, shop theft occurs where the victim of theft is a retail shop and includes the theft of goods, other than motor vehicles, by failing to pay or by avoiding payment for the goods obtained. Examples include shoplifting, theft from market stalls, theft from factory retail outlets and theft by employees of retail premises (ABS 2011a). Theft of motor vehicles, burglary and robbery at non-residential locations are excluded for present purposes and are dealt with in other sections of this report.

Estimating the number of shop thefts

ABS *Recorded crime—Victims* (2012b) shows that police recorded 487,573 victims of 'other theft' in 2011. Separate data are not provided by ABS for thefts from retail shops. However, some state police jurisdictions specifically identify shop theft (which is theft from retail premises by staff or customers) in their annual reports. For the 2011–12 financial year, New South Wales (NSW Police Force 2012), Queensland (QPS 2012) and South Australia (SA Police 2012) recorded 45,144 incidents of shop theft. Victoria Police (2011) recorded 19,356 incidents of 'shop-steal' for the period 1 January 2011 to 31 December 2011. Combined, these states recorded 64,500 incidents of shop theft. In order to estimate the number of incidents of recorded shop theft that occurred in Tasmania, Western Australia, the Australian Capital Territory and the Northern Territory, the same proportion of incidents of 'other theft' from these jurisdictions reported in *ABS Recorded Crime—Victims 2011* (ABS 2012b) was used to estimate the number of incidents of shop theft. It was found that 20 percent of incidents of 'other theft' were recorded by police in Tasmania, Western Australia, the Australian Capital Territory and the Northern Territory. Inflating the 64,500 estimated incidents of shop theft from New South Wales, Victoria, Queensland and South Australia by 20 percent results in a national estimated number of 80,625 incidents of shop theft that would have been recorded by police for 2011. Of course, this is an approximate estimate only as

the category of other theft includes theft from a retail store, theft from a person (excluding by force), theft of motor vehicle parts and contents, theft (excluding vehicle), theft not elsewhere classified and illegal use of property (except motor vehicles; ABS 2012b).

Prior crime victimisation surveys have found that many incidents of shop theft are both undetected and unreported. In the absence of Australian survey data, reliance was placed on surveys of shop theft in the United Kingdom. The British *Retail Consortium (2012) Retail Crime Survey*, for example, found that only 56 percent of customer thefts were detected and that only 59 percent of employee thefts were detected. Farrington's (1999) review of shoplifting studies found that between one in 40 and one in 250 acts of shoplifting led to a conviction and it was estimated that between one in 100 and one in 1,000 shoplifting incidents were actually recorded by police (Farrington 1999). Using these data, Mayhew (2003b) adopted a relatively conservative multiplier of 100 for shop theft, which was again used by Rollings (2008).

However, in 2011, the Home Office substantially revised its multiplier for shoplifting offences down from 100 to 16.1 using an offender-based approach rather than Farrington's (1999) methodology which was based on a limited number of self-reported shoplifting incidents. The revised methodology is in line with the method used to calculate the cost of shoplifting for use in the UK's *Drug Harm Index*. The Home Office (2011: 4) describe their new approach as follows:

> The volume of shoplifting incidents is the sum of the number of incidents by arrestees and the number of incidents by non-arrestees. The number of incidents committed by arrestees has been estimated using data from the 2005/06 Arrestee Survey (AS). The number of incidents committed by non-arrestees has been estimated using data from the 2003 Offending, Crime and Justice Survey (OCJS). The volume of shoplifting episodes has been adjusted to take account of co-offending using an estimated co-offending rate of 1.8 from Farrington (1999).

In the absence of local Australian research, the Home Office's revised multiplier of 16.1 has been applied to the present estimated 80,625 incidents of shop theft in 2011, resulting in a total for Australia of 1,298,063 incidents (see Table 21).

Table 21 Estimates of shop theft in 2011

	Estimate
Estimated number of shop thefts recorded by the police[a]	80,625
Multiplier	16.1
Estimated number of shop thefts	1,298,063
Best estimate of value of theft per incident ($)	70
Best estimate of total property loss ($ million)	90.9

a: Based on New South Wales, Victoria, Queensland and South Australia, aggregated to Australia-wide

Estimating property loss

Police estimates of the value of shop theft are likely to be skewed to the higher end of the scale, as higher value crimes are more likely to be reported. Taking this into consideration, where available, the median value of costs have been reported rather than the mean value, as mean values are likely to be highly skewed towards a small number of high-value crimes. One source of information on retail theft is the *Global Retail Theft Barometer Survey* 2010 (CRR 2010). The 2010 survey included 31 Australian retail business respondents from the Asia–Pacific region, who reported the cost of an average incident of retail theft by customers in the Asia–Pacific region of US$74.52. However, if the person responsible for the theft was an employee that amount rose to US$392.56 (CRR 2010). Another source of information on the cost of shop theft incidents was research by Shury et al. (2005b) who found the median value of direct financial losses of theft by customers from retail premises to be £35 in 2003 and the median value of theft by employees to be £125. In 2011, the Home Office (2011) updated its estimation of the unit cost to £124, although this includes not only the value of goods stolen but also costs in anticipation of shoplifting and the cost of responses.

Recent Australian data from Victoria Police (Victoria Police 2011) found the median value of 15,474 'shop steal' offences reported to police in 2010–11 to be $70. Offences that were reported to police that had no value stated were excluded from the calculations (Victoria Police 2011). No other Australian police agencies reported information on the value of shop thefts. This most recent Victorian figure of $70 is slightly less than both Mayhew's (2003b) estimate of $110 and Rollings' (2008) estimate of $108 per incident. However, in the absence of other available data, the present study makes use of the Victorian figure of $70 per incident, which for the estimated total number of 1,298,063 incidents, totals $90,864,410 for all shop thefts across Australia in 2011. No allowance has been made for the recovery of goods, as prior studies have shown recoveries to be low (Farrington 1999).

Lost output

Lost output arises principally from dealing with offenders and from managing stock losses (Mayhew 2003b). Shury et al. (2005b) estimated that the median length of time spent on a retail theft by a customer was one hour, which equated to approximately $25.83 per incident using the average Australian hourly wage in 2011 reported by the ABS *Labour Force survey* findings (ABS 2012c). For present purposes, lost output was calculated by multiplying the average hourly wage by the number of estimated incidents of shop theft. Previous reports calculated the amount differently. Mayhew (2003b), for example, used the mean cost of $10 per theft based on the indirect costs reported by businesses in the *Small Business Crime Survey 1999* (Taylor & Mayhew 2002). Rollings (2008) estimated lost output by taking into account the UK estimates and CPI movement between 2001 and 2005, finding a reasonable estimate of the amount per incident due to shop theft to be $15. Arguably, Shury et al.'s (2005b) estimate based on $25.83 per incident is more accurate. Using this for the 1,298,063 estimated Australian incidents in 2011, gives a total estimated cost of $33,528,967 for lost output due to shop theft (see Table 22).

Table 22 Costs of shop theft

Category	Per incident cost ($)	Total cost ($m)
Property loss	70	90.9
Medical		not estimated
Lost output	26	33.5
Intangible		not estimated
Total	96	124.4

Note: Totals may not add to sub-components due to rounding

Total costs

The total costs of shop theft are estimated at $124.4m, or $96 per incident (see Table 22). The largest component (73%) of shop theft was attributable to property loss.

Other estimates

The Australian Retailers Association (ARA 2013) estimated that the financial impact of retail theft in Australia was approximately $7.5b in 2013. This figure is based on three percent of the retail industry's $243b annual income being lost to theft. By contrast, the present report estimates losses based on the estimated number of incidents of shop theft and their estimated mean value. The total cost of shop theft in Australia finding of $124.4m is arguably a more accurate estimate, although further research is needed in Australia to confirm both the multiplier used and the mean cost per incident.

Other theft

Estimating the number of thefts

The category of 'other theft' for the purposes of this report includes all thefts that have not been previously included in this report. The principal category of other theft relates to theft from a person without the threat or use of force or violence (ABS 2012b). In 2011, ABS recorded crime statistics showed that there were 487,573 victims of other theft (ABS 2012b), although this figure includes both theft from a vehicle and shop theft, which have previously been canvassed in this report. As a result, the number of victims of other theft was reduced by the incidents of theft from a vehicle and shop theft to an estimated 269,000.

The multiplier for other theft is adapted from the 2005 UK costs of crime study, where a number of subcategories of other theft are discussed (Dubourg, Hamed & Thorns 2005). These subcategories include theft from a person, theft of a bicycle and other theft, which all fall under the ABS definition of other theft. Using the recorded and estimated offence totals provided by Dubourg, Hamed & Thorns 2005), a multiplier of 3.0 was calculated for other theft. After applying the multiplier, an estimated 807,117 incidents of other theft occurred in Australia in 2011.

Estimating property loss

Dubourg, Hamed and Thorns (2005) combined the previously mentioned subcategories of other theft when estimating the value of property lost. They estimated a cost for the value of property stolen and property damaged or destroyed, taking into account the value of property recovered. Adjusting their figures to 2011 prices and converting them to Australian dollars using PPPs, the cost per incident was $511. Overall, the total property loss is estimated to be $412m (see Table 23).

Lost output

The cost of lost output for other theft was derived using the calculations of Dubourg, Hamed and Thorns (2005), adjusted for inflation and converted using the OECD PPPs. The per incident cost across all incidents was $9.00. In total, the estimated cost of lost output arising from other theft was $7m.

Intangible losses

The UK Home Office (2011) recently revised the multipliers and unit costs of crime that Dubourg, Hamed and Thorns (2005) had prepared. The

physical and emotional costs of other theft were revised to account for changes in nominal GDP per capita, while all other costs were only increased to account for changes in inflation (Home Office 2011). In Australian dollars for 2011, the revised estimate for intangible losses was $231 per incident. Overall, intangible losses cost $187m for other theft (see Table 23).

Total costs

The total cost of other theft in Australia for 2011 was $605m, of which the largest component was property loss estimated to cost $413m.

Table 23 Estimates of the costs of other theft

	Cost estimate
Value of property stolen ($)	499
Value of property damaged/destroyed ($)	49
Less value of property recovered ($)	37
Value of theft per-incident ($)	511
Total property loss ($m)	412
Lost output per incident ($)	9
Total lost output ($m)	7
Intangible losses per incident ($)	231
Total intangible losses ($m)	186
Total loss per incident ($)	750
Total loss ($m)	605

Criminal damage

Estimating the number of incidents

Criminal damage can encompass a wide range of crimes; however, the category most commonly used includes offences such as graffiti and vandalism. The number of incidents of criminal damage was estimated using publicly available recorded crime data from each state and territory. Based on aggregated police recorded offences, there were approximately 249,220 incidents of criminal damage in 2011–12. In order to account for incidents not reported to police, a multiplier of 5.9 was applied. This was calculated using the most recent revisions to the Home Office Integrated Offender Management Value for Money Toolkit based on data from the most recent British *Crime Survey* compared with crimes recorded by police (Home Office 2011). Using this multiplier results in a total estimated number of criminal damage offences of 1.47m in 2011–12. This figure is only slightly higher than the 1.1 million incidents of malicious property damage reported in the reported in *Crime Victimisation, Australia,* 2011–12 (ABS 2013a). The ABS survey found that malicious property damage was experienced by 649,900 (7.5%) of Australian households in the 12 months prior to interview in 2011–12. Nearly half (46%) of the victims of malicious property damage reported the most recent incident they experienced to police (ABS 2013a).

Estimating property loss

An estimate of the value of property lost to criminal damage was obtained by synthesising information from a number of sources. Rollings' (2008) estimate of $500 was inflated to the equivalent price in 2011 ($598). Using updated information from British *Crime Survey*, the average estimated cost of criminal damage in 2011 would have been the equivalent of $3,346. However, based on previous estimates, only 25 percent of this amount would have been attributable to property loss ($836; Dubourg, Hamed & Thorns 2005). Howard (2006) used NSW crime data and found that the median cost of criminal damage was around $300 ($347 in 2011). Finally, estimates from Victoria Police in 2012 indicate that, on average, an incident of criminal damage cost $1,071, with a median cost of $486 (Victoria Police 2012). The estimate used in this report was calculated by averaging these amounts and totalled $567 per incident. This results in a total estimate of property loss of $833m.

Lost output

Both Mayhew (2003b) and Rollings (2008) considered $50 to be a reasonable estimate of the lost output associated with criminal damage. However, UK

figures estimated a slightly lower equivalent amount of $23. The average of these two figures results in a cost of $43 per incident or $63m in total.

Intangible losses

The same method used to estimate the value of lost output associated with criminal damage was applied here. Intangible losses accounted for 49 percent of the total unit cost of criminal damage according to the UK estimate, which is equivalent to $1,650 in 2011 prices. Rollings (2008) estimated approximately $700, which in 2011 would equate to $838.

Averaging these two estimates yields a figure of $1,244 per incident. The total estimated intangible losses due to criminal damage were therefore $1.8b in 2011.

Total costs

It is estimated that in 2010–11, criminal damage cost $2.7b or $1,853 per incident (see Table 24). The largest component of this cost attributable to the intangible losses sustained ($1.8b).

Table 24 Summary of criminal damage costs, 2011

Category	Unit cost ($)	Total cost ($'000)
Property loss	566.8	833.4
Lost output	43.0	63.3
Intangible losses	1,243.6	1,828
Total	1,853	2,724.7

Arson

Estimating the number of incidents

Estimating the number of arson incidents annually is difficult due to the offence often being aggregated into broader categories of property crime or criminal damage. For example, while the ABS estimates that there were 649,900 victims of malicious property damage in 2011–12, this figure includes not only arson but also graffiti and offences against livestock and animals (ABS 2012b). Similarly, recent estimates from the Victorian Bushfires Royal Commission (2010) and the AIC (see Bryant 2008; Muller 2009) have focused exclusively on deliberately lit vegetation fires which form only one type of arson present in Australia.

Alternatively, a national figure can be obtained by aggregating publicly available data on arson that are available from each state and territory police jurisdiction. Based on these figures, there were approximately 14,975 incidents of arson recorded by police in 2011–12. This is likely to be an underestimate owing to the various ways in which different police jurisdictions define arson for statistical purposes, as well as the omission of unreported incidents.

To estimate the number of arson incidents not reported to police, Mayhew (2003a, 2003b) used a multiplier of 3.0. Applying this to the above police recorded crime figure, in 2011–12 there were an estimated 44,925 incidents of arson.

Estimating property loss

Both Rollings (2008) and Smyth (2011) calculated the loss associated with arson by inflating Mayhew's (2003a, 2003b) original figure as this remains the most comprehensive estimate available. Mayhew (2003b) used a 'best estimates' approach and synthesised information from a variety of sources including Victoria Police and the Victorian Metropolitan Fire Brigade, Western Australia's Fire Service and the Insurance Council of Australia. Most of this information was obtained through private communication and therefore updated figures are not publicly available. As a result, Mayhew's (2003a) estimate of $730m has been inflated to 2011 prices with the estimated property loss associated with arson totalling $971m for 2011.

Medical costs

Calculating the related medical costs associated with arson is not possible as it unknown how many injuries are sustained as a result this offence. While some jurisdictional fire brigades do record casualty

numbers, those that resulted from arson will be covered by the homicide statistics.

The cost of dealing with fires

The Productivity Commission calculated the cost of fire services nationally in 2011–12 to be $3.4b (SCRGSP 2013). Mayhew (2003) estimated that 25 percent of this figure could reasonably be considered to reflect the proportion allocated to dealing with incidents of arson. Applying this in 2011, the cost of fire services associated with arson amounted to $856m.

An estimate of the cost of ambulance services is also included in the total cost of arson. The Productivity Commission (2013) found that ambulance services cost approximately $2.4b in 2011–12. Using Mayhew's (2003b) attribution of five percent allocated to dealing with arson incidents, the total comes to approximately $123m.

The value of volunteer time

Volunteerism has a long history in Australia and is particularly strong within the emergency services sector. Productivity Commission figures reflect this with 219,765 individuals volunteering in some capacity within the fire services in 2010–11 (SCRGSP 2013). However, it is very difficult to assign a dollar value to this figure as it does not reflect the amount of time individuals have spent volunteering. In addition, many volunteers derive non-economic benefits from volunteering, potentially resulting in a cost-neutral or even negative economic outcome of volunteer time.

Mayhew (2003b) estimated the cost of volunteering by calculating the equivalent per hour if the individual was a paid employee of the fire service. Of course, this fails to include the non-economic benefits that might be present. Mayhew's (2003b) figure was based on data received from the Country Fire Authority of Victoria and inflated to reflect a national estimate. While the ABS published the number of hours spent volunteering in 2006, there is no figure specific to fire services. In the absence of more detailed information, Mayhew's estimate, inflated to current values for the cost of volunteers attributable to dealing with arson incidents in 2011–12 is $319m.

Total costs

The total cost of arson in Australia for 2011 was $2.3b, of which the largest component was attributable to property loss ($971m; see Table 25).

Table 25 Summary of arson costs, 2011

Category	Total cost ($m)
Best estimate of loss	971.1
Fire services	855.8
Ambulance services	123.2
Volunteer services	319.3
Total	2,269.4

Fraud

The nature of fraud

Fraud is a generic category of conduct that involves the use of dishonest or deceitful means to obtain some unjust advantage. In some countries, such as England and Wales, there is a specific offence of fraud, while other jurisdictions have a range of crimes that entail an element of dishonesty—in Victoria, for example, there are over 300 separate criminal offences that could be charged in connection with acts of dishonesty (VPDCPC 2004). Dishonesty is the key attribute that distinguishes fraudulent from innocent conduct. Rather than defining dishonesty in legislation, it is usually a matter of fact for juries to determine in criminal cases (Smith 2013).

Anyone can be a target of fraud, be they an individual or an organisation, and victims can be targeted by individuals or organised groups of individuals. Defining fraud is difficult because of the range of conduct that can involve dishonesty. The lack of an agreed operational definition of fraud is one of the enduring limitations to effective quantification of the scale of the problem. Fraud is not a new phenomenon, but as technology continues to advance and its use increases, additional challenges are presented to those attempting to prevent and to control fraud. Identity-related fraud and other technology-enabled frauds are increasingly becoming areas of concern internationally and affect both the public and private sectors (Lindley, Jorna & Smith 2012). It is difficult to obtain consistent data on fraud in Australian jurisdictions because of different information systems, legislative definitions, data collection practices and prosecution activity. Despite this, it is known that a substantial amount of fraud occurs in the Australian community, affecting individual consumers, businesses and government agencies.

Challenges in estimating the cost of fraud

The difficulties associated with measuring the incidence and cost of fraud have been described in some detail by Lindley, Jorna and Smith (2012). The principal factors include:

- the wide range of types of fraud that must be counted, extending from small-scale credit card fraud through to major corporate financial crime, sometimes costing billions of dollars for one course of criminal conduct;
- the volume of 'hidden' fraud, which does not become known to police, or even to the individuals or organisations involved. Unlike more common crimes such as motor vehicle theft where victims are aware that the crime has taken place (even if they do not report it), it is the

case that some victims of fraud may not be aware of their victimisation. Examples of this include fraudulent charitable solicitations, insurance fraud and revenue fraud against the government. Mayhew (2003b) explained the difficulties associated with estimating exactly how much fraud is undetected and unreported to the authorities, and calculating the value to place on each of the various categories of fraud. One large-value case of unreported fraud could seriously affect the overall calculation of the total cost of fraud if an inappropriate multiplier were adopted;

- problems of inaccuracy of official crime statistics in which individual offences may be excluded from counting by omission (or on occasions intentionally for budgetary reasons within official agencies), or are wrongly categorised as falling within, or excluded from, the crime type in question;
- the costs of detected fraud are not always known, as victims might not be able to estimate their losses with accuracy. On occasion, even offenders may be unaware of the full extent of their dishonest conduct, showing surprise when evidence of losses is presented to the courts. Associated with reliance on court data is the problem that often only a small, representative sample of counts of fraud are prosecuted, with general estimates of other, often substantial amounts of offending taken into consideration during the process of sentencing. Reliance on the initial amounts alleged by prosecutors can be misleading both because some allegations may not be substantiated, while other matters might have been excluded from the indictment.

As is apparent from the above sections, difficulties associated with reliance on official crime statistics collected by police, prosecutors, courts and correctional agencies can be overcome, to some extent, through the use of crime victimisation survey data. Asking individuals to recall their experience of having been defrauded overcomes some of the problems of measuring unreported fraud, although undetected fraud will still be omitted from matters reported by victims, unless predictions of potential losses are asked for. Fraud victimisation surveys, however, entail other limitations. Surveys typically involve samples in which a small representative group is questioned and its responses used to predict the likely situation in an entire population. This, of course, introduces the possibility of error in predictions and the need for statistical controls to combat this. In the case of survey of organisations' experience of fraud, often only small and unrepresentative samples are involved. There are also problems of reliability (whether repeated surveys elicit the same answers from the same subjects) and validity (whether the survey is measuring what it is intended to measure; VPDCPC 2004).

Costing fraud using victimisation surveys

Although the ABS CVS does not cover offences of dishonesty and fraud other than personal fraud (ABS 2013a), considerable other information exists about the incidence and cost of many specific sub-types of fraud derived from crime victimisation surveys. One approach to costing fraud would be to examine each of these sources of information and then to arrive at a total estimate for fraud as a whole, based on each of its constituent elements. Unfortunately, complete and accurate survey data do not exist for each of the various sub-types of fraud that have been identified, making such an approach impractical.

There are also many inconsistencies in the manner in which subcategories of fraud have been defined in the past making a uniform data collection plan based on victimisation surveys impossible. Care is also need to avoid double counting if a victimisation survey approach is adopted. Some types of fraud such as consumer scams, overlap with other types, such as identity fraud or plastic card fraud; any attempt to aggregate cost estimates from these different subcategories would need to ensure that double counting does not occur.

Nonetheless, it is useful to present the results of these surveys in order to show that the overall total of the cost of fraud arrived at based on official crime statistics is within the total loss estimates based on fraud victimisation data, taking into account the above considerations. In addition, as explained above, victimisation surveys also provide an indication of the extent of unreported crime, which is of critical importance when extrapolating from recorded crime data to total crime estimates.

Fraud against the Commonwealth

Since the estimates of the cost of crime by Mayhew (2003b) and Rollings (2008) were published, the AIC has conducted annual surveys of all Commonwealth agencies to assess their experience of fraud. These are in the nature of fraud victimisation census research that seeks to obtain data from the entire population of agencies and with a mandatory obligation to respond in accordance with the *Commonwealth Fraud Control Guidelines* (AGD 2011).

Three aspects of this data source differ from officially recorded police deception statistics. First, a broad definition of fraud is used for the purposes of the Guidelines (Section 4) that extends beyond that included in official police definitions of fraud and dishonesty offences. Fraud is defined in the Guidelines as:

> Dishonestly obtaining a benefit, or causing a loss, by deception or other means, and may include (but is not limited to):
>
> - theft;
> - accounting fraud (false invoices, misappropriation etc.);
> - unlawful use of, or obtaining property, equipment, material or services;
> - causing a loss, or avoiding and/or creating a liability;
> - providing false or misleading information to the Commonwealth, or failing to provide it when there is an obligation to do so;
> - misuse of Commonwealth assets, equipment or facilities;
> - making, or using false, forged or falsified documents; and
> - wrongfully using Commonwealth information or intellectual property.

This definition of fraud includes both internal fraud alleged against Commonwealth public servants and contractors, and external fraud alleged against other members of the public. External fraud covers some of the largest areas of fraud risk that affect the government including revenue fraud against the Australian Taxation Office (ATO) and welfare and benefits fraud against the Department of Human Services. In 2010–11, for example, the ATO had net tax collections of $273.0b and checked 56,000 tax refunds, preventing approximately $500m in refunds being issued incorrectly. In 2010–11, the ATO undertook over 7.9 million active compliance activities, raising $9.0b in tax liabilities and $2.3b in penalties and interest liabilities (ATO 2011).

In the case of welfare and benefit fraud, in 2010–11, Centrelink completed 2.1 million eligibility and entitlement reviews, including 26,516 customer reviews as result of tipoffs, which led to $64.1m in debts and savings. In 2010–11, Centrelink referred 1,273 cases to the Commonwealth Director of Public Prosecutions (CDPP) to consider prosecution action (see also Prenzler's (2012) review of welfare fraud in Australia). The results of the AICs survey of Commonwealth agencies, however, reports aggregate data only, making quantification of fraud losses for individual agencies and departments unavailable.

Second, for the purposes of the annual survey, respondent agencies are asked to report their experience of fraud, as defined above, including not only incidents that would fall within the definition of 'recorded crime' by police agencies, but also suspected fraud, incidents under investigation and completed incidents, whether the fraud was proved or not and whether the incident was dealt with by a criminal, civil or administrative remedy.

Third, the unit of measurement in the annual survey is 'incidents' of fraud, defined as:

> all counts alleged during one fraud investigation and might comprise a number of counts of offences that are actually prosecuted. An incident may take place on a single date or over a period of time and may involve one or more accused persons (Jorna & Smith unpublished).

This unit of measurement differs from the unit used in police recorded crime statistics which is the number of persons victimised.

Each of these matters make the data obtained from the annual *Commonwealth Fraud Survey* of a slightly different nature than from official police recorded crime statistics. Nonetheless, the survey data provide a better indication of the cost of fraud experienced by Commonwealth agencies than any other available source.

In 2011 (the most recent year for which data are available), an invitation to complete the questionnaire was sent to all 192 Commonwealth agencies. Of those invited, 154 agencies provided responses, which represented a response rate of 82 percent. Of those that responded, 40 percent (61 agencies) reported that they had experienced a fraud incident in 2010–11, totalling 91,091 incidents worth $118,878,181, although 20 percent of agencies that experienced fraud were unable to specify a loss. Losses were defined as the total amount, in whole dollars, thought to have been lost to the agency from fraud incidents, prior to the recovery of any funds and excluding the costs of detection, investigation or prosecution (Jorna & Smith unpublished).

Assuming these 31 agencies that were unable to specify a loss were representative of all agencies that reported experiencing fraud, the grossed-up total losses for all agencies that reported experiencing fraud would be $142,653,810.

As 38 Commonwealth agencies (20% of those invited) failed to respond to the survey, some account needs to be taken of the fact that these agencies might also have experienced fraud but not reported it. Arguably, the value of unreported fraud would be quite low, as the agencies that failed to respond tended to be smaller agencies. Accordingly, a multiplier of 1.10 seems reasonable to account for these unreported losses. In addition, some fraud incidents might not have been detected by agencies, such as allowance-related internal fraud which often goes undetected. Again, it can be assumed that relatively low-value fraud would not have been detected, with a multiplier of 1.05 being appropriate. Applying a multiplier of 1.15, yields a total number of incidents of 104,755 with an estimated loss of $164,051,880.

However, KPMG and other organisations have reported that only a third of fraud is generally detected by organisations. This would suggest a multiplier of three could potentially be used to account for undetected fraud. In addition, other organisations, such as the Association of Certified Fraud Examiners (ACFE) use different methodologies based on a percentage (five percent) of revenue to calculate the amount an organisation loses to fraud. If these methodologies were applied to Commonwealth agencies, the estimated loss could be higher.

In 2010–11, agencies reported that approximately 30 percent of total reported losses were recovered, amounting to $35,780,906. In addition to agency recoveries, in 2010–11, the CDPP secured $31,819,253 from offenders by way of reparation under the *Crimes Act 1914* (Cth) and Pecuniary Penalty Orders under the *Proceeds of Crime Act 1987* (Cth).

Deducting total funds recovered and reparation for 2010–11 of $67,600,159 from the total estimated losses of $164,051,880 leaves a net total loss due to Commonwealth fraud of $96,451,730.

This estimate of fraud against the Commonwealth includes some matters that would also be counted as part of state and territory official police statistics. In 2010–11, Commonwealth agencies referred 17 incidents involving internal fraud and 58 incidents involving external fraud to state and territory police for investigation and these 75 incidents should be deducted from the number of incidents of fraud recorded by state and territory police below.

In addition, it should be noted that during 2010–11, the Australia Federal Police (AFP) accepted 61 fraud referrals from Commonwealth agencies and declined 23. During the 2010–11 financial year, 29 matters resulted in legal action. This figure may include matters that were referred to the AFP in previous financial years. In 2010–11, the AFP was able to estimate financial losses for 61 of the cases accepted for investigation. The total financial loss estimated for those cases was $12,796,207 or $209,774 per matter (Jorna & Smith unpublished).

In 2010–11, there were 1,746 cases referred to the CDPP for prosecution involving 3,152 defendants. Of the 3,512 defendants prosecuted, 2,615 resulted in conviction with 12 acquittals and 525 that were classified as 'other'. The total amount initially charged in each fraud type prosecution was $77,960,259, or $22,198 per defendant charged. The CDPP secured $31,819,252.66 by way of reparation under the *Crimes Act 1914* (Cth) and Pecuniary Penalty Orders under the *Proceeds of Crime Act 1987* (Cth) (Jorna & Smith unpublished).

Fraud against business organisations

Business consultancy practices have regularly conducted surveys of their clients to determine the

nature and cost of fraud victimisation that they have experienced. KPMG (2013) for example, invited a sample of Australian and New Zealand organisations in the public and private sectors to complete a questionnaire on their attitudes and responses to fraud. Respondents were asked to consider fraud occurring in their organisation during the period 1 February 2010 to 31 January 2012; a period of 23 months. Fraud was defined as

> any dishonest activity causing actual or potential financial loss to any person or entity including theft of monies or other property by employees or persons external to the entity and where deception is used at any time immediately before or immediately following the activity (KPMG 2013: 37).

Useable responses were received from 281 organisations. Respondents experienced 194,454 incidents of fraud worth $372.7m in total, or $3.08m per organisation experiencing fraud. The mean loss per incident was $1,685, although 20 incidents cost over $1m each.

Of relevance to the calculation of a multiplier for fraud offending is the fact that only 39 percent of respondents estimated that they had detected over 80 percent of fraud incidents; while 30 percent of respondents estimated that they had detected less than 40 percent of fraud incidents. In KPMGs 2012 survey report, 46 percent of major incidents of fraud were reported to police or a law enforcement organisation, a reduction from the 60 percent of incidents that were reported in this way in the KPMG 2010 survey. In KPMGs 2012 survey, eight percent of respondents recovered losses in full while another 49 percent made partial recovery of losses. Some 43 percent failed to recover any funds (KPMG 2013). In interpreting these results, it should be recalled that the reference period was 23 months that included 10 months prior to 2011 and that respondents came from both Australia and New Zealand.

Serious fraud

In 2003, the AIC and PricewaterhouseCoopers (Smith 2003) published the results of a study that examined 155 completed files relating to 208 accused persons from each of the Australian states and territories as well as the Commonwealth and New Zealand (10 jurisdictions in all) relating to 165 males and 43 females, 183 of whom were convicted of fraud offences. The study focused on cases involving 'serious fraud'. Files were mostly selected by the police and prosecution agencies concerned, in accordance with the criteria of seriousness of the fraud involved and year of determination. 'Seriousness' was defined on the basis of the following criteria:

- financial loss (generally over $100,000 unless other factors made the case of unusual seriousness or complexity); and/or
- sophistication in the planning and or execution of the offence (such as through the use of computers, electronic transfers of funds, forged instruments, multiple false identities etc); and/or
- organisation of the offender(s) (such as the presence of multiple offenders, cross-border activities relating to the movement of individuals or funds, large numbers of victims etc); and/or
- fraud offences committed by professionals such as solicitors, accountants, financial advisers, mortgage brokers etc who carry out serious offences involving breach of trust concerning clients' funds.

Over the two years in question (1998 and 1999), the 155 files involved $260.5m in respect of the total amount sentenced, $13.5m recovered as restitution prior to sentencing and $143.9m suffered as the total amount of actual loss. The maximum amount sentenced in any one case was $80m. The largest losses were sustained in Queensland, with the Commonwealth, New Zealand, New South Wales and South Australia all involving losses in excess of $2m each (Smith 2003). Although these data are somewhat dated, they do indicate the average high value that fraud can involve in serious cases. For the present exercise, it is necessary to take into account the fact that some fraud cases entail extremely large amounts of financial loss.

Consumer fraud

One fraud type that has been subjected to rigorous research concerns consumer scams perpetrated largely against individuals. It is sometimes known as personal fraud, consumer fraud or scams, however, the conduct generally involves the use of unsolicited

invitations to send money or personal information to criminals who use various techniques including social engineering to extract funds from their victims. Much consumer fraud involves the misuse of personal information or 'identities' and most is facilitated through the use of online communications (Jorna & Hutchings 2013). In Australia, national surveys of householders have found that the proportion of persons aged 15 years and over who have experienced personal fraud over the preceding year has increased from five percent of the population in 2007 to 6.7 percent in 2010–11 (ABS 2012a, 2008). This represents an increase of 382,100 victims who reported an increase in losses from $977m in 2007 to $1.4b in 2010–11. Three in five victims of personal fraud (60% or 713,600 persons) lost money, an average of $2,000 per victim who incurred a financial loss. The median loss for personal fraud was $300. This means that half the number of people who lost money due to personal fraud lost less than $300 and half lost more than $300.

Another survey designed to capture data on the experience of consumer fraud is the online survey undertaken annually by the AIC on behalf of the Australasian Consumer Fraud Taskforce, which comprises 22 government regulatory agencies and departments in Australia and New Zealand that work alongside private sector, community and non-government partners to prevent fraud. The survey for 2012, which asked respondents about their experiences in the preceding 12 months, attracted 1,576 respondents from Australia and New Zealand. Outliers, typically very large loss figures from respondents who appeared to have misunderstood the question, were removed from the analysis. Sixteen percent of the sample who had received an invitation sent their personal details, suffered a financial loss or both in response to at least one scam (n=231; 14.7% of the total sample). One hundred and six participants (7.1% of the sample who received a scam invitation and 6.7% of the total sample) sent their personal details only, 46 participants (3% of the sample who received a scam invitation and 2.9% of the total sample) suffered a financial loss only and 79 participants (5.3% of the sample who received a scam invitation and 5% of the total sample) lost money as well as sent their personal details. Of the 231 victims who reported having suffered a financial loss, 108 (46.8%) disclosed the amount. This reportedly ranged from $3 to $1,000,000. With outliers removed ($1,000,000 reportedly lost due to a scam reported in the 'other' category), the reported financial loss totalled $846,170, ranging from $3 to $195,000 (mean=$7,908.13; median=$500.00; Jorna & Hutchings 2013).

A further source of information on consumer scams is the data collected by the Australian Competition and Consumer Commission (ACCC) in connection with complaints of scams made to it each year (ACCC 2011). From 1 January to 31 December 2011, the ACCC received 83,150 scam-related contacts (82,338 scam reports and 812 inquiries). In 2011, the ACCC received reports of losses arising from scam activity of $85,607,748. In 2011, almost 88 percent of consumers contacting the ACCC about scams reported no financial loss. The remaining 10,028 (almost 13%) reported losses ranging from very small amounts for unsolicited credit card deductions up to $3.5m for a business that was a victim of advance fee fraud. The most prevalent loss category was between $100 and $499, with a median loss of $500.

Identity fraud

In 2002, the Securities Industry Research Centre for the Asia-Pacific Ltd estimated the cost of identity-related fraud in Australia. This modelling study involved some 120 organisations in the public and private sectors including the financial industry, telecommunications and other infrastructure industries, as well as the retail industry. It was found that identity fraud cost Australian large business $1.1b for the year 2001–02 (Cuganesan & Lacey 2003). Some 57 percent of this ($626m) involved the costs of resources consumed performing identity-related fraud response activities including risk assessment, deterrence, prevention and detection, as well as investigations, restoration and recovery. A further 38 percent ($420m) related to fraud losses actually incurred by users. Opportunity costs amounted to five percent of the total ($56m)—that is, resources spent on identity-related fraud responses that could have been deployed in generating income for the organisation (see Cuganesan & Lacey 2003). The Securities Industry Research Centre study found that less than 10 percent of identity

fraud events detected by organisations that provide and/or collect services and benefits were reported to police. Those organisations that actually issue documents used as evidence of identity, however, reported on average 19 percent of events to police. Of those reported cases, between 46 percent and 63 percent were solved. On average, between 46 percent and 55 percent of fraud offences contained identity fraud-related events (Cuganesan & Lacey 2003).

Cybercrime

Many incidents of cybercrime also entail an element of fraud, particularly deception involved in phishing and online consumer scams. The present report, as was the case with Mayhew (2003a, 2003b) and Rollings (2008), has not included the cost of cybercrime, other than where it fell within the cost of fraud as described below. Further research is needed to quantify the cost of cybercrime and cybersecurity, particularly attacks perpetrated against business and government, as well as the cost of preventing and responding to these. It is likely that cybercrime would add considerably to the costs of crime in Australia, on the basis of overseas estimates.

The US Department of Justice's national computer security survey estimated that cyber-attacks cost American businesses US$314m in 2005 (Rantala 2008). More recently, in the United Kingdom, according to a joint report published in 2011 by the Office of Cyber Security & Information Assurance in the Cabinet Office and information intelligence experts at Detica, the overall cost to the economy from cybercrime was estimated to be £27b per year (NFA 2012), although Anderson et al. (2012) subsequently published an extensive critique of the methodology employed, distinguishing between direct and indirect costs, and also between primary cybercrime and shared criminal infrastructure.

The Ponemon Institute and Symantec (2011) have also undertaken research to quantify the cost of data breaches in the United States. In 2010, the average organisational cost of a data breach was US$7.2m, an increase of seven percent on 2009. Data breaches in 2010 cost their companies an average of US$214 per compromised record, with the most expensive data breach costing a company US$35.3m to resolve.

Payment card fraud

Statistics on fraud perpetrated on Australian-issued payment instruments are published by the Australian Payments Clearing Association. During the calendar year 2011, the total value of the 1,151,825 fraudulent transactions reported was $301,647,315 (APCA 2012). This included fraud on Australian-issued cheques, proprietary debit cards and scheme credit, as well as debit and charge cards. In addition, 213,328 fraudulent transactions were perpetrated in Australia on cards issues overseas worth $67,832,108. The total of both amounts in 2011 was $369,479,423. This amount represents the total of fraud perpetrated and not amounts actually lost by individuals or organisations. Losses are, however, borne by financial institutions, scheme operators, merchants or individuals making the total amount a good indication of the cost of payment fraud in Australia in 2011.

The Australian Bureau of Statistics (2012) *Personal Fraud Survey*, found that approximately half (49.9%) of all credit card fraud victims reported the incident to an agency. The agency most commonly reported to was a bank or financial institution, with 41.7 percent of credit card fraud victims reporting to a bank or financial institution. Approximately one in five victims reported the incident to a credit card company (20.1%) and one in 10 to the police (11.0%). Just under three-quarters of victims (72.4%) sought reimbursement from their card issuers, with just under two-thirds of victims receiving reimbursement (64.0%). Nearly all victims of credit card fraud (95.5%) had money fraudulently transacted on their cards. Around a third of victims had between $1 and $100 fraudulently transacted (34.9%), over a quarter had between $101 and $500 fraudulently transacted (28.1%), 13.2 percent had between $501 and $1,000 fraudulently transacted, 18.8 percent had between $1,001 and $5,000 fraudulently transacted, and 4.5 percent had $5,001 or more fraudulently transacted. One in three victims (33.2%) indicated that they had lost money even after receiving reimbursement, with 15.2 percent of victims losing $100 or less, 9.1 percent losing between $101–$500, 4.2 percent losing between $501–$1,000 and 4.8 percent losing over $1,000.

Insurance fraud

A study in 2003 (IGA 2004) estimated that the total cost of insurance fraud in 2003 was $2.1b, or $73 per insurance policy paid in Australia. This was using the known figures for insurance fraud and adjusting them to the industry assumption that 10 percent of insurance claims made are fraudulent (IGA 2004). This is the most recent estimate made of general insurance fraud in Australia, although applying the 10 percent fraud rate to the $30b in insurance claims made annually in Australia would result in a fraud cost of $3b for Australia; although it is inappropriate to apply the same rate of fraud to different categories of policy (KPMG 2012).

KPMG (2012: 16) reported that

> the [Association of British Insurers] ABI estimates the total value of undetected general insurance claims fraud in the United Kingdom to be over £2b per annum. This equates to between 7 percent and 10 percent of claims by value and between 10 percent and 15 percent of claims by volume, depending on the type of insurance cover' (KPMG 2012: 16).

KPMG (2012) estimates that only one-third of insurance fraud is detected by businesses in Australia. In the absence of more precise data, the estimate of $2.1b losses will be used for present purposes.

Other estimates

In Australia, the Australian Crime Commission has conservatively estimated that organised crime costs Australia between $10 and $15b annually (ACC 2011). As Australia does not have separate organised crime offences, these costs would be included within the other categories of crime covered in this report.

Money laundering, the process whereby the origin of dishonest and/or illegally obtained money is concealed so it appears to come from a legitimate source, is not costed separately for the purposes of this report, as the laundering of the proceeds of crime does not impose a separate cost to society over and above what has already been estimated in each individual crime category. However, it is acknowledged there will be a cost of money laundering through lost productivity of legitimate business and individuals' time spent on the laundering of illegal profits. Individual costings of loss of productivity are included elsewhere.

Stamp and Walker (2007) estimated in 2004 that the total proceeds of crime (noting that this differs from the total costs of crime as estimated in this report) were $3.8b, with fraud (around $2.3b) being the largest component.

Table 26 summarises the above estimates of the cost of fraud for each of the subcategories considered. Although it would be inappropriate to total these estimates due to problems of double counting, non-comparability of the data collection definitions and categories used and different reference periods, it does give an indication of the large scale of different types of fraud recorded in various sectors in Australia and importantly, of the fact that some fraud types involve extremely large amounts and others relatively small sums. On the basis of this information, the present report will undertake separate estimations for the cost of fraud in four categories—fraud against the Commonwealth, serious organisational fraud, personal fraud and other fraud.

Table 26 Estimates of the cost of selected categories of fraud

Fraud category	Source	Reference period	Sample size	Incidents (n)	Unit cost ($)	Total estimated cost ($m)
Fraud against the Commonwealth	Jorna & Smith unpublished	2010–11	154 agencies	104,755	1,566	96.5
Fraud against organisations	KPMG 2012	Feb 2010 –Jan 2012	281 organisations	194,454	1,685	372.7
Serious fraud in Australia and New Zealand	Smith 2003	1998–99	208 accused persons	n/a	125,633 median loss	143.9 lost

Table 26 Estimates of the cost of selected categories of fraud cont.

Fraud category	Source	Reference period	Sample size	Incidents (n)	Unit cost ($)	Total estimated cost ($m)
Consumer fraud	Jorna & Hutchings 2013	2011	1,571 respondents	231 lost money	500 median loss	0.846
Personal fraud	ABS 2012	2010–11	26,405 households, >15 yrs	713,600 lost money	300 median loss	1,400
Scams	ACCC 2012	2011	ACCC 2011	82,338 complaints	500 median	85.6
Identity fraud	Cuganesan & Lacey 2003	2001–02	120 large organisations	n/a	n/a	1,100 cost; 420 lost
Payment card fraud	APCA 2012	2011	All Australia	1,365,153	271	369.5
Insurance fraud	IGA 2004	2003	All Australia		75 per policy	2,100
Money laundering – fraud component	Stamp & Walker 2007	2004	All Australia			2,300

An integrated approach to costing fraud

In the absence of national fraud victimisation survey data, the present report makes use of both fraud victimisation survey data that exist in respect of fraud against the Commonwealth and personal fraud, as well as officially recorded police statistics on fraud for the remaining fraud categories for which victimisation survey data are unavailable. Appropriate adjustments are taken into account to avoid double counting. In addition, an allowance is made for a number of high-value serious frauds when calculating the unit cost of these matters.

The approach adopted may be summarised as follows.

- Cost of fraud against the Commonwealth (AIC survey) +
- Cost of personal fraud (ABS survey—including credit card fraud and identity fraud) +
- Cost of serious fraud (AIC & PricewaterhouseCoopers and KPMG surveys) +
- Cost of police recorded fraud (inflated to account for undetected and unreported incidents) less:
  - cost of Commonwealth fraud incidents dealt with by state and territory police;
  - cost of personal fraud incidents recorded by police;
  - cost of serious fraud incidents recorded by police;
  - cost of losses recovered by victims and or prosecution agencies.

Cost of fraud against the Commonwealth

As indicated above, in 2011, Commonwealth agencies reported to the AIC that they had experienced 91,091 incidents of fraud worth $118,878,181 (Jorna & Smith unpublished). Inflating this figure for those cases for which a cost estimate was not reported and applying a multiplier of 1.15 to account for undetected and unreported fraud, it is estimated that there were 104,755 incidents with an estimated loss of $164,051,880. Deducting total funds recovered and reparation for 2010–11 of $67,600,159 from the total leaves a net total loss due to Commonwealth fraud of $96,451,730.

Cost of personal fraud

Also as indicated above, the Australian Bureau of Statistics (2012a) found in its national survey of

26,405 households in Australia that there were 1,188,100 victims of personal fraud aged 15 years or more in 2010–11. As there are likely to be very few victims of fraud under the age of 15 years, no adjustment has been made for this.

Three in five victims of personal fraud (60% or 713,600 persons) lost money, an average of $2,000 per victim who incurred a financial loss with a median loss of $300. Total losses were $1.4b.

Personal fraud included consumer scams, as well as credit card fraud and identity theft. Accordingly, the 1,365 fraudulent transactions worth $369.5m reported by APCA (2012) overlap with these losses in respect of credit card fraud only. The ABS (2012a) found that an estimated 662,300 Australians aged 15 years and over were victims of credit card fraud in the 12 months prior to interview, although the number of fraudulent credit card transaction is not reported.

The ABS (2012a) found that 40,000 incidents of personal fraud were reported to police (3.4%). This is a much lower reporting rate than the 17.3 percent of victims who reported scams to the police in the AIC's 2012 online *Consumer Fraud Survey* (Jorna & Hutchings 2013). The AIC's sample was, however, self-selected and likely to be composed of respondents who were willing to report their experiences officially. Although not all matters reported to police are officially recorded, it is reasonable to deduct the 40,000 cases reported to police that the ABS (2012a) found in order to avoid double counting.

Cost of serious fraud

Both Mayhew (2003a, 2003b) and Rollings (2008) provided an estimate of the cost of a small proportion of serious fraud cases that each resulted in substantial losses. Rollings (2008) considered 367 serious fraud cases that had been referred to the AFP worth approximately $491m, or an average of $1.34m per case. For the present report, however, these cases are included within the category of Commonwealth fraud.

KPMG's (2013) survey of 281 organisations found 194,454 incidents of fraud, with losses of $327.7m over the two years examined; 20 of which involved losses over $1m each, totalling $49.7m or $2.5m each on average. The research into 104 serious fraud cases in 1998 and 1999 by Smith (2003) found a similarly high mean loss of $667,360 per case (excluding New Zealand and Commonwealth cases), with a total actual loss of $69.4m for Australian state and territory cases alone, after deducting amounts recovered.

For present purposes, it is assumed that 300 fraud incidents would have involved losses of $1.5m each, totalling $450m in respect of serious fraud incidents reported to police.

As indicated above, KPMG (2013) found that only 46 percent of major incidents of fraud were reported to police. Inflating these estimates of serious fraud incidents, it can be estimated that there would be 438 incidents in total worth $657m in respect of reported and unreported serious fraud in 2011.

Cost of police recorded fraud

Although the term 'fraud' has been adopted, the precise crime categories relied on varied across police jurisdictions in Australia. Police data collection categories relevant to fraud were 'deception' (Victoria), 'fraud' (New South Wales, Western Australia, Queensland and the Australian Capital Territory), deception/manipulation (South Australia), 'fraud and similar offences' (Tasmania), 'fraud and related' (Northern Territory) and 'fraud and deception' (Commonwealth). In addition, police data in New South Wales related to the calendar year 2011, while all other jurisdictions were for the financial year 2010–11. These variations mean that data from each police jurisdiction might not be completely comparable.

In 2011–12, there were 97,550 fraud and dishonesty offences recorded by police throughout Australia according to data obtained from individual police agencies in each state and territory. Added to this, are the 61 fraud referrals from Commonwealth agencies to the AFP in 2010–11. The financial loss associated with these 61 cases alone was $12,796,207, or $209,774 per matter (Jorna & Smith unpublished). The total number of recorded fraud offences in Australia was, therefore, 97,611.

From this number of recorded fraud offences should be deducted the 75 incidents of fraud against the Commonwealth that were referred to state and

territory police by federal agencies in 2010–11 (Jorna & Smith unpublished) and the 40,000 incidents of personal fraud that the ABS (2012a) found had been reported to police in 2010–11, as well as the 438 serious fraud incidents, as estimated above. This leaves a total estimated number of officially recorded fraud incidents of 57,098.

It is assumed that recorded fraud accounts for 25 percent of all fraud—thus, for every fraud offence there are three that go either unreported or undetected (Mayhew 2003b). Inflating the estimate of 57,098 by a multiplier of 4.0 yields a total of 228,392 fraud offences.

In estimating the unit cost of fraud offences, both Mayhew (2003b) and Rollings (2008) adopted different values for recorded and unrecorded fraud on the assumption that a person or organisation was more likely to report a higher value fraud than a lower value incident. Mayhew applied a unit cost of $9,900 for recorded frauds in 2001 and Rollings (2008) increased this to $21,500 for 2005. Mayhew (2003b) estimated a unit cost of unreported fraud at $1,590 for 2001, while Rollings (2008) inflated this to $3,390 for 2005 as the unit cost of unrecorded fraud.

Inflating these estimates for prices in 2011 yields a unit cost for recorded fraud of $25,724 and a unit cost for unrecorded fraud of $4,056.

Applying these to the estimated number of recorded and unrecorded frauds, yields a total cost for recorded fraud of $1,472,338,800 and a total cost for unrecorded fraud of $696,447,640, totalling $2,168,786,400.

Indirect fraud costs

Both Mayhew (2003b) and Rollings (2008) added to the direct property loss associated with fraud and an amount to represent lost output including investigating, responding and reporting incidents of fraud, assisting the authorities with the prosecution of incidents, disruption to business as systems and controls are examined to prevent a repetition of the incident, and replacement of staff who were involved in the incident. Incidents of identity fraud might also include loss of time to have evidence of identity documents reissued and repairing one's credit rating. Fraud can also entail intangible costs such as occurs when a victim is required to sell a home or wind up a business in order to recover losses. Occasionally, health may be affected including stress-related illnesses and even suicide; however, as in previous AIC reports, in the absence of research into the health costs associated with fraud victimisation, this has not been included.

Mayhew (2003b) valued these indirect fraud costs at 40 percent of the total cost, which adds and additional $1,729m to the total estimated property loss from all types of fraud of $4,323m.

Total estimated fraud costs

The total cost of the various estimated components of fraud amounts to $6,052m, as indicated in Table 27. This is almost one-third (28.9%) less than the estimate for 2005. The reason lies partly in the reduced number of officially recorded fraud offences (1.8% fewer than in 2005), but mostly due to the revised and improved method of calculating the incidence and cost of fraud. When Mayhew (2003b) and Rollings (2008) undertook their assessments, there were no victimisation surveys undertaken of fraud against the Commonwealth or personal fraud. The present study has made use of both these surveys, which have provided a much sounder basis for the estimating of the cost of these two important elements of the cost of fraud in Australia. Much remains to be done, however, to improve the estimation of the unit cost of both serious fraud incidents, as well as other forms of fraud recorded by police. In addition, further research is needed to provide a more accurate indication of the cost of lost output, intangible costs and medical costs arising from fraud victimisation. In the absence of such research, the present estimation that fraud cost Australia $6b in 2011 is an approximate indication only.

Table 27 The elements of the overall cost of fraud[a]

Fraud category	Incidence	Total cost ($m)
Commonwealth fraud (including undetected and unreported, less recovered)	104,755 incidents	96.5
Personal fraud (based on national victimisation survey)	713,600 victims	1,400
Serious fraud (estimated)	438 incidents	657
Police recorded fraud (excluding above categories)	228,392 offences	2,169
Indirect costs (40% for lost output and intangible costs)	All	1,729
Total		6,052

a: Medical costs have not been estimated

Drug abuse

The cost of drug-related crime

Mayhew (2003a, 2003b) and Rollings (2008) identified three main components of the cost of drug offences. These were:

- the 'human' cost of drug offences, which primarily includes the health cost of drug abuse to society as well as the cost of drug-related deaths, HIV/AIDS, hepatitis, injury and the cost of treatment for drug addiction;
- the cost of offending to fund a drug habit; and
- the cost of law enforcement associated with the prevention of drug trafficking, drug use and drug-related crime.

This section focuses on the 'human' cost of drug-related crime, as the costs to law enforcement and of drug-related offending have been covered elsewhere in this report.

The human cost of drug abuse

Loss of life

Previously, Collins and Lapsley (2008) estimated that there were 872 deaths attributable to illicit drug use in Australia in 2004–05. This included deaths attributed to opiates, cannabis, psychostimulants, hallucinogens, other psychotropics, as well as other licit, unspecified and combined drug use.

In the absence of sufficiently disaggregated data, this appears to be the best available estimate of drug-attributable deaths in Australia. Assuming that that the proportion of drug-related deaths in 2004–05 remained the same in 2011, an estimated 974 deaths could be attributed to illicit drug use in 2011.

Applying the estimated medical and lost productivity cost associated with homicides above to these deaths, yields a total cost of $2.12b. The cost of lost productivity made up nearly all of this cost at $2.11b, while medical costs comprised the remaining $10m. As in the previous reports, intangible costs were not considered as a part of these calculations, as the

use of drugs can be considered a 'willing' cost (see Mayhew 2003b; Rollings 2008).

Hospitalisation

The Australian Institute of Health and Welfare (AIHW) provide data on incidents of hospitalisation, including illicit drug use in Australia. The latest available data were for the 2010–11 financial year and showed that there were 13,849 public and 6,928 private hospitalisations due to principal diagnoses related to illicit drugs (AIHW 2012b). These figures were determined using the following International Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM) codes T40, F11–F15, F16, F18 and F19.

The average cost of a stay in a public hospital in 2009–10 was $4,500, which inflated to 2011 prices is $4,649 (AIHW 2013a). Overall, in 2011, the total estimated cost of public hospital stays due to illicit drug use was $64m. In addition, the number of emergency department visits in public hospitals related to illicit drug use (which did not lead to admission) were determined using the 7:1 ratio presented in earlier costs of crime studies (see Mayhew 2003b; Rollings 2008). The Productivity Commission (SCRGSP 2013) determined that the average cost per presentation in a public hospital emergency department was $498 in 2010–11. The cost of an illicit drug-related presentation to a public hospital emergency department was $48m. Overall, the public hospital costs associated with illicit drug-related presentations in 2011 were $112m.

As costs differ between the public and private hospital systems, private hospital stays related to illicit drug use are costed separately here for the first time. Private Healthcare Australia (2011) report the average cost of a private hospital visit is $2,938. Recently, AIHW (2012b) reported that 55 percent of private hospital funding comes from sources (including governments and individuals) other than private health insurance funds. Applying this ratio to the average cost of a private hospital visit, the cost to society of each private hospital visit is approximately $1,615. In total, the cost of private hospital stay due to illicit drug use in 2011 was $11m. In addition, the cost of illicit drug-related presentations to private hospital emergency departments in 2011 was estimated to be $8m; although this may represent an overestimation due to emergency departments not being available in some private hospitals. Overall, the private hospital costs for illicit drug-related presentations in 2011 were $20m.

Illicit drug users in treatment

Data on illicit drug users in treatment were obtained from the AIHWs Alcohol and Other Drug Treatment Services National Minimum Data Set. This dataset does not collect information on those organisations or clients solely providing or receiving opioid pharmacotherapy treatments. It also had a number of other exclusions including treatment received in correctional settings, private agencies not publicly funded, clients aged 10 years and under, and patients admitted in acute care or psychiatric hospitals (for more details, see AIHW 2012a).

Figures presented in this section are for the numbers of closed-treatment episodes in 2010–11 and include those where the primary drug of concern was amphetamines, cannabis, cocaine, ecstasy or opioids. The use of benzodiazepines and other drugs have been excluded, as the legality of their use is unclear. In 2010–11, AIHW (2012a) reported that there were 65,376 closed-treatment episodes, of which 10,801 were in residential treatment.

Using figures from analysis carried out by the Australian National Council on Drugs, the average cost of treating a person in residential drug treatment is $215 per day and $16,110 per treatment episode (ANCD 2012). In total, the cost of residential drug treatment was $174m. As the cost of residential drug treatment was previously unavailable, care should be taken when comparing this figure with previous studies that used residential mental health costs as a proxy (see Mayhew 2003; Rollings 2008).

However, as the cost of drug treatment through non-residential treatment types are not available, the cost of treating a community-based mental health patient has, as in previous studies, been used as a proxy measure. The Productivity Commission (SCRGSP 2013) reported that the cost of treating a community-based mental health patient in 2011 was $2,089 per episode. Applying this figure to those drug users in non-residential treatment, outreach

treatment, home-based treatment and other treatment, the total cost for other treatment services was $114m.

Excluding pharmacotherapy, the cost of treatment for illicit drug use in 2011 was estimated to be $298m.

Pharmacotherapeutic treatment

The number of people in pharmacotherapeutic treatment in 2010–11 was 46,446. Methadone maintenance was the most common form of treatment with two in every three (69%) receiving this treatment, while 18 percent received a combination of buprenorphine and naltrexone, and 14 percent received buprenorphine (AIHW 2012a). Applying the cost of methadone maintenance as provided by Rollings (2008), inflated to 2011 prices, the cost of treatment was nearly $4,000 per client. A total cost of $185m was estimated for pharmacotherapy treatment in 2011. Although, it should be noted that this cost does not take into account the extra cost of buprenorphine and naltrexone treatment and as such, this may be an underestimation of the true cost of pharmacotherapy treatment.

Lost productivity

As in previous AIC cost of crime studies, estimates of lost productivity of drug users in treatment may be overestimated because, as a group of individuals, they tend to be underproductive (Mayhew 2003; Rollings 2008). Nonetheless, applying the lost productivity costs of assault (hospitalised figures have been used for residential treatment episodes and non-hospitalised injuries for non-residential treatment), the lost productivity of drug users in residential treatment is estimated to be $349m and $76m for those in non-residential treatment. Overall, the cost of lost productivity was $425m.

The total estimated human costs of drug abuse are, accordingly, $3,161m (see Table 28).

Table 28 Estimated human costs of drug abuse

Category	Estimated cost ($m)
Illicit drug use deaths	2,121
Medical costs of hospitalisation	132
Drug treatment costs	298
Pharmacotherapeutic treatment	185
Lost productivity of drug users in treatment	425
Total	3,161

Other estimates

Collins and Lapsley

In 2008, Collins and Lapsley (2008) published their fourth report, which estimated the costs of tobacco, alcohol and illicit drug abuse to Australian society. The report estimated costs for 2004–05 to be $55.2b, with illicit drug use accounting for $8.2b, or 15 percent of that figure. The report included costs on a wide range of social issues and used drug and alcohol attributable fractions (based in part on data from the two AIC collections of *Drug Use Monitoring in Australia* and *Drug Use Careers of Offenders*) to estimate the proportion of crime that can be attributed to drugs and alcohol. Items considered by Collins and Lapsley (2008) included production losses in the paid and unpaid workforce, health costs and crime costs including property theft and damage, as well as the associated costs of policing, criminal courts, prisons and private security.

This report is a valuable piece of work, but caution should be taken when attempting to compare its findings with those reported above. Collins and Lapsley (2008) approached the problem of assessing costs from alcohol, tobacco and drug use by attributing a proportion of total crime costs to, for example, illicit drug use. However, their report does not seek to assign a proportion of criminal justice spending to each crime type, but rather considers it as a whole and estimates costs for each crime type separately.

As indicated above, Collins and Lapsley's (2008) methodology has been criticised by Crampton, Burgess and Taylor (2011) who reviewed the methods and assessed the policy influence of a series of publicly funded cost of illness studies. Their analysis showed that headline cost estimates, including Collins and Lapsley's (2008) work, depended on an incorrect procedure for incorporating real-world imperfections in consumer information and rationality, producing what was argued to be a substantial overestimate of costs. Other errors were identified that further inflated these estimates, resulting in headline costs that they found to be unrelated to either total economic welfare or GDP and therefore of no policy relevance. It was argued that counting only external, policy-relevant costs not only deflated overall figures substantially but also resulted in rank-order changes among cost categories.

Australian Federal Police

The AFP's *Drug Harm Index* (DHI) was

> developed to provide a single measure that encapsulates the potential value to the Australian Community of AFP drug seizures. The index includes both domestic drug seizures and international seizures destined for Australia where the AFP played a significant role (AFP 2003: 1).

The DHI for 2010–11 was $1.2b (AFP 2012). This figure will not be counted separately, as components will have been included elsewhere in this report. However, the DHI is a good, high-level economic indicator that could be used to compare the potential value of drug seizures over time.

Exclusions

There were a number of costs that have deliberately not been taken into account in this section. These were:

- Health care costs and lost productivity costs of those injured by someone who is drug-dependent. It is assumed some of these costs would have been covered in the assault figures.
- Social welfare payments made to those who are drug dependent
- Costs for dependence on alcohol. As the consumption of alcohol is not illegal (other than for certain age-related circumstances and in connection with driving), it was not appropriate to include those estimates in this report. However, it is likely that the assault figures also include a high component of assault that is alcohol related.
- Intangible costs of drug use are not included.
- Costs involved with community awareness campaigns about illicit drugs and the research and training that go with them.

Criminal justice system costs

Costs for government services (police, prosecutions, courts, corrections and other related government agencies) are only available for financial years. For the purposes of this report, the financial year 2011–12 has been used in line with the discussion of reference periods above.

According to the Report on Government Services for 2011–12 (SCRGSP 2013), the total real recurrent expenditure (less revenue from own sources) on justice in 2010–11 was $13.1b. Of this, approximately $12.5b was spent on criminal justice. The remaining $635.5m was spent on the administration of civil courts.

Police costs

According to the Report on Government Services for 2011–12, real recurrent expenditure (including user cost of capital, less revenue from own sources and payroll tax) on police services for 2011–12 was $9,459m (SCRGSP 2013). This relates to state and territory policing only and excludes the cost of the AFP and other federal non-policing law enforcement agencies, which are included within Commonwealth costs below. Not all police time is spent on crime, however. For example, New South Wales Police Force (2012) estimated that almost 80 percent of time was spent either responding to incidents, criminal investigations or giving judicial support; the remaining 20 percent being spent on traffic and commuter services (although some of this time may have involved criminal matters) and support functions. The attribution of time by the New South Wales Police Force was similar to findings of the UK Her Majesty's Inspectorate Constabulary (2012) who found that between 80–90 percent of police time was spent dealing directly or indirectly with crime. On the basis of an 80 percent allocation for crime-related functions, the total cost of policing crime in Australia in 2011–12 was $7,567m.

Prosecution agency costs

Previous AIC research into the costs of crime has excluded the cost of public prosecutions of criminal conduct. As this is an important area of expenditure, this is being canvassed in the present report for the first time. The recurrent expenditure on state and territory prosecution agencies in 2011–12 was $303m (see Table 29). The costs of the Office of the CDPP are included within Commonwealth costs of crime below.

Table 29 Costs of prosecution agencies

Jurisdiction	Total appropriation ($m)
New South Wales	112.1
Victoria	67.8
Queensland	40.7
South Australia	18.3
Western Australia	38.9
Tasmania	6.3
Northern Territory	9.8
Australian Capital Territory	8.9
Total	303

Sources: ACTDPP 2012; DPP NSW 2012; DPP Victoria, OPP Victoria & CPP Victoria 2012; ODPP Queensland 2012; ODPP South Australia 2012; ODPP Western Australia 2012

Court costs

According to the Report on Government Services for 2011–12, real recurrent expenditure (net of monies received through electronic infringement and enforcement systems less payroll tax) on criminal courts for 2011–12 was $779,956,000 (SCRGSP 2013). This relates to state and territory courts at supreme, district/county and magistrates' levels including children's courts, coroners courts and probate registries, as well as federal courts, but excluding the High Court of Australia and tribunals, and specialist jurisdiction courts such as Indigenous courts, circle sentencing courts and drug courts. The cost of criminal matters handled by the High Court of Australia is included as part of the federal government costs below.

In the case of coroners' courts, not all coronial proceedings relate to criminal matters, as coroners are required to investigate all deaths that have occurred if the death appears to be unexpected, unnatural, or violent, the death is of a person who was in custody or care, or the death occurred as a result of a fire or explosion (New South Wales Coroners Court 2013). Costs of coroners' courts for each jurisdiction in 2011–12 were $41.1m. It is estimated that one-half of national coroners' court costs relate to crime, amounting to $20.6m which was deducted from the above Productivity Commission figure, making a total of $759,356,000.

Corrective services

According to the Report on Government Services for 2011–12, total recurrent operating expenditure and capital costs on prisons and community corrections, less payroll tax in 2011–12 dollars was $3,255,782,000 for prisons, $103,013,000 for transportation costs and $478,053,000 for community corrections, totalling $3,836,848,000 (SCRGSP 2013). This relates to public and private sector-operated adult custodial facilities and community corrections. These corrective services costs do not include juvenile justice costs, which are discussed below, nor the costs of police custody (which are included within policing costs above), offenders (or alleged offenders) held in psychiatric institutions or people held in immigration or military detention.

Commonwealth agencies

A number of Commonwealth agencies have functions and programs that relate to crime and its control. As noted above, where new crime reduction programs are used, government outlays increase accordingly and so the cost of responding to crime is closely related to the ways in which criminal justice policy is framed. On the basis of information presented in Department of Attorney-General 2011–12 Portfolio Budget Statements, the total resources allocated to the portfolio were $4,762m (AGD 2013). Examining the expense measures for each agency that could

have some crime relevance, a percentage of total resources was estimated for those portfolio agencies that have some criminal justice and crime-related relevance (see Table 30). The percentage is indicative only, as precise crime-related cost allocation was not always apparent. The total estimated resources allocated to crime and its control, excluding terrorism across all agencies was $1,792m in 2011–12.

Table 30 Costs of relevant Attorney-General's Portfolio agencies

Relevant agencies	Total appropriation ($m)	Crime percentage (%)	Estimated crime costs ($m)
Attorney-General's Department	800	25	200
Australian Commission for Law Enforcement Integrity	6	100	6
Australian Crime Commission	98	100	98
Australian Customs and Border Protection Service	1,450	15	218
Australian Federal Police	1,370	70	959
Australian Institute of Criminology	5	100	5
Australian Law Reform Commission	3	25	0.8
Australian Security and Intelligence Organisation	394	30	118
Australian Transaction Reports and Analysis Centre	67	100	67
CrimTRAC Agency	4	100	4
Federal Court of Australia	91	10	9
Federal Magistrates' Court of Australia	53	10	5
High Court of Australia	19	30	8
Office of the Director of Public Prosecutions	92	100	92
Office of Parliamentary Counsel	12	15	1.8
Total	3,788	-	1,792

In addition to agencies within the Attorney-General's Portfolio, there are other Commonwealth departments and agencies that undertake functions in relation to the prevention, control or response to crime. One example is the Department of Agriculture Fisheries and Forestry Biosecurity Division that works with the Australian Customs and Border Protection Service in maintaining the integrity of Australian borders. The Department of Agriculture Fisheries and Forestry allocated $297m in the 2011–12 financial period for quarantine and export services at Australian ports and borders. Other agencies that have some crime-related functions include those dealing with Indigenous Australians, the Australian Bureau of Statistics, agencies dealing with communications and computer security, research and scientific agencies, corporate and business regulatory agencies, revenue and finance agencies, and health and welfare agencies. Further research is needed to disaggregate the crime-related functions of these departments and agencies from their other functions in order to provide an accurate assessment of their contribution to the overall costs of crime in Australia, while ensuring that double counting does not occur.

State and territory agencies

Each state and territory has various agencies responsible for criminal justice-related matters including policy analysis, legislation, administration and the prevention of crime and corruption. These generally fall within Attorney-Generals' or Justice portfolios. An attempt was made to determine the costs associated with their crime-related functions, other than the costs associated with police, prosecutions, courts, correctional services, forensic mental health services, legal aid and juvenile justice that have been accounted for in the relevant sections elsewhere in the current calculations.

Examples of these state and territory crime-related functions include the work of anti-corruption agencies, crime prevention services, human rights and anti-discrimination functions, and other criminal justice policy work. These additional state and territory costs of criminal justice are presented in Table 31. The total additional crime-relevant cost for 2011 was $903,989m.

Table 31 Additional criminal justice costs of state and territory agencies (excluding police, prosecutions, courts, corrections, forensic mental health services, legal aid and juvenile justice)[a]

Jurisdiction	Agency—division	Division cost ($'000)	Estimated crime-related cost ($'000)
New South Wales	Department of Attorney General & Justice (total appropriation $5,724.1m)		
	Court Support Services[b]	95,361	47,681
	Crime Prevention and Community Services	119,975	119,975
	Offender program—reduce recidivism	70,405	70,405
	NSW Crime Commission	18,051	18,051
	Sub-total	394,477	256,122
	Percentage of total for jurisdiction	7.0%	5.0%
Victoria	Department of Justice (Total appropriation $4,430m)		
	The Office of Police Integrity	26,800	26,800
	Supporting the Judicial Process[c]	122,833	61,417
	Community Safety and Crime Prevention	46,000	46,000
	Sub-total	195,633	134,217
	Percentage of total for jurisdiction	4.0%	3.0%
Queensland	Department of Justice and Attorney-General (Total appropriation $594.9m)		
	Criminal Justice	298,824	298,824
	Human Rights[d]	38,069	19,035
	Crime and Misconduct Commission	16,607	16,607
	Witness Protection	5,975	5,975
	Sub-total	359,475	340,441
	Percentage of total for jurisdiction	60.4%	57.0%
South Australia[e]	Attorney-General's Department (Total appropriation $142.4m)		
	Forensic Services	20,329	20,329
	Police Complaints Authority	1,326	1,326
	Justice Portfolio	19,041	9,521
	Sub-total	40,696	31,176
	Percentage of total for jurisdiction	29.0%	22.0%
Western Australia	Department of the Attorney General (Total appropriation $496.3m)		
	Attorney-General's general budget	128,105	64,053
	Corruption and Crime Commission	32,747	32,747
	Sub-total	160,852	96,800
	Percentage of total for jurisdiction	32.0%	20.0%

Table 31 Additional criminal justice costs of state and territory agencies (excluding police, prosecutions, courts, corrections, forensic mental health services, legal aid and juvenile justice)[a] cont.

Jurisdiction	Agency—division	Division cost ($'000)	Estimated crime-related cost ($'000)
Tasmania	Attorney-General and Minister for Justice (Total appropriation $53.8m)		
	Support and Compensation for Victims of Crime	7,970	7,970
	Protective Jurisdictions	1,811	906
	Legislation Development review	602	301
	Anti-Discrimination Commission[d]	1,191	119
	Sub-total	10,972	9,296
	Percentage of total for jurisdiction	20.0%	17.0%
Northern Territory	Department of Justice (Total appropriation $259.3m)		
	Community Justice Policy	3,481	3,481
	Legal Policy	2,544	2,035
	Research & Statistics	1,651	1,651
	Community Justice Grants[f]	7,596	3,798
	Anti-Discrimination Commission[d]	1,209	605
	Sub-total	16,481	11,570
	Percentage of total for jurisdiction	6.0%	4.0%
ACT	Justice and Community Safety Directorate (Total appropriation $292.4m)		
	Policy Advice and Justice Programs	9,430	9,430
	Protection of Rights[d]	9,110	4,555
	Improved access to law and Justice Services ATSI	147	147
	Court security and court transport unit	952	952
	Sub-total	19,639	15,058
	Percentage of total for jurisdiction	7.0%	5.0%
All jurisdictions	Additional criminal justice costs	1,138,500	903,989

Notes:

a: Total appropriation excluding police, prosecutions, courts, corrections, forensic services, legal aid, juvenile justice and victim support that have been included in other sections

b: For 'court costs' and 'supporting judicial processes' 50% of those costs were attributed to criminal justice costs as not all court cases are criminal

c: Of this amount, $49,367 was deducted for the Victorian Forensic Mental Health costs which are included separately below

d: Half of the costs for 'human rights', 'protection of rights' or 'anti-discrimination' programs were attributed to costs of crime costs, except for Tasmania where 10% of the anti-discrimination costs were attributed as their program focused on community awareness

e: South Australia: Forensic Services related primarily to coronial and police investigations, for example, DNA technology, drug analysis in driving cases or in drug-related cases, and sexual assault kit screens, there for 100% of these costs were attributed to criminal justice costs

f: In the Northern Territory 50% of the costs associated with 'Community Justice Grants' were attributed to criminal justice costs, some of those costs bring for non-government organisations which were not involved with crime prevention

Sources: ACT Government 2012; NSW Government 2012; NTDTF 2012; Queensland Government 2012; SADTF 2012; TDTF 2012; Victorian Government 2012; Western Australian Government 2012

Forensic mental health services

At present, there is not a national system of forensic mental health services in Australia, which means there are differences in the services provided by state and territory jurisdictions (Hanley & Ross 2013). Research has shown that offenders have higher rates of mental illness than those in the general community and it has been estimated that one-third of all people institutionalised with mental health issues are in prison (Ogloff et al. 2007). As the Productivity Commission costs for corrections do not include those offenders held in psychiatric institutions, it was necessary to consider state and territory budgets associated with these functions. The Victorian forensic mental health budget was almost $49m for 2011–12 (VIFMH 2012), the New South Wales Justice Health and Forensic Mental Health Network's net cost of service for 2011–12 was $176m. The South Australian, Tasmanian and Australian Capital Territory Government services budgets for forensic mental health services, combined, totalled just over $23m. Costs for forensic mental health for Western Australia and Queensland could not be disaggregated from community mental health costs and have not been included. No details of forensic mental health services were available for the Northern Territory. For those states and territories with forensic mental health costs available, the total for 2011–12 was $248m.

Legal aid

Legal aid provides legal services to disadvantaged people in need of legal support. There are eight independent legal aid commission in each of the states and territories in Australia. For the 2011–12 financial year, funding for legal aid comprised $206m from the Commonwealth government and $270m from state and territory governments (SCRGSP 2013). The Commonwealth allocation has already been accounted for as part of the Attorney-General's portfolio, leaving a cost of $206m for the states and territories.

Juvenile justice

Youth justice systems are responsible for attending to young people (predominantly aged 10–17 years, although this may vary between states and territories) who have committed or are alleged to have committed an offence while considered by law to be a juvenile (SCRGSP 2013). The total cost of juvenile justice services across Australia in 2011–12 was $640m (SCRGSP 2013). This figure included the costs associated with juveniles held in detention, community corrections and juveniles involved in group conferencing.

Table 32 summarises the criminal justice system costs for 2011–12, with comparisons to previous AIC estimates for 2001–02 and 2005–06.

Table 32 Criminal justice costs in Australia

Category	2001–02 costs ($m)	2005–06 costs ($m)	2011–12 costs ($m)
Police costs	3,230	4,480	7,567
Prosecution costs	Not included	Not included	303
Court costs	410	466	759
Corrective Services	1,590	1,590	3,837
Commonwealth portfolio agencies	820	2,041	1,792
State and territory agencies	Not included	Not included	904
Forensic mental health services	Not included	Not included	248
Legal aid	Not included	Not included	206
Juvenile justice	350	416	640
Total	6,400	8,993	16,256

Source: The main source of figures was the Productivity Commission 2013, state and territory budgets for 2011–12 and Attorney-General's Department portfolio budget 2011–12

Other criminal justice costs excluded

In addition to the above criminal justice costs are a number of other state and territory functions that are relevant. These include the costs of alternative dispute resolution, the cost of consumer affairs including consumer protection relating to criminal conduct and offender assistance expenditure. Owing to the difficulties of disaggregating the costs related to crime from each of these functions, they have been excluded from the present calculations.

Victim assistance costs

A number of costs associated with providing services to victims of crime were estimated. These include providing victim compensation, victim support services, the costs associated with homelessness services due to domestic violence, child protection services for those children experiencing criminal child abuse, the value of volunteer time and costs associated with decreasing the violence against women. It is anticipated that the costs will underestimate the full expenditure associated with providing victim assistance.

Victim support

There are a range of services available for victims of crime, the majority of which focus on personal and or violent crimes. The funding for these services is predominately provided by state and territory governments and as such, the costs of these services have already been accounted for in the criminal justice costs that looked at state/territory budgets.

Victim compensation

In addition to victim support services are the costs of providing financial compensation to victims of crime. All states and territories have schemes that provide financial assistance or compensation to victims of violent crimes (the majority of schemes also provide financial assistance for witnesses and family members of violent crimes); however, the specific details of the schemes vary between jurisdictions. In 2011–12, the total amount spent by states and territories was just over $177m for victim compensation in 2011–12 (see Table 33).

Table 33 Victim compensation payments, by state and territory

Jurisdiction	Cost ($m)
New South Wales	63
Victoria	48
Queensland	8[a]
South Australia	17
Western Australia	33
Tasmania	3
Northern Territory	4
Australian Capital Territory	1
Total	177

a: Queensland figure obtained from 2010–11 Victim Assistance Queensland, the corresponding 2011–12 amount was unavailable

Source: Northern Territory Department of the Attorney-General and Justice 2012; NSWVCT 2012; Queensland Department of Justice and Attorney General 2012; South Australia Department of Attorney-General 2012; Tasmania Department of Justice 2012; Victim Support ACT 2012; VVCAT 2012; Western Australia Department of the Attorney General 2012

Homelessness related to domestic violence

From 1 July 2011, the Specialist Homelessness Services replaced the Supported Accommodation Assistance Program (AIHW 2012d). The total recurrent expenditure on homelessness for 2011–12 was just over $491m. This was in respect of service delivery expenditure only and does not include the additional $15.4m for administrative expenditure (SCRGSP 2013). 'Domestic violence services' is one of the categories of support that comprises the Specialist Homelessness Services provided by the AIHW and represents 23 percent of the amount spent on homelessness services. The total amount spent on women escaping domestic violence was $113m for 2011–12.

Child protection

Some of the costs for out-of-home care services and child protection services were included in the estimates. The total cost of child protection and out-of-home care services was almost $3b in 2011–12; an increase of 3.5 percent on the figure for 2010–11 (AIHW 2013b). Following the same methodology as Mayhew (2003b) and Rollings (2008) used, it was assumed that one-half of that expenditure could be set against criminal child abuse, representing a total of $1.5b (SCGSP 2013). This figure is over double the amount estimated by Rollings (2008), who found that $692m of child protection and out-of-home care services were allocated for criminal child abuse. AIHW (2013b) found that between 2009–10 and 2011–12, the number of children who were the subject of substantiations (of child abuse and neglect) increased from 6.1 to 7.4 per 1,000 children.

The Office for Women

The Australian Government Office for Women is currently part of the Department of the Prime Minister and Cabinet and was formerly within the Department of Families, Housing, Community Services and Indigenous Affairs. In the 2011–12 budget, the year closest to the reference period of the current research, it was allocated almost $32m (FaHCIA 2012). The role of the Office for Women is to advise and support the delivery of policies that will provide positive benefits for women and all Australians and has three main areas of work—women's economic security, women's equal place in society and reducing violence against women. With respect to the goal of reducing violence against women, the appropriation comprised $3.13m for 2011–12. This was to finance the 1800 RESPECT helpline for women who had been a victim of sexual violence or family violence, $1.25m for community

action grants to assist in promoting respectful attitudes towards women, $3m for Frontline Workers in the form of support for allied health workers, childcare staff and paramedics who deal with violence against women, $1.6m to improve services for women who have been the victim of domestic violence and $1.7m to establish a National Centre of Excellence for the Prevention of Violence against Women (Women's Budget Statement 2012). The total amount allocated to victim services within the Office for Women was almost $11m in 2011–12.

The value of volunteer time

The value of volunteer time is costed by calculating the proportion of volunteers in Australia who spent time volunteering their services for a community or welfare group. This particular category was chosen as it included organisations and institutions that provided human and social services to the general community and specific population groups, such as victims of crime (ABS 2010).

Volunteering statistics from 2006 were relied on, as the ABS *Voluntary Work Survey* 2010 did not ask how many hours of time volunteers spent on volunteer work, making comparable data unavailable. In the ABS *Voluntary Work Survey* 2006 (ABS 2006c), there were 59 million hours spent by people volunteering for community and/or welfare groups (this category included volunteer work assisting victims of crime). Rollings (2008) noted that this was a reduction from the estimate in the 2000 survey, with no explanation offered.

Rollings' (2008) estimate of five percent of the total volunteer time spent on community/welfare groups being allocated to victim services was employed in this report. This resulted in an estimate of three million hours spent of volunteer time providing services to victims of crime.

The average hourly wage in 2011 was $25.83 (ABS 2012c); therefore, it is estimated that in 2011, the value of volunteer time spent on victims' services was $76m. This is separate from the costs associated with volunteers who deal with incidents of arson, which was estimated above to be $319.3m in 2011.

The total amount spent on victims' services for 2011–12 is estimated at $1,877m (see Table 34).

Table 34 Victim assistance costs

Category	Cost ($m)
Victim compensation payments	177
Homelessness related to domestic violence	113
Child protection	1,500
Office for Women expenditure	11
Volunteering (other than arson)	76
Total	1,877

Other crime prevention and response costs

Security industry

The Australian Security Industry Association Limited (ASIAL) provided the data set out in Table 35 for private security turnover in 2012–13 (Bryan de Caires, ASIAL, personal communication). These data may overestimate the costs of private security for 2011–12 as they are relate to the financial year 2012–13—the only year for which data were provided. As was the case with previous AIC estimations, ASIAL indicated that between 60 and 75 percent of costs can be attributed to the crimes that the present report covers. For present purposes, the methodology used by Rollings (2008) was followed and 70 percent of the total costs have been used for this calculation.

Table 35 Expenditure on private security in Australia, 2012–13[a,b]

Category	Cost ($m)
Hardware and electronics	
Hardware and equipment (alarms, CCTV, access control)	760
Installation	810
Monitoring	390
Other	383
Total	2,343
Personnel costs including customer service/concierge, loss prevention/retail security, corporate risk, investigation services, cash management, armed escorts, ATM servicing, event security, critical infrastructure protection, passenger screening, mobile patrols, maritime security, crowd control	2,514
Overall total	4,857
Total to be attributed to crimes dealt with in this report (70% of total)	3,400

a: Industry estimate

b: Figures supplied relate to financial year 2012–13

Sarre and Prenzler (2011) undertook a comprehensive review of the private security industry in Australia in attempt to quantify the size of the industry and the legal and regulatory developments in the past 30 years. Sarre and Prenzler (2011) found that the private security population comprised 52,768 personnel in 2006 (from census data); however, they acknowledged that in 2008, regulatory authorities estimated the size of the industry at 112,773 security providers. The study found that the security industry in Australia was increasing in numbers at a higher rate than the police and the general population (Sarre & Prenzler 2011).

Insurance administration

Insurance Statistics Australia estimates a figure of $670m in Australia for 2011–12 as the cost of administering insurance for theft and damage involving domestic and commercial properties and private motor vehicles—approximately 4.0 percent of the gross value of written premiums (Nevena Mackic, on behalf of IGA, personal correspondence). No breakdown is available on the proportion that might relate to insurance claims made in respect of crime-related matters and so the total has been included in the current assessment.

Household precautions

Mayhew's (2003b) original report estimating the costs associated with crime factored in other costs, aside from direct costs associated with specific crime types, such as the cost of people's precautionary behaviour due to increased personal security. As the majority of the expenditure associated with locks and alarms was counted within security industry costs, Mayhew (2003b) costed the time spent by the average person on their precautionary behaviour as part of household precautions; specifically, the time spent per day locking and unlocking various locks. Following Mayhew's (2003b) methodology, the time spent dealing with locks was four minutes a day, the costs of which, inflated to 2011 prices, resulted in a cost estimate of $161 per year per adult or approximately $2.36 billion annually.

Total costs of crime prevention and responding to crime

Table 36 shows the total expenditure on the various categories of 'other' costs of crime, which in 2011 amounted to $24.6b. Most of this expenditure arose from criminal justice system responses (including police, prosecutions, courts, corrections and a proportion of the costs of other government crime and criminal justice agencies). The next most costly category related to spending in the private security industry.

Table 36 Cost of crime prevention and responding to crime, 2011

Category	Cost ($m)
Criminal justice	16,256
Victim assistance	1,877
Security	3,400
Insurance administration	670
Household precautions	2,360
Total	24,563

Conclusion

Trends in the cost of crime

In 2011, the total costs of crime in Australia were estimated to be $47.5b, or 3.4 percent of national GDP. Between 2001 and 2011, there has been an estimated 49.5 percent increase in total costs, although inflation increased by 33 percent during this period (RBA 2013). In terms of national GDP, the costs of crime have actually decreased by 1.1 percentage points over the deacde.

Between 2005 and 2011, there has been an estimated 33 percent increase in total costs, although inflation increased by 20 percent between 2005 and 2011 (RBA 2013). In terms of national GDP, the costs of crime have decreased by) 10.5 percentage points since 2005.

Over the decade between 2001 and 2011, all categories of police-recorded crime declined, except assault, sexual assault and shop theft. Police recorded crime statistics for attempted murder, robbery, burglary and vehicle theft all declined by at least 50 percent between 2001 and 2011.

In terms of the estimated costs of crime, the largest increase took place in connection with criminal justice costs, which increased by 154 percent in monetary terms between 2001 and 2011. However, the manner of calculating criminal justice costs has changed somewhat since Mayhew (2003b) first undertook her work and Rollings (2008) undertook her updated study for 2005. The present report undertook a more subtle and complete calculation of criminal justice agency expenditure on crime, which included an estimation of the prosecution costs incurred throughout Australia, a more sensitive calculation of the costs of Commonwealth agencies (which included some previously omitted costs), a new estimation of state and territory government agency costs associated with crime and its control, the inclusion of the cost of forensic mental health services, the cost of legal aid and household expenditure on crime prevention (that was included for 2001, but omitted for 2005). Although more costly, the inclusion of these additional categories, as well as the reduction in some other components, provides a more accurate indication of prevention and responses to crime in Australia in 2011.

On the basis of the present calculations, in 2011, Australia spent approximately $1,500 more on preventing and responding to crime than the actual cost of criminal acts themselves.

Future directions

The estimates in this report should be considered approximate and are not designed to reflect exact costs of crime for all categories of crime, nor the

cost of prevention of, and responses to, crime. The difficulties associated with estimating the costs of crime have been explained in previous AIC publications (Mayhew 2003a, 2003b; Rollings 2008; Walker 1992, 1997), as well as in a number of academic papers (see Centre for Criminal Justice 2008 for a review). In particular, further research is needed to quantify the costs of crime associated with new and emerging crime types such as cybercrime, identity crime, organised crime, environmental crime and corporate crime. Although some aspects of each of these have been included in the cost estimates contained in this report, other specific costs have not been explored owing to limitations in the available data. The AIC has an active program of research into the areas of cybercrime, fraud, and serious and organised crime, but more research into emerging areas of crime is needed. Some recent Australian Government initiatives to ensure that new and emerging crime types such as identity crime and cybercrime are reported officially, will provide an improved source of information on the incidence and cost of these crime types for future cost of crime research. In addition, as identified by both Mayhew (2003b) and Rollings (2008), there is a need to quantify more precisely the cost of arson, including bushfire arson. Finally, the outcomes of the various recent inquiries into child abuse in Australia may yield useful information on the extent and costs associated with this crime category, including the important indirect, intangible and consequential impact of child abuse and exploitation on victims.

Further work is also needed to quantify loss of productivity of criminals due to their involvement in crime. This has not previously been costed due to a lack of data. This includes the extent to which criminals participate solely in the criminal world, how economically productive they might be if not engaged in criminal activities and the gross number of individuals involved in criminal activities—all of which are not currently quantified. This report accounts for the lost productivity of victims of crimes (time spent away from work, time spent fixing any damage, time spent in hospital etc), but does not attempt to quantify the lost productivity to society of those individuals who are engaged in illegal activities themselves.

Throughout this report, there are many instances in which relevant datasets do not exist in Australia and for which it was necessary to rely on information gathered in the United States and the United Kingdom. While these overseas estimates are likely to be a reasonable proxy for what occurs in the Australian context, it would be better to have actual Australian data. The areas where data in the Australian context are not available fall into four main categories—estimates of intangible losses and lost output, costs of crime to business, Australia-wide costs of injury estimates and limited data collected by the ABS in its *Recorded Crime* collection. Each of these areas was explored by Mayhew (2003b) and Rollings (2008), and apart from some updated information from the United Kingdom, little has changed.

The costing of crime remains an area of criminology where more research is required—both to improve and to refine costing methodologies and to improve data upon which estimates are based. This report provides an estimate of the costs of crime to the Australian community for 2011. Although every effort has been made to ensure that the existing information has been accurately compiled, the final outcomes are not definitive indications of what crime costs the economy in Australia. There are areas for which costs have not been calculated due to lack of data and areas where baseline data from other countries have been used to construct projections of the likely costs applicable in Australia. However, in the absence of more robust data, this report provides an up-to-date estimate of the costs of crime as far as it is possible to ascertain. The limitations of the data identified in this report provide valuable indicators of where sources of data could be improved that will, hopefully, enhance the accuracy and utility of future exercises of this nature.

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