



Costs of Crime in Victoria

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Abstract

This paper provides an estimate of the costs to the Victorian community in 2009-2010. The findings from this study suggest that the costs of crime in Victoria in 2009-2010 were \$9.8 billion. This amount is equivalent to \$1678 per person in Victoria or 3.4% of Gross State Product in Victoria in 2009-2010. Where possible, Victorian contemporaneous estimates of the per incident cost of crime have been used. However, in many instances this information is not available and we have had to use earlier values for Victoria or data from other jurisdictions converted to 2010 Australian dollars. For this reason, the estimates reported here, as well as in similar other studies, should not be regarded as definitive.

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1. Overview and Main Findings

This section provides an overview of the key findings from the paper. Table 1 presents the total estimated cost to the Victorian community in the 2009-2010 financial year.

Table 1: Summary of Costs of Crime in Victoria 2009-2010

| Crime type | Estimated Cost in 2010 (\$m) | Percentage of Total Costs |
|----------------------------------|---|--------------------------------------|
| Crimes Against the Person | | |
| Homicide | 397.6 | 4.28 |
| Assault | 204.0 | 2.20 |
| Sexual Assault | 73.4 | 0.75 |
| Robbery | 82.0 | 0.88 |
| Total | 757 | 8.15 |
| Crimes Against Property | | |
| Burglary | 364.8 | 3.71 |
| Theft of Vehicles | 133.5 | 1.36 |
| Theft from Motor Vehicle | 149.1 | 1.52 |
| Theft from Shop | 287.9 | 2.93 |
| Other Theft | 64.4 | 0.66 |
| Property Damage | 365.6 | 3.72 |
| Arson | 1090.6 | 11.10 |
| Deception | 2143.5 | 21.81 |
| Total | 4599.4 | 46.80 |
| Drug Offences | | |
| Drug Offences | 468.8 | 4.77 |
| Other Costs | | |
| Criminal Justice | 2689.7 | 27.36 |
| Victim Assistance | 311.1 | 3.17 |
| Security Industry | 838 | 8.53 |
| Insurance Administration | 165 | 1.68 |
| Total | 4003.8 | 40.73 |
| TOTAL | 9829 | 100.00 |

Notes: Percentages do not add to 100 because of rounding.

The main findings are as follows:

- The cost of crime to the Victorian community in 2009-2010 is estimated to be just over \$9.8 billion.
- This amount is equivalent to \$1678 per person in Victoria in 2009-2010.
- This amount is equivalent to 3.4% of Gross State Product in Victoria in 2009-2010.
- Costs attributable to specific crimes against the person represent 8.2% of the total cost. Costs attributable to specific crimes against property represent 46.8% of the total. Costs associated with drug offences represent 4.8% of the total. Other costs, including costs associated with administering criminal justice (27.4%), victim assistance (2.2%), the security industry (8.5%) and insurance administration (1.7%), represent 40.7% of

total costs. These ‘other costs’ are associated with both crimes against the person and property crime.

- Deception accounts for the highest dollar value of all crime types (21.8%), followed by arson (11.1%). The least expensive crime in terms of total dollar value was sexual assault followed by robbery (as distinct from burglary).
- Costs specifically attributable to property crime are just over six times higher than costs specifically attributable to crimes against the person.
- It is noted that these findings are similar to previous Australian studies.
- Mayhew (2003a, 2003b) and Rollings (2008) present results for the total cost of crime in Australia in 2001 and 2005 respectively. The results are broadly comparable because a similar methodology is used. Specifically, Mayhew (2003a, 2003b) estimated the total cost of crime in Australia to be 3.8% of GDP in 2001, while Rollings (2008) estimated the total cost of crime in Australia to be 4.1% of GDP in 2005. Rollings (2008) estimated the costs of crime in Australia to be \$35.8 billion in 2005. As a rough robust check, if we convert this figure to 2010 prices then attribute a share to Victoria based on Victoria’s population share in 2010 (24.7% of the national population) we get \$10.2 billion, which is only slightly different to the estimate in this paper. The differences reflect the use of specific data on Victorian costs, wherever available, and more recent data on Victorian crime figures.
- Walker (2005) estimated the costs of crime in Victoria in 2004 at approximately \$6 billion. In 2010 prices this is equivalent to \$7.1 billion. This figure is less than that reported here, which reflects the fact that Walker (2005) underestimates the costs of crime not attributable to specific offences. Walker (2005) estimates this to be \$1.8 billion in 2010 prices, while we estimate this figure to be just over \$4 billion.

In the remainder of the paper, we provide a detailed discussion of the methodology used to derive these estimates as well as a detailed breakdown of the relevant assumptions. The assumptions and methodology are the same as those employed in previous Australian studies (Mayhew, 2003a, 2003b; Rollings, 2008) as well as studies for other countries, such as New Zealand (Roper & Thompson, 2006) and the UK (Brand & Price, 2000; Dubourg *et al.*, 2005).

2. Methodological Issues

2.1 Reported Counts of Crime Type

The starting point is to begin with the recorded (or baseline) counts of crime according to crime type. These figures are reported in the first column of Table 2. The source of the recorded data is the Victoria Police, *Crime Statistics, 2009-2010*. Following Mayhew (2003b) and Rollings (2008), we define homicide as murder, manslaughter and driving occasioning death. Attempted murders are counted as assaults. The cost of assault, as well as the associated multipliers, can be expected to differ depending on whether the assault resulted in hospitalization, injury short of hospitalization or no injury. The recorded crime statistics do

not indicate whether the assault resulted in hospitalization or injury short of hospitalization. Here, it is assumed 2 per cent of recorded assaults required hospitalisation, 19 per cent of assaults required in injuries short of hospitalisation and 79 per cent of assaults resulted in no injuries. These assumptions are based on information derived from the Crime and Safety Survey (ABS, 1999) and follow the approach adopted in Mayhew (2003b, p. 23).

Table 2: Reported and Estimated Crime in Victoria 2009-2010

| Crime type | | Number of Crimes in Reported Data | Multiplier Estimate ^(c) | Estimated Number of Crimes |
|----------------------------------|--------------------|-----------------------------------|------------------------------------|----------------------------|
| Crimes Against the Person | | | | |
| Homicide ^(a) | | 194 | 1.0 | 194 |
| Assault ^(b) | | | | |
| | Attempted Murder | 7 | 1.0 | 7 |
| | Hospitalised | 700 | 1.5 | 1,050 |
| | Other Injury | 6,646 | 3.3 | 21,932 |
| | No Injury | 27,635 | 6.7 | 185,155 |
| Sexual Assault ^(d) | | | | |
| | Injured | 1,333 | 2.8 | 3,732 |
| | Not Injured | 5,332 | 8.0 | 42,656 |
| Robbery ^(e) | | | | |
| | Against Individual | 2610 | 7.2 | 18,792 |
| | Against Commercial | 498 | 1.2 | 598 |
| Crimes Against Property | | | | |
| Burglary | | | | |
| | Residential | 27,343 | 3.4 | 92,966 |
| | Non-residential | 16,233 | 1.2 | 19,480 |
| Theft of Vehicles | | 15,078 | 1.0 | 15,078 |
| Theft from Motor Vehicle | | 45,435 | 2.8 | 127,218 |
| Theft from Shop | | 21,326 | 100.00 | 2,132,600 |
| Other Theft | | 52,576 | 2.7 | 141,955 |
| Property Damage | | 52,346 | 4.3 | 255,088 |
| Arson | | 3,034 | 3.0 | 9102 |
| Deception | | 19,139 | 4.0 | 76,556 |
| Drug Offences | | | | |
| Drug (Cult, Man. Traff) | | 4,388 | – | 4,388 |
| Drug (Poss. Use) | | 10,195 | – | 10,195 |

Notes:

- (a) Murder, manslaughter and driving occasioning death.
- (b) Recorded assaults were 34,981 plus seven attempted murders. Here, it is assumed 2 per cent of recorded assaults required hospitalisation, 19 per cent of assaults required in injuries short of hospitalisation and 79 per cent of assaults resulted in no injuries following the approach adopted in Mayhew - (see Mayhew 2003b, p. 23)
- (c) Based on Mayhew (2003b) for arson, assault and sexual assault and Rollings (2008) all others
- (d) Recorded Sexual assaults were 6,665. Here, it is assumed one-fifth resulted in injury following the approach adopted in Mayhew - (see Mayhew, 2003b, p. 27)
- (e) Recorded Robberies were 3,108. Here, 84 per cent of victims of robberies were assumed to be individuals following the approach adopted in Rollings - (see Rollings, 2008, p. 21)

Source of Recorded data: Victoria Police, Crime Statistics, 2009-2010

Similarly, the cost of sexual assault, as well as the associated multipliers, can be expected to differ depending on whether the sexual assault resulted in injury. The recorded crime statistics do not indicate whether the sexual assault resulted in injury. Here, it is assumed that one-fifth of sexual assaults resulted in injury. This assumption is based on information derived from the Crime and Safety Survey (ABS, 1999) and follows the approach adopted in Mayhew (2003b, p. 27). The cost of robbery, as well as the associated multipliers, can be expected to differ depending on whether the robbery was against the individual or a commercial concern. The recorded crime statistics do not distinguish whether the robbery occurred against the individual or commercial interests. Here, 84 per cent of victims of robberies were assumed to be individuals, which is consistent with the figure for Australia reported in ABS *Recorded Crime: Victims* (ABS, 2005, p. 13) and estimates from New South Wales (see Rollings, 2008, p. 21). This approach follows that adopted in Rollings (2008, p. 21). Finally, the costs of burglary, and the associated multipliers, will differ depending on whether the burglaries are residential or non-residential. This information is available directly from the Victoria Police, *Crime Statistics, 2009-2010*, so no estimates were needed.

2.2. Multipliers

To get a sensible estimate of the cost of crime it is necessary to recognise that the actual crime rate exceeds the recorded crime rate. This occurs because not all crimes are reported to police and police may not record all crime which are reported to them. The most common approach for adjusting the recorded crime rate to get an estimate of the actual crime rate is to use an appropriate multiplier. The multiplier is constructed using the nationally representative ABS Crime and Safety Surveys (ABS, 1999, 2006a) and the Personal Safety Survey (ABS, 2006b). The multiplier is calculated by comparing the number of crimes reported in the Crime and Safety Survey or Personal Safety Survey, with the ABS *Recorded Crime: Victims* in the corresponding year. For example, assume there were 3,400 residential burglaries on the basis of what victims report, according to the Crime and Safety Survey, but the ABS recorded crime statistics suggest that there were only 1000 residential burglaries over the same period. In this case, the appropriate multiplier would be 3.4. Note that based on the information in the Crime and Safety Survey and Personal Safety Survey, it is not possible to derive state-specific multipliers. In general, we employ the multipliers used by Rollings (2008). This is because Rollings' (2008) multipliers are derived by comparing data on victim responses from the 2005 Crime and Safety Survey and Personal Safety Survey, with the ABS *Recorded Crime: Victims* for the same year and this is the latest year for which the Crime and Safety Survey and Personal Safety Survey have been administered. In a few cases (arson, assault and sexual assault), Rollings (2008) does not break the crimes down according to outcome. In these cases, we use the same multipliers as used by Mayhew (2003b). Where Australian estimates are not available, following Rollings (2008), we employ the UK multipliers used by Dubourg *et al.* (2005). The multipliers, and resulting estimated number of crimes, are reported in Table 2.

2.3. Inflation and Purchasing Power Parity

Wherever possible cost figures from Victoria, or other Australian jurisdictions, have been used. However, in most cases, the cost figures will be for an earlier year. In these cases, figures are inflated to 2010 using the CPI. In a few cases, no Australian estimates were available. In these cases, costs estimates from the UK were employed. The cost estimates were first inflated to 2010 prices using the UK CPI, then converted to Australian dollars using Purchasing Power Parity figures available from the OECD. This treatment follows the approach employed by both Mayhew (2003b) and Rollings (2008). The assumptions are that estimates from other jurisdictions and/or from earlier time periods reflect the true cost in Victoria in 2010 once adjustments are made. Ideally we would like figures for all costs for Victoria for 2010, but the cost of putting this together would be very high. In the absence of temporal Victorian data, data from other jurisdictions and time periods “are likely to be a reasonable proxy” (Rollings 2008, p. xiv) for what occurs in the Victorian context.

2.4 What Costs are Included?

We distinguish between costs which can be attributed to specific offences and ‘other costs’. For costs attributed to specific offences, as a benchmark, we attempt to cover (a) medical costs, (b) costs due to lost output, (c) costs due to property losses and (d) intangible costs.

Medical costs are costs associated with hospitalization or medical treatment short of hospitalization. Lost output is the present value monetary value of victims of crime being unable to engage in paid and unpaid work. Property losses are the monetary value of property foregone, typically as a result of property crime. The intangible costs of crime include items such as fear, pain, suffering and lost quality of life. Estimates of medical costs, costs due to lost output, costs due to property losses and intangible costs on a per incident basis are available from different sources. For medical costs and costs due to lost output, the main sources are the Monash University Accident Research Centre (MUARC) study of the cost of injury in Victoria in 1993-1994 (Watson & Ozanne-Smith, 1997) and a study into the costs of injuries in the United States in 2000 (Finkelstein *et al.*, 2006). The MUARC estimates were used by Mayhew (2003b), while the US estimates were used by Rollings (2008). While the MUARC estimates are more dated than the US estimates, we use the MUARC estimates whenever possible because they are specifically for Victoria. For some estimates of medical costs and costs associated with lost output for which Australian data is not available, such as burglaries and motor vehicle theft, we primarily relied on the most recent UK estimates in Dubourg *et al.* (2005). To calculate intangible losses, the ratios in the BTE study on road crash costs (BTE, 2000) was applied to MUARC or Dubourg *et al.* (2005) estimates, following the approach in Mayhew (2003b) and Rollings (2008). In addition to costs attributable to specific crimes, we also estimate the costs of administering criminal justice, victim assistance, the security industry and insurance administration. These costs are not attributable to specific crimes, but are a reflection of criminal activity as a whole.

We do not have figures for *all* potential costs of crime. There are some potential costs for which no data is available from any jurisdiction. Typical examples are costs of supporting offenders and their families, local government crime prevention activity and costs associated with disinvestment in high crime areas. Other costs, such as the lost productivity of incarcerated individuals, cannot be estimated with any reliability. As Mayhew (2003b, p. 7) puts it: “No study in Australia or elsewhere – has ever fully assessed the myriad costs involved. Rather, the main focus has been on what countries spend on their criminal justice systems and on some of the direct consequences of crime”. The implicit assumption is that costs for which we do not have data are zero. This is a conservative strategy producing lower bound estimates on total costs. For this reason, the ‘bottom up approach’, employed in this study, tends to produce lower estimates than a ‘top down approach’.

3. Cost Estimates for Specific Types of Crime

3.1 Homicide

Number of Homicides

There were 194 recorded instances of murder, manslaughter and driving occasioning death in Victoria in 2009-2010. It is assumed that the recorded homicide rate is likely to be a good estimate of the actual homicide rate. Moreover, victims of homicide are unable to participate in victimization surveys, from which multipliers are calculated. Thus, a multiplier of 1 is used. This follows the approach used in Mayhew (2003b), Rollings (2008) and UK studies such as Brand and Price (2000) and Dubourg *et al.* (2005).

Costs of Homicide

The costs of homicide consist of medical costs, lost output and intangible losses. Property losses are not relevant in the case of homicide. The costs of homicide in Victoria in 2009-2010 are reported in Table 3. The per incident cost for medical costs and lost output are based on MUARC estimates for Victoria for 1993-1994, inflated to 2010 prices. More tenuous is estimation of the intangible costs. The per incident cost for intangible losses is the ratio of the BTE’s quality of life figure to BTE’s lost output figure for fatal road accidents (0.32) (see BTE, 2000) applied to MUARC’s lost output figure inflated to 2010 prices. This follows the approach to estimating intangible costs adopted in Mayhew (2003b) and Rollings (2008). The estimated total cost of homicide in Victoria in 2009-2010 is just under \$400 million.

Table 3: Costs of Homicide in Victoria in 2009-2010

| Costs | Per Incident Cost (\$) | Total Cost (\$m) |
|-------------------|-------------------------------|-------------------------|
| Medical Costs | 9,787 | 1.9 |
| Lost Output | 1,545,360 | 299.8 |
| Intangible Losses | 494,515 | 95.9 |
| Total | 2,049,662 | 397.6 |

3.2 Assault

Number of Assaults

There were 34,981 recorded assaults plus seven attempted murders in Victoria in 2009-2010. For attempted murders we use a multiplier of 1. For other assaults, the costs and associated multiplier depends on the degree of injury. For example, for assaults requiring hospitalisation the costs are likely to be much higher, and the number of unrecorded assaults much lower, than assaults which do not result in any injury. The recorded crime statistics do not indicate whether the assault resulted in injury and whether hospitalisation was required. Hence, we have to estimate what proportion of assaults resulted in no injury, injury short of hospitalisation or hospitalisation. Based on information derived from the Crime and Safety Survey (ABS, 1999) and following the approach adopted in Mayhew (2003b, p. 23) it is assumed 2 per cent of recorded assaults required hospitalisation, 19 per cent of assaults required in injuries short of hospitalisation and 79 per cent of assaults resulted in no injuries. The appropriate multipliers for assault causing no injury, assault causing injury short of hospitalisation and assault causing hospitalisation are taken from Mayhew (2003b).

Table 4: Costs of Assault in Victoria 2009-2010

| | Per Incident Cost (\$) | | | | Total Costs (\$m) | | | |
|--------------------------------|------------------------|-------------|------------|--------|-------------------|-------------|------------|-------|
| | Medical | Lost Output | Intangible | Total | Medical | Lost Output | Intangible | Total |
| Hospital ^(a) | 11,203 | 31,294 | 20,654 | 63,151 | 11.8 | 33.1 | 21.8 | 66.7 |
| Injured (Medical treatment) | 515 | 2,576 | 2,704 | 5,795 | 3.4 | 16.9 | 17.8 | 38.1 |
| Injured (No medical treatment) | – | 644 | 644 | 1,288 | – | 9.9 | 9.9 | 19.8 |
| No Injury | – | 39 | 390 | 429 | – | 7.2 | 72.2 | 79.4 |
| Total | – | – | – | – | 15.2 | 67.1 | 121.7 | 204 |

(a) Includes attempted murder

Costs of Assault

The costs of assault consist of medical costs, lost output and intangible losses. Property losses are not relevant in the case of assault. The costs of assault in Victoria in 2009-2010 are reported in Table 4. The per incident cost for medical costs and lost output are based on MUARC estimates for Victoria for 1993-1994, inflated to 2010 prices. A similar method for estimating per unit intangible losses was used as that for estimating intangible losses in the case of homicide (ie. an appropriate multiplier from BTE applied to the MUARC lost output figures inflated to 2010 prices). The appropriate ratios were 0.66 for assault victims requiring hospitalization, 1.05 for assault victims requiring medical treatment short of hospitalisation and 1 for assault victims without injury. These are the same ratios, and this follows the same

approach, used by Mayhew (2003b) and Rollings (2008). When the per incident costs are multiplied by the total estimated assault rate, the total cost is just over \$200 million.

3.3 Sexual Assault

Number of Sexual Assaults

There were 6,665 recorded sexual assaults in Victoria in 2009-2010. Recorded crime statistics do not indicate whether the sexual assault resulted in injury to the victim. The per incident costs of sexual assault are likely to be higher, and the associated multiplier smaller, if the sexual assault results in injury. Based on information from the Crime Safety Survey (ABS, 1999) and following the approach in Mayhew (2003b, p. 27), it is assumed that one-fifth of sexual assaults resulted in injury. Again, based on the Crime Safety Survey (ABS, 1999) and using the same multipliers as in Mayhew (2003b) we use a multiplier of 2.8 for sexual assaults resulting in injury and 8 for sexual results not resulting in injury.

Table 5: Costs of Sexual Assault in Victoria 2009-2010

| | Per Incident Cost (\$) | | | | Total Costs (\$m) | | | |
|----------------------|------------------------|-------------|------------|--------|-------------------|-------------|------------|-------|
| | Medical | Lost Output | Intangible | Total | Medical | Lost Output | Intangible | Total |
| Injured ¹ | 1,288 | 5795 | 4636 | 11,719 | 4.8 | 21.6 | 17.3 | 43.7 |
| Not Injured | – | 51 | 644 | 695 | – | 2.2 | 27.5 | 29.7 |
| Total | – | – | – | – | 4.8 | 23.8 | 44.8 | 73.4 |

Costs of Sexual Assault

Our approach to deriving the per incident costs of sexual assault follows Mayhew (2003b, pp.28-29). The per incident medical costs for sexual assault are the same as for assault. To get the per incident cost for lost output and intangibles, we inflate the corresponding per incident costs for assault by one-third. This produces conservative estimates relative to Rollings (2008, pp. 19-20), who multiplies the per incident cost for lost output and intangibles by 3.8, based on UK estimates. The costs of sexual assault in Victoria in 2009-2010 are reported in Table 5. When the per incident costs are multiplied by the total estimated number of sexual assaults, the total cost is just over \$73 million. It is likely that rape will incur a larger human cost, relative to other sexual assaults, though there is no guide as to the cost of rape, relative to other forms of sexual assault (Mayhew, 2003b, p. 29).

3.4 Robberies

Number of Robberies

There were 3,108 recorded robberies in Victoria in 2009-2010. The property loss from robbery, and the associated multiplier, will differ depending on whether the robbery is against the individual or a commercial interest. The recorded crime statistics do not indicate whether the victim of robbery was an individual or business. Based on ABS *Recorded Crime: Victims*

(ABS, 2005, p. 13) and estimates for New South Wales by the New South Wales police (see Rollings, 2008, p. 21), it is assumed that 84 per cent of victims of robberies were individuals. The associated multipliers for robberies against individuals and against commercial interests were 7.2 and 1.2, taken from Rollings (2008, p.x).

Table 6a: Medical Costs, Loss Output and Intangible Losses for Robberies for Victoria, 2009-2010

| | Per Incident Cost (\$) | | | Medical | Total Costs (\$m) | |
|--|------------------------|-------------|------------|---------|-------------------|------------|
| | Medical | Lost Output | Intangible | | Lost Output | Intangible |
| Injured (Medical treatment) ^(b) | 2576 | 8242 | 8654 | 7.0 | 22.4 | 23.5 |
| Injured (No medical treatment) | – | 644 | 644 | – | 1.8 | 1.8 |
| No Injury | – | 39 | 390 | – | 0.5 | 5.4 |
| Total | | | | 7.0 | 24.7 | 30.7 |

Table 6b: Overall Costs of Robberies for Victoria, 2009-2010.

| | Total Costs (\$m) |
|--------------------|-------------------|
| Property loss | |
| Against Commercial | 1.9 |
| Against Individual | 17.7 |
| Medical | 7.0 |
| Loss Output | 24.7 |
| Intangible | 30.7 |
| Total | 82 |

Costs of Robbery

The costs of robbery encompass medical costs, lost output, intangible losses and property losses. Based on the Crime Safety Survey (ABS, 1999) and following the approach in Mayhew (2003b, p. 32) it is assumed that 28% of robbery victims are injured (5429 people). Of these 5429 people one half received medical treatment and the other half did not. The per incident medical costs and costs of lost output are based on MUARC estimates, inflated to 2010 prices. To calculate intangible losses, the same approach was adopted to measuring intangible costs for assault (ie. an appropriate multiplier from BTE applied to the MUARC lost output figures inflated to 2010 prices). The appropriate ratios were 1.05 for robbery victims requiring medical treatment, 1 for robbery victims who were injured but did not require medical treatment and 10 for robbery victims who were not injured. These are the same ratios, and this follows the same approach, used by Mayhew (2003b) and Rollings (2008). Per incident property loss figures against commercial were \$3212 and against individuals were \$940, based on Mayhew (2003b, p.32) adjusted for inflation. Table 6a presents a detailed breakdown of medical costs, costs from lost output and intangible losses from robbery in Victoria in 2009-2010. Table 6b presents the summary estimates of medical costs, costs from lost output and intangible losses plus property losses from robbery in

Victoria in 2009-2010. The estimated total costs of robbery in Victoria in 2009-2010, which are the sum of medical costs, costs from lost output, intangible losses and property losses, are just over \$80 million.

3.5 Burglaries

Number of Burglaries

There were 27,343 recorded residential burglaries and 16,233 recorded non-residential burglaries in Victoria in 2009-2010. The appropriate multipliers are 3.4 and 1.2 respectively, which are the multipliers used by Rollings (2008). The estimated number of residential burglaries were 92,966 and non-residential burglaries were 16,233 in Victoria in 2009-2010.

Costs of Burglaries

The cost of burglaries encompass property loss and damage, lost output and intangible losses. Property loss and damage per incident costs are 2005 average values from Victoria Police statistics (reported in Rollings 2008, p. 26), inflated to 2010 values. Loss output and intangible loss per incident costs are UK estimates based on Dubourg *et al* (2005) as no Australian figures are available. The estimated costs of burglaries in Victoria in 2009-2010 are reported in Table 7. The total costs of burglaries are just under \$365 million.

Table 7: Costs of Burglaries in Victoria, 2009-2010

| | Per Incident Cost (\$) | | | Total Costs (\$m) | | | |
|-----------------|------------------------|-------------|------------|------------------------|-------------|------------|-------|
| | Property loss & damage | Lost Output | Intangible | Property loss & damage | Lost Output | Intangible | Total |
| Residential | 1,198 | 174 | 1,700 | 111.4 | 16.2 | 158 | 285.6 |
| Non-residential | 2083 | 282 | 1,700 | 40.6 | 5.5 | 33.1 | 79.2 |
| Total | | | | 152 | 21.7 | 191.1 | 364.8 |

3.6 Motor Vehicle Theft

Number of Motor Vehicle Thefts

The number of recorded motor vehicle thefts in Victoria in 2009-2010 was 15,078. Following Rollings (2008) we assume a multiplier of 1, so the recorded and estimated number of motor vehicle thefts are the same.

Table8a: Property Loss and Damage Costs for Vehicle Theft, Victoria, 2009-2010

| | Number of Incidents | Estimated Loss per Incident (\$) | Total Loss (\$m) |
|---------------------------|---------------------|----------------------------------|------------------|
| Insured and Claim Made | 6785 | 11,037 | 74.9 |
| Insured but no Claim Made | 5,277 | 1,169 | 6.2 |
| Uninsured | 3016 | 2337 | 7.1 |
| Total | 15078 | | 88.2 |

Table8b: Overall Costs of Motor Vehicle Theft, Victoria, 2009-2010

| Cost | Per Incident Cost (\$) | Total Cost (\$m) |
|--------------------------|------------------------|------------------|
| Property Loss and Damage | 5850 | 88.2 |
| Lost Output | 900 | 13.6 |
| Intangibles | 2100 | 31.7 |
| Total | | 133.5 |

Costs of Motor Vehicle Theft

The costs of motor vehicle theft encompass property loss and damage, lost output and intangible losses. The property loss and damage will depend on whether the motor vehicle was insured and, if it was insured, if a claim was made. Of the 15,078 motor vehicle thefts in Victoria in 2009-2010, we assume that 45% result in an insurance claim; 35% were insured but no claim made and 20% uninsured. These assumptions are based on estimates from the National Vehicle Theft Reduction Council and were employed in the previous Australian studies (see Rollings, 2008 p. 28; Mayhew, 2003b p. 39). The estimated property loss and damage per incident are 2005 estimates from CARS (the Comprehensive Auto-theft Research System) and MM Stars (2005) and inflated to 2010 prices (see Rollings 2008 p. 28). A breakdown of the estimates of property loss and damage from motor vehicle theft are reported in Table 8a. A summary of the costs from property loss and damage and other costs associated with motor vehicle theft are reported in Table 8b. The lost output figure is based on Mayhew (2003b p. 40), inflated to 2010 prices. As there are no Australian estimates of the intangible losses associated with motor vehicle theft, following Rollings (2008), we use UK estimates from Dubourg *et al* (2005) converted to 2010 Australian dollars. The total costs of motor vehicle theft are estimated to be \$133.5 million in Victoria in 2009-2010.

3.7 Theft From Motor Vehicles

Number of Thefts From a Motor Vehicle

There were 45,435 recorded thefts from a motor vehicle in Victoria in 2009-2010. Following Dubourg *et al.* (2005) and Rollings (2008), we use a multiplier of 2.8. Hence, the estimated number of thefts from motor vehicles in Victoria in 2009-2010 is 127, 218.

Table 9: Costs of Theft from Motor Vehicles in Victoria 2009-2010

| | Per Incident Cost (\$) | | | Total Costs (\$m) | | | |
|--------------------|------------------------|-------------|------------|-------------------|-------------|------------|-------|
| | Property Loss | Lost Output | Intangible | Property Loss | Lost Output | Intangible | Total |
| Commercial Vehicle | 650 | 70 | 700 | 12.4 | 1.3 | 13.4 | 27.1 |
| Other | 370 | 58 | 700 | 40.0 | 6.3 | 75.7 | 122 |
| Total | | | | 52.4 | 7.6 | 89.1 | 149.1 |

Cost of Thefts From a Motor Vehicle

The costs of theft from motor vehicles which can be estimated are property loss, lost output and intangible losses. The costs of theft from motor vehicles in Victoria in 2009-2010 are reported in Table 9. Overall, the total cost of theft from motor vehicles is estimated to be \$149.1 million. The per incident cost depends on whether the motor vehicle was a commercial vehicle. Based on estimates from New South Wales Police, and following the approach in Rollings (2008, p. 30), it is assumed that 15% of thefts from motor vehicles are from commercial vehicles. The per incident costs for property loss are based on Rollings (2008, p. 30) inflated to 2010 prices. In the absence of Australian estimates, following Rollings (2008), the per incident costs for lost output and intangible losses are based on UK estimates reported in Shury *et al.* (2005) converted to 2010 Australian dollars.

3.8 Shop theft

Number of Shop Thefts

The number of recorded shop thefts in Victoria in 2009-2010 was 21,326. A feature of shop theft is the large number of unrecorded offences. There is no guide from victim's survey in either Australia or the UK to the true number of shop thefts. Hence, in the absence of a better indicator, we use a multiplier of 100, which was the multiplier employed by Mayhew (2003b) and Rollings (2008). Thus, we estimate the number of shop thefts to be 2.1 million.

The Costs of Shop Theft

The costs of shop theft which can be estimated are property loss and lost output. The costs of shop theft are reported in Table 10. Overall, the total cost is estimated to be just under \$290 million. The per incident cost for property loss are based on Rollings (2008, p.44) inflated to 2010 figures. The per incident cost for lost output is a best guess, based on Mayhew (2003b) and Rollings (2008) and allowing for inflation. There is no information on which to assess medical costs or intangible losses. Hence, following Mayhew (2003b) and Rollings (2008), these are not estimated.

Table 10: Costs of Shop Theft in Victoria, 2009-2010

| | Per Incident Cost (\$) | Total Cost (\$m) |
|---------------|------------------------|------------------|
| Property Loss | 115 | 245.2 |
| Medical | | Not Estimated |
| Lost Output | 20 | 42.7 |
| Intangibles | | Not Estimated |
| Total | | 287.9 |

3.9 Other theft

Number of Other Thefts

The number of recorded “other thefts”, including bicycle thefts, in Victoria in 2009-2010 was 52,576. The multiplier of 2.7 is the same as that used by Dubourg *et al.*, (2005) and Rollings (2008). The estimated number of other thefts is 141,955.

Table 11: Costs of Other Theft in Victoria, 2009-2010

| | Per Incident (\$) | Total Cost (\$m) |
|---------------|-------------------|------------------|
| Property Loss | 250 | 35.5 |
| Lost Output | 13 | 1.9 |
| Intangibles | 190 | 27 |
| Total | | 64.4 |

The Costs of Other Theft

The costs of other theft cover property loss, lost output and intangibles. The per incident cost for property loss, lost output and intangibles are based on Brand and Price (2000), as used in Mayhew (2003b) and Rollings (2008), inflated to 2010 Australian dollars. The costs of other thefts in Victoria in 2009-2010 are recorded in Table 11. Overall, the total cost is just under \$65 million, with property loss being the major contributor to costs.

3.10 Property Damage

Number of Incidents of Property Damage

There were 52,346 recorded incidents of property damage in Victoria in 2009-2010. The multiplier of 4.3 is the same as that used by Dubourg *et al.*, (2005) in their UK study and Rollings (2008). The estimated number of incidents of property damage is 255,088.

Costs of Property Damage

The costs of property damage encompass property loss, lost output and intangibles. The per incident costs for property loss, lost output and intangibles are based on Rollings (2008) inflated to 2010 prices. Rollings (2008) per incident costs are based on a synthesis of per

incident costs suggested by Dubourg *et al.*(2005) and Shury *et al.* (2005) for the UK and Mayhew (2003b). The costs of property damage in Victoria in 2009-2010 are reported in Table 12. The total costs are estimated to be \$365 million.

Table 12: Costs of Property Damage in Victoria, 2009-2010

| | Per Incident (\$) | Total Cost (\$m) |
|---------------|-------------------|------------------|
| Property Loss | 575 | 146.7 |
| Lost Output | 58 | 14.8 |
| Intangibles | 800 | 204.1 |
| Total | | 365.6 |

3.11 Arson

Number of Incidents of Arson

There were 3,034 recorded instances of arson in Victoria in 2009-2010. We use a multiplier of 3, following Mayhew (2003b). Hence, we estimate that there were just over 9,100 instances of arson in Victoria in 2009-2010.

Table 13a: ‘Best Estimate’ of Costs of Arson in Victoria 2009-2010

| | Per Unit Cost (\$) | Total Cost (\$m) |
|---|--------------------|------------------|
| Victoria Police Estimates | 22,400 | 203.9 |
| Victorian Metropolitan Fire Brigade Estimates | | 237.71 |
| Insurance Council of Australia Victoria Estimates | | 231.52 |
| Average | | 224.4 |

Table 13b: Summary of Arson Costs in Victoria in 2009-2010

| | Total Cost (\$m) |
|------------------------------|------------------|
| Best Estimate Costs of Arson | 224.4 |
| Fire Service | 237.2 |
| Ambulance Service | 27 |
| Volunteer Effort | 602 |
| Total | 1090.6 |

Costs of Arson

To calculate the costs of arson we follow the two-step procedure adopted in Mayhew (2003b) and Rollings (2008). First, we provide a best estimate of the costs of arson, based on the average of several Victorian sources reported in Mayhew (2003b). Second, we add estimates of the cost of the fire service, ambulance service and volunteer effort due to arson. The ‘best estimate’ of the costs of arson in Victoria in 2009-2010 is reported in Table 13a. Victoria Police provide per incident costs for arson in 2001, which have been inflated to 2010 prices. The Victorian Metropolitan Fire Brigade estimated the direct cost of arson to be \$65

million in 2001. Following the approach in Mayhew (2003b), direct costs are assumed to be 35% of total costs. Then the 2001 figure is inflated to 2010 prices. The Insurance Council of Australia estimated the direct cost of arson in Victoria to be \$50 million in 1991. Direct costs are assumed to be 35% of total costs. Then the 2001 figure is inflated to 2010 prices. All three estimates are in the same ballpark. The average of the three estimates is \$225 million.

Table 13b provides the best estimate summary plus estimates of the cost of the fire service, ambulance service and volunteer time resulting from arson in Victoria. The cost of fire services in Victoria in 2009-10 was \$948.6 million (PC 2011, Table 9.2); of which, 25% is assumed attributable to arson following Mayhew (2003b) and Rollings (2008). The cost of ambulance services in Victoria in 2009-10 was \$541 million (PC 2011, Table 9.4); of which, 5% is assumed attributable to arson following Mayhew (2003b) and Rollings (2008). The estimate for volunteer time is a 2001 Country Fire Authority estimate (Hourigan 2001), inflated to 2010 prices. The total cost of arson is just under \$1.1 billion, representing 11.1% of the total costs.

3.12 Deception

Number of Instances of Deception

There were 19,139 recorded instances of deception in Victoria in 2009-2010. The multiplier of 4 is the same as that employed by Rollings (2008). Hence, there were estimated to be 76,556 instances of deception in Victoria in 2009-2010.

Costs of Deception

Table 14 presents estimates of the direct and other costs of deception. The per incident direct cost of deception are Victoria Police estimates for 2005 inflated to 2010 prices (Rollings 2008, p. 39). Following Mayhew (2003b) and Rollings (2008), other costs - lost output and intangible losses - are assumed to be 40% of total costs. Overall, the total costs of deception are estimated to be about \$2.1 billion, representing over one-fifth of the total costs of crime. This is consistent with Rollings (2008) observation (at p. 38) that “it appears certain the costs of fraud are well in excess of other types of crime”.

Table 14: Costs of Deception in Victoria, 2009-2010

| | Per Incident Cost (\$) | Total Cost (\$m) |
|--------------|------------------------|------------------|
| Direct Costs | 16,800 | 1286.1 |
| Other Costs | | 857.4 |
| Total | | 2143.5 |

3.13 Drug Offences

Number of Drug Offences

There were 4,388 recorded instances of cultivation, manufacturing and trafficking and 10,195 recorded instances of possession and use in Victoria in 2009-2010. We do not attempt to provide estimates of the actual number of drug offences. As Mayhew (2003b, p. 63) notes: “For both, estimates of the number of offences are difficult, with police figures an unreliable guide”.

Cost of Drug Offences

Table 15 presents the estimated costs of illicit drug abuse in Victoria in 2009-2010. To estimate the costs of deaths due to illicit drug use we adopt the following approach. In 2005 872 deaths were attributable to illicit drug use in Australia (Rollings, 2008 p. 44). In 2005 24.7% of the population lived in Victoria so we attribute 218 deaths to Victoria. We multiply the 218 deaths by the per incident estimates of medical costs and lost output costs (both from homicide) to get the total cost. Following Rollings (2008, p. 44) we do not include intangible costs because drug abuse represents a willing cost. In the absence of specific Victorian data, all other costs are based on the estimates presented in Rollings (2008, p. 46), inflated to 2010 prices, then apportioned to Victoria based on Victoria’s population share. The total cost of illicit drug abuse is estimated to be \$468.8 million.

Table 15: Estimated Costs of Illicit Drug Abuse in Victoria, 2009-2010

| | Total Cost (\$m) |
|----------------------------------|------------------|
| Illicit Drug Use Deaths | 339 |
| Medical Costs of Hospitalisation | 14.2 |
| Drug Treatment Costs | 44.6 |
| Pharmacotherapy Treatment | 36.9 |
| Lost Productivity | 34.1 |
| Total | 468.8 |

4. Cost Estimates Not Attributable to Specific Types of Crime

In addition to costs attributable to specific crimes against the person and property crime, there are other costs of crime recorded in Table 16. These are costs associated with administering the criminal justice system, costs associated with providing victim assistance, costs associated with the security industry and insurance administration. In 2009-2010, the costs associated with the criminal justice system were \$2.7 billion, the costs of providing victim assistance were \$311 million, the costs associated with the security industry were \$838 million and the costs of insurance administration were \$165 million. Total costs not attributable to specific crimes were just over \$4 billion.

Table 16: Other Costs of Crime in Victoria, 2009-2010

| Costs associated with criminal justice system | \$ million |
|--|-------------------|
| Police Costs | 850 |
| Court Costs | 158.5 |
| Corrective Services | 480.3 |
| Commonwealth Agencies | 916.3 |
| Juvenile Justice | 153.6 |
| Legal Aid Victoria | 131 |
| Total | 2689.7 |
| Victim Assistance | |
| Criminal Injury Compensation | 37.6 |
| Victim Support Services | 4.8 |
| Value of Volunteer Time | 21.6 |
| SAAP Expenditure for Domestic Violence | 24.1 |
| Child Protection | 223 |
| Total | 311.1 |
| Security Industry | 838 |
| Insurance Administration | 165 |
| Total | 4003.8 |

4.1 Costs Associated With the Criminal Justice System

Costs associated with the criminal justice system are police costs, court costs, cost of corrective services, cost of relevant commonwealth agencies, costs of juvenile justice and costs of providing legal aid. Total salaries and payments to police in Victoria in 2009-10 were \$1213.7 million (PC 2011, Table 6A.2). Following Rollings (2008, p. 47) 70% of police time is assumed to be spent on crime. Court costs are from PC (2011, Table 7A.9). These costs include the Supreme Court of Victoria, County Court of Victoria, Magistrates Courts and Children's Courts. These costs are for criminal courts only and do not include civil courts. The costs of corrective services are from PC (2011 Table 8A.12) and includes both prisons and community corrections facilities in Victoria. Commonwealth agencies are the Attorney General's Department, Australian Crime Commission, Australian Federal Police, Australian Institute of Criminology, AUSTRAC, Criminology Research Council, CrimTRAC and the Commonwealth DPP. The figure is sourced from the Attorney-General's Portfolio Budget Statement for 2009-2010 and apportioned to Victoria based on population share. Following Mayhew (2003b) and Rollings (2008), the juvenile justice figure is a 2001 estimate for New South Wales, inflated to 2010 prices. The figure for Legal Aid Victoria is the 2009-2010 cost of legal aid in Victoria from the Legal Aid Victoria Annual Report, 2009-2010. The total costs of administering the criminal justice system are estimated to be \$2.7 billion.

4.2 Costs Associated With Providing Victim Assistance

Costs associated with providing victim assistance are the cost of providing criminal injury compensation, victim support services, the value of volunteer time, the cost of that part of the Supported Accommodation Assistance Program (SAAP) allocated to women escaping domestic violence and costs of child protection. The figure for criminal injury compensation is from the Victims of Crime Assistance Tribunal 2009-2010 Annual Report. The estimates

of the costs of victim support services are based on national figures reported in Rollings (2008, p. 49) inflated to 2010 prices, then apportioned to Victoria based on population share.

The value of volunteer time was calculated by multiplying the proportion of volunteers in Victoria (0.25) by 59 million hours allocated to community/welfare groups in Australia in 2009-2010 to give 14.8 million hours. Volunteer time is calculated from the ABS (2010b) volunteer survey. Then, following Mayhew (2003b) and Rollings (2008) 5% of this time was assumed to be allocated to assisting victims of crime which is 741, 533 hours. This was multiplied by the average hourly earnings in Victoria in 2009-2010.

The estimates of the costs of child Protection are from PC (2011 Table 15A.1). The total cost of child protection and out-of-home care services in Victoria in 2009-2010 was \$446.1 million. Making the same assumption as Mayhew (2003b) and Rollings (2008), one half of this figure was assumed to be allocated to child protection. In 2008-2009, SAAP expenditure was 102.2 million in Victoria. Of this, 22.9% was allocated to women escaping domestic violence (PC, 2011, Table 17A.4). This gives 23.4 million. This was inflated to 2009-10 prices. Hence, the total cost of providing child protection was estimated to be \$223 million. Access Economics estimated the cost of child abuse attributed to crime in Australia in 2007 to be \$756 million (or \$826 million in 2010 prices) (see Taylor *et al.*, 2008). As a rough estimate, based on population share, this corresponds to just over \$200 million in Victoria. The costs of child abuse and child protection are not directly comparable. The Access Economics figure covers estimates for law enforcement, the judicial system, incarceration of perpetrators and victim assistance associated with child abuse (see Taylor *et al.*, 2008, p. xv), each of which are covered under various headings in this report.

In a report for the National Council to Reduce Violence Against Women and their Children, KMPG (2009) estimated that violence against women and their children in Australia cost \$13.6 billion in 2009. As a rough approximation, based on population share, this suggests the costs to Victoria were in the region of \$3.4 billion. It is difficult to draw a direct comparison between the results presented here and the KMPG (2009) study because we do not use domestic violence against women and their children as a separate category. In this report, the costs of domestic violence will be spread across the costs of homicide, assault and sexual assault as well as more generally be reflected in several categories under the cost of administering criminal justice and the costs of victim assistance. It is likely that domestic violence is a major contributor to these cost categories. Intimate partner violence is the leading contributor to preventable death, illness and disability in Victorian women, aged 15 to 44 (VicHealth, 2004; Department of Planning and Community Development, 2009).

The total costs of providing victim assistance are estimated to be \$311 million.

4.3 Security Industry

We use Australian Security Industry Association Limited (ASIAL) estimates for 2007 of the costs of providing security, which was \$4,436 million.¹ We inflate this figure to 2010 prices, giving \$4847 million. Based on Rollings (2008), 70% of this number is attributed to crimes here. This gives \$3393 million. We then apportion to Victoria based on population share. The total cost of the security industry in Victoria was estimated to be \$838 million.

4.4 Insurance Administration

We use the national estimates of insurance administration used by Mayhew (2003b) and Rollings (2008), inflated to 2010 prices and apportioned to Victoria based on population share. The total cost of insurance administration was estimated to be \$165 million.

5. Conclusion

This paper has provided an estimate of the costs to the Victorian community in 2009-2010. The findings from this study suggest that the costs of crime in Victoria in 2009-2010 were \$9.8 billion. This amount is equivalent to \$1678 per person in Victoria or 3.4% of Gross State Product in Victoria in 2009-2010. The costs associated with some crimes, such as homicide, assault, sexual assault, robbery, burglary, car theft and shoplifting can be estimated reasonably accurately. As can some costs not attributable to specific offences, such as the costs of the criminal justice system. Estimates of the costs associated with other offences, such as arson, deception and drug offences are more tenuous and require more heroic assumptions. Where possible, Victorian contemporaneous estimates of the per incident cost of crime have been used. However, in many instances this information is not available and we have had to use earlier values for Victoria or data from other jurisdictions converted to 2010 Australian dollars. For this reason, the estimates reported here, as well as in similar other studies, should not be regarded as definitive (see also Rollings, 2008, p. 53). There is a clear need for updated Australian estimates of the medical costs, costs associated with lost output and property loss and damage associated with specific crimes along the lines of the MUARC study (Watson & Ozanne-Smith, 1997) or the equivalent US study (Finkelstein *et al.*, 2006). With these limitations in mind, the least that can be said from the findings reported here is that the costs of crime in Victoria are high. This conclusion holds irrespective of the specific assumptions or sources of cost estimates one uses.

The bottom-up approach employed here cannot measure all types of potential costs. As such, the cost of crime reported here is likely to represent a lower bound estimate on the true cost

¹ See <http://www.asial.com.au/Statistics?printView=true>

of crime. It has been suggested that a top down approach to estimating the costs of crime is more useful for policy purposes (Ludwig, 2010). The top-down approach corresponds to the resource allocation issue facing policy-makers. The government must decide *ex ante* how much of the budget for next year should go to crime prevention versus other pressing needs, such as schools, roads and the like. The public good that citizens receive in exchange for devoting extra resources to crime prevention, instead of alternative uses, is a reduction in the risk that they, or the people they care about, will be victimized in the future. To compare the value of the benefit of reduced risk of victimization to the costs (such as reduced services elsewhere), we need to convert these benefits to dollar terms. The top down approach does this by measuring the sum of what people in the community are willing to pay (WTP) for changes in victimization risk. As such, it is now generally accepted that estimates obtained with the WTP method are more comprehensive (Cohen *et al.*, 2010). While the WTP approach does have limitations, it is well accepted in the economics literature as being more appropriate to estimate external or social costs. To put it differently, relative to the bottom-up approach, the top-down approach is likely to better capture intangible costs that are difficult to objectively quantify, such as fear of crime in general or loss of community spaces because of crime (Heaton, 2010). The WTP methodology is widely-used in the environmental, health and safety fields (Cohen, 2009) and it is gaining increased acceptance in the economics literature that has attempted to estimate the costs of crime (Cohen *et al.*, 2010). The top-down approach represents a useful way forward in terms of estimating the costs of crime in Victoria and such estimates would complement findings from this study in policy evaluation.

References

Attorney-General (2010) *Portfolio Budget Statements 2009-2010* (Canberra: Attorney-General's Department).

Australian Bureau of Statistics (ABS) (1999) *Crime and Safety Australia* ABS Cat. No. 4509.0 (Canberra: ABS).

Australian Bureau of Statistics (ABS) (2005) *Recorded Crime Victims Australia 2005*. ABS Cat. No. 4510 (Canberra: ABS).

Australian Bureau of Statistics (ABS) (2006a) *Crime and Safety Australia* ABS Cat. No. 4509.0 (Canberra: ABS).

Australian Bureau of Statistics (ABS) (2006b) *Personal Safety Survey Australia* ABS Cat. No. 4906.0 (Canberra: ABS).

Australian Bureau of Statistics (ABS) (2010a) *Recorded Crime Victims Australia 2010*. ABS Cat. No. 4510 (Canberra: ABS).

Australian Bureau of Statistics (ABS) (2010b) *Voluntary Work: Australia* ABS Cat. No. 4441.0 (Canberra: ABS).

Australian Security Industry Association Ltd. (ASIAL) (2007) "Security Industry Statistics" <http://www.asial.com.au/Statistics?printView=true> (last accessed July 22, 2011).

Brand, S. and Price, R. (2000) *The Economic and Social Costs of Crime* (London: Home Office).

Bureau of Transport Economics (BTE) (2000) *Road Crash Costs in Australia*, Report No. 102 (Canberra: Bureau of Transport Economics).

Cohen, M.A. (2009) "Valuing Crime Control Benefits Using Stated Preferences Approaches". In T. Dunworth (Ed.) *Costs and Benefits of Crime* (Washington DC: Urban Institute Press).

Cohen, M.A, Piquero, A.R. and Jennings, W.G. (2010) "Studying the Costs of Crime Across Offender Trajectories", *Criminology & Public Policy*, 9, 279.

Department of Planning and Community Development (2010) *Victorian Government's Women's Progress Report* (Melbourne: Department of Planning and Community Development).

Dubourg, R., Hamed, J. and Thorns, J. (2005) *The Economic and Social Costs of Crime Against Individuals and Households 2003/04* Home Office On-line Report No. 30

Finkelstein, EA., Corso, PS. and Miller, TS. (2006) *The Incidence and Economic Burden of Injuries in the United States* (New York: Oxford University Press).

- Heaton, P. (2010) "Hidden in Plain Sight: What Cost of Crime Research Can Tell Us About Investing in Police", Rand Center on Quality Policing Occasional Paper.
- Hourigan, M. (2001) "The Value of the Volunteer Contribution", Country Fire Authority, Melbourne.
- KMPG (2009) *The Costs of Violence Against Women and their Children* (Canberra: Department of Families, Housing, Community Services and Indigenous Affairs).
- Legal Aid Victoria (2010) *Legal Aid Victoria Annual Report, 2009-2010* (Melbourne: Legal Aid, Victoria).
- Ludwig, J. (2010) "The Costs of Crime", *Criminology & Public Policy*, 9, 307.
- Mayhew, P. (2003a) "Counting the Costs of Crime in Australia", Australian Institute of Criminology Trends & Issues in Crime and Criminal Justice No. 247 (Canberra: Australian Institute of Criminology).
- Mayhew, P. (2003b) "Counting the Costs of Crime in Australia: Technical Report", Australian Institute of Criminology Technical and Background Paper Series No. 4 (Canberra: Australian Institute of Criminology).
- MM Stars (2005) *Benefits of Theft Reform: Second Review of the National Motor Vehicle Theft Reduction Council* (Melbourne: National Motor Vehicle Theft Reduction Council).
- Productivity Commission (PC) (2011) *Report on Government Services 2011* (Canberra: Australian Government Publishing Service).
- Rollings, K. (2008) "Counting the Costs of Crime in Australia: A 2005 Update", Research and Public Policy Series No. 91 (Canberra: Australian Institute of Criminology).
- Roper, T. and Thompson, A. (2006) "Estimating the Costs of Crime in New Zealand in 2003/04", New Zealand Treasury Working Paper 06/04.
- Shury, J., Speed, M., Vivian, D., Kuechel, A. and Nicholas, S. (2005) *Crime Against Retail and Manufacturing Premises: Findings From the 2002 Commercial Victimisation Survey* (London: Home Office).
- Taylor, P., Moore, P., Pezzullo, L., Tucci, J., Goddard, C. and De Bortoli, L. (2008) *The Costs of Child Abuse in Australia* (Melbourne: Child Abuse Prevention Research Australia).
- VicHealth (2004) *The Health Costs of Violence: Measuring the Burden of Disease Caused by Intimate Partner Violence* (Melbourne: VicHealth).
- Victoria Police (2010) *Crime Statistics 2009-2010*
- Victims of Crime Assistance Tribunal (2010) *Victims of Crime Assistance Tribunal 2009-10 Annual Report* (Melbourne: Victims of Crime Assistance Tribunal).
- Walker, J. (2005) "Measuring the Costs of Crime", John Walker Crime Trend Analysis.

Watson, WL. and Ozanne-Smith, J. (1997) "The Costs of Injury in Victoria", Report No. 124, Monash Accident Research Centre, Monash University, Melbourne.