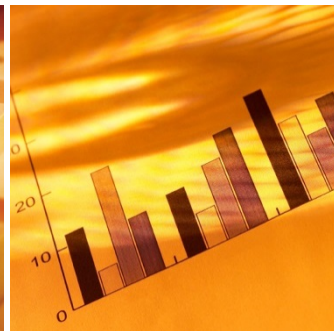


Costs of Crime and Criminal Justice Responses

by Thomas Gabor, Ph.D.

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Abstract

In light of rising criminal justice expenditures in Canada over the last decade, concerns about the sustainability of the Canadian justice system programs and services have emerged. Although there is a growing body of international evidence on the associated costs, little has been done to synthesize this literature. This report presents a global, comprehensive literature review on the costs of crime and criminal justice responses for the purpose of examining their comparative burdens to society. An important aim of this report was to lay the groundwork for a comparison of cost estimates from Canadian studies with those found in the international literature and to aid in the development of a framework that could be applied in future costing studies. The report emphasizes the importance of costing methodology (e.g., accounting-based versus court-based awards), crime definitions, study location, population age, and the differentiation between tangible and intangible costs when determining accurate cost estimates for crimes and criminal justice responses. Finally, it offers some key theoretical considerations for the interpretation of study findings, and identifies four recommendations that social science researchers and operational personnel need to know about the future of crime costing studies.

Author's Note

The views expressed are those of the authors and do not necessarily reflect those of Public Safety Canada. Correspondence concerning this report should be addressed to: Research Division, Public Safety Canada, 340 Laurier Avenue West, Ottawa, Ontario, K1A 0P8; email: PS.CSCCBResearch-RechercheSSCRC.SP@canada.ca.

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Executive Summary

Major increases in criminal justice system expenditures have created concerns about the sustainability of Canadian justice system programs and services. In addition to the impact of these expenditures on public sector programs, crime victims incur both tangible (e.g., direct economic losses) and intangible costs (e.g., pain and suffering). Moreover, society pays for crime when individuals decide to pursue a criminal career rather than participating in the legitimate marketplace as productive citizens.

An examination of the costs of crime allows for a comparison of the comparative burden of different crimes to society. Information on the costs of crime, the cost of policies designed to reduce crime, as well as the effectiveness of different policies can be used in resource allocation decisions. Ultimately, the bottom line question is: Which programs and policy options will yield the greatest reductions in crime at the lowest cost? Some crime prevention programs, for example, have been found to yield reductions in crime, criminal justice, and mental health costs that are many times the amounts invested.

The principal aim of this study was to conduct a comprehensive review of international research on the costs of crime and of justice system responses. Rather than a purely narrative literature review, the findings of this review were placed in a searchable database. Apart from arriving at estimates of the costs of different offences and criminal justice processes, this study also focused on the types and robustness of the methodologies used to arrive at these estimates.

Key research issues addressed included:

1. The costs of different categories of crime and of criminal justice processes and interventions.
2. The costing methodologies used and whether cost estimates vary with these methodologies.
3. Whether crime and criminal justice costs vary by the population (e.g., youth) being considered.
4. The extent to which crime and justice system costs vary according to the category of crime being considered.
5. Variations in crime and criminal justice costs across nations?

A comprehensive, wide-ranging global literature search was conducted in order to locate articles and other publications relevant to the issue of the costs of crime and justice system responses. In order to be included in the study, a publication had to provide original data or analyses on the costs of crime, whether globally or in relation to specific crimes, and/or the costs of justice system responses to crime. The publication dates of the studies ranged from 1988 to the present.

Core variables captured in this study included the following:

1. Publication type (e.g., peer-reviewed article, government report);
2. Costing methodology used (e.g., accounting-based, approaches based on court awards);
3. Currency (e.g., Canadian dollar, US dollar, British pound);
4. Categories of costs (e.g., victims' tangible or intangible costs);

5. Population (e.g., youth, adults);
6. Type of crime (e.g., homicide, sexual assault, robbery);
7. Criminal justice processes (e.g., policing, arrest, trial).

The literature search identified 84 publications that provided information on the costs of crime and/or the costs of justice system responses to crime. Upon further review, 19 of these publications were excluded as they provided no original data on costing and/or dealt with issues that were not necessarily criminal (e.g., drug addiction). A total of 65 studies met the requirements of the present project by being published in English or French and by providing original costing data. Three-quarters of the studies have been published since 2000. More than half of the costing studies were published in academic journals and over a third of the studies were undertaken by government researchers or on behalf of government agencies.

Over half of the costing studies were conducted in the United States and close to a quarter were undertaken in either the United Kingdom or Australia. Three studies were conducted in both Canada and South Africa. Two studies took place in Chile and one study was conducted in France, New Zealand, Poland, and Italy. The vast majority of studies based their crime and justice system cost estimates on data drawn from crime victims and/or offenders who were adults or a combination of adults and youth. Fewer than 10 percent of the studies based their cost estimates exclusively on youth.

Many studies employed a combination of methods to estimate the cost of crime. Accounting-based methods and crime victimization surveys were utilized in cost estimation in about 70 percent of the studies. Cost of illness data, which typically includes the value of medical care resources used to treat victims and any losses in productivity, served as the basis of cost estimation in under half of the analyses. Contingent valuation, a more subjective method probing the amount of dollars taxpayers are willing to pay in order to avoid a specified offence, served as a costing method in about a quarter of the studies. Jury or court-based awards were used in cost estimation in about one of every six studies.

Three measures of central tendency were used to compute the estimated total cost of each crime across the studies. One method involved summing the average cost for each cost category (i.e., victims' tangible and intangible costs, criminal justice system costs, and criminal career costs). A second method calculated the average costs after removing the values on both extremes, as outliers tended to have a major impact on the totals. A third method for computing the total cost of each offence involved calculating the median for each cost category and then adding the results. For all analyses, costs captured in each study were first adjusted for inflation and then converted to 2014 Canadian dollars.

The table below displays the estimated per incident costs of different categories of crime. The ranges are based on the three measures of central tendency discussed above. In each case, the higher figure is based on the unadjusted mean and the low figure is based on either the median or an adjusted average with outliers removed. In the case of fraud, all three measures yielded an identical dollar cost due to the small sample size. In general, the lower figure in the range is more conservative and stable as it is less sensitive to the impact of extreme values from one study. The table indicates that homicide is by far the most costly offence, ranging between \$4.8 and \$5.9

million. The more conservative figures indicate that sexual assault/rape and aggravated assault are the next most costly crimes. Victims' intangible and tangible costs dominated in the case of all three offences. By contrast, theft and residential burglary have been estimated to be the least costly offences among those covered in this review.

Offence	Estimated Total Cost Per Incident in 2014 \$ Canadian
Homicide	4,837,018 - 5,904,357
Sexual Assault/Rape	136,372 - 164,417
Assault	19,075 - 203,555
Aggravated Assault	98,945 - 167,472
Robbery	28,056 - 92,350
Motor Vehicle Theft	8,157 - 9,641
Arson	45,958 - 49,807
Residential Burglary	5,928 - 6,228
Theft	1,330 - 2,627
Fraud	45,030

A small proportion of studies provided per incident, case, or contact ¹estimates of the costs of different criminal justice processes. Caution is urged in the interpretation of these findings due to the extremely small number of studies on which the figures were based. Adult custody or custody where the inmate population was unspecified averaged \$81,820 per prisoner annually across the studies. Secure custody for youth cost \$51,742 per youth and \$65,526 per contact. Open custody for youth was much less costly at \$3,292 and \$926 per youth and per contact, respectively. Court/trial proceedings ranged between \$1,445 and \$44,280, depending on whether the unit of analysis was per contact, case, or conviction. Policing in general also varied considerably, depending on whether costs were estimated by case, incident, or arrest. Local custody was determined to be \$29,110 per inmate and remand admissions were \$18,826 per contact. Police warnings/cautions and charging were less costly items at \$1,402 and \$1,049 per contact, respectively.

Information was collected on a limited number of variables to determine the extent to which they may have influenced the estimated costs of crime or of criminal justice processes. Studies conducted in the United States reported the highest costs of crime, with a per incident average of

¹ The one study providing cost estimates for contacts with youth defined contact as one of the following: police caution; referral to a juvenile justice team by police; referral to a juvenile justice team by a children's court; or court conferences.

over \$1.1 million. This cost was approximately twice the average cost of a crime in New Zealand and more than twice the cost of an offence in the United Kingdom. The mean cost of a crime in Australia was about a quarter of the cost of an offence in the United States. Poland was an outlier, as the average cost of a crime was \$3,431, although the results were from just one study.

To test the idea that the higher costs per offence may be due to a different mix of offences rather than higher costs, a separate analysis was conducted in which the offence (homicide) was held constant (i.e., the analysis was restricted to homicide costs only across the different studies). When the offence was held constant, the costs of each homicide in the United States was still the highest at almost double the cost in New Zealand, more than double that of a homicide in the United Kingdom and more than triple that of a homicide in Australia. Therefore, factors other than the different mix of offences appear to be responsible for the cross-national differences observed.

The cost of crime varied considerably according to the segment of the population serving as the basis for the estimates. Studies covering the adult population estimated that the average cost of a crime was over \$2.2 million. The removal of one enormous outlier, a value of \$20 million in an estimate of homicide, brings the average cost of crime for adults to less than \$500,000. By contrast, studies of youth estimated the average cost of an offence at \$34,782. Studies covering both adults and youth estimated that the cost of an offence was close to \$1 million.

The costing method itself may be a factor in the cost of crime figures obtained. Studies in which contingent valuation was used yielded the highest cost estimates at over \$1.2 million per offence. Accounting-based and cost of illness approaches yielded average per incident costs of \$840,366 and \$778,084 per crime, respectively. Studies in which victimization surveys and court/jury awards were used to generate cost estimates yielded per incident costs of \$627,905 and \$618,630 per crime, respectively. Thus, contingent valuation, which gauges what people are willing to pay to avoid an offence, seems to generate cost of crime figures that are about twice those yielded by court/jury awards and victimization surveys.

The analysis above indicates that the countries in which studies are undertaken, the age of the population covered, the costing methodology, and the offences being considered may all influence the cost estimates obtained.

The costing method continues to make a difference when the offence is held constant. When only homicide cases are considered, the figures continue to vary by costing method, although their order, in terms of which method yields the highest cost estimates, differs from that found when all offences were included in the analysis. Contingent valuation/willingness to pay continues to yield the highest cost estimates, followed by court/jury awards and accounting-based methods. Approaches based on cost of illness yielded the lowest figures. Contingent valuation yielded more than double the per incident estimates of homicide than the cost of illness approach.

In another analysis, only American studies were included in order to hold the influence of country constant on the per incident cost of crime. The method of contingent valuation continued to yield the highest figures followed by accounting-based methods. The values of crime were lowest when court/jury awards were used as the basis for the cost estimates.

This review of the literature faced a number of methodological challenges and issues in the interpretation of the existing body of costing research:

- The use of different cost categories. While some studies distinguished between victims' tangible and intangible costs, others did not use this language or focused on subcategories of these, such as direct victim costs or pain and suffering. Thus, different studies were sometimes measuring different items under the same broad category.
- While some studies were comprehensive, addressing victims' tangible and intangible costs, criminal justice costs, and criminal career costs, others focused on just one or two cost categories.
- While many studies provided per incident costs of crime, others merely calculated aggregate societal costs.
- Apart from definitional differences, some studies broke offences down into very specific categories. For example, the coding form contained the categories of theft, grand theft, and petit theft. Some studies added categories such as bicycle theft, household theft, and personal theft.
- Costing methods varied across studies. In addition, while some studies relied on one method, others used several methods. Therefore, it was difficult to assess the impact of the method itself on the cost estimates, as the impact of each method could not be isolated.
- Costing studies tend to exclude certain intangible costs that are especially difficult to quantify, such as the fear of crime.
- Many publications failed to make explicit certain aspects of a study, such as the age of the population that served as the basis for the cost estimates.

The report concluded with the following recommendations:

1. A Need for Additional Research – This literature review did not uncover a single Canadian study in which per incident costs of specific crimes were estimated. Canadian research is urgently needed to fill this gap, as this study has shown that cost estimates for crimes vary considerably across nations. In addition, this review identified a need for more comprehensive costing studies on youth crime and interventions, as well as specific justice system processes. Furthermore, additional analyses are required regarding the impact on costs of offence type, costing methods, and the jurisdiction/country being considered.
2. More Comprehensive Studies Required – Just a fraction of the studies were comprehensive ones that estimated the different categories of costs (victims' tangible and intangible, criminal justice system costs, and criminal opportunity costs) of major crimes and, on that basis, generated overall per incident costs for those crimes. More of these studies are needed as they have the advantage of using a uniform method for costing each crime.

3. **Multiple Costing Methods Should Be Used** – While the costing methods used to estimate the costs of different offences should be uniform across the set of offences studied, multiple methods should be selected to establish a range in costs rather than a precise number.
4. **Conservative Estimates Should Be Used** – This study found that a small number of extreme values (outliers) often had a significant impact when the average costs of an offence were computed across studies. However, with the exception of the offence of assault, the estimated total costs of offences did not diverge by much when the median or an adjusted average, with outliers removed, was computed. It was recommended that these more conservative, lower estimates be used and that the standard arithmetic mean be avoided when costs are averaged across studies.

Background

A recent report by the Office of the Auditor General of Canada indicates that about half of all federal institutions are running above their rated capacities (Office of the Auditor General of Canada, 2014). In addition, the average cost of housing inmates is just under \$118,000, an increase of 46 percent from ten years ago. These figures and a 66 percent increase in total criminal justice system expenditures (from \$13.4 billion to \$ 20.3 billion) over a ten-year period, beginning in 2002, have created understandable concerns about the sustainability of justice system programs and services (Story & Yalkin, 2013).

Brantingham and his associates (2014) have found that the total annual costs of crime have doubled since 1998, from \$42.4 billion to over \$80 billion in recent years. While some of this increase has been due to a more detailed analysis of the overall costs of crime, their analysis shows that criminal justice system expenditures have risen sharply, even as the total crime rate has declined by 27 percent from 2002-2012.

The costs of crime are not borne exclusively by the public sector. These costs fall into four broad categories: (1) Victim costs – the direct economic losses to crime victims, including property loss and damage, lost wages, and medical costs related to injuries; (2) Criminal justice system expenditures for law enforcement, the courts, and correctional facilities, programs, and services; (3) Opportunity costs, also referred to as criminal career costs, when an individual chooses to participate in illegal activities as opposed to the legitimate marketplace; and (4) Intangible costs, which include pain and suffering of crime victims and a diminished quality of life. A full accounting of the costs of crime requires the measurement of losses on all four of these dimensions (McCollister, French & Fang, 2010).

Calculating the costs of crime is beneficial for a number of reasons (Dolan et al., 2005):

1. An examination of costs allows us to compare the relative burden of different crimes to society without relying on a simple tally of their incidence. Such an analysis can indicate whether, for example, robbery constitutes a greater burden to society than burglary.
2. The cost of crimes can provide a measure of crime trends. In any given year, the rate of some crimes will increase and that of others will decrease. A tally of the cost of each form of crime

yields a measure of the overall cost of crime which, in turn, will indicate the overall burden of crime and whether this burden has increased or declined.

3. Information on the costs of crime, the cost of policies designed to reduce crime, as well as the effectiveness of different policies, can be used in resource allocation decisions. Ultimately, the bottom line question is: Which programs and policy options will yield the greatest reductions in crime at the lowest cost?

In addition, costing information is required in conducting cost-benefit analyses. Such analyses expand upon impact evaluations by determining whether the costs invested in programs justify the benefits even where programs are successful in reducing crime (Soomeren and Wever, 2005). To undertake a comparison of costs and benefits, expenditures and returns on investment are assigned a monetary value. Benefits that cannot be expressed as a monetary value cannot be compared and are included only for discussion. In a criminal justice context, the per incident costs of crime and the unit costs of diverse criminal justice responses are critical in calculating both the costs of policies and programs as well as the returns in reduced crime and its associated savings.

One example of cost-benefit analysis is a study that examined seven delinquency, violence, and substance abuse prevention programs in the state of Pennsylvania. The programs were found to produce a return on investment of between \$1 and \$25 per dollar invested. Collectively, these programs not only paid for themselves but represented a potential return of \$300 million to the state treasury due to reduced corrections costs, lower social services costs, savings in mental health and drug treatment, and increased employment and tax revenue (Jones et al., 2008).

Objectives

There is a growing international literature on the costs of different types of crimes and of criminal justice responses to crime; however, little has been done to synthesize this literature. The principal aim of this study was to conduct a comprehensive review of international research on the costs of crime and of justice system responses. Rather than a purely narrative literature review, the findings of this review were placed in a searchable database. Such a database can serve as the basis for future studies and policy decisions seeking to identify the costs and benefits of diverse policy options and crime prevention programs.

Apart from arriving at estimates of the costs of different offences and criminal justice processes, this study focused on the types and robustness of the methodologies used to arrive at these estimates. One important aim of this project was to further the development of methodologies to estimate Canadian-specific costs for a variety of crimes and criminal justice processes. The study laid the groundwork for a comparison of cost estimates from Canadian studies with those found in the international literature and will aid in the development of a framework that could be applied by the federal government to future costing studies. As a result of studies such as the present one, cost-benefit analyses can ultimately be an integral part of program evaluations.

Coding instruments were used to guide the extraction of relevant information from the research reports. Data on variables of interest have been placed in an Excel data file to facilitate the comparative analysis of international cost estimates.

Key research questions addressed included:

1. What are the typical costs of different categories of crime and of different criminal justice processes and interventions?
2. What costing methodologies have been used in previous studies?
3. Do cost estimates vary with the costing methodologies used?
4. Do crime and criminal justice costs vary by the age of the population being considered?
5. To what extent do crime and justice system costs vary according to the category of crime being considered?
6. How much variation is there in crime and justice system costs across nations?
7. Which victim costs are greater, tangible or intangible?

Methodology

Literature Search Strategy

A comprehensive, wide-ranging literature search was conducted in order to locate articles and other publications relevant to the issue of the costs of crime and justice system responses. The search was international in scope, and was guided by the following parameters:

Inclusion/Exclusion Criteria – In order to be included in the study, a publication had to provide original data or analyses on the costs of crime, whether globally or in relation to specific crimes, and/or the costs of justice system responses to crime. Research that merely reviewed previous literature, without conducting some original analysis, was not included in the present study.

Sample Size – The Project Team, in consultation with the Project Authority, established an initial target of 90 articles to be coded and included in the database.

Reliability of Data – This review was limited to more rigorous studies. As such, publications were sought in the scholarly literature (e.g., books, peer-reviewed articles in academic journals) or the gray literature (e.g., white papers, government fact sheets).

Timeframe – The document search initially covered the period from 2000 to the present. The search was then expanded to include publications from 1990-2000. One seminal work published in the 1980s was also included.

Databases Searched – Major scholarly databases used to conduct the searches were: Canadian Research Index at ProQuest; Criminal Justice Abstracts; EconLit; Economics at ProQuest; National Criminal Justice Reference Service; PAIS International (Public Affairs database); and PsychInfo. Internet searches were also conducted using Google Scholar.

Bibliographic Searches – Bibliographies of seminal publications (e.g., reports/articles by Aos, Miller, Cohen, Delisi, and McCollister) were examined in order to uncover publications that may have been missed in the search of academic databases.

Search Terms – Search terms used included: cost of crime; cost and crime; economic cost of crime; societal cost of crime; cost of violence; cost and violence; cost of property crime; cost and property crime; value of crime; cost of criminal justice; cost and criminal justice; costs of drug abuse.

Language of Publications – The literature search covered reports/publications written in English and French.

Development of the Coding Form and Guide

A standardized coding form and guide were developed in consultation with the Project Authority to guide the extraction of relevant information from the publications selected for this study. Information extracted from the publications was entered into an Excel database. The coding form structured the extraction of relevant data from each document and the guide provided instructions with regard to the completion of the coding form. The use of such coding instruments enhances

the consistency of data extraction across the documents. See the Appendices for copies of both the coding form and coding guide.

The Project Authority provided a first version of the coding form and guide. Further development of these instruments occurred following a review of approximately ten seminal works on the costing issue. Subsequent testing of the items and additional review yielded further refinements of the coding instruments.

Core variables captured in this study included the following:

1. Publication type (e.g., peer-reviewed article, government report).
2. Costing methodology used (e.g., accounting-based, approaches based on court awards).
3. Currency (e.g., Canadian dollar, US dollar, British pound).
4. Types of costs includes (e.g., victims' tangible or intangible costs).
5. Population (e.g., youth, adults).
6. Type of crime (e.g., homicide, sexual assault, robbery).
7. Criminal justice processes (e.g., policing, arrest, trial).

Most of the above variables require little explanation. With regard to costing methodologies, several methods have been used to estimate the costs of crime and justice system processes:

Accounting-Based Methods: The accounting approach attempts to identify all the individual costs associated with crime that individuals and society bear and place a dollar value on those costs (Miller, Cohen, and Wiersema, 1996; Rajkumar and French, 1997). For example, robberies result in expenditures for prevention, property loss to victims, expenditures on medical treatment for injuries, pain and suffering of victims, and costs for investigating, adjudicating, and incarcerating offenders. An accounting-based study would attempt to collect and tally data on each of these elements to arrive at a cost value for an average robbery. This approach may use data from a variety of sources, including surveys, medical data, and court awards.

Jury/ Court Awards: The jury-compensation approach uses the money awarded to victims by juries or judges to estimate the costs of crime (Cohen, 1988). Court awards may compensate victims for medical expenses, lost wages, and pain and suffering. The theory underlying compensatory damages is to restore the victim to the position he/she would have been in had the offence not occurred (i.e., to make the victim whole). One problem with this theory is that third parties cannot really understand the compensation required to make the victim whole.

Contingent Valuation/Willingness to Pay: This approach uses surveys to elicit information about the amount a person would be willing to pay for crime reduction. Typically, respondents are asked whether they would fund a program providing specific benefits in exchange for tax increases of a given amount (Heaton, 2005). By varying the amount of the tax in the question, researchers can statistically estimate the average amount people would pay for the program. Willingness-to-pay estimates provide a monetary value of the benefits of crime reduction and, hence, a measure of the costs of crime as the amounts people are willing to pay to reduce crime presumably reflect their views of the harms associated with a given offence. An important advantage of contingent valuation is that the approach captures overall willingness to pay for a program and, thus, includes both tangible and intangible costs. A downside is that questions

about an individual's willingness to pay for a program are hypothetical and people may overstate what they are prepared to invest when they are not actually paying for that program.

Cost of Illness: The principal aim of cost of illness (COI) analysis is to measure the economic burden of illness to society. COI typically includes the value of medical care resources used to treat victims and the losses in productivity to society due to illness. Non-medical costs associated with the illness are sometimes included as well (Corso, N.D.). Examples of medical costs are inpatient visits, emergency department visits, outpatient visits, prescription drugs, medical equipment, and home health services. Examples of non-medical costs include child care and travel expenses associated with receiving treatment. Examples of productivity losses include days lost from work due to illness, injury, or associated treatment.

Surveys: Surveys can be used to determine aggregate costs of crime, losses incurred by crime victims, and other impacts on victims (McCollister, French, and Fang, 2010). They are often used as part of accounting-based methods, contingent valuation, and COI.

Inflation Adjustment and Currency Conversion

Costs captured in each study were first adjusted for inflation and then converted to Canadian dollars. Thus, all analyses in this study were conducted following inflation adjustments and conversions to 2014 (August 1) Canadian dollars.

Sources used for the inflation adjustments were: Bank of Canada; United States Department of Labor, Bureau of Labour Statistics; Reserve Bank of New Zealand; and the site www.fxtop.com.

The sources for the currency adjustments to Canadian dollars were the following sites:

<http://www.oanda.com/currency/converter/>

<http://www.oanda.com/currency/historical-rates/>

The Coding Process

The coding form and guide served to provide direction with regard to the coding process. The application of the coding form ensured that all documents were reviewed systematically, consistently, and comprehensively. The majority of the variables were categorical, yielding responses such as "yes" or "no", or a response, such as a country or publication type. On the other hand, the cost of crimes and criminal justice processes took the form of continuous, interval-level variables (i.e., dollar values or values in other currencies).

The issue of inter-rater reliability (i.e., consistency in coding) was examined by having three individuals from Public Safety Canada nominated by the Project Authority and two persons from Lansdowne's research team code half a dozen articles using the draft coding form and guide. Items that were difficult to code were removed and refinements of the coding form and guide were made as a result of the coding exercise. In addition, to maximize consistency in coding, a team approach was adopted. While one individual served as primary coder, the Project Leader was consulted throughout the coding process regarding any publications in which the coding was

less clear or more subjective. In addition, the primary coder and Project Leader consulted on the coding of the first five articles to ensure the coding was done consistently and accurately.

Creating the Database

For each document, data on all variables of interest (listed above), including the costs of crime and criminal justice responses, was entered into an Excel data file. The Project Authority provided guidance and feedback with regard to the format of the database. In addition, the research team provided a copy of the data file after data from a subsample of documents had been entered to ensure that the file met the requirements of the Project Authority.

A standard Excel file was set up. This file can be converted to SPSS, if desired. The cases were placed in the rows of the spreadsheet. Where a study provided cost estimates for more than one offence, a separate case and row were created for each estimate. For example, if a study developed cost estimates for robbery, assault, and homicide, the three estimates were treated as distinct cases in the Excel file. As a result, there were often multiple cases per publication. The variables were placed across the columns of the spreadsheet. Variables included: the country and date of the relevant study; publication type; costing methodology; population covered in the study; type of crime; criminal justice process; and the cost in dollars (or other currency) of the crime or criminal justice process. The responses to items in the coding form were placed in the appropriate cells of the spreadsheet.

Data Analysis

There were several components to the data analysis.

Firstly, a descriptive analysis was conducted. Each variable was examined separately in order to provide the number of cases in which each variable category has appeared in the documents. For example, how many of the documents were peer-reviewed publications and how many were books, government reports, etc.? How often were different types of crimes addressed in the documents on costing? How frequently was each costing method used? How often was the cost of each criminal justice process (e.g., police investigation, trial, incarceration) calculated in the reports?

Secondly, we examined the costing figures themselves. For each type of crime, we calculated the average and median costs, as well as minimum and maximum figures. We computed the average costs per unit (offender, case, or crime) of different criminal justice processes.

Thirdly, we sought to identify relationships between the independent variables (e.g., costing methodology, population, type of crime, criminal justice process) and the dependent variable (costs in dollars). Due to the low sample size and missing data, the statistical analyses were primarily descriptive; however, in some cases, we were able to assess the link between the independent variables and costs while holding a third variable constant.

The analyses provided estimated dollar figures for different crimes and criminal justice responses. Subsequently, program evaluators will be able to use these figures to determine the cost savings associated with a certain reduction in crime. They will also be able to determine the costs of selected criminal justice responses (e.g., the costs of arresting assault suspects or youth suspected of various criminal acts). Cost estimates will permit cost-benefit analyses to be undertaken by

future researchers to shed light on the net benefits or costs of different justice system responses and programs.

Methodological Challenges

This study presented a number of methodological challenges. These challenges were magnified by the diversity of backgrounds of those undertaking costing studies—economists, criminologists, sociologists, and public health researchers. These challenges are discussed in Section 5 (Conclusions and Recommendations).

Results and Discussion

Overview of the Costs of Crime Studies

Our literature search identified 84 publications that provided information on the costs of crime and/or the costs of justice system responses to crime. Upon further review, 19 of these publications were excluded as they provided no original data on costing and/or dealt with issues that were not criminal in many jurisdictions (e.g., drug addiction).

A total of 65 studies met the requirements of the present project by being published in English or French and by providing original data on the costs of specific crimes or of criminal justice processes (e.g., police investigations, trials, incarceration). Table 1 indicates that three-quarters of the studies have been published since 2000. All, but one of the remaining studies, was published in the 1990s.

Table 1: Year of Publication of Costing Studies Meeting Project Criteria

Period	Number of Studies
2000-Present	49
1990-1999	15
1980-1989	1
Total	65

More than half of the costing studies were published in academic journals (Table 2). These publications are usually regarded as the most rigorous due to the fact that they must undergo a formal and often demanding peer-review process. Over a third of the studies were undertaken by government researchers or on behalf of government agencies, including statistical agencies. These studies are also often undertaken by academics whose services have been retained by government agencies. The remaining five studies were published by a non-governmental agency or appeared in a book chapter.

Table 2: Nature of the Publications

Type of Publication	Number of Studies
Academic Journal Article	37
Report by/for Government Agency	23
Report by Non-Governmental Agency	4
Book Chapter	1
Total	65

Over half of the costing studies were conducted in the United States (Table 3). Close to a quarter were undertaken in either the United Kingdom or Australia. Three studies were conducted in both Canada and South Africa. Two studies took place in Chile and one study was conducted in France, New Zealand, Poland, and Italy. One remaining study utilized data from both Canada and the United States.

Table 3: Country in Which Studies Were Conducted

Country	Number of Studies
United States	36
United Kingdom	8
Australia	8
Canada	3
South Africa	3
Chile	2
New Zealand	1
France	1
Poland	1
Italy	1
Canada & United States	1
Total	65

The vast majority of studies based their crime and justice system cost estimates on data drawn from crime victims and/or offenders who were adults or a combination of adults and youth (Table 4). Fewer than 10 percent of the studies based their cost estimates exclusively on youth. However, in close to half of the publications, the authors did not explicitly state the age of the population serving as the basis for their calculations. For example, many studies used victim data to develop crime cost estimates. One might assume that victims referred to both adults and minors; however, such assumptions may be inaccurate in certain cases and jurisdictions. We chose the conservative approach of coding the item as “not specified” unless there was an explicit reference to the age group selected for the analysis.

Table 4: The Age of the Population Used to Compute Cost Estimates

Population Age	Number of Studies
Adults Only	15
Youth Only	5
Adults and Youth	17
Not Specified	28
Total	65

Table 5 shows that about three-quarters of the studies based their cost estimates on data from the general population or from crime victims. Those studies relying on data from the population at large often used general population surveys or agency records to determine the impact of crime on victims or on agency resources. Other studies conducted surveys of known victims to develop their cost estimates. Offenders in custody or in the community were the next most common sources of information for the costing studies.

Table 5: Detention Status of the Population Used to Compute Cost Estimates

Population Detention Status	Number of Studies
Offenders in Custody	6
Offenders in the Community	0
Offenders Both in Custody and the Community	6
General Population	29
Victims	18
Combination of the Above	4
Other	1
Not Specified	1
Total	65

Table 6 illustrates the most common methods used to estimate crime and criminal justice costs. Many studies employed a combination of methods. Accounting-based methods, which add up the various costs of a type of crime or justice system process, were used in over 70 percent of the studies. Surveys, too, were utilized in cost estimation in about 70 percent of the studies. Cost of illness data served as the basis of cost estimation in 43 percent of the analyses. Contingent valuation, a more subjective method probing the amount of dollars taxpayers are willing to pay in order to avoid a specified offence, served as a costing method in 23 percent of the studies. Jury or court-based awards were used in cost estimation in about one of every six studies. No other costing method was used in a significant number of studies. One measure (not a methodology) encountered in several studies was that of quality-adjusted life-years (QALY), which measures the number of quality years lost due to a criminal offence.

Table 6: Cost Estimation Methods Used in the Research Literature

Cost Estimation Method	Number of Studies*
Accounting- based	47
Jury Compensation/Court awards	11
Contingent Valuation/WTP	15
Cost of Illness	28
Survey-based	46

*More than one method could be used in a study. Therefore, the figures appearing in the second column, when totaled, exceed the total number of studies.

The Cost of Individual Offences

Table 7 provides the average, median, minimum, and maximum costs in Canadian dollars of homicide by cost category. A total of 27 studies provided estimates of the cost of homicide. Some studies focused on one cost category (e.g., intangible costs, criminal justice costs), while others were more comprehensive and estimated tangible, intangible, criminal justice, and criminal career costs. As some studies yielded extremely low or high values, three measures of central tendency were used. We calculated an average or mean cost per cost category, an average with the outliers (lowest and highest values) removed, and a median cost.

Table 7 shows that the overall cost of homicide across the studies was between \$4.8 million and \$5.9 million, depending on the measure of central tendency used. Due to some very high values—one study estimated victims’ intangible costs at over \$10 million—one might adopt the more conservative overall costs of \$4.8 million (mean with outliers removed) to \$5.4 million (the median cost). Over half of the costs of homicide were intangible costs, including such things as pain and suffering and diminished quality of life. These intangible items were quantified using different measures across the studies. Victims’ tangible costs were the next most costly item. When the lowest and highest values for each cost category were totalled, the total cost of homicide ranged between a low of just under \$1 million and over \$16 million at the high end.

Table 7: Cost of Homicide Per Incident in August 1, 2014 Canadian Dollars (N=27)

Cost Category	Mean Cost	Mean Cost (Outliers Removed)	Median Cost	Minimum Cost	Maximum Cost
Victims’ Tangible/Direct	1,502,070.47	1,222,126.83	1,412,785.51	81,679.43	5,162,010.62
Victims’ Intangible	3,827,153.28	3,038,838.81	3,439,939.36	603,327.50	10,204,236.93
CJS Costs	398,663.99	399,582.98	371,514.25	56,371.12	738,199.89
Criminal Career	176,469.11	176,469.11	176,469.11	173,372.91	179,565.31
Total Cost	5,904,356.85	4,837,017.73	5,400,708.23	914,750.96	16,284,012.75

Sexual assault/rape was estimated, on average, to cost between \$136,372 and 164,417, depending on the measure of central tendency used (Table 8). When the lowest and highest values for each cost category were totaled, the cost of sexual assault/rape ranged between a low of just under \$17,000 and a high cost of over \$614,000. As in the case of homicide, intangible costs accounted for over half of the total cost of sexual assault. Just one study estimated the cost of aggravated sexual assault, a more brutal crime in which the victim is seriously injured, disfigured, and/or has their life endangered. The cost of that crime was estimated to be \$542,161.

Table 8: Cost of Sexual Assault/Rape Per Incident in August 1, 2014 Canadian Dollars (N=27)

Cost Category	Mean Cost	Mean Cost (Outliers Removed)	Median Cost	Minimum Cost	Maximum Cost
Victims' Tangible/Direct	45,469.04	25,545.84	10,610.01	434.05	329,582.52
Victims' Intangible	92,397.25	86,593.36	104,503.98	1,516.91	241,316.55
CJS Costs	15,416.16	13,097.89	13,097.89	3,462.45	32,006.40
Criminal Career Costs*	11,134.97	11,134.97	11,134.97	11,134.97	11,134.97
Total	164,417.42	136,372.06	139,346.85	16,548.38	614,040.44

*All cells had the same value as just one study provided an estimate of the criminal career costs in the case of sexual assault/rape.

Table 9 displays the estimated cost of assaults. There is a wide range in the total estimated cost across studies (\$19,075 - \$203,555), depending on the method of central tendency used to arrive at this total. This wide range is largely due to one very high estimate for intangible costs yielded by one comprehensive study. In the last column, we can observe that the study placed the intangible cost of assault at \$970,348. The lowest estimate yielded by a study on victims' intangible costs was \$615. Such variations may be due to low sample sizes, national differences in costs, or different estimation techniques used across the studies. We urge the use of the adjusted total costs in column three or the median total cost in column four due to the size of the outlier and its impact on the unadjusted mean costs.

Table 9: Cost of Assault Per Incident in August 1, 2014 Canadian Dollars (N=23)

Cost Category	Mean Cost	Mean Cost (Outliers Removed)	Median Cost	Minimum Cost	Maximum Cost
Victims' Tangible/Direct	80,009.47	40,002.59	2,791.57	77.02	359,976.30
Victims' Intangible	119,164.50	14,502.50	11,902.18	614.95	970,348.00
CJS Costs	4,381.34	4,381.34	4,381.34	691.82	8,070.85
Criminal Career	No Data	-	-	-	-
Total*	203,555.31	58,886.43	19,075.09	1,383.79	1,338,395.15

*The total figures were calculated without data on criminal career costs.

Aggravated assaults were not found to be more costly than less injurious assaults on all measures of central tendency (Table 10). The total costs were estimated to be in the range of \$98,945 - \$167,472. While the adjusted mean costs and median costs were lower than the unadjusted mean costs, the range of total costs was not as wide as with the case of assault. This was the case because there were no extremely high estimates to potentially skew the values as was the case in the one study of assault in which the intangible costs were estimated to be very high. Intangible costs continued to be higher than other cost categories, accounting for over half of the total estimated costs.

Table 10: Cost of Aggravated Assault Per Incident in August 1, 2014 Canadian Dollars (N=14)

Cost Category	Mean Cost	Mean Cost (Outliers Removed)	Median Cost	Minimum Cost	Maximum Cost
Victims' Tangible/Direct	51,273.35	10,125.10	10,509.96	2,074.90	306,203.02
Victims' Intangible	96,820.32	73,699.73	90,004.28	14,457.02	248,545.38
CJS Costs	15,398.92	12,550.72	10,489.22	6,032.23	33,310.20
Criminal Career Costs	3,979.56	2,569.80	2,569.80	1,443.13	7,925.75
Total	167,472.15	98,945.35	113,573.26	24,007.28	595,984.35

The total cost of robberies across studies also varied considerably, depending on the computation method used (Table 11). The total cost of robbery ranged between \$28,056 and \$92,350. Once again, a very high value, this time for victims' tangible and direct costs, influenced the results. One study was a major outlier as it estimated these tangible and direct costs at \$623,072. That study examined the expected income loss for youth victims of violence. Due to the magnitude of this outlier, we recommend the use of the more conservative estimates of the total cost of robbery (i.e., the adjusted mean costs of \$32,022 or the median costs of \$28,056).

Table 11: Cost of Robbery Per Incident in August 1, 2014 Canadian Dollars (N=32)

Cost Category	Mean Cost	Mean Cost (Outliers Removed)	Median Cost	Minimum Cost	Maximum Cost
Victims' Tangible/Direct	66,975.09	5,706.12	4,064.99	1,029.49	623,072.45
Victims' Intangible	12,425.64	11,991.09	10,444.56	1,040.22	27,287.45
CJS Costs	9,385.61	9,371.48	8,592.67	624.03	18,203.72
Criminal Career Costs	3,564.07	4,953.45	4,953.45	1,964.37	5,163.77
Total	92,350.41	32,022.14	28,055.67	4,658.11	673,727.39

Across the studies, estimates of the cost of motor vehicle thefts were in the range of \$8,157-\$9,641 per incident (Table 12). Victims' tangible and direct costs accounted for most of the costs. The low and high total figures ranged between \$1,260 and \$22,528.

Table 12: Cost of Motor Vehicle Theft Per Incident in August 1, 2014 Canadian Dollars (N=15)

Cost Category	Mean Cost	Mean Cost (Outliers Removed)	Median Cost	Minimum Cost	Maximum Cost
Victims' Tangible/Direct	6,676.09	6,318.72	6,846.91	656.65	14,839.73
Victims' Intangible	1,067.60	552.58	552.58	316.69	2,345.81
CJS Costs	1,457.97	846.26	805.28	76.87	4,674.23
Criminal Career Costs	439.03	439.03	439.03	209.61	668.44
Total	9,640.69	8,156.59	8,643.80	1,259.82	22,528.21

The per incident cost of arson was just under \$50,000 regardless of the measure of central tendency used (Table 13). The victims' tangible and direct costs accounted for about half of the total costs, while intangible costs were slightly lower. Just five studies provided cost estimates for arson and just one study provided estimates of the criminal justice costs and the criminal career costs associated with this crime. Therefore, caution ought to be exercised in interpreting these results.

Table 13: Cost of Arson Per Incident in August 1, 2014 Canadian Dollars (N=5)

Cost Category	Mean Cost	Mean Cost (Outliers Removed)	Median Cost	Minimum Cost	Maximum Cost
Victims' Tangible/Direct	24,481.18	24,481.18	24,481.18	13,842.56	35,119.80
Victims' Intangible	19,311.39	15,462.43	15,462.43	6,204.49	32,418.28
CJS Costs	5,308.82	5,308.82	5,308.82	5,308.82	5,308.82
Criminal Career Costs	705.90	705.90	705.90	705.90	705.90
Total	49,807.29	45,958.33	45,958.33	26,061.77	73,552.80

Table 14 displays the estimated costs of residential burglary. On average, the per-incident total cost of burglary was in the neighbourhood of \$6,000 regardless of the measure of central tendency used to compute this total. Criminal justice costs typically accounted for over one-half of the total costs, followed by tangible and direct costs. It is interesting that intangible costs appear to be low despite the frequent observation that people often feel violated when their homes have been burglarized.

Table 14: Cost of Residential Burglary Per Incident in August 1, 2014 Canadian Dollars (N=16)

Cost Category	Mean Cost	Mean Cost (Outliers Removed)	Median Cost	Minimum Cost	Maximum Cost
Victims' Tangible/Direct	1,857.06	1,891.66	1,981.12	306.06	3,235.08
Victims' Intangible	888.06	786.00	670.55	388.01	1,898.40
CJS Costs	2,658.57	2,426.85	2,579.30	1,255.55	4,988.50
Criminal Career Costs	824.64	823.16	823.16	411.80	823.16
Total	6,228.33	5,927.67	6,054.13	2,361.42	10,945.14

Table 15 indicates that the total cost of theft ranged between \$1,330 and \$2,627, depending on the method of central tendency used for the calculations. Here again, we would urge the use of the lower figures due to the impact of outliers on the unadjusted mean costs. Virtually all of the costs were victims' tangible/direct costs or criminal justice system costs.

Table 15: Cost of Theft Per Incident in August 1, 2014 Canadian Dollars (N=14)

Cost Category	Mean Cost	Mean Cost (Outliers Removed)	Median Cost	Minimum Cost	Maximum Cost
Victims' Tangible/Direct	1,199.91	444.45	482.66	86.57	6,846.01
Victims' Intangible	113.32	113.32	113.32	12.09	214.54
CJS Costs	1,181.58	732.29	593.68	231.08	3,479.98
Criminal Career Costs	140.25	140.25	140.25	83.48	197.02
Total	2,627.06	1,430.31	1,329.91	413.22	10,737.55

Table 16 shows that, regardless of the measure of central tendency, the estimated cost of fraud was approximately \$45,000. The costs converged due to the small sample size. The totals were susceptible to influence by extreme values due to the small number of cases. For example, one Chilean study put the victims' tangible costs at \$77,543, which increased considerably the tangible cost to victims. None of the studies provided data on victims' intangible costs; however, such costs are likely to be less significant in the case of property crimes.

Table 16: Cost of Fraud Per Incident in August 1, 2014 Canadian Dollars (N=4)

Cost Category	Mean Cost	Mean Cost (Outliers Removed)	Median Cost	Minimum Cost	Maximum Cost
Victims' Tangible/Direct	40,848.22	40,848.22	40,848.22	4,153.75	77,542.68
Victims' Intangible	No Data	-	-	-	-
CJS Costs	3,384.37	3,384.37	3,384.37	1,484.10	5,284.64
Criminal Career Costs	797.77	797.77	797.77	797.77	797.77
Total	45,030.36	45,030.36	45,030.36	6,435.62	83,625.09

Costs of Criminal Justice Processes

Table 17 presents the per incident criminal justice system costs for different offences. Homicide imposed by far the heaviest economic burden on the justice system at a cost of \$371,514 - \$400,000, depending on the measure of central tendency used. This fact undoubtedly reflects the higher prosecution and incarceration rates, longer sentences, and higher solution rates for this offence. Sexual assault/rape and aggravated assault followed at a cost to the justice system of \$13,098 - \$15,416 and \$10,489 - \$15,399, respectively. The least costly offences with regard to

the criminal justice system were theft and residential burglary which cost the system \$594 - \$1,182 and \$2,427 - \$2,659, respectively. Other offences examined in this project were not included in the table due to insufficient information as to their per incident costs. The last two columns of the table display the lowest and highest cost estimates for each offence.

Table 17: Per Incident Criminal Justice System Costs by Offence in \$ Canadian (August 1, 2014)

Offence	Criminal Justice System Costs*	Minimum Cost	Maximum Cost
Homicide	371,514.25 - 399,582.98	56,371.12	738,199.89
Sexual Assault/Rape	13,097.89 - 15,416.16	3,462.45	32,006.40
Assault	4,381.34	691.82	8,070.85
Aggravated Assault	10,489.22 - 15,398.92	6,032.23	33,310.20
Robbery	8,592.67 - 9,385.61	624.03	18,203.72
Motor Vehicle Theft	805.28 - 1,457.97	76.87	4,674.23
Arson**	5,308.82	5,308.82	5,308.82
Residential Burglary	2,426.85 - 2,658.57	1,255.55	4,988.50
Theft	593.68 - 1,181.58	231.08	3,479.98
Fraud	3,384.37	1,484.10	5,284.64

*The ranges in this column are based on the average cost across studies, the adjusted average with outliers removed, and the median.

**Just one study provided justice system costs for arson.

The present study also sought to ascertain the costs of a number of criminal justice processes, from the initial police investigation to incarceration. As indicated in the left-hand column of Table 18, the number of studies providing cost estimates per case or incident was very few as the majority of studies merely reported or estimated the aggregate annual cost of different processes for all offences (e.g., annual policing costs for the entire country). While these aggregate costs have been captured in this study, they provide little insight into economic costs on their own as they will vary by the population of a country, crime rate, and other factors.

Table 18 provides information in relation to those criminal justice processes where studies obtained cost estimates per individual in contact with the justice system. Caution is urged in the interpretation of these findings data due to the extremely small number of studies on which the information is based. The table shows that custody, especially adult custody and secure custody for youth, is the most costly item. Adult custody or custody where the inmate population was unspecified averaged \$81,820 per prisoner annually across the studies. Secure custody for youth cost \$51,742 per youth and \$65,526 per contact. Open custody for youth was much less costly at \$3,292 and \$926 per youth and per contact, respectively. Court/trial proceedings ranged between \$1,445 and \$44,280, depending on whether the unit of analysis was per contact, case, or conviction. Policing in general also varied considerably, depending on whether costs were estimated by case, incident, or arrest. Local custody was determined to be \$29,110 per inmate and remand admissions were \$18,826 per contact. Police warnings/cautions and charging were less costly items at \$1,402 and \$1,049 per contact, respectively.

Table 18: Per Unit Cost of Different Criminal Justice Processes (\$ Canadian 2014)

Criminal Justice Process	Cost	Unit
Police warning/Caution (N=1)	1,402.33	Per contact
Policing in General (N=3)	15,364.34	Per arrest
	2,456.14	Per incident
	1,722.79	Per case
Charge (N=1)	1,048.83	Per contact
Court/Trial Proceedings (N=6)	44,279.80	Per conviction
	6,866.03	Per case
	1,445.06	Per contact
Adult Custody or Custody in General (N=5)	81,819.97	Annual cost per prisoner
Local Custody (N=1)	29,110.40	Annual cost per inmate
Secure Custody for Youth (N=2)	51,741.96	Annual cost per youth
	65,526.07	Per contact
Open Custody for Youth (N=2)	3,292.36	Annual cost per youth
	925.82	Per contact
Remand Admissions (N=1)	18,825.87	Per contact

Factors Associated with Crime and Criminal Justice Costs

What factors influence the estimated costs of crime and of criminal justice processes?

Information was collected on a limited number of variables to determine whether they may have influenced costs. This analysis was limited to understanding the costs of crime as just a modest number of studies provided unit costs for criminal justice processes.

We examined national differences in the per incident cost of crime (Table 19). All values were in 2014 Canadian dollars. As the table indicates, none of the Canadian studies included in this project provided breakdowns by incident for different categories of crime. Studies conducted in the United States reported the highest costs of crime, with a per incident average of over \$1.1 million. This cost was approximately twice the average cost of a crime in New Zealand and more than twice the cost of an offence in the United Kingdom. The mean cost of a crime in Australia was about a quarter of the cost of an offence in the United States. Poland was an outlier, as the average cost of a crime was \$3,431, although the results were based on just one study. The substantially higher per incident cost of crime in the United States may be due, in part, to longer prison sentences, different methods used in estimating costs, and/or a difference in the mix of offences committed in the United States.

To test the idea that the higher costs per offence may be due to a different mix of offences rather than higher costs, a separate analysis was conducted in which the offence was held constant. The offence examined was homicide and Table 20 shows that the cost of each homicide in the United States is estimated to be almost double the cost in New Zealand, more than double that of a homicide in the United Kingdom and more than triple that of a homicide in Australia. Therefore, national differences in crime costs remain about the same when the type of offence is held constant.

Table 19: Per Incident Estimated Cost of Crime (in 2014 \$ Canadian) By Country

Country	Average Per Incident Cost of Crime
Canada	No cases reporting per incident crime costs
United States (N=85)*	1,116,233.78
United Kingdom (N=20)	499,124.35
Australia (N=18)	263,461.06
New Zealand (N=9)	570,213.11
Poland (N=6)	3,431.17

*The number of cases listed in parentheses exceed the number of studies as many of the studies provided cost estimates for multiple offences.

Table 20: Per Incident Estimated Cost of Homicide (in 2014 \$ Canadian) By Country

Country	Average Per Incident Cost of Homicide
Canada	No relevant studies
United States (N=10)	7,481,494.50
United Kingdom (N=3)	3,141,397.67
Australia (N=2)	2,338,517.13
New Zealand (N=1)	4,657,886.88
Poland	No relevant studies

Table 21 indicates that the cost of crime varies greatly according to the segment of the population serving as the basis for the estimates. Studies covering the adult population only estimated that the average cost of a crime is over \$2.2 million. The removal of one enormous outlier, a value of \$20 million in an estimate of homicide, brings the average cost of crime for adults to less than \$500,000. Studies of youth estimate the average cost of an offence at \$34,782. Studies covering adults and youth estimate that the cost of an offence is close to \$1 million. While it would be desirable to determine the reasons for the enormous difference in the cost of crimes involving adults or youths, the number of studies limited to youth was too small to conduct an analysis in which the type of offence was held constant. A major confounding variable appears to be that just one study of youth included in this project provided cost estimates for homicide, whereas several studies of adults did so and the costs of homicide are estimated to cost many times that of other offences. Thus, the difference in the costs of crime when adults and youth were compared may have been due, in part at least, to differences in the offences covered by these studies.

More research is required on the cost of youth crime. If we accept the findings at face value, they suggest that an older population will increase criminal justice system expenditures. However, this may be offset to some extent by the propensity of young people to be more active in crime. Further confusing this issue is the fact that justice system expenditures in Canada have not followed the crime rate, as they have risen as the crime rate has declined over the last decade (Brantingham et al., 2014). Further study is required of the impact of the aging of the population on the anticipated costs of crime.

Table 21: Per Incident Estimated Cost of Crime (in 2014 \$ Canadian) By Population

Segment of Population Covered in Study	Average Per Incident Cost of Crime
Adult Only (N=18)*	2,281,575.22
Youth Only (N=7)	34,781.71
Adult and Youth (N=62)	933,124.69

*Cases can exceed the 65 studies as there can be more than one cost estimate per study.

Table 22 displays the average per incident cost per crime for each costing method. In many studies, more than one costing method was used, making it difficult to isolate the impact of each method on cost estimates. The dollar figures nevertheless indicate the average cost of one offence when each costing method has been used. The table suggests that the costing method may be a factor in the cost of crime figures obtained. Studies in which contingent valuation was used yielded the highest cost estimates at over \$1.2 million per offence. Accounting-based and cost of illness approaches yielded average per incident costs of \$840,366 and \$778,084 per crime, respectively. Studies in which victimization surveys and court/jury awards were used to generate crime cost estimates yielded per incident costs of \$627,905 and \$618,630 per crime, respectively. Thus, contingent valuation, which gauges what people are willing to pay to avoid an offence, seems to generate cost of crime figures that are about twice those yielded by court/jury awards and victimization surveys. This finding may not be surprising in light of the criticism that the contingent valuation approach taps a hypothetical or “what if?” scenario, that is, what people say

they are willing to pay to reduce crime when they know they are not actually being asked to pay that amount.

The analysis above indicates that the countries in which studies are undertaken, the age of the population covered, and the offences being considered may all influence the cost estimates obtained. Before concluding that the costing method may also influence the estimates obtained, it may be instructive to attempt to rule out these other influences.

**Table 22: The Relationship Between Costing Methods and Per Incident Crime Costs
(2014 \$ Canadian)**

Costing Method	Average Per Incident Cost of Crime
Accounting-based (N=113)*	840,365.78
Court/Jury Awards (N=51)	618,630.24
Contingent Valuation/WTP (N=45)	1,223,488.89
Cost of Illness (N=46)	778,084.22
Surveys (N=100)	627,905.38

*The number of cases in this column exceeded the number of studies as many studies provided cost estimates for more than one offence.

Table 23 examines the impact of the costing method in the case of one offence, homicide, thereby nullifying the influence of the offence on the cost estimates. The figures continue to vary by costing method, although their order, in terms of the method yielding the highest cost estimates, differs from that found when all offences were included in the analysis. Contingent valuation/willingness to pay continued to yield the highest cost estimates, followed by court/jury awards and accounting-based methods. Approaches based on cost of illness yielded the lowest figures. Contingent valuation yielded more than double the per incident estimates of homicide than the cost of illness approach.

Table 23: The Relationship Between Costing Methods and the Per Incident Cost of Homicide (2014 \$ Canadian)

Costing Method	Average Per Incident Cost of Homicide
Accounting-based (N=14)	5,547,479.73
Court/Jury Awards (N=4)	6,621,265.00
Contingent Valuation/WTP (N=6)	8,552,745.00
Cost of Illness (N=5)	3,915,310.00
Survey (N=11)	5,260,659.10

In another analysis, only American studies were included in order to neutralize the influence of national differences on the per incident cost of crime (Table 24). Studies conducted in the United States were sufficient in number to permit an analysis comparing the influence of costing methods on the cost of crime. The table shows that the method of contingent valuation continued to yield the highest figures followed by accounting-based methods. The values of crime were lowest when court/jury awards were used as the basis for the cost estimates.

Table 24: The Relationship Between Costing Methods and Per Incident Costs of Crime (2014 \$ Canadian) for US Studies Only

Costing Method	Average Per Incident Cost of Crime
Accounting-based (N=60)	1,251,400.70
Court/Jury Awards (N=51)	619,858.00
Contingent Valuation/WTP (N=39)	1,411,190.08
Cost of Illness (N=35)	957,092.57
Survey (N=56)	828,412.02

Conclusions and Recommendations

This project identified a total of 65 studies that provided original data on the costs of crime and/or of specific criminal justice processes. The majority of these studies were published since 2000 and at least a third were undertaken or commissioned by government agencies. More than half of the costing studies were conducted in the United States. Researchers in the United Kingdom and Australia conducted another quarter of the studies. Three studies were conducted in Canada; however, none of these projects generated per incident costs of specific crimes. Where it was specified, the population used to develop cost estimates usually comprised adults or a combination of adults and youth.

Many studies employed several cost estimation methods. Accounting-based methods and crime victimization surveys were used in cost estimation in about 70 % of the studies. Cost of illness analyses were used in just under half the studies. Contingent valuation, which probes the amount of dollars taxpayers are willing to pay to avoid a specified offence, was used in almost a quarter of the studies and jury or court-based awards were used in cost estimation in one-sixth of the studies.

Across the studies, the costs of crime varied enormously by offence. Homicides were estimated to cost between \$4.8 and \$5.9 million, depending on the measure of central tendency used. Sexual assaults/rapes were estimated to cost around \$136,000 – \$164,000 and aggravated assaults cost between \$99,000 and \$167,000, depending on the measure used. Robbery ranged between \$28,000 and \$92,000. On the low end, the average residential break-in was estimated to cost about \$6,000 and theft, on average, cost between \$1,300 and \$2,600. The total estimated cost of several offences (e.g., assault) varied greatly due to the sensitivity of the arithmetic mean to outliers.

Criminal justice costs varied considerably. Adult custody or custody where the inmate population was unspecified averaged \$81,820 per prisoner annually across the studies. Secure custody for youth cost \$51,742 per youth and \$65,526 per contact. Open custody for youth was much less costly at \$3,292 and \$926 per youth and per contact, respectively. Local custody was determined to be \$29,110 per inmate and remand admissions were \$18,826 per contact. Court/trial proceedings ranged between \$1,445 and \$44,280, depending on whether the unit of analysis was per contact, case, or conviction. Policing in general also varied considerably, depending on whether costs were estimated by case, incident, or arrest. Arrests cost \$15,364, while police warnings/cautions and charging were less costly items at \$1,402 and \$1,049 per contact, respectively.

Crime cost estimates also varied by country, age, and costing method. Studies conducted in the United States reported the highest costs of crime, with a per incident average of over \$1.1 million. This cost was approximately twice the average cost of a crime in New Zealand and more than twice the cost of an offence in the United Kingdom. The mean cost of a crime in Australia was about a quarter of the cost of an offence in the United States. Poland was an outlier, as the average cost of a crime was \$3,431, although the results were obtained from just one study.

To test the idea that the higher costs per offence in certain countries may be due to a different mix of offences rather than higher costs, a separate analysis was conducted in which the offence

(homicide) was held constant. When the offence was held constant, the costs of each homicide in the United States was still the highest at almost double the cost in New Zealand, more than double that of a homicide in the United Kingdom and more than triple that of a homicide in Australia. Therefore, factors other than the different mix of offences appear to be responsible for the cross-national differences observed.

The cost of crime varied considerably according to the segment of the population serving as the basis for the estimates. Studies covering the adult population estimate that the average cost of a crime is over \$2.2 million, although this figure would fall below \$500,000 with one major outlier removed. By contrast, studies of youth estimate the average cost of an offence at \$34,782. Studies covering both adults and youth estimate that the cost of an offence is close to \$1 million.

The costing method itself may be a factor in the cost of crime figures obtained. Studies in which contingent valuation was used yielded the highest cost estimates at over \$1.2 million per offence. Accounting-based and cost of illness approaches yielded average per incident costs of \$840,366 and \$778,084 per crime, respectively. Studies in which victimization surveys and court/jury awards were used to generate cost estimates yielded per incident costs of \$627,905 and \$618,630 per crime, respectively. Thus, contingent valuation, which gauges what people are willing to pay to avoid an offence, seems to generate cost of crime figures that are about twice those yielded by court/jury awards and victimization surveys.

The costing method continued to make a difference when offence was held constant. When only homicide cases were considered, the figures continued to vary by costing method, although their order, in terms of which method yields the highest cost estimates, differed from that found when all offences were included in the analysis. Contingent valuation/willingness to pay continued to yield the highest cost estimates, followed by court/jury awards and accounting-based methods. Approaches based on cost of illness yielded the lowest figures. Contingent valuation yielded more than double the per incident estimates of homicide than the cost of illness approach.

In another analysis, only American studies were included in order to hold the influence of country constant on the per incident cost of crime. The method of contingent valuation continued to yield the highest figures followed by accounting-based methods. The values of crime were lowest when court/jury awards were used as the basis for the cost estimates.

Challenges and Dilemmas in Costing Research

In the end, offence, country, age, and costing method all appeared to play a role in the cost of crime estimates. The analysis of crime and justice system costs was confronted with a number of methodological challenges, including:

- The use of different cost categories. While some studies distinguished between victims' tangible and intangible costs, others did not use this language or focused on subcategories of these, such as direct victim costs or pain and suffering. This matter is not just an issue of terminology. Rather, different studies were sometimes measuring different items under the same broad category.

- While some studies were comprehensive, addressing victims' tangible and intangible costs, criminal justice costs, and criminal career costs, others focused on just one or two cost categories.
- While many studies provided per incident costs of crime, others merely calculated aggregate societal costs.
- There were differences in the definition of certain crimes across countries. In Canada, sexual assault refers to a wide range of behaviour from non-consensual sexual touching to the most brutal assaults involving forced sexual intercourse. In other countries, sexual assault includes a narrower range of behaviours.
- Apart from definitional differences, some studies broke offences down into very specific categories. For example, the coding form contained the categories of theft, grand theft, and petit theft. Some studies added categories such as bicycle theft, household theft, and personal theft. In such cases, we would provide ranges for theft, from lowest to highest, and we used the midpoint of the ranges for the cost calculations.
- Costing methods varied across studies. In addition, while some studies relied on one method, others used several methods. Therefore, it was difficult to assess the impact of the method itself on the cost estimates, as the impact of each method could not easily be isolated.
- Costing studies tended to exclude certain intangible costs that were especially difficult to quantify, such as the fear of crime.
- Many publications failed to make explicit certain aspects of a study, such as the age of the population that served as the basis for the cost estimates.

Several theoretical considerations warrant consideration in the interpretation of the findings of costing studies.

Firstly, are all financial losses costs to society? Economists refer to certain crimes as illegal transfers rather than costs. For example, a theft of \$100 is a loss to the victim but an equivalent gain to the offender. In this study, we adopted the notion that they are costs.

Secondly, criminal justice system expenditures cost taxpayers billions of dollars each year, yet police officers, prosecutors, judges, and correctional employees all pay income as well as other taxes and their incomes are invested in the economy. Arguably only the net costs, not the total costs, of the justice system should be counted. We did not encounter any studies that have examined net costs.

Thirdly, it may even be argued that some community benefits accrue from crime (Walker, 1997). Some individuals may become more productive or better citizens due to justice system interventions. For others, crime may be an alternative to claiming social welfare benefits. Is there any merit to the argument that crime may sometimes be beneficial to society or an alternative to other expenditures society would otherwise incur?

Recommendations

A Need for Canadian Research – This literature review did not uncover a single Canadian study in which per incident costs of specific crimes were estimated. Canadian research is desperately needed to fill this gap, as this study has shown that cost estimates for crimes vary considerably across nations. One cannot simply apply estimates from the United States, Australia, the United Kingdom, or New Zealand to the Canadian context.

More Comprehensive Studies Required – Just a fraction of the studies were comprehensive ones that estimated the different categories of costs (victims' tangible and intangible, criminal justice system costs, and criminal opportunity costs) of major crimes and, on that basis, generated overall per incident costs for those crimes. More of these studies are needed as they have the advantage of using a uniform method for costing each crime. Hence, the costing method used is not a confounding variable in the calculation of the relative costs of different crimes.

Multiple Costing Methods Should Be Used – While the costing methods used to estimate the costs of different offences should be the same, multiple methods should be selected to establish a range in costs rather than a precise number.

Conservative Estimates Should Be Used – This study found that a small number of extreme values (outliers) often had a significant impact when the average costs of an offence were computed across studies. However, with the exception of the offence of assault, the estimated total costs of offences did not diverge by much when the median or an adjusted average, with outliers removed, was computed. It is recommended that these more conservative, lower estimates be used and that the standard arithmetic mean be avoided when costs are averaged across studies.

Additional Studies Required – In addition to Canadian research and more comprehensive costing studies, the present review identified a need for more studies on the costs of youth crime and interventions, as well as more studies of the costs of specific justice system processes. Furthermore, additional analyses are required regarding the impact on costs of offence type, costing methods, and of the jurisdiction/country being considered.

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