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**THE COSTS OF POVERTY IN QUÉBEC
ACCORDING TO THE MODEL PROPOSED BY
NATHAN LAURIE**

Centre d'étude sur la pauvreté et l'exclusion

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Summary

In this document, we attempt to gauge the costs of poverty in Québec by applying one of the models identified in our review, specifically the model put forward by Nathan Laurie and published by the Ontario Association of Food Banks in 2008. As a recent study set in the Canadian context, the method applied can be transposed relatively faithfully to Québec realities.

First, a review of the scientific literature dealing with the costs of poverty here and elsewhere is carried out. Next, we present the selected methodology, which is based on the model used to gauge these costs. Finally, the various costs of poverty assessed using this model, of which the main ones are listed below, are then estimated:

- Remedial costs, or those associated with treating the symptoms and consequences of poverty, especially costs related to the health and criminal justice systems as well as social assistance;
- Intergenerational costs, or future costs that society will have to pay for children currently living in poverty and who will grow up to be poor like their parents;
- Opportunity costs, or those costs stemming from the loss of earnings of persons living in poverty. They also include costs that society pays for failing to address the root causes of poverty.

Our application of the model is based on the available sources of data. By distinguishing between individual costs and social costs, we obtained the following results for 2008 (in billions of dollars):

Types of Costs	Individual Costs	Social Costs	Total	Percentage of GDP
1. Remedial costs		4.7 - 4.9	4.7 - 4.9	1.7 - 1.8
2. Intergenerational costs	0.7 - 0.9	0.07 - 0.09	0.8 - 1.0	0.3 - 0.4
3. Opportunity costs	9.9 - 10.8	0,3	10.2 - 11.1	3.8 - 4.1
Total	10.6 - 11.7	5.1 - 5.3	15.7 - 17.0	5.8 - 6.3

The results of this analysis suggest that, for the aspects evaluated, poverty costs Québec society as a whole between \$15.7 billion and \$17.0 billion a year, or from 5.8% to 6.3% of its real GDP. Social costs alone are estimated at over \$5 billion a year.

Foreword*

This working paper was prepared in response to a request from the Comité consultatif de lutte contre la pauvreté et l'exclusion, which wished to determine the costs of poverty in Québec.

Our estimation of these costs is based on a review of the scientific literature and the application to Québec of one of the models identified, specifically the model put forward by Nathan Laurie and published by the Ontario Association of Food Banks in 2008.

Without losing sight of our goal of coming up with an exact figure, our main objective is to stimulate discussion about the costs and consequences of poverty for society as a whole. It is recognized that any model of this kind is based on a number of postulates and reasoning that cannot help but be imperfect.

* We wish to express our sincere thanks to Nathan Laurie, who provided sound advice on use of his model.

We would also like to thank Liz Durden, Mara Baltais and Jelena Markovic, interns in the Interprovincial Exchange Program for university students, for their assistance with the literature review.

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1. Introduction

Poverty has adverse effects on the well-being of anyone who experiences it. However, beyond such personal effects, it also has a financial impact on society as a whole.

For example, children born into families living in poverty are more likely to drop out of school. And dropping out has repercussions on individuals, families and society as a whole. Moreover, persons living in poverty are at greater risk of falling ill and dying prematurely, which also puts pressure on our health and social services.

Despite significant progress in the fight against poverty, there were still in 2008 nearly 726,000 people in Québec, including 138,000 children, living in households unable to provide for their basic needs, based on the Market Basket Measure (MBM). This indicator serves as a benchmark for monitoring poverty in terms of the ability to provide for one's basic needs. How much does their poverty cost them? What is the cost for Québec society? While we acknowledge that it is impossible to calculate an exact price for some of the human and social harm inflicted by poverty, our initial premise is that even though some observers may feel that the cost of taking action to combat poverty is very high, failing to take any such action can also be costly because of the inherent effects of poverty.

In this study, we attempt to gauge those costs based on a review of the scientific literature and our application of one of the models identified, namely the model put forward by Nathan Laurie¹ and published by the Ontario Association of Food Banks in 2008. As a recent study on this issue in the Canadian context, the method can be transposed relatively faithfully to Québec realities.

In the following section, we summarize the literature which deals with the costs of poverty here and elsewhere. In Section 3, we present the methodology used. In Section 4, we estimate the various costs of poverty determined using the selected model, including health system costs, crime-related costs, intergenerational costs and economic losses.

1. Nathan Laurie was a university professor of applied economics for over 30 years. He has also worked as an advisor to the federal government (specifically to the Minister of Finance in the government of Pierre Elliot Trudeau), a senior researcher (Director of Forecasts at the Conference Board of Canada) and a member of the *Toronto Star* editorial team, from 1984 to 2008.

2. Literature Review on the Costs of Poverty

According to the literature consulted, a few studies have attempted to determine the economic costs of poverty in general, the costs of child poverty, or the costs for specific sectors such as education, health and justice. Some of these studies were carried out in the United States, Great Britain and Canada.

One of the few Canadian studies that attempted to determine the economic and social costs of poverty is the study published by the Ontario Association of Food Banks in 2008 (Laurie, 2008). Although the study's goal was to gauge the economic and social costs of poverty in Ontario, the author also determines those costs for the whole of Canada. Basing his estimates on empirical studies (Holzer et al., 2007; Hirsch, 2008), he seeks to determine the economic and social costs of the many consequences of poverty. His model shows that this is a relatively complex operation, reflecting the complexity of the real-life situation. In addition, the author estimates the share of public funds allocated to the health and criminal justice systems that can be attributed to poverty. He also calculates the economic losses resulting from unemployment, underemployment, and low education and skill levels which can be attributed to low income. Three categories of costs are analyzed:

- **Remedial costs** incurred in treating the symptoms and consequences of poverty, especially those related to the health and criminal justice systems as well as social assistance;
- **Intergenerational costs** of poverty, or the future costs that society will have to pay for children currently living in poverty and who will grow up to be poor like their parents;
- **Opportunity costs**, or those costs stemming from the low earnings of persons living in poverty. This category also includes the costs that society pays for failing to address the root causes of poverty.

Opportunity costs measure the loss of goods that a person foregoes by allocating his or her available resources to another use. The expression "alternative costs" is also used in this sense. These costs are always based on the value of the goods foregone. They reflect a lack of earnings caused by the renunciation of a possibility considered to be the next best after the one chosen.²

The author concludes that by eliminating poverty, Ontario could have saved between \$32.2 billion and \$38.3 billion, or 5.5% to 6.6% of its gross domestic product (GDP) in 2007.

A recent study on the costs of poverty in British Columbia, which also applied Laurie's model, albeit only partially, arrived at results that were somewhat lower (Ivanova, 2011). The author gauged the costs to be between \$8.1 billion and \$9.2 billion for the province, or between 4.1% and 4.7% of its gross domestic product (GDP) in 2008. This finding can be attributed to the fact that the author reproduces almost textually the same calculations for remedial costs (except for

2. For example, a loss of earnings can be quantified for a person who delays entering the labour force in order to study. He or she may decide to accept that loss of earnings on the grounds that his or her studies will eventually enable him or her to make up for it.

social assistance costs) and opportunity costs. She also disregards intergenerational costs because they are mid- or long-term costs.

However, she estimates these costs on the basis of the same assumptions as Laurie (between 20% and 25% of children do not manage to escape their parents' poverty) and acknowledges that it is important to consider them when modelling the costs of poverty, along with other costs that are harder to quantify (e.g., neighbourhood quality of life, greater polarization, and the loss of social cohesion). Nevertheless, she prefers not to include them in her overview since the real costs may be underestimated.

In Calgary, in 2004, an estimation of the external costs of poverty was also carried out by Shiell and Zhang (2004). "External costs of poverty" refers to costs incurred by people other than those who live in poverty. Based on available data on the health and education systems, criminal justice and welfare and other social programs, the authors endeavour to determine poverty's impact on members of society beyond those deemed "poor." The estimation is also based on certain assumptions where information is not available or usable. The study does not deem welfare benefits to be costs, since they are merely a transfer of resources from one individual or group to another. On the other hand, the study does take account of the costs associated with the administration and financing of income support programs because, if there were no poverty, they would not exist. The study concludes that poverty in Calgary costs society at least \$8 million a year in health and education costs. According to the authors, the cost could potentially exceed \$50 million per year if poverty has an impact on other aspects of the economy.

The National Council of Welfare (NCW) has attempted to determine the social costs of poverty (NCW, 2001). The report reviews some of the effects of poverty on healthcare, justice, human rights and development, labour and productive capacity, and child development. It presents a thorough overview of the scope of the costs of poverty, but does not quantify them. The NCW also published bibliographies on the topic in 2010 (NCW, 2010a and 2010b).

The authors of a 2007 study by the Center for American Progress estimate that, for the United States, the costs associated with child poverty are at least \$500 billion a year due to the increase in crime, economic losses and the fact that children living in poverty are more likely to suffer from poor health when they are adults (Holzer, Schanzenbach, Duncan and Ludwig, 2007). These costs represent nearly 4% of American GDP. In determining the costs of child poverty, the authors base their findings on studies that found statistical correlations between growing up in families living in poverty and income, propensity to commit a crime, and quality of life during adulthood (Ludwig and Sawhill, 2006; Duncan, 2006). The authors described their assumptions as "moderate."

Two studies conducted in Great Britain looked at the costs of child poverty.

In the first study, the costs were estimated to be £25 billion a year, or 2% of GDP (Hirsch, 2008). This study is based on an economic model and provides two estimates which, according to the author, use a conservative approach in order not to exaggerate the results. The first estimate clearly illustrates that children living in poor families are less healthy and have more learning difficulties. This necessitates additional public expenditures of £12 billion on social services. The

second estimate, at £13 billion, represents the long-term economic costs resulting from economic losses and the loss of income tax revenue attributable to children who have lived in poverty and who have now reached adulthood. The author concludes that eliminating poverty would have a twofold advantage: first, the families' quality of life would be improved, and second, society would no longer have to spend exorbitant amounts.

In the second study, the authors emphasize the cost associated with growing up in poverty (Blanden et al., 2010). The study was based on longitudinal data, meaning that the individuals in question were contacted at several occasions from childhood to the age of 59.

First, the authors seek to gauge the following factors for subjects who lived in poverty at the age of 16:

- the loss of earnings for various observable age cohorts (from 18–24 years to 50–59 years);
- employment prospects;
- tax revenues not collected by the state.

This first model produces an estimate exceeding 1% of GDP.

Next, the authors endeavour to assess the probability for each subject of:

- engaging in criminal acts (cost of £31 billion);
- suffering from poor health (partial data that show ill health among 30-year-old subjects);
- having a reduced sense of well-being (at age 16, poverty is associated with lower levels of happiness).

The somewhat imprecise data do not allow the authors to translate these costs into dollar figures, but do enable them to affirm that their own estimate, at over 1% of GDP, is far less than the actual amount.

Other studies have dealt with more specific costs associated with poverty, especially those related to dropping out of school, the health system and crime.

Dropping out of school

No doubt poverty is not always a factor behind engaging in crime or dropping out of school, but it can play at least a partial role. For example, in her study on the costs of dropping out of school in Canada, Hankivsky (2008) presents the economic costs of abandoning secondary school studies to individuals and the government. Based on economic models used to calculate the financial costs of dropping out of secondary school in the United States (Levin et al., 2007; Levin, 2005) and a dropout rate of 17%³ for those aged 20 and over in Canada, the author calculates the tax implications in connection with expenditures for social services and programs,

3. Nearly 17% of Canadians aged 20 or over have not completed their secondary studies (Mang, 2008).

education, employment and the fight against crime, not to mention the economic loss and health repercussions. The author estimates the annual cost of dropping out in Canada to be \$37 billion (in 2008 dollars). She suggests that an increase of just one percentage point in the secondary school graduation rate would generate savings of nearly \$8 billion a year.

The costs of dropping out were also studied in a recent Québec study (Fortin, 2008). After 45 years of labour force participation, the cost for a dropout who does not obtain a secondary school diploma is estimated at \$439,000 in 2008 dollars. The Groupe d'action sur la persévérance et la réussite scolaires au Québec (2009) support the findings provided in Fortin's study.

The author distinguishes two kinds of dropout-related costs. First, there are the social costs (welfare, health, education, etc.) incurred in supporting non-graduates; second, there are the economic costs comprising the economic losses incurred by non-graduates and the loss of tax revenues for the government. The author mentions that if the non-graduation rate dropped from 12% (Statistics Canada's data for 2006) to 9% (the Ontario non-graduation rate in 2006), Québec would collect \$1.3 billion more a year in income taxes. The study's findings are based on the gross annual income of a typical worker without a high school diploma, which is roughly 25% lower than for a high school graduate.

In their study on the costs of dropping out of high school in California, Belfield and Levin (2007) estimate the economic losses attributable to dropping out of school to be \$46 billion for every cohort of 120,000 20-year-olds who have not completed their secondary studies. Those costs represent 2.9% of California's GDP. The authors estimate that over the course of his or her working life, a person with a high school diploma earns an average of \$290,000 more than a dropout and pays \$100,000 more in income tax. The authors suggest that increasing the high school graduation rate would cut violent crimes by 20%, property offences by 11%, and drug-related crimes by 12%. They conclude that over two thirds of dropouts will use food banks over the course of their working life. Moreover, a person who has a secondary school diploma in California has a 68% greater chance of never going on social assistance than a high school dropout.

Health system

A relationship between personal income and public health expenditures has been observed in Manitoba (Mustard et al., 1998). The analysis is based on survey data from a sample composed of 16,627 households, or 47,935 individuals. The authors observed relationships with income, according to data from the 1986 census and information on the Manitoba health insurance plan for fiscal year 1986–1987. In Canada, the quintile with the lowest income accounts for close to 31% of all public health expenditures, whereas the richest quintile accounts for only 14.6%. The findings of this analysis were applied by the Canadian Institute for Health Information in its recent estimates regarding health expenditures. They were also used in studies on the costs of poverty in Ontario (Laurie, 2008) and Calgary (Shiell and Zhang, 2004).

In Québec, in the *Troisième rapport national sur l'état de santé de la population du Québec* (Dunnigan et al., 2007), it was estimated that there would be approximately 13,500 fewer hospitalizations every year if all young people under 18 years of age had the same hospitalization

rate as the most well-off quintile of young people. Moreover, poverty is associated with a higher risk of having insufficient birth weight, suffering from asthma and otitis, being overweight starting at age 6, having poor dental health, becoming pregnant while a teenager and dropping out of school. Too often, growing up in conditions of poverty has a major impact on a child's development and health as an adult. Clearly, not all children are born equal in socioeconomic terms, particularly when their mothers are under 20. The calculations are based on a number of indicators, including Pampalon and Raymond's material and social deprivation index (2003). However, the authors restrict their study to children under 18 and draw up a list of poverty's effects on children's health without assessing their financial impact.

Crime

Although there is a correlation between poverty and crime, no study has established a causal link between the two (Bourguignon, 2001; McCollister et al., 2010). What's more, it is important to distinguish between poverty per se and the accompanying income and standard-of-living inequalities which have a known impact on the crime rate. Various authors from the U.S. (Ludwig et al., 2001) have concluded that giving poor families the opportunity to live in less-disadvantaged neighbourhoods tends to reduce the violent behaviour of young teenagers. Other researchers (Kaplan et al., 1996) have confirmed that the crime rate is higher in communities with significant income disparity. According to the National Council of Welfare (2000), more economically disadvantaged children may have problems at school, and it has been shown that academic failure and the likelihood of becoming a repeat offender are closely linked, to such a degree that, according to the study, scholastic performance during adolescence is the best predictor of juvenile delinquency and adult crime.

Based on census data (1960, 1970 and 1980) on imprisonments, FBI arrest reports (Uniform Crime Reports) and data from the National Longitudinal Survey of Youth (NLSY), the authors of an American study suggest that education significantly reduces the probability that an individual will be involved in a crime (Lochner and Moretti, 2004). The authors judge that an increase of just one percentage point in the secondary school graduation rate for men between 20 and 60 years of age would generate savings of \$1.4 billion in crime-related costs.

In its 2008 report, the Poverty Reduction Coalition in Calgary set out to determine the costs of accusations and incarcerations for non-payment of fines, because over 20,000 people are thought to be imprisoned every year for this reason. The offences in question concerned the non-payment of fines levied against people who had not paid for a public transit ticket. The authors evaluate the cost of incarceration at nearly \$300 million a year for the entire province. This report offers a new perspective by supposing that the persons incarcerated in this case were incarcerated because of their poverty.

3. Methodology

For the purposes of our analysis, we opted for the model proposed by Laurie (2008), which looks at three types of poverty-related costs:

- Remedial costs incurred in treating the symptoms and consequences of poverty, especially those related to the health and criminal justice systems as well as social assistance;
- Intergenerational costs, or the future costs that society will have to pay for children currently living in poverty and who will grow up to be poor like their parents;
- Opportunity costs, or those costs stemming from the loss of earnings of persons living in poverty. This category also includes the costs that society pays for failing to address the root causes of poverty.

The simulations used by every author who has attempted to gauge the economic and social costs of poverty have their limits. They afford us a partial look at the gross impact of poverty. However, the results could be very different if we were able to determine the net impact, which would reflect changes in thresholds or norms as well as system changes brought about by public interventions. Although they offer instructive guidelines, these simulations cannot replace a reality test.

For example, if the average income of every person in the first income quintile could be raised to the level of the second quintile, an estimation technique used in Laurie's model, we would no doubt alleviate absolute poverty, but not make any difference in relative poverty. Similarly, it is impossible to eliminate distribution by quintile: there will always be a poorer quintile, only the threshold will have shifted. For this reason in particular, the model used remains theoretical.

The same holds true for education. If everyone achieved a higher level of education without any changes in prevailing values, the outcome could include various undesirable effects, including an undermining of the value of a diploma. This in turn would necessitate the use of other criteria to access employment or compensate individuals, hence the change in "system." The added value of the additional training would decline accordingly.

Whatever the case may be, and despite the known limits, a simulation based on a recognized model should at least make it possible to obtain a cost estimate for Québec comparable to other estimates based on the same model.

The data that we are using to determine the average disposable income of persons in family units under the low income threshold⁴ based on the Market Basket Measure (MBM) are those used in the Survey of Labour and Income Dynamics (SLID, 2008)⁵.

4. The MBM low-income threshold is the indicator recommended by the Centre d'étude sur la pauvreté et l'exclusion (CEPE) for tracking poverty in terms of the ability to provide for basic needs; this indicator was also accepted and used by the Minister of Employment and Social Solidarity to track progress or setbacks in the fight against poverty.

5. Our data is taken from the master file of the 2008 Survey of Labour and Income Dynamics (SLID).

4. The Costs of Poverty

4.1 Remedial Costs of Poverty

4.1.1 Costs of Poverty for the Health System

The authors of studies that have dealt with the relationship between income and health have noted that low-income individuals are less healthy than others.

In her review of studies that looked at poverty's effects on health, Phipps (2003) identified two categories of studies, namely:

- Those with a micro or individual orientation, according to which personal direct experience of poverty is associated with personal health status;
- Those with a macro or population orientation, according to which living in a society with a more unequal distribution of income is associated with worse population health outcomes.

According to the main findings of studies with an individual orientation, there is a very clear and very strong link between health and personal income. In other words, according to the author, poor health can be attributed to poverty. Even if it is no easy feat to distinguish cause from effect when it comes to poverty and health, numerous statistical correlations show that it is poverty that influences health in most cases (Mullahy et al., 2001; Benzeval et al., 2001). Several studies with a social approach have also confirmed the hypothesis according to which societies characterized by a high degree of inequality also show worse health outcomes.⁶

As we saw above, Mustard et al. (1998) have also demonstrated a relationship between income and public health expenditures. The model has been applied in studies on the costs of poverty in Calgary and Ontario (Shiell and Zhang, 2004; Laurie, 2008). Its findings on the distribution of health expenditures in Canada by income quintile are shown in Table 1, below.

Because of a lack of information about the distribution of health expenditures by income quintile in Québec, we have supposed that the same results can be applied to Québec. We have applied this distribution to the latest health expenditure estimates found in the 2009 report of the Canadian Institute for Health Information⁷. For the purposes of our calculations, we presumed that health costs would decline if the average income of the poorest quintile were raised to the level of the second quintile. According to this assumption, Québec's health expenditures could decrease by \$1.7 billion a year, for savings of 6.5%.

6. In regard to the socioeconomic costs of inequalities (distinct from the costs of poverty), researchers Wilkinson and Pickett (2009) have demonstrated a close correlation between, on the one hand, economic inequalities and, on the other, life expectancy, literacy levels, incarceration rates, substance abuse rates, maternal and child health, and a host of other social indicators. In fact, their work shows that the more wealth is evenly distributed in a given society, the more likely people (both poor and rich) are to benefit from the situation.

7. According to the 2009 report of the Canadian Institute for Health Information, Québec's public health expenditures are estimated at nearly \$26 billion in 2008.

Table 1: Impact of the Reduction in Poverty on Public Health Expenditures, Québec, 2008

Income Quintile	Share of Public Health Expenditures in Canada (%)	Distribution of Health Expenditures in Québec in 2008 (in billions of dollars)
1st	30.9	8.0
2nd	24.2	6.3
3rd	16.2	4.2
4th	14.1	3.7
5th	14.6	3.8
Total	100.0	26.0
Estimated cost of the reduction in public health expenditures depending on the degree of reduction in poverty		
If first-quintile expenditures were reduced to the level of second-quintile expenditures		\$1.7 billion, or 6.5% of Québec's health care expenditures

Sources: Mustard, C.A. et al., (1998); Canadian Institute for Health Information (2009); Centre d'étude sur la pauvreté et l'exclusion (CEPE) compilation, August 2011.

4.1.2 Crime-Related Costs of Poverty

The correlation between weak literacy levels and crime was demonstrated in a study conducted by Statistics Canada (2005). The study suggests that literacy levels among incarcerated offenders are significantly lower than among the population as a whole. According to the Ministère de la Sécurité publique (2002), over 61.7% of Québec offenders are dropouts. Its dropout rate measures the percentage of people who abandoned their studies before obtaining a high school diploma.

Crime-related costs are very high in Canada. In 2002–2003, Canada spent \$12.7 billion for police services, courts, legal aid, correctional services for adults and judicial proceedings (Statistics Canada, 2006). Moreover, the Research and Statistics Division of the Department of Justice Canada estimated the costs of prejudice to victims of violent crime and property crime at between \$9.8 billion and \$35.8 billion in 1999. When both types of costs⁸ are added together, the estimated total crime-related costs range from \$22.5 billion to \$48.5 billion per year.

Since literacy is sometimes considered to be the best predictor of involvement in crime, this variable was used in the Ontario study as the indirect link between poverty and crime (Laurie, 2008).

8. Due to a lack of recent estimates of justice expenditures, we have used the available information, which date from 1999 and 2002–2003.

Table 2, below, shows the distribution of literacy quintiles by income quintile in Canada. For instance, the cell corresponding to the bottom quintile for both variables includes just over 8% of the population. In contrast, the proportion of individuals found in the lowest literacy quintile and highest income quintile stands at just 0.8%.

Table 2: Distribution of Literacy Quintiles by Income Quintile in Canada

Literacy Quintile	Income Quintile				
	1st	2nd	3rd	4th	5th
	%				
1st	8.3	5.8	3.4	1.6	0.8
2nd	4.4	5.3	4.4	3.4	2.4
3rd	2.5	3.9	4.8	4.9	4.0
4th	1.9	3.2	4.4	5.2	5.4
5th	1.3	2.4	4.2	4.9	7.4

Note: Based on calculations from the 2003 International Adult Literacy and Skills Survey (IALSS). Literacy refers to document literacy. Income refers to household pre-tax and pre-transfer income. Cell entries correspond to the percentage of observations in the total cell, defined by quintiles of the literacy and income distributions. Numbers in each row and column may not add up to 20 due to rounding.

Source: Statistics Canada (2007b), *Literacy and the Labour Market: The Generation of Literacy and Its Impact on Earnings for Native-born Canadians*. Report published as part of the Adult Literacy Survey, Number 18, catalogue no. 89-552-MWE.

Combining these income-literacy distributions with the probabilities that a person in one of the literacy quintiles will engage in crime generates a new distribution, giving the probabilities that people in each income quintile will be involved in crime (Table 3, below). As in the study by Laurie (2008), we have assumed that there is a relationship between the literacy quintiles and the probabilities of engaging in crime. (The detailed calculations are provided in Point 1 in the Appendix.)

Table 3: Probability of Engaging in Crime by Income Quintile

Literacy Quintile	Probability of Engaging in Crime by Literacy Quintile	Income Quintile				
		1st	2nd	3rd	4th	5th
1st	0.516	0.215	0.150	0.088	0.041	0.021
2nd	0.258	0.057	0.069	0.057	0.044	0.031
3rd	0.129	0.016	0.025	0.031	0.031	0.026
4th	0.065	0.006	0.010	0.014	0.017	0.017
5th	0.032	0.002	0.004	0.007	0.008	0.012
Total	1.000	0.297	0.258	0.197	0.142	0.107

Note: Columns may not add up to 1.000 due to rounding.

Source: Statistics Canada (2007b), op. cit. p. 8; CEPE compilation, August 2011.

We then applied the combined probabilities to the total cost of crime in order to determine the portion attributable to each income quintile (Table 4, below).

Table 4: Impact of the Reduction in Poverty on the Costs of Crime in Québec (in billions of dollars)

Income Quintile	Probability of Engaging in Crime by Income Quintile	Crime Costs in Canada	Crime Costs in Québec (18.5% of Costs for Canada)
1st	0.297	6.7 - 14.4	1.2 - 2.7
2nd	0.258	5.8 - 12.5	1.1 - 2.3
3rd	0.197	4.4 - 9.6	0.8 - 1.8
4th	0.142	3.2 - 6.9	0.6 - 1.3
5th	0.107	2.4 - 5.2	0.4 - 1.0
Total	1,000	22.5 - 48.5	4.1 - 9.1
By raising the first quintile to the level of the second		0.9 - 1.9	0.2 - 0.4

Note: Columns may not add up to 1.000 due to rounding.

Sources: Leung, A. (2004), Statistics Canada (2006); CEPE compilation, August 2011.

Finally, by raising the lowest quintile to the next level, we can determine the reduction in costs of associated crime. Since Québec accounts for 18.5% (see Point 2 in the Appendix) of all crimes committed in Canada, its crime-related savings would be between \$200 million and \$400 million a year.

In some respects, these costs may be underestimated because our calculations are based on direct and non-direct crime costs. Crime statistics underestimate the number of crimes simply because there are a number of unreported crimes. In addition, the psychological effects on the victims of crimes such as domestic violence and child abuse are not included in the estimate.

4.1.3 Costs of Social Assistance Programs

Québec has three social assistance programs:

- the Social Assistance Program, designed to provide last-resort financial assistance to individuals without a limited capacity for employment;
- the Social Solidarity Program, which provides last-resort financial assistance for individuals with a severely limited capacity for employment;
- the Alternative jeunesse Program.

According to the annual report of the Ministère de l'Emploi et de la Solidarité sociale (2009b), these programs cost the Québec government \$2.8 billion in 2008–2009. First-quintile income is to a large degree made up of government transfers, particularly social assistance. As a result, if the income of this quintile were raised to the level of the next-highest, Québec would theoretically save the same amount (\$2.8 billion) in annual financial assistance expenditures on income security. However, with this simulation of raising incomes from the first- to second-quartiles levels, we run into one of the model's limits, since it does not indicate where the higher income levels would come from. In addition, a substantial proportion of individuals with a severely limited capacity for employment would likely continue to require public assistance.

4.1.4 Other Social Costs of Poverty

Other costs, primarily government investments in measures to fight poverty, could be estimated, but determining the share attributable to poverty would require in-depth sector-based studies and exceed the scope of this document.

Various public expenditures in areas such as access to employment and social housing can be deemed to be costs of poverty, but care must be taken to isolate only those portions designed to alleviate or fight poverty. In addition, we can presume that subsidies to community organizations are also a cost of poverty, but gauging the portion of such costs that are poverty-induced would require the ability to distinguish those organizations whose mission, in whole or in part, is to fight poverty. Indeed, such organizations have many objectives and are active on many fronts, including defending rights, literacy and food security, of course, but also health and social services (where poverty is not a factor), sociocultural activities, and so on.

Without being exhaustive, we would have to take a closer look at expenditures in a variety of spheres, all of which were mentioned in the 2010-2015 Government Action Plan for Solidarity and Social Inclusion (2010) and which must not be counted twice: access to employment, health and social services (programs specifically designed for disadvantaged persons and families), social housing (programs facilitating access to low-cost housing for persons and families living in poverty), poverty prevention through education (for instance, as part of the intervention strategy for disadvantaged areas), tax measures for low-income households (solidarity tax credit), assistance to community organizations, and support for Aboriginal initiatives. Even though this is a potential avenue of research that could help complete our estimation, this aspect is not part of the reference study. As a result, the amounts indicated in the Government Action Plan are not considered here.

4.2 Intergenerational Costs of Poverty

In recent years, special attention has been paid to poverty among Canadian children because poverty can be transmitted from generation to generation. According to a Canadian study, the probability that children will inherit their parents' economic status is between 20% and 25% (Fortin and Lefebvre, 1998).

Moreover, in the course of their studies, various authors have observed that there is a relationship between poverty and dropping out of school (Kherroubi et al., 2004, Demers, 2005; Statistics Canada, 2005; Esterle-Hedibel, 2006; Groupe d'action sur la persévérance et la réussite scolaire au Québec, 2009).

4.2.1 Individual Costs of Child Poverty

In 2008, Québec was home to nearly 138,000 children under 18 years of age (9.2%) living under the MBM low-income threshold. Supposing that 20% to 25% of them, or 27,600 to 34,500

children, will live in poverty as adults, their average disposable income will be only \$10,917 a year, based on current income levels (Table 5, below).

However, if these children were able to avoid finding themselves in the same situation as their parents by raising their level of schooling and therefore earning an average income at least equivalent to second-quintile levels, they would receive total additional income of \$391 million to \$488 million a year.

By increasing the graduation rate for these children to 80%, as recommended by the Groupe d'action sur la persévérance et la réussite scolaires au Québec (2009), it would be possible for children living in poverty to achieve, upon reaching adulthood, an average income similar to that of the population as a whole. In that case, their total disposable income would rise by \$718 million to \$890 million a year. These are individual gains which would also benefit Québec's economy.

4.2.2 Social Costs of Child Poverty

Child poverty goes hand-in-hand with a loss of earnings for Québec society. That loss is chiefly composed of income tax revenue that the Québec government could collect if the children living in poverty were able to escape poverty during their working lives.

By raising the education levels of the 20% to 25% of children likely to live in poverty as adults, Québec could boost its revenues by \$72 million to \$90 million a year. The total cost of intergenerational poverty estimated in this fashion is between \$790 million and nearly \$1 billion a year.

Table 5: Impact of the Reduction in Child Poverty, Québec, 2008

	Disposable income (\$)	Provincial income tax (\$)
Average disposable income of persons in family units living below the MBM low-income threshold	10 917	0
MBM average disposable income by quintile		
1st	12 578	0
2nd	25 072	584
3rd	36 705	2 610
4th	53 314	6 146
5th	96 328	17 075
Estimated savings attributable to the reduction in child poverty		
If the average disposable income of low-income persons were raised to the level of the 2nd quintile	(25,072-10,917) x 27,600 to (25,072-10,917) x 34,500 = 391 million to 488 million	(584-0) x 27,600 to (584-0) x 34,500 = 16 million to 20 million
If the graduation rate rose to 80%	(36,705-10,917) x 27,600 to (36,705-10,917) x 34,500 = 718 million to 890 million	(2,610-0) x 27,600 to (2,610-0) x 34,500 = 72 million to 90 million
Total	718 million to 890 million	72 million to 90 million

Note: The simulation is based on the assumption that, of the 138,000 children living under the MBM low-income threshold in 2008, 20% to 25% of this group will still have low incomes in adulthood: 20% of 138,000 = 27,600; 25% of 138,000 = 34,500.

Source: Statistics Canada, Survey of Labour and Income Dynamics, 2008; CEPE compilation, August 2011.

4.3 Poverty-related Opportunity Costs

One of the greatest costs of poverty is the individual opportunity cost to individuals from 18 to 64 years of age⁹ in family units living under the MBM low-income threshold. In this case, Laurie used the entire population of the first quintile, while we preferred—by analogy with his model, but also taking a degree of liberty—to use only the number of people living under the MBM low-income threshold. This choice has the advantage of not overestimating opportunity costs, because not everyone in the first quintile has a low income. This number of people was estimated to be nearly 567,000 in 2008, or 11.3% (Statistics Canada, 2010b). We also estimate the cost of these individuals' poverty to themselves and to Québec society.

9. Here, we consider the working-age population only. However, persons 15 to 17 years old are not taken into account because they are covered in Section 4.2.

4.3.1 Individual Poverty-Related Opportunity Costs for Persons in Family Units

These are individual costs incurred by individuals because of their poverty. To estimate them, we applied the same approach as before. We began by raising the average disposable income (\$10,917) of individuals in family units living under the MBM low-income threshold to the average disposable income of the second quintile (\$25,072, for a difference of \$14,155 X 567,000), which resulted in an economic impact of \$8.0 billion. To complete the exercise with the help of another estimation, we then raised the average disposable income of the first quintile (\$12,578) to that of the second quintile (\$25,072, for a difference of \$12,493 X 567,000), with an economic impact this time of \$7.1 billion (Table 6, below).

These calculations no doubt underestimate the individual costs of poverty, since individuals who are part of family units living under the low-income threshold or in the first quintile would have earnings less than those considered here, with an average of \$10,917 and \$12,578 respectively, if they could not count on additional social assistance income. That income, which totals \$2.8 billion in 2008, is transfer income and not market income. Consequently, the increase in market income associated with eliminating poverty, as measured here, should be \$2.8 billion more. The individual costs of poverty would therefore be between \$9.9 billion and 10.8 billion per year.

Table 6: Impact of the Reduction in Poverty of Persons Living in Family Units, Québec, 2008

	Disposable Income (in dollars)	Provincial Income Tax (in dollars)
Average disposable income of persons in family units living below the MBM low-income threshold	10 917	0
Disposable income by quintile		
1st	12 578	0
2nd	25 072	584
3rd	36 705	2 610
4th	53 314	6 146
5th	96 328	17 075
Estimated savings attributable to the reduction in poverty of persons living in family units		
If the average disposable income of persons living under the MBM low-income threshold were raised to the level of the 2nd quintile	$(25,072-10,917) \times 567,000 = 8.0 \text{ billion}$	$(584-0) \times 567,000 = 0.3 \text{ billion}$
If the average disposable income of the first quintile were raised to the level of the 2nd quintile	$(25,072-12,578) \times 567,000 = 7.1 \text{ billion}$	$(584-0) \times 567,000 = 0.3 \text{ billion}$
Subtotal	7.1 billion – 8.0 billion	0.3 billion
Social assistance	2.8 billion	
Total	9.9 – 10.8 billion	0.3 billion

Sources: Statistics Canada, Survey of Labour and Income Dynamics, 2008; CEPE compilation, August 2011.

4.3.2 Social Costs of Opportunity for Persons in Family Units Living in Poverty

Not only does poverty give rise to opportunity costs for persons in family units living in poverty, but it also creates costs for society as a whole. These are chiefly composed of the income tax revenue that the government loses because of poverty. For the 567,000 persons in family units living in poverty, the Québec government loses over \$300 million in income tax revenue every year (Column 3 of Table 6).

Total costs of opportunity are therefore estimated to be between \$10.2 billion and \$11.1 billion per year.

4.4 Total Poverty Costs in Québec

Table 7, below, shows the total costs of poverty estimated in this analysis. They are presented here broken down into individual costs and social costs.

Table 7: Total Costs of Poverty in Québec, 2008 (in billions of dollars)

Type of Costs	Individual Costs	Social Costs	Total	Percentage of GDP
1. Remedial costs				
Health system		1.7		0.6
Crime		0.2 – 0.4		0.07 – 0.1
Transfers (social assistance)		2.8		1
Subtotal		4.7 – 4.9	4.7 - 4.9	1.7 – 1.8
2. Intergenerational costs	0.7 – 0.9	0.07 – 0.09	0.8 – 1.0	0.3 – 0.4
3. Opportunity costs	9.9 – 10.8	0.3	10.2 – 11.1	3.8 – 4.1
Total	10.6 – 11.7	5.1 – 5.3	15.7 – 17.0	5.8 – 6.3

Source: CEPE compilation, August 2011.

However, the investments needed to reduce poverty have not been estimated. On top of what has already been spent on fighting poverty, how many more billions of dollars must be incurred to make a significant dent in the poverty rate? What should those dollars be spent on in terms of transfers and services? It would no doubt be wise to gain a better idea of the choices made in countries where poverty rates are lowest, while bearing in mind that comparisons are flawed because both circumstances and economic possibilities vary widely from one country to another. Conversely, it would also be interesting to compare ourselves with countries that make no investments and have higher poverty rates.

This question is important, not only in and of itself, but also because the choice of measures influences the costs of poverty. In today's society, initiatives that do not result in a higher labour force participation rate for persons living in poverty will not allow us to reduce opportunity costs, which represent two thirds of the costs of poverty according to the findings of our analysis.

Another point to remember is that the method used does not include the individual and social costs which stem from an inability to save the necessary funds for retirement, which has an impact on the quantity of income available after age 65 and on the make-up of that income. In other words, the model does not take account of the costs of the income support provided to the elderly by the federal Old Age Security program.

5. Conclusion

In this study, we applied the model developed by Laurie (2008) for estimating the costs of poverty to Québec. Our application is based on the available sources of data. Our findings suggest that, for the aspects evaluated, poverty costs the whole of Québec society between \$15.7 billion and \$17.0 billion a year, or between 5.8% and 6.3% of its real GDP. Social costs alone are estimated to be over \$5 billion a year.

The simulation carried out makes it clear that if all other variables are equal, and if we disregard changes in thresholds or norms as well as system effects generated by public initiatives to alleviate or fight poverty, certain costs are inherent to poverty. In theory, the costs in question afford us a partial look at the gross impact of poverty, and not its net effect in real-life situations.

Despite meaningful data from a variety of sources, the economic and social costs of poverty have not yet been gauged scientifically in Québec or anywhere else in the world, and may never be so in a truly satisfactory fashion. This is a complex exercise and it is impossible to factor in every single parameter.

In this regard, the contribution of the scientific community and the expertise of citizens, including individuals living in poverty, remain essential if we are to attempt to take our study further. We have already indicated that among the avenues of research worthy of consideration is the necessity for a more accurate estimation of a number of public expenditures specifically designed to fight poverty, whereas those expenditures are undifferentiated today. More in-depth studies are necessary to determine these costs in a more comprehensive fashion and quantify them more accurately by perfecting the method or using new approaches. It is also important to estimate the direct and indirect benefits of initiatives taken to fight poverty.

Bibliography

- AYDEMIR, Abdurrahman and Mikal SKUTERUD (2005), “Explaining the Deteriorating Entry Earnings of Canada’s Immigrants’ Cohorts, 1996–2000”, *Canadian Journal of Economics*, vol. 38, no. 2, pp. 641–672.
- BELFIELD, Clive R. and Henry M. LEVIN (2007), “The Economic Losses from High School Dropouts in California”, California Dropout Research Project, project no. 1, p. 69.
- BENZEVAL, Michaela and Ken JUDGE (2001), “Income and Health: The Time Dimension”, *Social Science and Medicine*, no. 52, p. 1379.
- BLANDEN, Jo, Kirstine HANSEN and Stephen MACHIN (2010), “The Economic Cost of Growing Up Poor: Estimating the GDP Loss Associated with Child Poverty”, *Fiscal Studies*, vol. 31, no. 3, pp. 289–311.
- BLOOM, Michael and Michael GRANT (2001), *Brain Gain: The Economic Benefits of Recognizing Learning and Learning Credentials in Canada*, Conference Board of Canada, 51 p.
- BOURGUIGNON, François (2001), “Crime as a Social Cost of Poverty and Inequality: A Review Focusing on Developing Countries”, *Desarrollo y sociedad*, September, pp. 61–99.
- CANADIAN INSTITUTE FOR HEALTH INFORMATION (2009), *National Health Expenditure Trends, 1975 to 2009*, Ottawa, 155 p.
- COMITÉ CONSULTATIF DE LUTTE CONTRE LA PAUVRETÉ ET L’EXCLUSION SOCIALE (2009), *Prevention of Persistent Poverty*, Advisory opinion to the Minister of Employment and Social Solidarity, Government of Québec, Québec, 41 p.
- CORAK, Miles and Andrew HEISZ (1998), “How to Get Ahead in Life: Some Correlates of Intergenerational Income Mobility in Canada”, in *Labour Markets, Social Institutions, and the Future of Canada’s Children*, Corak, M. (ed.), Ottawa, Statistics Canada, pp. 71–98.
- DEMERS, Marius (2005), “La rentabilité du baccalauréat”, in *Bulletin statistique de l’éducation*, no. 32, 11 p.
- DUNNIGAN, Lise et al. (2007), *Troisième rapport national sur l’état de santé de la population du Québec: Riches de tous nos enfants – La pauvreté et ses répercussions sur la santé des jeunes de moins de 18 ans*, Alain Poirier and Marc-André Maranda (ed.), Ministère de la Santé et des Services sociaux and Institut national de santé publique, 163 p.

- EBERLE, Margaret Patricia et al. (2001), *Homelessness – Causes and Effects. The Costs of Homelessness in British Columbia*, Ministry of Social Development and Economic Security, Government of British Columbia, Victoria, 110 p.
- ESTERLE-HEDIBEL, Maryse (2006) “Absentéisme, déscolarisation, décrochage scolaire, les apports des recherches récentes”, in *Déviance et Société*, vol. 30, pp. 41-65.
- FORTIN, Nicole and Sophie LEFEBVRE (1998), “Mobilité intergénérationnelle du revenu au Canada”, in *Labour Markets, Social Institutions, and the Future of Canada's Children*, Corak, M. (ed.), Ottawa, Statistics Canada, pp. 57–70.
- FORTIN, Pierre (2008), *Les sans-diplôme au Québec: Portrait d'ensemble*, Lecture, UQAM, Montréal.
- FRENETTE, Marc and René MORISSETTE (2005), “Will They Ever Converge? Earnings of Immigrant and Canadian-Born Workers over the Last Two Decades”, in *International Migration Review*, vol. 39, no. 1, pp. 228–258.
- GREEN, David A. and Christopher WORSWICK (2004), *Entry Earnings of Immigrant Men in Canada: The Roles of Labour Market Entry Effects and Returns to Foreign Experience*, University of British Columbia, Vancouver.
- GROUPE D'ACTION SUR LA PERSÉVÉRANCE ET LA RÉUSSITE SCOLAIRES AU QUÉBEC (2009), *Savoir pour pouvoir: Entreprendre un chantier national pour la persévérance scolaire*, 67 p.
- HANKIVSKY, Olena (2008), *Cost Estimates of Dropping Out of High School in Canada*, Canadian Council on Learning, Simon Fraser University, Vancouver, 85 p.
- HATFIELD, Michael, Wendy PYPER and Burton GUSTAJTIS (2010), *First Comprehensive Review of the Market Basket Measure of Low Income*, Human Resources and Skills Development Canada, SP-953-06-10F, Gatineau, 88 p.
- HIRSCH, Donald (2008), *Estimating the Costs of Child Poverty*, Joseph Rowntree Foundation, York, 12 p.
- HOLZER, Harry J., Diane WHITMORE SCHANZENBACH, Greg J. DUNCAN and Jens LUDWIG (2007), *The Economic Costs of Poverty in the United States: Subsequent Effects of Children Growing up Poor*, Center for American Progress, Washington D.C., 22 p.
- IVANOVA, Iglïka (2011), *The Cost of Poverty in BC*, Canadian Centre for Policy Alternatives/Centre canadien des politiques alternatives, BC Office, Vancouver, 45 p.

- KAPLAN, George A., Elsie R. PAMUK, John W. LYNCH, Richard D. COHEN and Jennifer L. BALFOUR (1996), *Inequality in Income and Mortality in the United States: Analysis of Mortality and Potential Pathways*, *BMJ* 312, pp. 999–1003.
- KHERROUBI, Martine, Jean-Paul CHANTEAU and Brigitte LARGUÈZE (2004), “Exclusion sociale, exclusion scolaire” in *Les Travaux de l’Observatoire national de la pauvreté et de l’exclusion sociale, 2003-2004*, La Documentation française, Paris, pp. 127–165.
- LAURIE, Nathan (2008), *The Cost of Poverty: An Analysis of the Economic Cost of Poverty in Ontario*, Ontario Association of Food Banks (OAFB), Toronto, 35 p.
- LEUNG, Ambrose (2004), *The Cost of Pain Suffering from Crime in Canada*, Research and Statistics Division, Department of Justice Canada, Ottawa, 38 p.
- LOCHNER, Lance and Enrico MORETTI (2004), “The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-Reports”, in *The American Economic Review*, vol. 94, no. 1, pp. 155–189.
- LUDWIG, Jens, Greg DUNCAN and Paul HIRSHFIELD (2001), “Urban Poverty and Juvenile Crime: Evidence from a Randomized Housing-Mobility Experiment”, in *The Quarterly Journal of Economics*, vol. 116, no. 2, pp. 655–679.
- MANG, Colin (2008), “The Canada – U.S. Income Gap”, Lecture, Canadian Economic Policy course. Nipissing University, Ontario.
- McCOLLISTER, Kathryn E., Michael T. FRENCH and Hai FANG (2010), “The Cost of Crime to Society: New Crime-specific Estimates for Policy and Program Evaluation”, in *Drug and Alcohol Dependence*, vol. 108, nos. 1–2, pp. 98–109.
- MINISTÈRE DE L’EMPLOI ET DE LA SOLIDARITÉ SOCIALE (2009a), *2004-2009 Government Action Plan to Combat Poverty: Fifth-year Progress Report*, Government of Québec, Québec, 51 p.
- MINISTÈRE DE L’EMPLOI ET DE LA SOLIDARITÉ SOCIALE (2009b), *Rapport annuel de gestion 2008-2009*, Government of Québec, Québec, 214 p.
- MINISTÈRE DE L’EMPLOI ET DE LA SOLIDARITÉ SOCIALE (2010), *2010-2015 Government Action Plan for Solidarity and Social Inclusion: Québec’s Combat against Poverty*, Government of Québec, Québec, 55 p.
- MORISSETTE, René and Xuelin ZHANG (2001), “Experiencing Low Income for Several Years”, in *Perspectives on Labour and Income*, Statistics Canada, Ottawa, catalogue no. 75001XPE, pp. 25–36.

- MULLAHY, John, Stephanie ROBERT and Barbara WOLFE (2001), *Health, Income and Inequality: Review and Redirection for the Wisconsin Russell Sage Working Group*, Russell Sage Foundation, New York City, pp. 5–6.
- MUSTARD, Cameron A. et al. (1998), *Paying Taxes and Using Health Care Services: The Distributional Consequences of Tax Financed Universal Health Insurance in a Canadian Province*, Lecture at the Conference on the State of Living Standards and the Quality of Life in Canada, Ottawa, Canada.
- NATIONAL COUNCIL OF WELFARE (NCW) (2000), *Justice and the Poor*, Ottawa, Minister of Public Works and Government Services, no. 111.
- NATIONAL COUNCIL OF WELFARE (NCW) (2001), *The Cost of Poverty*, Ottawa, Minister of Public Works and Government Services, no. 115.
- NATIONAL COUNCIL OF WELFARE (NCW) (2010a), *The Cost of Poverty and the Value of Investment: Comprehensive Bibliography*, Ottawa, January, 34 p.
- NATIONAL COUNCIL OF WELFARE (NCW) (2010b), *The Cost of Poverty and the Value of Investment: Top Ten Picks from the Comprehensive Bibliography*, Ottawa, January, 4 p.
- OECD (2000), *Literacy in the Information Age: Final Report of the International Adult Literacy Survey*, OECD, Paris, 191 p.
- PAMPALON, Robert and Guy RAYMOND (2003), “Indice de défavorisation matérielle et sociale: son application au secteur de la santé et du bien-être”, in *Santé, société et solidarité*, Les Publications du Québec, Québec, pp. 191–208.
- PHIPPS, Shelly (2003), *The Impact of Poverty on Health: A Scan of Research Literature*, Canadian Institute for Health Information, Ottawa, 32 p.
- POVERTY REDUCTION COALITION (2008), *Crimes of Desperation: The Truth about Poverty-related Crime*, United Way of Calgary and Area, Calgary, 46 p.
- ROBITAILLE, Clément, Jean-Pierre GUAY and Caroline SAVARD (2002), *Portrait de la clientèle correctionnelle du Québec 2001*, Société de criminologie du Québec for the Direction des services correctionnels, Ministère de la Sécurité publique, Montréal, 128 p.
- SCHRAMM, David G. (2006), “Individual and Social Costs of Divorce in Utah”, in *Journal of Family and Economic Issues*, vol. 27, no. 1, pp. 133–151.
- SHIELL, Alan and Jenny ZHANG (2004), *The External Costs of Poverty: A Conservative Assessment – A Report to the United Way of Calgary and Area*, Centre for Health and Policy Studies, University of Calgary and Institute for Health Economics, Calgary, 35 p.

- STANDING SENATE COMMITTEE ON SOCIAL AFFAIRS, SCIENCE AND TECHNOLOGY (2009), *In from the Margins: A Call to Action on Poverty, Housing and Homelessness*, Ottawa, 324 p.
- STATISTICS CANADA (2005), *Criminal Justice Indicators*, Ottawa, catalogue no. 85-227-X, 226 p.
- STATISTICS CANADA (2006), *Justice System Spending*, Ottawa, catalogue nos. 85-225-XIE, 85-403-XIE, 85F0015XIE, 85-211-XIE and 85-402-XIE.
- STATISTICS CANADA (2007a), *2006 Census Analysis*, Ottawa.
- STATISTICS CANADA (2007b), *Literacy and the Labour Market: The Generation of Literacy and Its Impact on Earnings for Native-born Canadians*, Ottawa, catalogue no. 89-552-MIE, no. 18, 48 p.
- STATISTICS CANADA (2008), *Educational Portrait of Canada, 2006 Census*, Ottawa, catalogue no. 97-560-X2006001, 37 p.
- STATISTICS CANADA (2010a), *Low Income Lines, 2008-2009*, Ottawa, catalogue no. 75F0002M, no. 005, 35 p.
- STATISTICS CANADA (2010b), *Income in Canada, 1976 to 2008*, Ottawa, catalogue no. 75-202-XWE.
- WALLACE, Marnie (2009), "Police-reported Crime Statistics in Canada, 2008", in *Juristat*, Ottawa, no. 85-002-X, vol. 29, catalogue no. 3, 37 p.
- WILKINSON, Richard and Kate PICKETT (2009), *The Spirit Level: Why More Equal Societies Almost Always Do Better*, Allen Lane, London, 331 p.

Appendices

1. Methodological Note on Estimating Crime-related Costs of Poverty

Step 1: Distribution of Literacy Quintiles by Income Quintile in Canada (Table 2 in the study)

Step 2: Formulate an assumption derived from studies on the relationship between education levels and crime

Assumption: For persons in any literacy quintile, the probability of engaging in crime is twice as high as for those in the next-higher quintile.

Applying this assumption provides the following data:

Probability of Engaging in Crime, by Literacy Quintile

Literacy Quintile	Assumption	Probability of Engaging in Crime
1st	16	0,516
2nd	8	0,258
3rd	4	0,129
4th	2	0,065
5th	1	0,032
Total	31	1,000

Source: CEPE compilation, August 2011.

The probabilities (in the third column) are estimated by dividing the data in the second column by the total for the same column.

Step 3: Applying the probabilities of engaging in crime for each literacy quintile (Step 2) to the distribution of literacy and income quintiles (Step 1) provides a new distribution of the probabilities of engaging in crime for persons in each income quintile (Table 3 of the study).

Step 4: Crime-related costs of poverty are estimated by applying the probabilities of engaging in crime for each income quintile to total crime costs.

Step 5: The costs for Québec are calculated as 18.5% of the costs for Canada. Data on crime distribution by province are shown in the following table:

2. Crime Rate by Province, Canada, 2009

Province	Crime Rate (per 100,000 habitants)	Population	Total Crimes	Proportion of crimes (%)
Newfoundland	6 473	508 100	32 943	1,6
Prince Edward Island	6 263	141 100	8 830	0,4
Nova Scotia	6 932	939 100	65 035	3,1
New Brunswick	5 627	749 300	42 171	2,0
Québec	5 016	7 828 400	392 689	18,5
Ontario	4 704	13 064 900	614 749	29,0
Manitoba	9 800	1 219 600	119 755	5,6
Saskatchewan	12 694	1 029 100	130 767	6,2
Alberta	8 540	3 670 700	314 919	14,8
British Columbia	9 006	4 460 300	401 230	18,9
Canada	6 406	33 720 200	2 123 088	100,0

Notes: Population as of July 1.

The crime rate includes all *Criminal Code* offences, except for traffic violations, offences related to drugs and offences committed under other federal statutes. Canada's crime rate includes Yukon Territory, the Northwest Territories and Nunavut.

Source: Statistics Canada, Canadian Centre for Justice Statistics, Uniform Crime Reporting Survey, CANSIM, Table 051-0001.