

**Applied Research Branch  
Strategic Policy  
Human Resources Development Canada**

**Direction générale de la recherche appliquée  
Politique stratégique  
Développement des ressources humaines Canada**

## **The Costs of Dropping Out of High School**

**March 28, 2000**

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### Abstract

This report examines the potential costs of dropping out of high school to both individuals and to society as a whole. The term “dropout” refers to those youth who at a given time had left high school without graduating. The “dropout rate” is the proportion of people in a specified age group who have left high school without graduating at a given point in time. Calculating a dropout rate that corresponds to a specific age group is useful since it can take into consideration the fact that individuals may take longer to complete high school.

The dropout rate in Canada in the 1990s has been estimated to be between approximately 14 and 21 percent depending on the methodology used. The report explores these different methodological strategies and their impact on estimates of the dropout rate.

Although Canadian dropouts do not fit a consistent profile, a number of characteristics typify them. They are more often male than female and are more often living with one or no parents. Parents’ level of education, their socio-economic status and their attitudes toward education also impact the likelihood of their children completing high school. Dropouts typically have lower grades, are less likely to be satisfied with school or engaged in school life, and are more likely to be engaged in deviant behaviour. Aboriginal youth, those with disabilities and those that work excessive hours while in school are also more likely to drop out.

It is possible to estimate internal rates of return to investment in education. This study reveals that the monetary rates of return to individuals for completing high school (the private rates of return) are substantial. Relative to those that dropped out at Grade 10, the private monetary rates of return are 41 and 54 percent respectively for young male and female graduates. If it was possible to include additional non-monetary benefits, such as greater personal satisfaction and better health, the private rates of return would be even higher. Estimates of the net present value of private income associated with high school completion are similarly substantial. The net present value of income (i.e., using a 3% discount rate) for male graduates over the lifetime is \$138,000 relative to those that leave school at Grade 9, while it is \$121,000 for female graduates relative to those that leave at Grade 10. The total monetary rates of return for high school completion are also considerable. When comparing graduates to those that dropped out at Grade 10, the total monetary rate of return is 17 percent. From a societal standpoint, these findings support the case to lower the dropout rate in Canada.

There are several possible options that could be considered for addressing the dropout issue. These include: (1) developing alternative educational pathways to promote high school retention and increase the attractiveness of such pathways for youth; (2) raising the legal age for which youth can leave high school; (3) introducing a lower minimum wage for youth relative to the adult minimum wage; and (4) promote the long-term benefits of completing high school through social marketing campaigns.

## **Acknowledgements**

This project was initiated by Richard Roy and Louise Boyer. Three preliminary studies were prepared for the Applied Research Branch by Bill Ahamad, Doug Giddings, François Vaillancourt and Sandrine Bourdeau-Primeau. The final studies will be completed in 2000. Yves Gingras and Jeffrey Bowlby produced this summary report from the preliminary studies and the available literature on the topic. Michelle Pilon provided technical assistance in the production of the figures.

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## 1. Introduction

Recent developments including increased international competition, the emergence of new technologies, and the adoption of alternative human resources management practices may be making it difficult for youth, especially those that do not complete high school, to obtain and hold a job. In most OECD countries today, graduation from secondary school is considered the minimum education threshold level for all youth. In reality, however, large numbers of young adults in all countries, including Canada, leave the formal education system without completing high school and the requisite skill levels.

Part of the reason for an ongoing interest in the dropout issue is that it focuses our attention on a potential stock of human capital that some youth are not acquiring, by failing to obtain a high school diploma. Employers in today's competitive global economy are increasingly demanding that workers have suitable skills and knowledge for the workplace. Those that leave school early are more likely to lack the requisite skills, and are more likely to be excluded from fully participating in the labour market. There are costs to society as well, from the lower human capital of dropouts to the lower monetary gains realized through reduced income.

This report examines the potential costs of dropping out to both individuals and to society as a whole. Before addressing this, however, it is important to understand the scope of the situation, particularly at it exists among Canadian youth. How widespread is dropping out of high school in Canada, and how does it compare to other OECD countries? Such questions will be addressed in Chapter 2. It is also important to understand what the characteristics of early school leavers are, and how they compare with those of graduates. Are specific groups at risk of dropping out? Evidence from recent Canadian surveys will be presented to address these questions in the third chapter.

To address the issue of the costs of dropping out, data on earnings and labour force trends for Canadian high school dropouts and graduates are presented in Chapter 4. In the fifth chapter, more specific calculations are provided. That is, the monetary rates of return for completing high school for individuals (the private monetary rates of return) and for society (the total monetary rates of return) are calculated. As well, estimates of the net present value of the private income over the lifetime associated with high school completion are outlined. A review of existing research on the social costs and benefits of education is also presented.

In Chapter 6, some policy considerations for reducing the number of dropouts in Canada are discussed.

Finally, in the Conclusion, the key findings are summarized along with the policy considerations for reducing the dropout rate.

## 2. High School Dropout Rates

In this chapter, the concept of a dropout rate is introduced and discussed. Various strategies for calculating the dropout rate are outlined, and corresponding estimates of the Canadian high school dropout rate are presented. As well, Canada's performance relative to other OECD countries in terms of secondary school completion is briefly assessed.

### 2.1 Estimates of Dropout Rates

High school dropouts (or leavers) are youth, who at a given time, left high school without graduating. The high school dropout rate (or non-completion rate) is the proportion of people in a specified age group who left high school without graduating at a given point in time.

There is no single agreed upon method of calculating the dropout rate. As well, data availability is a major factor in determining how dropout rates are calculated. Some problems in calculating dropout rates include students that leave school and return later to complete their studies, students that drop out more than once, and those that enroll in different schools or jurisdictions.

Estimates of high school non-completion come from two general sources. Administrative records can be used to examine school attendance and completion. As well, the population can be asked about their school completion history in surveys. Some calculations use a combination of the two.

One approach is to calculate a graduation rate and then take the complement as an estimate of the dropout rate. Graduation rates can be derived from administrative data counts of high school diplomas in a given year compared to the population in the age group likely to be graduating. The graduation rate for Canada was 75 percent in 1997.<sup>1</sup> Thus, using this approach, the dropout rate is 25 percent. However, graduation rates are not adequate indicators of dropout rates since some students may take longer to graduate because of interruptions or repeating grades. Since graduation requirements vary considerably from one jurisdiction to another, comparisons of provincial and territorial rates should be made with caution.

A second method is the "apparent cohort dropout rate" approach. This approach uses administrative enrolment and graduation counts to model the progress of an entering cohort of students through school to graduation. Using this data it is possible to compare the number of students who enter their first year of secondary school in a particular year with the number of graduates three to five years later. The complement of this estimated cohort graduation ratio is the apparent non-completion or dropout rate. Once again, problems arise in calculating the rates because students may temporarily interrupt their studies and return later on, some may repeat grades, while others may have migrated from elsewhere. An additional problem is the time lag involved since calculations are made over a relatively long period of time.

One effective and commonly used approach is to use cross-sectional data from surveys to develop estimates of non-completion pools. Using cross-sectional survey data, it is possible to calculate the proportion of any age group that does not have a high school diploma. One factor that needs to

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<sup>1</sup> *Education Indicators in Canada: Report of the Pan-Canadian Education Indicators Program 1999*. Statistics Canada and the Council of Ministers of Education, Canada, 2000.

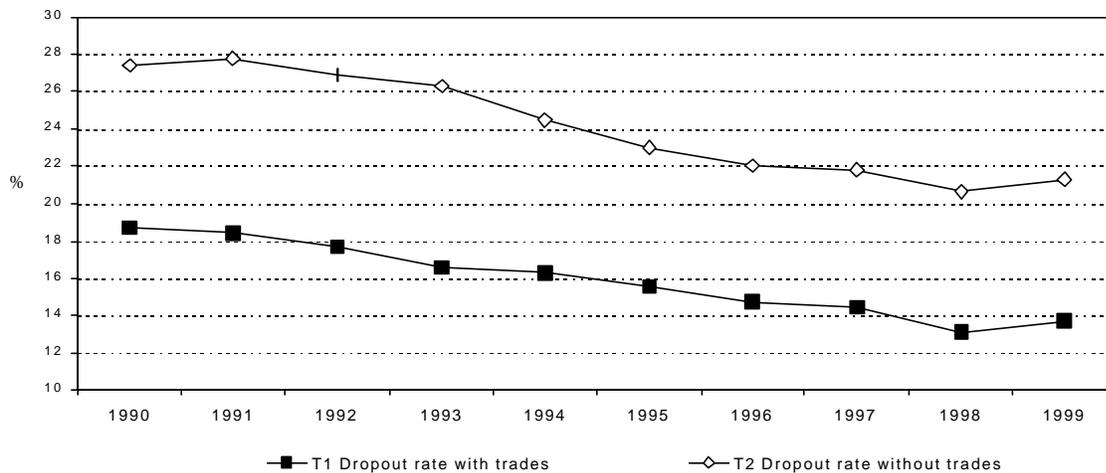


be considered is the age range to be examined. If the estimate pool includes 15-24 year-olds, many in this age group will still be in high school, and of those who are not, some may return and eventually graduate. One method of dealing with this problem is to choose individuals who are somewhat older, for example those who are at least in their mid-twenties. Choosing a slightly older age group should result in a lower estimate of the dropout rate but at the expense of creating a considerable time lag in the estimate. If information is collected on those still attending high school, it is possible to eliminate them from the estimate pool. As well, with survey data, it is possible to include in the estimate those who have completed high school equivalency (e.g., trades training) or advanced education.

The two sources of cross-sectional data commonly used in Canada to calculate completion and non-completion rates are the Census and the Labour Force Survey (LFS). These data sources contain valuable information on personal and household characteristics, providing a rich basis for analysis. A disadvantage with LFS and Census data is that information may be reported by another member of the household and, therefore, may not be accurate. Furthermore, the LFS and Census report where individuals are currently living and not necessarily where they were schooled so that international and inter-provincial migration may affect the estimates (e.g., possible overestimation of dropout rates).

Figure 1 shows estimates of high school dropout rates based on LFS data. The rates exclude “late completers,” dropouts who return to complete secondary school, and students who may report that they have completed secondary school because they have qualified for and entered a post-secondary program without a secondary school diploma. Those still in high school are counted as dropouts although they are more properly “continuers.” Consequently, the estimates slightly exaggerate the proportion not finishing high school.

Figure 1: Dropout Rates, 20-24 year-olds, Canada, 1990-1999



Note: Dropout (or non-completion) rate refers to the proportion of people in a specified age group who have left high school without graduating at a given point in time. These rates include those with and without trades as high school equivalency.  
Source: Labour Force Survey

As shown, the dropout rate for 20-24 year-olds declined from 27.4 percent in 1990 to 21.3 percent in 1999. Based on this approach, there were 428,000 dropouts in 1999. However, if the

completion of trades training is considered equivalent to high school completion, the dropout rate was significantly lower at 13.7 percent, representing 276,000 dropouts.

*[Note: Estimates of the dropouts rates presented in Figure 1 are currently being updated. Along with continuing to make a distinction between dropout rates for those with trades/ non-trades high school equivalency (as in Figure 1), the new estimates will exclude those individuals who are still in school.]*

Another estimate of the dropout rate in Canada comes from the School Leavers Survey (SLS) and the School Leavers Follow-up Survey (SLFS) – see Table 1.<sup>2</sup> In 1991, 18 percent of 20 year-old youth had dropped out, meaning that they were no longer in high school and had not received a high school graduation certificate, diploma or its equivalent. In 1995, the dropout rate for this same group of youth (24 years-old) had fallen to 15 percent.<sup>3</sup> As shown, the dropout rate varied across Canada, with lower rates experienced in Ontario and the western provinces, and higher rates experienced in Quebec and the Maritimes.

<b>Table 1: High School Dropout Rates for Same Youth in 1991 and 1995, Canada and the Provinces (%)</b>		
	<b>1991 (20 year-olds)</b>	<b>1995 (24 year-olds)</b>
Canada	18	15
Newfoundland	24	19
Prince Edward Island	25	21
Nova Scotia	22	17
New Brunswick	20	16
Quebec	22	19
Ontario	17	14
Manitoba	19	14
Saskatchewan	16	11
Alberta	14	11
British Columbia	16	13

Source: School Leavers Survey and School Leavers Follow-up Survey

In 1991, 16 percent of SLS respondents had not graduated and were no longer in high school, while a full 21 percent were still in school. Four years later, one quarter of those that had not graduated and were not attending school in 1991 had obtained a high school diploma or its

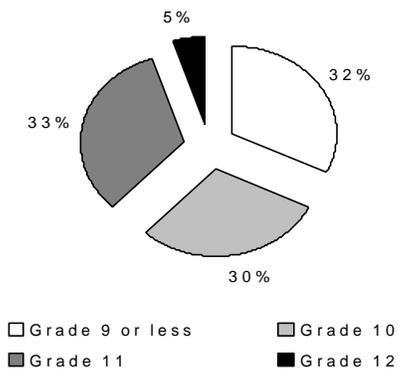
<sup>2</sup> The SLS (1991) was designed to estimate the rate of high school non-completion among young adults and to investigate the factors related to non-completion. The survey examined Canadian youth 18-20 years-old. The objective of the SLFS (1995) was to examine the education, training and labour market experiences beyond high school of the same youth who were then 22-24 years-old. In addition to information collected on personal and family characteristics, respondents were asked about their interest in classes, their academic records, and the importance that their family and friends attached to high school completion.

<sup>3</sup> SLS dropout rates are based on only those youth that were 20 years-old in 1991. SLFS dropout rates are based on the same youth, or those that were 24 years-old in 1995.

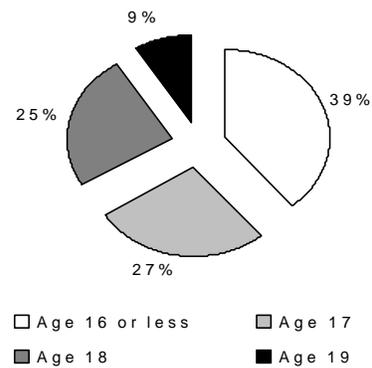
equivalent. As well, a large majority of those (90 percent) still in high school in 1991 had received a high school diploma or its equivalent by 1995.

At what age and grade level do dropouts leave high school? Figures 2 and 3 taken from the 1991 SLS reveal that 62 percent of dropouts quit school prior to completing Grade 11, and that 39 percent of dropouts were 16 years of age or less.

**Figure 2: Highest Grade Completed by Dropouts, Canada, 1991**



**Figure 3: Dropouts' Age at Time of Departure, Canada, 1991**



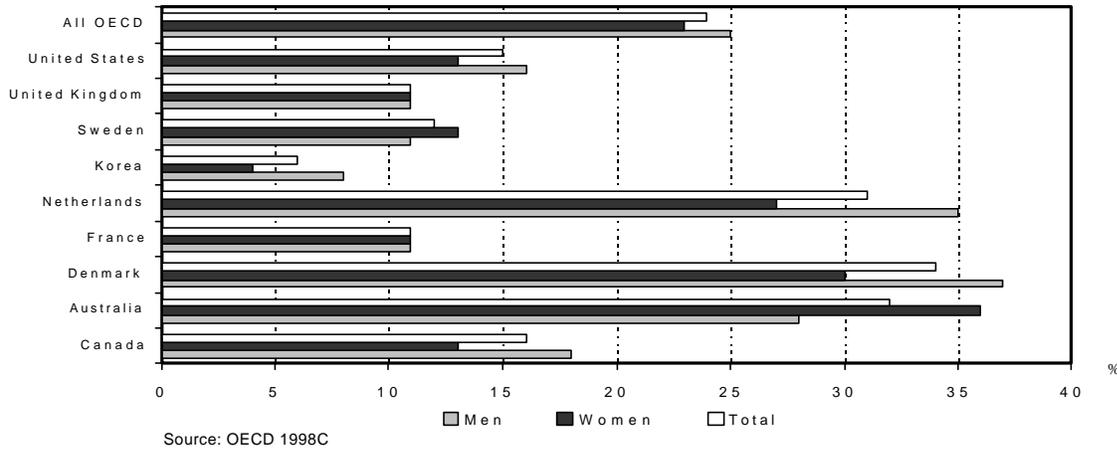
Source: School Leavers Survey

## 2.2 Canada's Performance Relative to Other OECD Countries

How does Canada compare to other countries in terms of educational attainment at the secondary school level? Figure 4 shows the percentage of youth 20-24 years-old whose highest level of education in 1995 was lower secondary school, or Grade 9 in Canada.<sup>4</sup> Canada's rate was 16 percent, well below the OECD average of 24 percent.

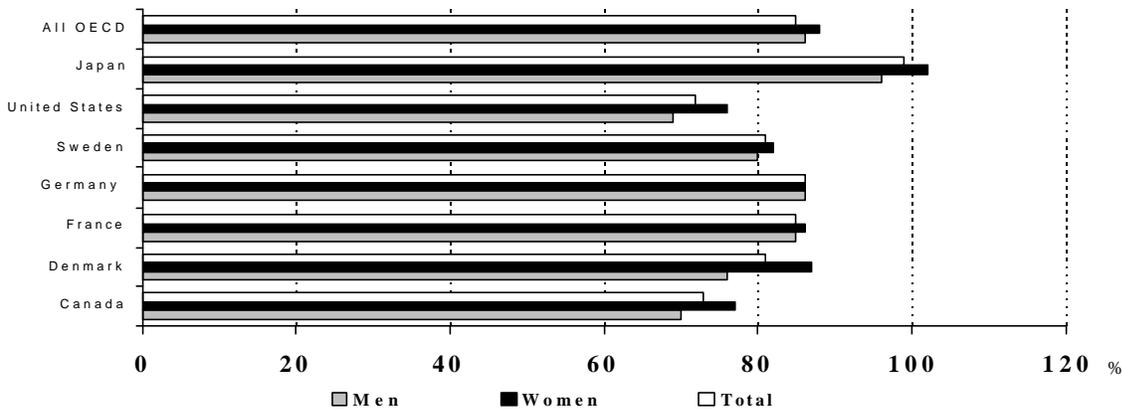
<sup>4</sup> This education level is based on definitions from the International Standard Classification of Education. The number of corresponding years of education ranges from 8-11 years. Thus, caution should be exercised in making comparisons between these rates.

**Figure 4: Percentage of 20-24 year-olds Whose Highest Level of Educational Attainment is Lower Secondary School: Selected OECD Countries, 1995**



Another way of assessing Canada’s performance is to look at the percentage of graduates in the population in a given year. Figure 5 shows the ratio of upper secondary graduates to the population at the typical age of graduation for selected OECD countries in 1996.<sup>5</sup> In Canada, graduation from upper secondary school typically corresponds to the completion of Grade 12, while the typical age of graduation is 18 years. The ratio for Canada (73 percent) is ten percentage points below the OECD average (85 percent). Both Canada and the United States have similar graduation rates, for both young men and women.

**Figure 5: Ratio of Upper Secondary Graduates to Population at Typical Age of Graduation: Selected OECD Countries, 1996**



Note: This ratio can exceed 100% since “upper secondary graduates” could include individuals younger or older than those that graduate at the typical age of graduation. Source: OECD, 1998

<sup>5</sup> The classification “upper secondary” is based on definitions from the International Standard Classification of Education. The number of corresponding years of education ranges from 11-14 years. Thus, caution should be exercised in making strict comparisons between these rates.

The OECD *Thematic Review of the Transition from Initial Education to Working Life* reports that countries such as Korea, the Czech Republic, the United Kingdom Norway, Poland, Sweden, the United States and Canada have succeeded in ensuring that a large majority of young adults obtain an upper secondary qualification (OECD, Forthcoming). The OECD also notes that in countries like Canada, Norway, Sweden and the United States this reflects not only higher rates of initial upper secondary graduation, but also second-chance and safety net mechanisms through which those who have dropped out of school are subsequently able to obtain a diploma.

### **2.3 Conclusions**

Estimates of the high school dropout rate in Canada vary, depending on the methodology used. Since some youth may take longer to complete their schooling, estimates based on youth that are somewhat older (e.g., in their mid-twenties) will provide a more accurate estimate of the dropout rate. Findings from the SLFS reveal that among 24 year-olds, the dropout rate was 15 percent in 1995, meaning that they were no longer in school and had not received a high school certificate, diploma or its equivalent (i.e., trades training). Findings from the Labour Force Survey reveal that among 20-24 year-olds the dropout rate decreased from 18.7 percent in 1990 to 13.7 percent in 1999 (or 276,000 youth). If trades training is not considered equivalent to high school completion, the LFS dropout rate was 21.3 percent in 1999 (representing 428,000 youth). On an international scale, Canada's rate of upper and lower secondary school completion is below the OECD average.

### 3. Characteristics of Dropouts

This section describes the characteristics of high school dropouts and explores whether or not it is possible to identify groups or individuals that are at risk of dropping out. While establishing causality is never an easy task, nor ever possible in its fullest sense, our goal is to characterize the main factors that might influence some individuals to leave high school without graduating. It is hoped that by identifying those at risk and by better understanding the causes of dropping out, it may be possible to design effective preventative interventions.

#### 3.1 Factors Associated with Dropping Out

A review of the literature reveals that the following socio-demographic characteristics, behaviours and other factors are associated with dropping out of high school.

- poverty - its severity and duration
- ethnicity (e.g. Aboriginal youth)
- family background and other family issues (e.g., single-parent families, stability, child abuse, parenting style)
- poor knowledge of a majority language
- a lack of connection between life in and out-of-school
- students or parents unable to identify with educational goals or program content
- geographic locale (e.g., urban versus rural, provincial/territorial differences)
- a lack of community support such as poor housing, a lack of coordinated services
- school type
- low educational attainment
- low satisfaction and self-esteem
- a lack of involvement in school activities (school engagement)
- excessive employment
- teenage pregnancy
- gender (e.g., being a male)
- behavioral problems such as aggression, delinquency
- truancy

The following sections will review findings from the SLS, the SLFS and the General Social Survey to examine how some of these factors may be associated with dropping out.<sup>6</sup>

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<sup>6</sup> While the SLF and SLFS addressed a number of useful indicators, unfortunately no data were collected on school characteristics (e.g., school type, size). As well, limited data were collected on assessments of school environment, family structure and socio-economic status. Furthermore, the data do not provide the opportunity to examine whether or not dropping out is correlated with prior life events and influences.

SLS and SLFS statistics presented in this chapter are based on the full sample of respondents 18-20 years-old and 22-24 years-old. This is done so, despite the fact that estimates of the dropout rate (presented in Chapter 2) are based on respondents that were only 20 years-old (SLS) and 24 years-old (SLFS). Thus, the distributions of the characteristics presented here might vary somewhat from what they would if only those sample members included in the estimated dropout rates were included.

**3.2 Gender Differences, Dependent Children and Marital Status**

Findings from the SLS and SLFS reveal that dropouts are predominantly male; two out of every three dropouts were male. In 1995, 18 percent of 22-24 year old males had left high school without a high school certificate, diploma or equivalent compared to 10 percent of females.

The gender difference is even more striking when one considers that many young women quit high school because of pregnancy and child rearing. Teenage mothers have been identified as one group especially vulnerable to leaving high school without graduating. SLS findings reveal that 27 percent of 18-20 year-old female dropouts in 1991 had dependent children compared to 4 percent of female graduates. In contrast, only 7 percent of male dropouts had children.

Table 2 shows the situation four years later, in 1995.<sup>7</sup> Sixty-four percent of female dropouts in 1991 who did not return to finish high school (or obtain high school equivalency by other means) had dependent children in 1995. As well, 55 percent of women who were in high school in 1991, but then left high school without graduating, had children in 1995. In contrast, only 16 percent of 1991 female graduates had children in 1995. This suggests that for young women, having children has a reasonably strong relationship with them leaving school. Despite this, almost half of 1991 female dropouts (46%) that had children in 1995 had graduated, suggesting it is still possible for women to complete high school after having children.

<b>Table 2: Percentage of youth 22-24 years-old with dependent children and percentage married, 1995</b>					
<b>Percentage with dependent children</b>					
	1991 dropouts/ 1995 dropouts	1991 dropouts/ 1995 grads.	1991 grads./ 1995 grads.	1991 continuers/ 1995 grads.	1991 continuers/ 1995 dropouts
Men	28	--	7	8	--
Women	64	46	16	13	55
<b>Percentage married</b>					
	1991 dropouts/ 1995 dropouts	1991 dropouts/ 1995 grads.	1991 grads./ 1995 grads.	1991 continuers/ 1995 grads.	1991 continuers/ 1995 dropouts
Men	63	71	77	82	81
Women	41	65	65	77	50

Source: School Leavers Follow-up Survey, 1995

With respect to marital status, male dropouts were 20-30 percent more likely to be married than female dropouts in 1995 (Table 2). As well, women dropouts were less likely to be married than women graduates. Thus, compared to males (dropouts or graduates), and compared to female graduates, female dropouts are more likely to have children, but less likely to be married.

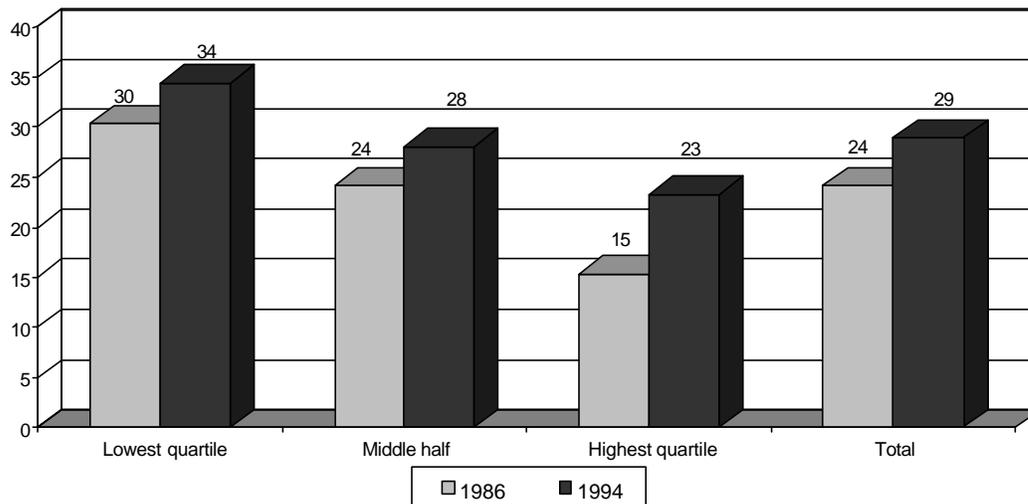
<sup>7</sup> As an example, “1991 dropouts/1995 dropouts” in the table are youth 22-24 years-old who were dropouts in 1991 and had not received a high school diploma, certificate or its equivalency by 1995.

### 3.3 Family Characteristics

Some family background characteristics are associated with dropping out. For example, the SLS reveals that 25 percent of dropouts are from single-parent families compared to 12 percent of graduates. As well, a higher percentage of dropouts (13 percent) compared to graduates (5 percent) had not lived with either parent in their last year of high school.

According to the 1994 General Social Survey (GSS), youth 18-21 years of age that had lower socio-economic status (SES) family backgrounds were most likely to have obtained less than a high school education. About one-third of those in the lowest quartile had not completed high school, compared to one-quarter of those in the upper quartile – see Figure 6. However, this gap may be closing somewhat. Between 1986 and 1994, the percentage of youth with less than high school from the highest SES quartile increased 8 percentage points (from 15 to 23 percent), while the percentage of those from the lowest quartile only increased 4 percentage points (from 30 to 34 percent). It should be noted that compared to the estimates presented in Chapter 2, these figures may overstate the extent of high school non-completion since they do not take into account the fact that individuals may obtain the equivalent of high school completion through other means (e.g., trades training).

**Figure 6: Percentage of the population aged 18 to 21 with less than high school completion, by family socio-economic status, Canada, 1986 and 1994**



Source: General Social Survey 1986, 1994, Statistics Canada

Parental attitudes toward education also appear to have an impact. Findings from the SLS reveal that the majority of graduates’ parents considered high school completion to be “very important.” Forty-nine percent of those who reported that their parents did not consider high school completion very important were dropouts. Parental education was also an important factor -- dropouts were more likely to have parents with low levels of education. Parental education, particularly that of mothers had a greater impact on women than men. In two-parent families there were eight times as many female leavers whose mothers had low levels of education as had higher levels of education. Dropouts were also more likely to have parents employed in blue-collar fields.

### 3.4 School Factors and Achievement



The SLS reveals that 40 percent of dropouts gave school-related reasons for dropping out including not enjoying classes, being unable to connect or identify with educational goals, dissatisfaction with school rules, and programs and courses that were not interesting or relevant. For example, 46 percent and 33 percent of male and female dropouts indicated they were not interested in their classes, while only 25 and 18 percent of male and female graduates were not interested.

Dropouts are less engaged in school life. Twenty-three percent of dropouts believed they participated in class less often than the average compared to 10 percent for graduates. Forty-five percent of dropouts compared to 27 percent of graduates did not participate in extracurricular activities. Dropouts were also more likely to skip classes.

Academic performance may play a significant role in the decision to leave school. The SLS reveals that dropouts had lower grades than graduates. Thirty-seven percent of dropouts reported they had mainly A or B grades, while 79 percent of graduates reported similar grades. As well, more dropouts reported difficulty with core subjects such as mathematics, science and English/French. Early academic failure also had an impact. Thirty-six percent of dropouts had failed an elementary school grade compared with 8 percent of graduates. Thus, those who fall behind in school may be at greater risk. West (1991) found that being behind in grade level, not reading at the grade level, enrollment in general courses (rather than college or vocational preparatory courses) and lower school achievement were risk factors for dropping out.

### **3.5 Working While in School**

One of the objectives of the SLS was to examine the effect of working during school on the likelihood of graduating. Fifty-nine percent of dropouts and 66 percent of graduates had worked in their last year of high school. Among dropouts, the non-completion rates were lowest for those who worked only a moderate number of hours per week (less than 20 hours). Excessive work, especially for young men, increased the risk of dropping out. Forty-nine percent of male dropouts worked 20 hours per week or more, compared to 30 percent of female dropouts, and 34 percent and 25 percent of male and female graduates. Among all respondents, working moderate hours (compared to having no job or working long hours) was associated with positive school experiences and academic success.<sup>8</sup>

### **3.6 Additional Risk Factors**

Other risk factors influence the likelihood of dropping out. For example, Aboriginal youth are at greater risk of leaving school before graduating. The SLS reveals that 40 percent of Aboriginal 18-20 year-olds dropped out compared to 16 percent for the population overall. Close to half of Aboriginal youth lived with a single parent or with neither parent, while the percentage of Aboriginal youth with dependent children was 16 percent or about four times the figure for the population overall.

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<sup>8</sup> For a formal test and more details see: Dagenais M.; Montmarquette C.; Parent D.; Durocher B. and Raymond F.: "Travail pendant les études et abandon scolaire: causes, conséquences et politiques d'intervention." HRDC Research Paper R-99-11E.a. Ottawa, 1999.

Perhaps not surprisingly, deviant behavior is also closely associated with quitting school. For example, 12 percent of dropouts had a criminal conviction during their last year of school compared to 3 percent of graduates. Dropouts (18 percent) were also more likely than graduates (11 percent) to consume alcohol on a regular basis and to use “soft” drugs such as marijuana, hashish or the misuse of tranquilizers (30 percent for dropouts, 16 percent for graduates).

Geographic locale, in terms of rural or urban residency, has been cited as a factor related to dropping out. Findings from the School Leavers Survey reveal that slightly more rural youth (27 percent) were dropouts compared to urban youth (23 percent). However, a greater percentage of rural youth leave school at a younger age -- 42 percent left before completing Grade 10, compared to 29 percent of urban youth.

Disabled youth were also more likely to drop out. Research conducted in conjunction with the School Leavers Survey revealed that some physically disabled youth mentioned that they felt alienated at school and were having a difficult time.<sup>9</sup>

Figure 7 shows the distribution of dropouts and graduates by level of risk in 1995. The most notable finding is that 69 percent of dropouts had high-risk characteristics.<sup>10</sup> However, one-third of those in high-risk situations still did graduate. Further analysis may help to reveal what differentiates dropouts and graduates with high-risk characteristics. We can only speculate that dropouts have additional personal characteristics or background factors that place them at even greater risk beyond the characteristics considered here (e.g., cognitive ability, initiative; family factors such as parental style and social capital; school factors such as teaching style and mentorship; peer influences).<sup>11</sup> Another noteworthy finding from the figure is that only 10 percent of leavers had low risk background characteristics.

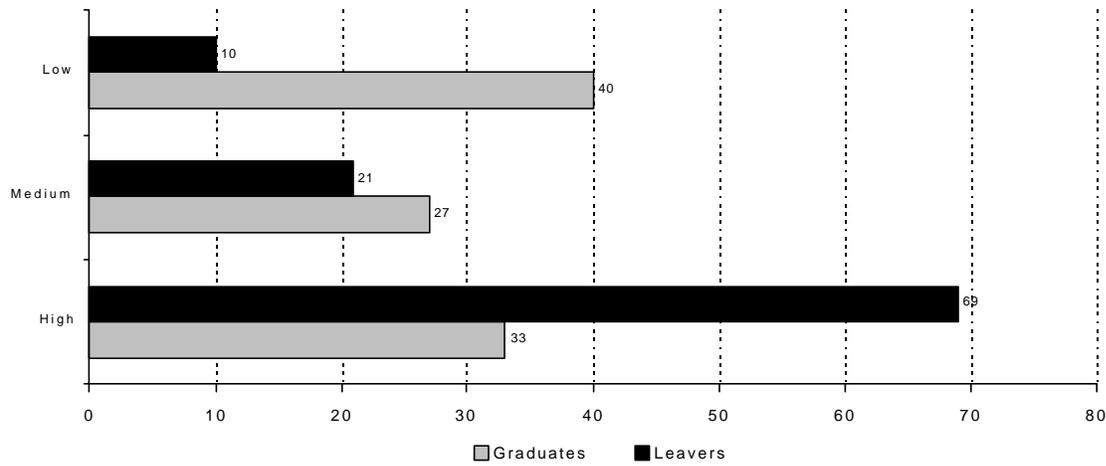
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<sup>9</sup> Price Waterhouse. “Qualitative Research Related to the School Leavers Questionnaire.” Final Report, October 25, 1990.

<sup>10</sup> The high risk group consists of those in one or more of the following categories: with dependent children; ever-married; with disabilities; living with neither parent; lone-parent families where the parent had less than post-secondary education; two-parent families where the father was not working and the mother either was not working or had a pink or blue collar job; two-parent families where both parents were blue collar workers; or two-parent families where the father's education was unknown. All of these had leaver rates of at least 20%. The low risk group includes those from two-parent families where both parents had at least graduated from high school, and students from two-parent families in which the father held a managerial, professional or technical occupation. The medium risk group includes families headed by a well-educated lone parent or from two-parent families where at least one parent did not complete high school.

<sup>11</sup> A new survey, the Youth in Transition Survey (YITS), initiated by Human Resources Development Canada, and carried out by Statistics Canada will examine some of these factors. Among other things, this survey will help to enhance our understanding of the factors related to dropping out of high school.

Figure 7: Percentage Distribution of Dropouts and Graduates by Level of Risk, Canada



Source: School Leavers Survey

*[Note: New analysis from Dr. Claude Montmarquette to be added. His study uses SLS and SLFS data to examine the relationship between risk factors (e.g., multiple risk factors) and the likelihood of dropping out of high school]*

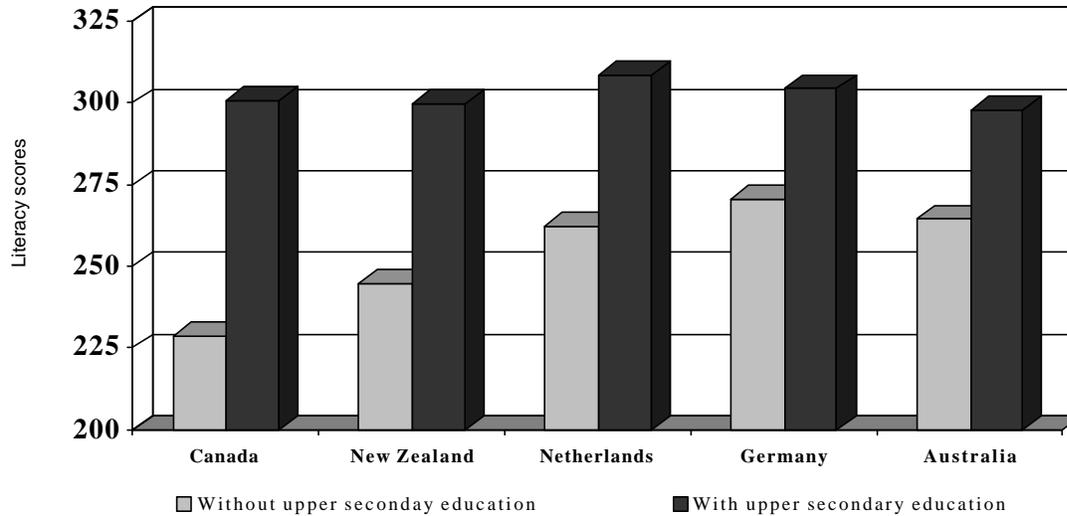
### 3.7 Literacy Levels

Thus far in this chapter, antecedent factors associated with dropping out of high school have been discussed. However, those that do not complete high school may have other characteristics associated with their educational attainment. One characteristic is a lower level of literacy, experienced by high school non-completers, compared to graduates. In many cases, a lack of literacy observed for those who did not obtain an upper secondary qualification can be thought of as both a cause and a consequence of the decision to leave school.

Figure 8 outlines mean literacy scores from the International Adult Literacy Survey for young people 20-29 years-old, among those that have and have not completed upper secondary school.<sup>12</sup> Across the OECD countries listed, the mean literacy scores for those without high school are significantly lower than the scores attained by graduates. As well, while scores for graduates are relatively stable across countries, scores for those without upper secondary education are more varied. It is interesting to note that the difference between scores for those that did and did not complete high school is larger for Canada than for the other countries. This could suggest that the costs of dropping out, at least with respect to literacy skill development, are larger in Canada. Given the importance that employers attach to strong transferable skills in the knowledge-based economy today, those with lower literacy levels are at greater risk of not being successfully integrated into the labour market.

<sup>12</sup> In Canada, graduation from upper secondary school typically corresponds to the completion of Grade 12.

**Figure 8: Mean literacy scores on prose scale of young people aged 20-29 with and without upper secondary graduation, selected countries, 1994-1995**



Source: International Adult Literacy Survey, 1994-1995

### 3.8 Conclusions

Canadian high school dropouts do not fit a consistent profile. Nevertheless, a number of characteristics seem to typify them. They are more often male than female and are more often living with one or no parents. Parents' level of education, their socio-economic status and their attitudes toward education also impact the likelihood of their children completing high school. Dropouts typically have lower grades, are less likely to be satisfied with school or engaged in school life and are more likely to be engaged in deviant behaviour. Additional sub-groups of young people such as Aboriginal youth, those with disabilities, and younger rural youth, are more likely to leave secondary school early. Young people that work long hours while in school, particularly males, are also more likely to drop out. In Canada and other countries, dropouts are more likely than graduates to have lower levels of literacy, making them more vulnerable to exclusion from fully participating in the labour market. In particular, the lower literacy scores attained by Canadian dropouts could suggest that the costs of dropping out, at least with respect to literacy skill development, are larger in Canada.

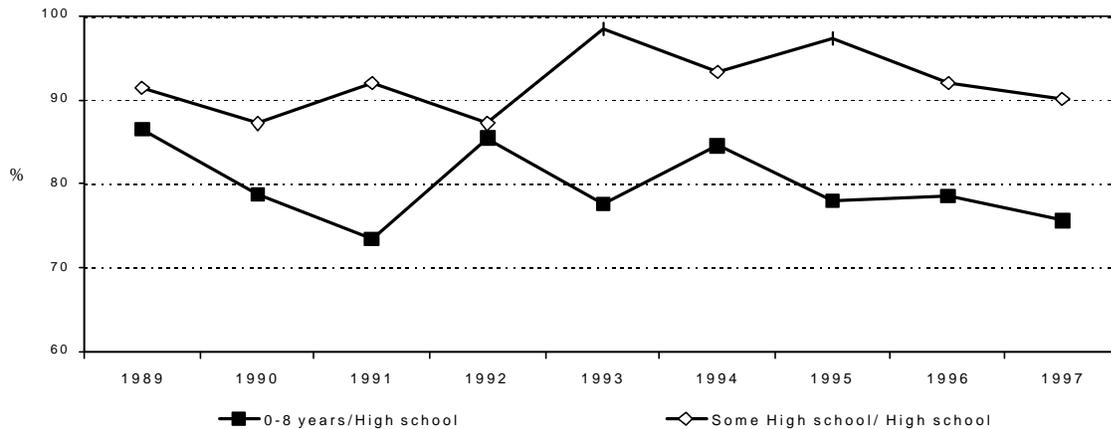
## 4. Labour Market Outcomes of High School Dropouts and Graduates

It is often assumed that high school dropouts differ from graduates in terms of their labour market outcomes. This chapter takes a closer look at various Canadian data sources to document the extent to which dropouts and graduates differ in terms of their earnings, their employment status, and other employment-related factors.

### 4.1 Earnings

One way in which markets reward workers for acquiring more credentials and skills is by offering higher wages and salaries. Figure 9 shows the ratio of full-time earnings of 30-39 year-olds for those with less than a high school education compared to high school graduates, between 1989 and 1997.<sup>13</sup> As shown, dropouts earn 88 to 98 percent on average of what graduates earn. Those that completed 8 years of education or less earn even less; roughly 70 to 90 percent of what graduates earn.

Figure 9: Ratio of Full-Time Earnings, High School Non-Completers to Completers, Workers 30-39 years-old, Canada, 1989-1997



Source: Survey of Consumer Finances

Findings from the SLS reveal that the wage distributions between male dropouts and graduates were similar while the wage distributions for women were quite different. For example, the median weekly wage for male dropouts was \$400 per week while it was \$430 for male graduates (Table 3). Among women, the median for dropouts was \$260 per week compared to \$336 for graduates. For young men at least, the income advantages for graduates were modest in size as many dropouts did just as well as graduates.

<sup>13</sup> The 30-39 years-old cohort was chosen because it allows most individuals a sufficient number of years in the labour market before examining their income. In particular, for those that have continued on into post-secondary education (and especially university) it is important to examine outcomes after individuals have been working for several years.

<b>Table 3: Weekly wages of dropouts and graduates, 1995</b>				
	Graduates		Leavers	
	Men	Women	Men	Women
25 <sup>th</sup> percentile	\$318	\$228	\$308	\$200
Median	\$430	\$336	\$400	\$260
75 <sup>th</sup> percentile	\$615	\$448	\$560	\$300

Source: School Leavers Follow-up Survey, 1995

Such findings demonstrate that there is a positive relationship between educational attainment and earnings. Nevertheless, it is not clear whether or not this is due to the positive impact of education on productivity and earnings or other factors such as inherent ability, or screening by employers. For example, the earnings gap by education level obscures the fact that individuals at all levels have different abilities. Studies suggest that about a third of the returns to investments in human capital are due to variations in individual ability. Cognitive abilities, social skills and manual skills as well as personality affect success. Still, abilities like these play a minor role compared with the actual number of years spent at school.<sup>14</sup>

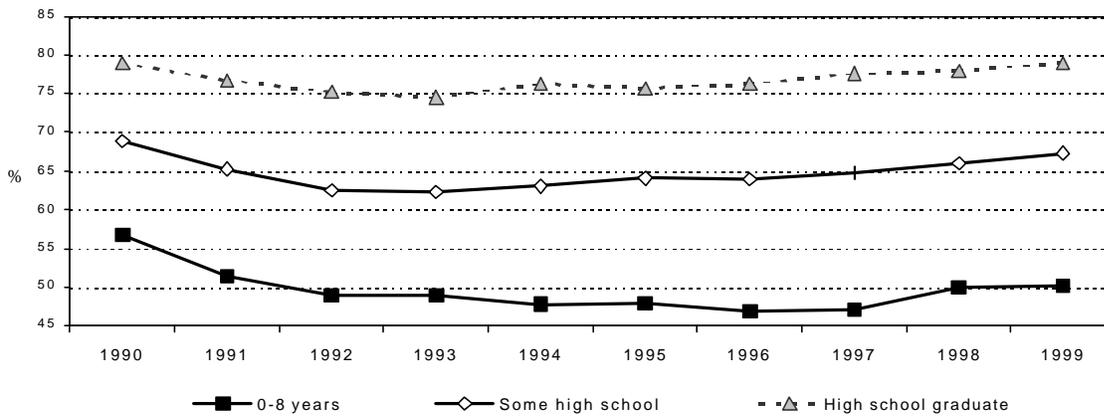
The OECD has estimated that earnings of men and women with less than upper secondary educational attainment are between 60 to 90 percent of persons who have completed upper secondary education (OECD, 1997). In general, men with lower levels of education fare slightly better than women relative to upper secondary completers of the same gender.

#### 4.2 Employment Status

High school graduates are more likely to be employed than those that drop out. Figure 10 presents the employment rates for 25-44 year-olds between 1990 and 1999 by level of education. As shown, graduates' employment rate is 10 to 15 percentage points higher, on average, compared to dropouts and 20 to 30 percentage points higher, on average, compared to those with 8 years of education or less.

<sup>14</sup> *Behind the veil of human capital*, Joop Hartog, University of Amsterdam, published in the OECD Observer January 1999.

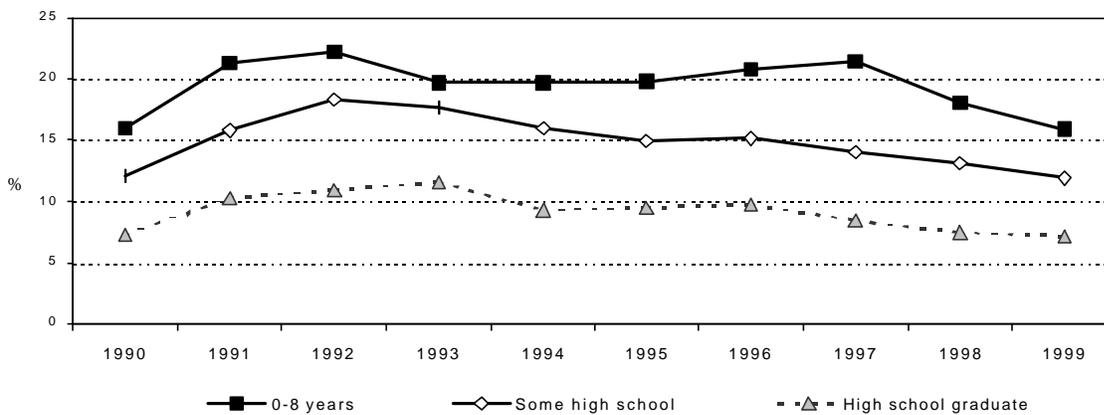
**Figure 10: Employment Rates by Educational Attainment, 25-44 Age Group, Canada, 1990-1999**



Source: The Labour Force Survey

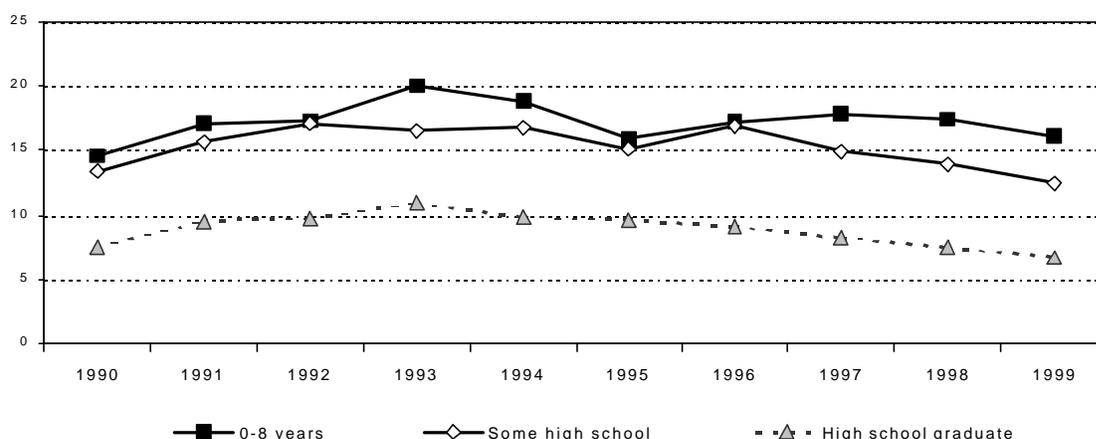
Figures 11 and 12 present male and female unemployment rates by educational attainment for 25-44 year-olds over the same time period. The figure reveals the advantage held by male and female graduates over those who acquire less education. The average unemployment rate over the period for dropouts (i.e., those with some high school) was 15 percent for males and 15.3 percent for females. For those with even less education (i.e., 8 years or less) the average unemployment rates were even higher – 19.5 and 17.1 percent for males and females respectively. High school graduates experienced the lowest average rates between 1990 and 1999 – 9.2 percent for males and 8.9 percent for females.

**Figure 11: Unemployment Rates for Males by Educational Attainment, 25-44 Age Group, Canada, 1990-1999**



Source: The Labour Force Survey

Figure 12: Unemployment Rates for Females by Educational Attainment, 25-44 Age Group, Canada, 1990-1999



Source: The Labour Force Survey

### 4.3 Time Spent Working After High School

The SLFS yields information about the early labour market experiences of dropouts and graduates, for those without additional education and training.<sup>15</sup> Table 4 outlines the proportion of time that dropouts and graduates spent working in a reference job since leaving high school.<sup>16</sup> Among male graduates, the median percentage of time spent working in a reference job was 58 percent while the median percentage for male dropouts was 46 percent. Thus, many male dropouts spent as much time working in a stable job as did graduates. The situation for women was very different with the median percentage of time spent working at 46 percent for graduates compared to 10 percent for dropouts. The gender differences in large part reflect the fact that 45 percent of women dropouts never had a reference job. This may be due to the large number of women dropouts with dependent children.

Some caution should be exercised in interpreting these comparisons. First, the labour market context of the early 1990s must be considered. Due to the economic recession and the subsequent slow recovery period, transitions were more difficult for many young people. Second, the length of time spent in the labour market may be too short for the differences between dropouts and graduates to emerge. Third, the groups may not be strictly comparable in the sense that the dropouts may have one or two years less education and are likely to have entered the labour market some time before the graduates.

<sup>15</sup> For more details see: Chapter 7, *High School May Not Be Enough: An Analysis of Results from the School Leavers Follow-up Survey, 1995* (HRDC, 1998).

<sup>16</sup> A reference job is a job that involves at least 20 hours of work per week for a period of at least six consecutive months. The 1995 SLFS collected information on the first and the most recent reference job held. For some respondents, this may have been the same job. Others may never have had a reference job at all. It is used as a measure of the intensity of stable employment.



**Table 4: Time spent working in reference jobs, dropouts and graduates without further education and training**

	Graduates (%)		Leavers (%)	
	Men	Women	Men	Women
25 <sup>th</sup> percentile	25	17	21	0
Median	58	54	46	10
75 <sup>th</sup> percentile	95	81	80	40

Source: School Leavers Survey

#### 4.4 Further Human Capital Investment

Dropouts and graduates clearly differ from each other in terms of their likelihood of pursuing further education and training. The SLFS reveals that while four out of five graduates had taken education or training towards a degree, diploma or certificate after completing high school, only one in four dropouts had pursued further education or training. This may be due, in part, to a lack of credentials and prerequisites on the part of dropouts that effectively bar them from many post-secondary options.

Male dropouts are more likely than female dropouts to access further education and training, most often in trade, vocational and apprenticeship programs. These differences may be attributable in part to the fact that 63 percent of male dropouts worked in blue collar occupations while their female counterparts worked in clerical, sales or service jobs. The blue-collar jobs may provide better access to vocational training as well as higher wages. Another factor, as noted earlier, is that female dropouts were much more likely to have dependent children.

Initial educational attainment levels are a good basis for predicting participation in further education and training. Better-educated workers generally participate more in adult education and training. According to the Adult Education and Training Survey, conducted in 1998, 52 percent of Canadian workers with a university degree participated in adult education and training, compared with only 16 percent for those with some secondary education. High school dropouts and graduates without further education and training together accounted for almost 30 percent of the 22-24 age group. Their relatively low levels of education, their lack of access to further training and their low rates of skills use suggest they would be at greater risk of exclusion from career opportunities and pathways.

#### 4.5 Conclusions

A number of indicators reveal that dropouts are at a relative disadvantage in the labour market. They earn less than graduates, and experience lower employment rates and higher unemployment rates. Among dropouts and graduates that complete no additional education or training after high school, SLFS findings reveal that dropouts, and particularly female dropouts, spent less time working in stable, reference jobs. Dropouts and graduates differ with respect to their participation in formal learning after high school. For example, a majority of graduates, but a minority of dropouts took further education or training.

## 5. Estimates of the Costs of Dropping Out of High School

Over the past forty years, there has been considerable economic analysis conducted on estimating the net benefits of education. This analysis has usually taken a human capital approach in which the costs of education are treated as investment expenditures, and additional earnings are treated as the benefits to the investment. The rate of return provides an estimate of the average annual excess of benefits over costs for a given investment. Much of this research has focused on the differences between high school graduates and university or community college graduates. Relatively little research has been directed at estimating the differences between those who complete and those who drop out of high school. In this chapter, monetary rates of return to a high school education for individuals and for society are calculated. Present value income estimates associated with completing high school are also presented. Additionally, a review of existing research that has examined the social costs and benefits of education is presented.

### 5.1 Costs and Benefits of Human Capital Investment

The net benefits of investment in education can be calculated from the point of view of the individual (i.e. the private net benefits) or society as a whole (i.e. the total net benefits). Much research has focused on the former. This may not be surprising since the costs and benefits to the individual are easier to measure than those to society as a whole. The OECD notes that:

while average benefits to individuals in terms of increased earnings and employment prospects are often clear, it is not always as easy to quantify benefits to society – which are highly relevant given that the cost of the investment is often borne in large part by public money (OECD, 1998b, p. 53).

Figure 13 illustrates how the social costs and benefits of education can be divided into private and public spheres. The costs and benefits within the shaded rectangle represent the total monetary costs and benefits. Within this category, the private costs include the costs of tuition and forgone earnings during the period of education. The private benefits include the higher earnings associated with more education. Since individuals with more education generally earn higher incomes and are more likely to be employed than those with less education, they are likely to pay higher taxes. This represents a public benefit. Public sector spending on education represents the public costs.

The total non-monetary benefits outside the shaded rectangle are more difficult to measure. The private non-monetary benefits include greater personal satisfaction and health. Others not shown in the figure could include better working conditions in higher paying jobs, and the consumption benefits realized through more education. The public non-monetary benefits include better health, lower crime and greater social cohesion.

Figure 13: Costs and Benefits of Human Capital Investment

		TOTAL MONETARY		TOTAL NON-MONETARY
		Costs	Benefits	
SOCIAL	Public	Public sector spending on education	Extra income taxes due to enhanced earnings through education	Better health, lower crime, economic growth and greater social cohesion
	Private	Private costs of education including forgone earnings	Higher earnings associated with more education, net of extra taxes paid	Greater personal satisfaction and net health

Source: Adaptation of figure from OECD, 1998b

## 5.2 Private Monetary Returns to Education

In this section, private monetary returns to high school completion are presented.<sup>17</sup> Specifically, the private monetary (after tax) rates of return to a high school education in Canada in 1995 are calculated. The private rates of return to high school completion are estimated relative to high school non-completion. Following this, estimates of the net present value of the private income associated with high school completion are presented.

### 5.2.1 Estimates of the Private Monetary Rates of Return

The analytical framework used here links individuals' earned income to the human capital they have acquired through education. Rates of return are obtained by taking income profiles before and after investment in education, subtracting the difference in income per year per individual, discounting those differences and then comparing them with the costs of education. The internal rate of return is calculated by equating the benefits to the costs.

The private costs of education consist of the resources expended by the individual who receives the education. The costs fall into two categories: income forgone and expenditures such as tuition and books. Lost income is estimated by taking the annual income for the lowest appropriate education level and multiplying it by the portion of the year in which the student did not work. The number of months of work in the summer is determined on the basis of the length of the school year. There are no tuition fees in Canada for students attending public elementary schools and high schools. Private schools, on the other hand, collect tuition fees, but these are not considered in this study since public schools are open to all.

This research looks at all individuals who reported positive earned income, except full-time students not in high school. Census data from a single year (1996) are used to represent lifetime

<sup>17</sup> This research is a summarized version of a forthcoming Applied Research Branch paper written by François Vaillancourt and Sandrine Bourdeau-Primeau.

income. This is inevitable, given the lack of adequate longitudinal data for Canada. Income profiles are calculated as the sum of salary, benefits and net income from self-employment. Calculations are based on all individuals with the appropriate level of education at the time of the Census.

Table 5 shows the private monetary rates of return for obtaining a high school diploma relative to dropping out before graduating. Those with additional training are excluded. Grades shown are indicative of the number of years spent in school by an individual, and not of the fact that the individual has passed that particular grade.

<b>Table 5: Private Monetary Rates of Return to a High School Diploma, Graduates Relative to Dropouts, Men and Women, Canada, 1995 (%)</b>						
<i>High school completion relative to:</i>						
	Grade 9	Grade 10	Grade 11*		Grade 12	Grade 13
			1 yr	2 yrs		
Men	30	41	67	37	29	30
Women	40	54	82	41	23	40

\* Grade 11 with one year or two years remaining to earn a high school diploma.

Source: Vaillancourt and Bourdeau-Primeau, Forthcoming.

As shown in Table 5, the rates of return for completing high school are substantial for both men and women whatever the number of years remaining before obtaining a diploma. The rates of return are highest when comparing graduates to those that dropped out at grades 10 or 11. For example, the private returns for graduating relative to leaving at Grade 10 are 41 and 54 percent respectively for men and women.

In Table 6, estimates for Canada’s five major regions are presented. A regional breakdown is used in order to obtain a sufficient sample size of income profiles for estimating the rates.

<b>Table 6: Private Monetary Rates of Return to a High School Diploma by Region, Graduates Relative to Dropouts, Men and Women, Canada, 1995 (%)</b>			
<i>High school completion relative to:</i>			
	Grade 10	Grade 11	Grade 12
<i>Atlantic</i>			
Men	27	30	18
Women	36	26	0
<i>Quebec</i>			
Men	20	26	26
Women	28	37	25
<i>Ontario</i>			
Men	37	75	41
Women	55	110	41

<b>Prairies</b>			
Men	52	75	16
Women	35	74	0
<b>British Columbia</b>			
Men	56	91	29
Women	70	74	34

Note: Zero indicates the return is not positive.

Source: Vaillancourt and Bourdeau-Primeau, Forthcoming.

Findings from Table 6 reveal that the rates of return are substantial for both men and women regardless of the region, and the number of years remaining before obtaining a diploma. Once again, the highest rates of return are when comparing graduates with those that dropped out at grades 10 or 11. Residents of Ontario, the Prairies and British Columbia have significantly higher rates of return than do residents of Quebec and the Atlantic Provinces.

### 5.2.2 Net Present Value Income Estimates

In addition to estimating the private rates of return, it is also possible to calculate the net present value (NPV) of the private income associated with completing high school. Table 7 presents the NPV of income estimates over the lifetime for male and female graduates relative to dropouts. Once again, individuals with additional education or training are excluded. A low and a high discount rate are used -- 3% and 6% -- to calculate the NPV in 1995 dollars.

<b>Table 7: Net Present Value Income Estimates, Differential of Graduates' Income to Dropouts' Income Over the Lifetime, Men and Women, by Discount Rate, Canada, 1995 Dollars</b>						
	Discount Rate	<i>High School Completion Relative to:</i>				
		Grade 9	Grade 10	Grade 11	Grade 12	Grade 13
Male	3%	138,000	111,000	84,000	52,000	66,000
	6%	74,000	63,000	49,000	27,000	36,000
Female	3%	87,000	121,000	45,000	7,000	10,000
	6%	52,000	66,000	30,000	5,000	9,000

As shown in Table 7, the net present value of income over the working lives of male and female graduates is relatively substantial. When a discount rate of 3% is used, the NPV of income for male graduates is \$138,000 relative to those that leave high school at Grade 9. When a 3% discount rate is used for females, the NPV of income is \$121,000 for graduates relative to those that leave at Grade 10. The NPV of income is much higher for male than female graduates in the more senior grades (i.e., Grades 11, 12 and 13).

### 5.3 Total Monetary Returns to Education

In this section, estimates of the total monetary rates of return to high school completion in Canada are presented. Total monetary rates of return include both public and private monetary returns. Total monetary benefits are based on estimates of income taxes collected by governments due to higher wages associated with completing high school. Gross individual incomes from the 1996 Census are estimated using the same methodology to calculate the private rates of return. Net income is calculated by subtracting personal income tax from gross income. The tax amounts are calculated for income profiles using the 1995 federal and provincial taxation rates. The public costs of education consist of the resources required for high school completion.<sup>18</sup> A public cost of \$8493 per year of high school education is estimated. For both forgone income and direct expenditures, the sum of annual costs for the appropriate number of years is used, without calculating present value. Table 8 presents the total monetary rates of return to a high school diploma for graduates relative to dropouts.

**Table 8: Total Monetary Rates of Return to a High School Diploma, Graduates Relative to Dropouts, Men and Women, Canada, 1995 (%)**

<i>High school completion relative to:</i>						
	Grade 9	Grade 10	Grade 11*		Grade 12	Grade 13
			1 yr	2 yrs		
Men	14	17	26	15	15	17
Women	12	17	21	11	3	22

\* Grade 11 with one year or two years remaining to earn a high school diploma.

Source: Vaillancourt and Bourdeau-Primeau, Forthcoming.

Table 8 reveals that the total monetary rates of return are smaller than the private rates of return presented in the previous section. Nevertheless, the total monetary rates of return are still reasonably substantial. The rates of return are highest when comparing graduates to those that left school at grades 10 or 11. For example, for graduates relative to those that dropped out at Grade 10, the total monetary rate of return is 17 percent for both males and females.

In Table 9, estimates for total monetary rates of return by region are presented.

<sup>18</sup> The combined cost of elementary and high school education is provided by Statistics Canada for 1995-1996 (Statistics Canada 1998). Some assumptions are made to calculate the costs separately. Specifically, it is assumed that elementary school costs are 75 percent of high school costs, which is the ratio calculated for Ontario for 1985 using figures from Education Statistics Ontario (1987).

**Table 9: Total Monetary Rates of Return to a High School Diploma by Region, Graduates Relative to Dropouts, Men and Women, Canada, 1995 (%)**

<i>High school completion relative to:</i>			
	Grade 10	Grade 11	Grade 12
<b><i>Atlantic</i></b>			
Men	15	15	10
Women	12	10	0
<b><i>Quebec</i></b>			
Men	11	14	12
Women	11	15	12
<b><i>Ontario</i></b>			
Men	15	25	17
Women	15	26	12
<b><i>Prairies</i></b>			
Men	21	30	10
Women	13	20	0
<b><i>British Columbia</i></b>			
Men	19	28	11
Women	16	21	0

Note: Zero indicates the return is not positive.

Source: Vaillancourt and Bourdeau-Primeau, Forthcoming.

As shown in Table 9, total monetary rates of return are higher for residents from the Prairie provinces, British Columbia and Ontario. The rates of return are highest once again when comparing graduates to those that dropped out at grades 10 and 11.

#### 5.4 Social Rates of Return

Estimates of the private and public rates of return to a high school education outlined in the previous two sections only considered monetary costs and benefits to calculate these rates. This section presents how the social costs and benefits to education have been discussed and estimated in the research literature. The social costs and benefits of education include the monetary and non-monetary costs and benefits from both the public and private spheres. Some of the related conceptual and measurement problems in calculating social rates of return are also outlined later in this section.

A review of the literature reveals that many factors are associated with the social costs and benefits of education. Haveman and Wolfe (1984) prepared a comprehensive catalogue of the economic impacts of education. Their catalogue separately identifies private and public goods, marketed and non-marketed goods, external effects, human capital investment, and consumption (see Appendix A). Four of the items in their catalogue -- crime reduction, social cohesion, technological change and income distribution -- are considered to be public goods. Charitable

giving is considered to be both private and public, while other impacts such as health are considered as having some external effects.

Others have also attempted to identify the factors that affect the social costs and benefits of education. Chaplin and Lerman (1997) identify many of the same factors as Haveman and Wolfe, although they also include information dissemination and intergenerational transfers. The Conference Board of Canada identified the following as elements in the social costs of education: decreased participation in the electoral and political process, higher administration costs of welfare programs, higher costs associated with crime prevention and detection, decreased level of charitable giving, and decreased social cohesion (Lafleur, 1992; see Appendix B).

More recently, the Office of Educational Research and Improvement of the U.S. Department of Education commissioned a series of papers examining the relationship between educational attainment and different social factors including health, family structure, fertility and child welfare, crime, and the environment (Behrman and Stacey, 1997). These papers considered how reducing the number of dropouts would affect these social factors. It was concluded that such a reduction would likely lead to an improvement in health, a reduction in poverty and associated problems in family structure, although the authors note that existing research does not provide a basis for determining estimates of the monetary value associated with these effects. The authors also conclude that it is not clear that reducing the number of dropouts would generate significant social benefits in terms of crime reduction. With respect to the impact on the environment, the authors note that there has been little research on the topic.

Haveman and Wolfe (1984) examined research and the status of economic benefit estimates for various social impacts of education. Table 10 presents this research and estimates for a select number of these impacts (see Appendix A for a complete list). As shown, research suggests there is some evidence that education is related to these factors. However, no estimates of the economic value of education are available for impacts such as crime reduction. Even for health, the evidence on the impact of education is only indirect.

<b>Table 10: Research findings on economic impacts of education</b>		
<i>Channel of impact</i>	<i>Nature of existing research on magnitude of impact</i>	<i>Status of economic benefit estimates</i>
Own health	Evidence that own schooling positively and significantly affects health status and, on an aggregate level, that more education decreases mortality	Little evidence on economic value; except indirect evidence via earnings, weeks worked and life expectancy
Spouse and family health	Evidence that own and spouse's schooling positively and significantly affects health status and, on an aggregate level, that more education decreases mortality	Little evidence on economic value; except indirect evidence via earnings, weeks worked and life expectancy
Crime reduction	Evidence that education is, ceteris paribus, positively associated with reduced criminal activity	No estimates of economic value
Social cohesion	Some evidence of a positive relationship with	No estimates of economic value



	education	
Technological change	Limited evidence that education influences economic behaviour in terms of research and development	No estimates of economic value
Income distribution	Evidence on the direction of impact on education on income equality is mixed	No estimates of economic value
Savings	Education appears to be positively associated with savings rates	No estimates of economic value
Charitable giving	Evidence that education increases both money and time donations	No estimates of economic value

Source: Derived from Haveman and Wolfe, 1984

In terms of the total social monetary costs, Chaplin and Lerman (1997) estimate that dropping out of high school in the United States leads to earnings losses over the course of the lifetime of between \$90,000 and \$600,000 per dropout. They indicate that the earnings losses suggest lost tax revenues for society of between \$30,000 and \$200,000 per dropout. They also note that ‘educated guesses suggest that additional losses to society could be equal to or even more than earnings losses experienced by the individual’ (Chaplin and Lerman, 1997, p. 1). They base this assumption on Haveman and Wolfe’s research (1984) although those authors stressed that such a suggestion is highly speculative and that ‘estimated relationships on which the calculations are based all contain data, specification and estimation shortfalls... None of them was designed to reveal accurately the value of the marginal contribution of schooling’ (1984, p.400). Thus, Haveman and Wolfe are clear in pointing out that estimates of the overall social costs are not likely to be accurate. It follows that the true social costs of education may differ considerably from those outlined by Chaplin and Lerman.

In Canada, estimates of the social costs of dropping out of high school were developed by the Conference Board of Canada (Lafleur 1992). The report concludes that ‘Canada will lose more than \$4 billion in present-value terms over the working lifetimes of the nearly 137,000 youths who dropped out of high school instead of graduating with the class of 1989’ (Lafleur, 1992). This estimated loss for Canada may be overly high. One reason is that Conference Board’s estimate of a 30 percent dropout rate in 1989 may be too large. As outlined earlier, the dropout rate is much lower when dropouts who return to high school, or those that have completed the equivalent of high school, are taken into account.

As well, the Conference Board may have overestimated the overall social costs of dropping out. For example, they estimate the social costs of market factors to Canada in 1989 to be \$809 million, while the total costs of non-market factors are estimated at \$3,230 million (Lafleur, 1992; see Appendix C). These calculations are based on the work of Haveman and Wolfe (1984) which assumes that non-market factors are equal in value to market factors. Yet, those authors clearly point out that because of limitations in their analysis, estimates of social costs based on this assumption are not likely to be accurate. It follows that the Conference Board’s estimates may not be accurate.

There are several conceptual and measurement problems in developing quantitative estimates of the overall social costs and benefits of education. These problems can be discussed under three

main headings: (1) measures of education; (2) variation in the benefits of education; and (3) estimating the effects of education on different outcomes.

### *Measures of Education*

Almost all of the available research on the social benefits of education is based on educational attainment. Little research has examined the benefits of cognitive achievement, one of the most important outcomes of the education system. Other educational outcomes such as self-discipline, general knowledge, job-specific skills, problem-solving skills and learning skills may also have an important effect on the social benefits of education, yet these factors have also received little attention in the literature.

Most studies only address formal education, most of which is provided in public institutions. However, education provided through private institutions, employers and organizations, as well as through new on-line electronic formats are more important than they were in the past. Thus, the earnings of individuals will only partly be due to their formal educational attainment. The contribution of informal education should also be taken into account in developing estimates of the social effects of education.

### *Variation in the Benefits of Education*

As discussed, the work of Chaplin and Lerman (1997) suggests that the private costs of dropping out in the United States are subject to considerable variation. This arises partly because of wide variation in the earnings of dropouts and graduates. There has been no study of the variation in the earnings of dropouts in Canada, although a recent study by Appleby et al (1999) suggests that the private rates of return to investment within fields of study at the university and college level in Canada vary considerably.

There are other difficulties in measuring the net benefits of reducing the number of dropouts. A significant reduction in the dropout rate will generally lead to a fall in the relative wages of graduates. Hence, current wages will provide an overestimate of the net benefits of reducing the dropout rate. The additional education provided to dropouts may also generate significant external benefits, and these may be difficult to estimate.

### *Estimating the Effects of Education on Different Outcomes*

The literature shows that much of the analysis on the social benefits of education has been based on a simple relationship between educational attainment and the benefits of education (Behrman and Stacey, 1997). It is generally assumed that the relationships are causal and uni-directional, so that an increase in education would tend to increase social benefits. However, the reverse may also be the case. For example, while education may affect the health of individuals, it would also seem reasonable to assume that healthy individuals are more likely to continue with their education.

In practice, it is difficult to identify the causal impact of education on various outcomes. Stacey argues that this is 'because education reflects choices of individuals, families, communities, and policy makers. These choices are made in the presence of important factors that are not measured in most data sets used to analyze the effects of education' (Stacey, 1998, p.61). Thus, in estimating

the causal impact of education on various outcomes, it is essential to control for factors that often cannot be observed directly.

### 5.5 Conclusions

The social costs and benefits of education can be divided into public and private spheres. As well, the social costs and benefits of education include monetary and non-monetary factors. Estimates of the private monetary rates of return for completing high school, using 1996 Census data, are substantial. Relative to those that dropped out at Grade 10, the private monetary rates of return are 41 and 54 percent respectively for young male and female graduates. If it was possible to include additional non-monetary benefits, such as greater personal satisfaction and better health, the private rates of return would be even higher. Net present value estimates of private income associated with high school completion are similarly substantial. The net present value of income (i.e., using a 3% discount rate) for male graduates over the lifetime is \$138,000 relative to those that leave high school at Grade 9, while it is \$121,000 for female graduates relative to those that leave at Grade 10. In light of the apparently high private rates of return to high school completion, it is surprising that a relatively high percentage of Canadian youth continue to leave high school before graduating. Many youth may be tempted to drop out as they may not realize the long-term monetary benefits of staying in school, not to mention the non-monetary benefits that are more difficult to determine.

Estimates of the total monetary benefits for completing high school are also considerable. When comparing graduates to those that dropped out at Grade 10, the total monetary rate of return is 17 percent. Such findings reveal that there are monetary costs to dropping out of high school for individuals and society at large.

Since the rates of return calculated in this chapter are internal rates of return, they must be compared to returns on alternative investments. The OECD has noted that 'a rate of return of 10 per cent on an investment may be treated as a threshold rate above which rates of return may be viewed as "socially profitable" compared with alternative investments in physical or financial capital' (OECD 1997, p.268). In this respect, the relatively high monetary rates of return presented in this chapter suggest that the monetary costs of dropping out of high school are substantial.

Calculating the social rate of return to a high school education presents a more difficult challenge. Among other things, limited data have been available to researchers to accurately estimate the non-market costs and benefits associated with education.

### 6. Policy Considerations

Concerns about dropping out of high school largely result from the numerous costs and benefits associated with it. As discussed in the previous chapter there are high private and public monetary costs associated with dropping out of high school in Canada. Such findings support the case for reducing the proportion of dropouts, although questions remain as to the directions that could be taken to address the issue. This section discusses some of the policy considerations for increasing high school completion rates.

In light of the relative disadvantages of dropping out in terms of earnings and other outcomes, it may seem surprising that some youth still drop out. As outlined in Chapter 3, dropouts from the School Leavers Survey cited a number of reasons for quitting school including school-related reasons, work-related reasons, as well as personal or family reasons. A recent Canadian study points to the fact that some youth may be enticed by the hourly wage they may get in the short term, rather than considering the long-term impact of dropping out of high school.<sup>19</sup>

Considering that there is little disagreement in general terms about the importance of completing high school and that provincial education ministries consider high school completion rates as a key measure of system outcomes, various strategies aimed at increasing high school retention could be considered by Canadian governments.

Significant improvements to high school completion rates will require a system that addresses school failure and meets the challenges of diversity. Children with special needs are estimated to account for 15-20 percent of the student population in most OECD countries. A recent report on special education in Quebec reveals that 12 percent of the student population have been identified as special needs students (Quebec, 1999). Of these, students with learning disabilities make up the majority of students with special needs (67 percent), followed by students with behavioural difficulties (19 percent). Of those students with disabilities, the largest number have multiple impairments (2 percent) or moderate or severe intellectual impairments (2 percent). Once again, the data indicate that boys are disproportionately more likely to be at risk. Specifically, there were almost twice as many boys in preschool, elementary and secondary education with social maladjustments or learning disabilities. This observation is consistent with other data in recent years on school dropouts, grade repetition and failure rates.

The Quebec report contains comparisons of the graduation rates (based on a cohort method) of the various categories of special needs students. The graduation rate for students who have not been declared as having special needs was 83 percent. Students with mild learning disabilities had a 38 percent success rate. The graduation rate for students with behavioral difficulties was 15 percent and for those students with severe learning difficulties it was 13 percent. With early intervention, greater flexibility in instructional methods and approaches to match individual need, supplemental support in core skills such as reading and mathematics and with parent and community support, most would be able to graduate without diluting educational standards.

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<sup>19</sup> Daniel Parent, "Labour market outcomes and schooling in Canada: Has the value of a high school degree changed over time?" Rapport de recherche 99s-42, CIRANO, November 1999.

One method of dealing with those who have difficulty with academic courses is to place them in modified programs. For example, in some school systems those struggling with academic courses and those who are not motivated by the abstract and theoretical content of academic courses can choose practical or applied programs often with a vocational orientation.<sup>20</sup> One problem with such programs is that those who complete them may have difficulty being accepted in college technology programs and universities.<sup>21</sup> There are strong arguments for creating multiple pathways in high school. In particular, technical programs are more likely to address the interests of vocationally oriented students as they are more explicitly connected to the workplace.

The availability of alternative pathways may encourage more students to finish school while preparing them for the workforce. However, these must provide explicit links to formal education and training after high school. Students and their parents may shy away from pathways that appear to deny access to post-secondary education. Furthermore, in the past, students in vocational programs have been stigmatized and have often finished high school without a sound foundation in basic skills. Governments may have an opportunity to play a larger role in disseminating apprenticeship information and to find ways to improve the attractiveness of apprenticeable careers for youth. The availability of alternative pathways to complete high school is often promoted by OECD analysts as a means of achieving more successful outcomes.

The connection between schools and the workplace has been strengthened in recent years. School/work programs such as career exploration and youth apprenticeship provide young people with the opportunity to learn workplace skills and make informed career choices. For example, in Ontario, the Youth Apprenticeship Program offers secondary students the opportunity to train as registered apprentices while still in school. In addition, curriculum reform in Quebec and elsewhere promises curricula that better reflects the needs of a changing society including, but not exclusively concerned with the needs of the workplace.

Besides offering alternative educational pathways, another approach for reducing the dropout rate could involve raising the legal age at which youth can leave school. In other countries such as the United Kingdom, a higher compulsory school leaving age has led to fewer dropouts in the system. With some exceptions, youth in Canada are required to legally stay in school until the age of 16. Raising the legal leaving age would bring it in line with the typical age of high school completion (i.e., 17 in Quebec and 18 elsewhere in Canada). New Brunswick is one province that recently raised the age at which students can leave school.

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<sup>20</sup> Ontario is adopting a variation of this. In grades 9 and 10, three types of courses are offered: academic courses, applied courses, and open courses. Academic courses emphasize theory and abstract problems. Applied courses focus on practical applications and concrete examples. Both types of courses set high expectations for students while preparing them for studies in the senior grades. Open courses, offered in all secondary school grades, are designed to prepare students for further study in certain subjects and to enrich their education generally. In Grades 11 and 12, courses offered to prepare students for post-secondary destinations include preparation courses for university, university/college, college, and the workplace. Open courses are also offered in Grades 11 and 12. Transfer courses offer students a means of transferring from one type of course to another.

<sup>21</sup> Other more subtle forms of streaming exist in high schools particular in the selection of mathematics courses. As described in a recent paper by Doug Willms, higher level mathematics has served as a critical filter. Those who take the higher level mathematics have many more options.

A third possible strategy would be to lower the minimum wages of youth (17 years of age or less) relative to those of adults (18 years or more). This may, in theory, offer another tool to reduce the dropout rate. A recent study from Montreal-based CIRANO highlights the role played by the minimum wage in the decision to drop out (Dagenais et al., 1999). The study reveals that the higher the minimum wage, the higher the dropout rate. The authors compared the effects of five different minimum hourly wage rates varying from \$2.98 to \$4.65 between 1987 and 1991 in constant 1986 dollars. The results show that the average number of hours worked and the dropout rate rise when there is an increase in the minimum wage. According to the researchers, provincial governments create conditions more favourable for dropping out every time they raise the minimum wage. The first to experience the effects of these increases are students who are predisposed to abandon their education either because they have less motivation to study or because they are very uncertain about the likelihood of successfully completing their senior year.

Finally, there is the need to promote the benefits of completing high school. Some youth may be tempted to drop out as they may not fully realize the long-term benefits of staying in school. Evaluative information on the awareness campaign under the Stay-in-School initiative revealed that it was a successful social marketing campaign. Based on this experience, a similar social marketing campaign to promote the long-term benefits of high school completion in Canada could be considered.

## 7. Conclusion

This report set out to examine the potential costs of dropping out of high school to both individuals and to society. The term “dropout rate” has been used to refer to the proportion of people in a specified age group who have left high school without graduating at a given point in time. “Dropout,” on the other hand, is a broader term referring to all youth who at a given time have left high school without graduating. Calculating a dropout rate that corresponds to a specific age group is more useful since it takes into consideration the fact that some individuals may take longer to complete high school. Thus, calculations based on youth that are somewhat older (e.g., in their mid-twenties) will provide a more accurate estimate of the dropout rate in Canada.

As discussed in Chapter 2, estimates of the high school dropout rate vary, depending on the methodology used. Findings from the School Leavers Follow-up Survey reveal that 15 percent of 24 year-old youth had not completed high school, or its equivalent, in 1995. The Labour Force Survey (LFS) reveals that 13.7 percent of 20-24 year-olds (or 276,000 youth) had not completed high school or its equivalent, in 1999. If trades training is not considered equivalent to high school completion, the LFS dropout rate was 21.3 percent in 1999 (representing 428,000 youth).

A number of characteristics typify Canadian dropouts. They are more often male than female and are more often living with one or no parents. Parents’ level of education, their socio-economic status and their attitudes toward education also impact the likelihood of their children completing high school. Dropouts are more likely to have lower marks, are less likely to be satisfied with school or engaged in school life, and are more likely to take part in deviant behaviour. Additional sub-groups of young people such as Aboriginal youth, those with disabilities, and younger rural youth, are more likely to leave secondary school early. As well, young people that work long hours while in school, particularly males, are more likely to drop out.

Estimates of the private monetary rates of returns to high school completion, as presented in Chapter 5, reveal that they are considerable. For graduates relative to those that dropped out at Grade 10, the private rates of return are 41 and 54 percent respectively for young men and women. If it was possible to include additional non-monetary benefits, such as greater personal satisfaction and health, the private rates of return would be even higher. Estimates of the net present value of private income associated with high school completion are similarly substantial. The net present value of income (i.e., using a 3% discount rate) for male graduates over the lifetime is \$138,000 relative to those that leave school at Grade 9, while it is \$121,000 for female graduates relative to those that leave at Grade 10. In light of the apparently high private returns for obtaining a high school diploma, it is surprising that a relatively high percentage of Canadian youth continue to leave high school without earning one.

The total monetary rates of return to high school completion presented in Chapter 5 are also considerable. For example, when comparing graduates to those with a Grade 10 education, the total monetary rate of return is 17 percent. From a societal standpoint, such findings support the business case for reducing the number of dropouts.

Among others, four broad policy options could be considered for addressing the dropout issue. The first one would be the development of programs aimed at increasing high school retention. Among other strategies, Canadian governments could find ways to improve the attractiveness of

alternative educational pathways for youth in high school. There are strong arguments for creating multiple pathways in high school. In particular, technical programs are more likely to address the interests of vocationally oriented students as they are more explicitly connected to the workplace. The availability of alternative pathways may encourage more youth to finish school while preparing them for the workforce. Such pathways are often promoted by the OECD as a means for achieving more successful educational outcomes.

Another option to consider for lowering the dropout rate could involve raising the legal age at which youth can leave school. Such a strategy would bring the legal leaving age in line with the typical age that most individuals complete high school. This is the approach that New Brunswick has recently adopted.

Another option would be to introduce legislation stipulating a lower minimum wage for young people (i.e., 17 years of age or less) relative to those that are older (18 years or more). Recent Canadian research has revealed that the higher the minimum wage, the higher the dropout rate. Some might argue that this approach would result in an increased earnings gap between some youth and adult workers. Yet, such an approach could provide an incentive for some youth to complete high school.

Finally, there is the need to promote the benefits of completing high school. In this respect, a social marketing campaign to promote the long-term benefits of high school completion in Canada could be considered.



**Appendix A**

**Impacts of Education Identified by Haveman and Wolfe (1984)**

<i>Channel of impact of schooling</i>	<i>Economic nature of impact</i>	<i>Nature of existing research on magnitude of impact</i>
1. Individual market productivity	Private; marketed; human capital investment	Extensive research on the magnitude of market earnings impact, by demographic group and type of schooling
2. Non-wage labour market remuneration	Private; marketed and non-marketed; human capital investment	Some research on differences in fringe benefits and working conditions by education level
3. Leisure	Private; non-marketed; consumption	Wage rate differences in (1) form shadow prices which could be used to value leisure, but seldom are
4. Individual productivity in knowledge production	Private; non-marketed; human capital investment	Some evidence that schooling increases productivity in the production of human capital investment
5. Non-market individual productivity (e.g. do-it-yourself)	Private; non-marketed; human capital investment	Some evidence of education-induced reduction in female home production time, but increase in quality; no evidence for males
6. Intra-family productivity	Private; some external effects; both marketed and non-marketed; human capital investment	Relationship between wife's schooling and husband's earnings, apart from selectivity, is well-established
7. Child quality through home activities	Private; some external effects; both marketed and non-marketed; human capital investment	Substantial evidence that child quality in several dimensions (health, cognitive development, education, occupation status, future earnings) is positively and significantly related to mother's and father's education
8. Own health	Private; modest external effects; partially marketed; human capital investment and consumption	Evidence that own schooling positively and significantly affects health status and, on an aggregate level, that more education decreases mortality
9. Spouse and family health	Private (within household); modest external effects; partially marketed; human capital investment and consumption	Evidence that own and spouse's schooling positively and significantly affects health status and, on an aggregate level, that more education decreases mortality
10a. Fertility (viz. Attainment of desired family size)	Private (within household); non-marketed; consumption	Research on contraceptive use and techniques suggests that efficiency in contraceptive and attainment of desired family size is related to education
10b. Fertility (viz. Changed tastes for children)	Private (within household); some external effects; non-	Evidence suggests that schooling reduces desired family size

## The Costs of Dropping Out of High School

<i>Channel of impact of schooling</i>	<i>Economic nature of impact</i>	<i>Nature of existing research on magnitude of impact</i>
tastes for children)	marketed; consumption	desired family size
11. “Entertainment”	Private; non-marketed; consumption	Education appears to be consumed for its intrinsic value, and possibly to broaden forms of entertainment enjoyed
12. Consumer choice efficiency	Private; some external effects; non-marketed; human capital investment	There is evidence that education alters budget allocations in the same direction as income, implying the existence of positive efficiency effect
13. Labour market search efficiency (including migration)	Private; some external effects; non-marketed; human capital investment	Some evidence that job search costs reduced with improved information and knowledge, and job and regional mobility increased
14. Marital choice efficiency	Private; minor external effects; non-marketed; consumption	Some evidence of improved sorting in the marriage market and assortative mating by intelligence
15. Crime reduction	Public good	Evidence that education is, ceteris paribus, positively associated with reduced criminal activity
16. Social cohesion	Public good	Impressionistic evidence of a positive relationship with education
17. Technological change	Public good	Limited evidence that education influences economic behaviour in terms of research and development
18. Income distribution	Public good	Evidence on the direction of impact on education on income equality is mixed
19. Savings	Private; some external effects; marketed productive factor	Holding constant income and other savings determinants, education appears to be positively associated with savings rates
20. Charitable giving	Both private and public; non-marketed	Evidence that education increases both money and time donations

Source: Haveman and Wolfe (1984), pp. 382-386

**Appendix B**

**Examples of Factors Associated with Dropping Out Identified by the Conference Board of Canada**

<i>Individual student</i>	<i>Rest of society</i>
<b><i>Market factors</i></b>	
Lower lifetime after-tax earnings of dropout	Lower tax collections
Savings in costs to student associated with staying in school <ul style="list-style-type: none"> <li>- books, tuition</li> <li>- income foregone while attending school</li> </ul>	Savings in costs to society to educate students to graduation <ul style="list-style-type: none"> <li>- school board expenditures</li> </ul>
<b><i>Non-market factors</i></b>	
Lower non-wage benefits of work <ul style="list-style-type: none"> <li>- working conditions</li> <li>- status</li> </ul>	Decreased participation in the electoral and political process
Lower level of personal health	Higher administration costs of welfare programs
Decreased opportunity for mobility and training	Higher costs associated with crime prevention and detection
Decreased probability of finding a job	Decreased level of charitable giving
Lower return on investment portfolio	Decreased social cohesion
Less highly educated offspring	
Decreased financial security	
Decreased cultural enjoyment	

Source: Lafleur (1992), p. 6.

## Appendix C

### Conference Board of Canada: Estimated Total Costs to Canada for Dropouts in 1989 (\$ millions) – Adapted from Lafleur (1992)

Costs of Market Factors			
	<i>To Dropout</i>	<i>To rest of society</i>	<i>To Canada</i>
Lower lifetime after-tax earnings	\$1,335		\$1,335
Lost taxes		\$1,697	\$1,697
Savings in costs to student associated with remaining in school	-\$156		-\$156
Savings in costs to society to educate students to graduation		-\$2,067	-\$2,067
<b>Total costs of market factors</b>	<b>\$1,179</b>	<b>-\$370</b>	<b>\$809</b>
Costs of Non-market Factors			
	<i>To Dropout</i>	<i>To rest of society</i>	<i>To Canada</i>
Lost private non-market benefits associated with graduation	\$1,492		\$1,492
Lost private non-market benefits associated with graduation		\$1,738	\$1,738
<b>Total costs of non-market factors</b>	<b>\$1,492</b>	<b>\$1,738</b>	<b>\$3,230</b>
<b>TOTAL COSTS</b>	<b>\$2,671</b>	<b>\$1,368</b>	<b>\$4,039</b>

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