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Social Returns: Assessing the benefits of higher education

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Executive Summary

While discussions on the value of education often focus on economic gains, the social returns to education are vast and can be reaped at both the individual level (e.g., better health) and societal level (e.g., lower crime rates).

Based on a combination of new and existing analyses, this paper explores the individual benefits and disadvantages associated with education, focusing on civic engagement; health/happiness; crime; and welfare/unemployment. The findings clearly suggest that investing in education has both individual and social benefits. While no causal link can be made between level of education and the returns examined, it is evident that those with some form of postsecondary education (PSE) often fare better than those with no more than a high school education.

For example, in terms of civic engagement, university graduates are more likely than high school graduates to volunteer and donate money. Higher levels of education also increase the likelihood of voting and other forms of political participation. In terms of health and happiness, university graduates tend to rate their physical and mental health higher than those with fewer years of education and are also less likely to smoke. Finally, happiness and life satisfaction also tend to increase with education.

Educated individuals are less likely to be incarcerated, most notably when comparing high school graduates with those who did not graduate. With that said, certain types of crime are more prevalent among certain populations and individuals with higher levels of education are more likely to commit white collar crimes. Finally, those with more education have lower unemployment rates and fared better during the most recent economic recession. They were less likely to require social assistance and had shorter welfare spells, especially for women.

Introduction

In the spring of 2013, the Higher Education Quality Council of Ontario released a report that assessed the performance of Ontario's higher education sector. This report explored four domains, including the social impact of higher education. This @Issue paper delves further into the concept of social impact by examining the social returns associated with higher education.

When assessing the benefits of higher education, attention is often placed on economic returns. While it is true that jobs requiring higher levels of education often yield higher earnings and that salary tends to increase together with level of education, there is more to the story. Social returns can be considered another payoff of higher education and refer to returns that can be reaped at both the individual and societal level but that are rarely measured in monetary terms.

There are two broad ways of understanding social returns. First, they have been defined as "positive (or possibly negative) consequences that accrue to individuals other than the individual or family making the decision about how much schooling to acquire" (Riddell, 2004, p. 1). An example of this would be lower crime rates: as the level of education of a society increases, the incidence of crime decreases. Lower crime rates benefit the community at large, not just the individual or family involved in the decision about schooling. Thus, education is thought to provide a social return at the societal level, rather than merely at the individual or family level.

Another way of conceiving social returns is presented by Oreopoulos and Salvanes (2011), who note that "schooling generates many experiences and affects multiple dimensions of skill that, in turn, may affect central aspects of individuals' lives both in and outside the labour market" (p. 159). A good example of this type of social return, which can also be considered an economic return, is found in the lower unemployment rates associated with higher levels of education. At the individual level, lower unemployment rates not only mean a decreased likelihood of being unemployed and potentially having to collect welfare, but they also have health implications. For example, a relationship has been shown to exist between unemployment and lower self-perceptions, as well as depression (Sheeran, Abrams & Orbell, 1995).

While the focus of this report is on social returns to the individual, the findings presented also point to social returns at the societal level. For example, increased charitable giving by those with higher levels of education has clear positive consequences for individuals in need but who are not involved in the education decision-making process. Having a greater proportion of citizens participate in politics and civil society also implies a social return at the societal level as one can assume that the greater the proportions of individuals who vote, the more likely their interests are to be represented in government. While this report does not consider the relationship between education and productivity, or the increases in personal earnings resulting from education more generally, these too have social repercussions. For example, they result in increased tax revenue and likely better or additional social programs (Davies, 2002).

A broad range of measures has been examined in the literature with respect to social returns to education (e.g., civic engagement, crime, health, happiness, environment, family, tax and transfer effects, social cohesion and social well-being, lifelong learning, and welfare and unemployment). However, this paper will focus on the social returns with the greatest amount of research or that are most applicable to Canada. Four areas have been identified as being relevant to the discussion of social returns in the Canadian context: 1) civic engagement, 2) health and happiness, 3) crime, and 4) welfare and unemployment. While an effort was made to highlight research that draws on Canadian data, the dearth of research in these areas led to a broader review of literature drawing data from Canada, the United States and the United Kingdom.

Finally, we close with a point of clarification before proceeding. Research on the social returns associated with education struggles to identify causal relationships. While some studies have attempted to go beyond correlation, the analyses have often been met with considerable resistance. Demonstrating causality is a

difficult task for many researchers, especially when dealing with complex systems like societies, where the sheer number of variables involved in a given process can be so great as to make it nearly impossible to take them all into account. Furthermore, as Michalos (2007) emphasizes, understanding how any two variables, such as education and happiness, interact will often depend on how these terms are defined and operationalized. Ultimately, the lack of causal relationships is not unique to the analysis of the social returns of education but rather points to a reality of complex sociological research. As a result, the lack of causational relationships should not exclude social returns from consideration in policy making. Instead, this paper underscores the importance of taking into account social returns when making individual and policy-level decisions about higher education.

This @Issue paper is organized into three sections. The first provides an overview of selected literature and empirical research on social returns. The second outlines data sources relevant to this investigation and draws on them to present analyses of the four types of social returns considered in this paper, and the conclusion summarizes the key findings.

Literature Review

The literature review and the analyses focus on four areas that are either most commonly observed in the relevant literature or most applicable to Canadian society. While each area of interest is presented separately, this should not discount their interconnectedness.

Civic Engagement

While a range of aspects could be included under the broad heading of civic engagement, there are a few that stand out in the literature. Commonly used measures of civic engagement include voting, charitable giving and volunteering. These are not only good measures of civic engagement but are also variables that are easy to populate, and thus commonly appear in surveys.

A positive association between education and voting has been reported by a number of researchers (e.g., Pallas, 2001; Dee, 2004; Milligan, Moretti & Oreopoulos, 2004; Riddell, 2004; Curtis et al., 2008; Higher Education Quality Council of Ontario, 2013), suggesting that those with higher levels of education are more likely to vote. This does not imply that attaining additional educational credentials causes individuals to vote, but rather that there is a positive correlation between the two.

Despite the difficulty in demonstrating causality, some researchers have attempted to do so. Research by Milligan et al. (2004) and Dee (2004) uses instrumental variables to provide evidence of a causal relationship between education and voting. While the researchers' interests lay primarily at the secondary school level, positive associations were also found at the postsecondary level.

Volunteering and charitable giving, other commonly referenced measures of civic engagement, are also positively associated with education (e.g., Owens, 2004; Riddell, 2004; Hout, 2012). Wolfe and Zuvekas (1997) identify studies dating back to the 1970s that have demonstrated a positive association between education and charitable giving, measured both in time (volunteering) and money. One might question the association between increased monetary charitable giving and education given the positive relationship between education and earnings. However, even after controlling for income, Hodgkinson and Weitzman (1988) provide evidence that postsecondary graduates donated a significantly larger proportion of their income to charity than did high school graduates.

Health and Happiness

The correlation between education and health has been well documented (e.g., Leigh, 1981; Stacey, 1998; Pallas, 2001; Mirowsky & Ross, 2003; Owens, 2004; Robison & Christophersen, 2004; Riddell, 2004; Lleras-Muney, 2005; Hout, 2012). Generally speaking, the more educated an individual, the better their health and that of their family, using such variables as physical health, (infant) mortality and psychological well-being. In addition to one's own health, spouse's and children's health have also been shown to be positively correlated with (parents') education (e.g., Grossman, 1975; Wolfe & Behrman, 1982; Behrman & Wolfe, 1987; Grossman & Joyce, 1989).

Closely related to health are happiness and life satisfaction, which one could argue are loose proxies for psychological well-being. Consistent with findings for physical health and psychological well-being, positive associations also exist between happiness and education, and life satisfaction and education (Yang, 2008; Miner, 2010; Hout, 2012). Oreopoulos and Salvanes (2011) demonstrate that after controlling for a range of background variables and income, there is a positive association between self-reported happiness and educational attainment.

The problem with demonstrating causality is also highlighted in research that examines the links between education and health. Causality can be difficult to demonstrate, in part because research often cannot account for a number of variables that are not measured in surveys yet might still be related to the variable under investigation. Riddell (2004) notes how empirical results could support the idea that education has a causal impact on health, but that there is a dearth of evidence to show the actual pathways through which this effect might occur. However, this does not mean that demonstrating causality has not been attempted. Taking a similar approach to Milligan et al. (2004) and Dee (2004), Lleras-Muney (2005) examines the causal impact of education on health, more specifically on mortality, and provides evidence of a large causal effect through the use of compulsory education laws as instruments.

Research that uses compulsory schooling to demonstrate causality, such as Lleras-Muney (2005), has not gone unchallenged. Mazumder (2007) explores the effect of education on health by using compulsory schooling laws. His results question those of Lleras-Muney (2005) and he cautions against the use of compulsory education laws as instruments to make conclusions about the causal effects that education has on long-term health (Mazumder, 2007). Stephens and Yan (2013) also question the use of these laws for making causal inferences. This lack of consensus restricts conclusions about the causal relationship between education and health, but evidence suggests that a positive relationship does exist between these variables.

According to Feinstein (2002), the effects of education on health can be broken into three channels: 1) economics factors – a result of one's employment and income and manifested in aspects such as better nutrition and better health care; 2) health-related behaviours, including factors such as exercise, smoking and alcohol consumption; and 3) psychosocial factors, such as feeling as though one has power over one's life. Others have also speculated about the effect of education on health. For example, Riddell (2004) notes evidence to support the idea that education impacts health through the greater utilization of health knowledge. Owens (2004) too suggests possible ways in which education and health might be related, such as the level of pollution in one's neighbourhood and the ability to make more appropriate use of health care services.

Crime

The evidence describing the relationship between education and crime is not as clear as that for the other social returns. Riddell (2004) highlights literature reviews by Witte (1997) and McMahon (1999), which find no evidence to support the claim that education has a positive impact on crime after controlling for other factors. Some more recent work, however, has found evidence to support such claims (e.g., Lochner, 2004; Lochner & Moretti, 2004; Robison & Christophersen, 2004).

Explanations for the relationship between education and crime vary from economic to social, and can also combine the two. Feinstein (2002) provides five potential channels for the effects of education on crime: 1) the income effect, which increases the opportunity costs associated with criminal activity; 2) direct effects on patience and/or risk aversion, whereby education increases patience; 3) direct effects on the return to crime, by which increased education can lead to increased earnings from crime, as with white-collar crimes (see Lochner, 2004); 4) delinquency and the direct effects of the pleasure gained from crime, which is especially relevant for teenagers and whereby school attendance reduces the time available for committing crime; and 5) the inter-generational effect, which highlights that criminal activity is concentrated in families and may be attributable to environmental and genetic factors. Here, the link to education is not direct but may be found in other influences, such as parental educational expectations, the impact that parents' education has on their parenting styles, etc.

Stacey (1998) urges caution when interpreting any research that shows associations between time spent working or in school and lower rates of criminal activity. She goes on to state that any causal relationship between education and crime likely stems from the socializing and supervisory role that education plays.

This brief review makes clear that more research is needed in this area to better understand the link that exists between education and crime. Substantive conclusions about whether education has a causal effect on crime or whether the two are merely correlated cannot be made with the amount and scope of existing research. New and comprehensive data are needed.

Welfare and Unemployment

Some may question whether welfare and unemployment are economic rather than social returns. In truth, they can be both. There are obvious economic returns associated with being employed, but there are also social returns that stem from employment.

The association between level of education and unemployment is relatively stable, as data from the Canadian Education Statistics Council demonstrate (2012). Its research notes that during the most recent economic downturn, individuals with lower levels of education were most affected in terms of unemployment. For example, the number of employed individuals with less than a high school diploma decreased by just over 10% between 2008 and 2009. The decrease experienced by high school graduates (including those with some postsecondary education) was significantly lower, with a drop in net employment equivalent to less than 4% (Canadian Education Statistics Council, 2012). According to the same report, the only group to have maintained relatively stable employment rates was postsecondary education (PSE) graduates. While it is true that as of 2011, employment growth for individuals with PSE has not been able to keep up with supply, PSE graduates still fare better than those with less than a PSE education (Canadian Education Statistics Council, 2012).

The advantaged position of more educated workers during times of recession can also be seen across the border. College-educated individuals had the lowest unemployment rate in the US during the most recent recession (Carnevale, Smith & Strohl, 2010). Using a model of skill-biased technological change to explain the current low employment rates in the US, Beaudry, Green and Sand (2013) demonstrate that less educated workers fare worse than highly educated workers during the bust period of boom and bust. Carnevale et al. (2010) also note that workers without PSE were less likely to be hired during the recovery period of the recession than were college-educated workers.

Riddell and Song (2009) have demonstrated that education also has a causal effect on adaptability or, more specifically, that re-employment success (for unemployed individuals) increases with education. Furthermore, highly educated individuals put job search strategies, which are thought to increase the probability of re-employment, to better use (Riddell & Song, 2009).

Receiving welfare is tied to unemployment and is associated with educational attainment (e.g., National Council of Welfare, 1998; Robison & Christophersen, 2004). A report by the National Council of Welfare (1998) demonstrates that those with PSE are less likely to receive welfare than are those with only a high school education. Barrett's (2000) work, which focuses on the duration of welfare spells, also highlights the relationship between educational attainment and welfare.

Drawing on data for New Brunswick welfare recipients, Barrett (2000) finds that educational attainment has a greater impact on the duration of welfare spells for women than for men. The median duration of a welfare spell for males with elementary schooling is six months, and five months for males with high school or PSE, demonstrating that men experience welfare spells of similar length regardless of their level of education. Females, on the other hand, experience much longer spells, with a median duration of 12 months for those with elementary schooling, nine months for those with a high school education, and six months for females with PSE (Barrett, 2000).

The literature reviewed demonstrates that while there is evidence to support a positive association between education and social returns, there is a lack of consensus about the causal relationship that may or may not exist. Instrumental variables have been used to demonstrate causality but some question the use of compulsory education laws as instruments.

Data

Research on the social returns to education tends to pursue either correlation or causation. The results presented in this section reflect correlations between level of education and outcomes and make no inferences about causality.

This section draws upon multiple sources of data to demonstrate the relationship that exists between education and measures of social returns. The majority of the analysis uses raw data and includes significance tests (noted with an asterisk in Table 1) to identify statistically significant differences (α=0.05) between level of education and each variable of interest. The data come solely from Canadian surveys and the results will thus contribute to our understanding of the association between education and social returns in the Canadian context.

Table 1 provides a brief summary of the data used.[1] This report also uses two additional sources of data, provided by Robison and Christophersen (2004) and the National Council of Welfare (2012), which are not referenced in the table below.

[1] The information to populate this table has been drawn from the respective user guides available on the Statistics Canada website.

Table 1: Data Sources

Survey Name	Year(s)	Number of respondents	Target population	Objectives of survey	Relevant social return group
Canadian Alcohol and Drug Use Monitoring Survey (CADUMS)*	2011	10,076	Non-institutionalized individuals aged 15 years and older residing in one of Canada's ten provinces	Assess the extent to which drugs and alcohol are used by the target population, as well as the associated harms	Health and happiness
Canadian Survey of Giving, Volunteering and Participating (CSGVP)*	2010	14,059 (after sub-sampling non-volunteers)	Non-institutionalized individuals aged 15 years and older residing in one of Canada's ten provinces (provincial component)	Collect national data on volunteering, charitable giving and civic participation that can be used to inform relevant policy and programs, as well as providing timely and reliable data to the Systems of National Accounts	Civic engagement
Canadian Tobacco Use Monitoring Survey (CTUMS)*	2011	20,703	Non-institutionalized individuals aged 15 years and older residing in one of Canada's ten provinces	To provide a continuous supply of data that measure smoking prevalence and allow for changes to be measured over time	Health and happiness
General Social Survey, time use (GSS)*	2010 (cycle 24)	15,390	Non-institutionalized individuals aged 15 years and older residing in one of Canada's ten provinces	Gather data that are relevant to social policy and that allow for the assessment of social trends	Civic engagement Health and happiness
Labour Force Survey (LFS)	2008-2012	Varies (according to *Methodology of the Canadian Labour Force Survey* (2008) the Canadian sample was 52,653)	Non-institutionalized individuals aged 15 years and older residing in Canada, excluding those living on reserves and full-time members of the Canadian Armed Forces	To provide timely measures of labour market activity in Canada. Data inform government planning and evaluation of employment programs	Welfare and unemployment
A One-day Snapshot of Inmates in Canada's Adult Correctional Facilities[2]	1996	23,679	All inmates placed in a facility to serve their sentence in provincial/territorial and federal prisons at midnight on October 5th, 1996	To provide additional detailed information on inmates in Canada	Crime

[2] Data are provided as percentages rather than raw data, as is the case for all others in the table.

Civic Engagement

Three broad measures of civic engagement are highlighted in the tables below. The first assesses the relationship between level of education and volunteering, the second presents the relationship between level of education and charitable giving, and the third uses three measures of collective efficacy – a term commonly used in neighbourhood research and explained in greater detail below – to determine if any type of relationship exists between these measures and level of education.

A good source of data that allows for the assessment of volunteering as well as charitable giving is the Canada Survey of Giving, Volunteering and Participating (CSGVP). Survey respondents are asked in detail about their volunteering and giving activities. In an effort to capture respondents during their working years, the sample has been restricted to 25-64 year olds. Table 2 (below) includes multiple measures of charitable giving by level of education.

In addition to controlling for age, Table 2 also controls for income, which removes some of the issues surrounding affordability of donating as earnings are not proportionally distributed by level of education. Failure to control for earnings does not recognize the variation that exists in earnings by level of education. The CSGVP provides five breakdowns of household income.[3] Rather than presenting all five, Table 2 presents the income group with the most equal distribution by level of education – $60,000-<$100,000. Analyses were run for the other income groups (<$20,000; $20,000-<$40,000; $40,000-<$60,000; $100,000+) and results that differed from those presented in Table 2 will be noted.

Table 2 demonstrates that a large majority of respondents reported making monetary donations. However, there were statistically significant differences by level of education. Looking at giving for adults aged 25 to 64 years with household incomes between $60,000 and <$100,000, college graduates were more likely to donate to a charity than were those with a high school diploma or less. Graduates with no more than a high school diploma with household incomes below $60,000 and above <$100,000 were consistently less like to donate than were most other educational groups.

Volunteering, an activity that may be more difficult for some to accomplish given the time commitment involved, was more likely to be reported by university graduates. They were also the only group to report a volunteer participation rate of at least 50% in the primary income category of interest. University graduates were also significantly more likely to volunteer than were all others, and college graduates were significantly more likely to report volunteering than were high school graduates. Looking at all other income groups, individuals whose highest level of education was a high school diploma were consistently among those least likely to volunteer.

It is not uncommon for individuals to both volunteer and donate money, and the last type of charitable giving presented in Table 2 measures this combination. Of the four categories included in the “combined volunteer and giver” variable, it is shown that the two most common types of charitable giving were volunteering and giving, or giving only. University graduates were more likely than all others to both volunteer and give, while high school graduates were less likely to do so when compared to university and college graduates. For all other income groups, high school graduates were always among those least likely to both volunteer and donate.

Looking at those with household incomes between $60,000 and <$100,000 who only volunteered, no significant differences were found by level of education. However, significant differences were identified among other income groups. University graduates with household incomes of at least $100,000 were more

[3] Note that personal income was also provided but included no valid cases.

likely than college graduates to only volunteer, and were also more likely to only volunteer than college and high school graduates with household incomes of less than $20,000.

Compared to their counterparts, university graduates with household incomes between $60,000 and <$100,000 were the least likely to report only giving. They were also less likely than college graduates to only give when their household incomes were at least $100,000. This pattern does not hold true for all income groups, as university graduates with household incomes between $20,000 and $39,999 were more likely than high school and college graduates to only give.

For those with household incomes between $60,000 and <$100,000, college graduates were least likely to neither volunteer nor give, and university and high school graduates were most likely. When looking at other income groups, it was found that high school graduates, no matter their household incomes, were among those most likely to neither volunteer nor donate.

Table 2: Charitable Giving by Level of Education, Household Income $60,000-<$100,000

		Highest level of completed education			
		University	College	Some PSE	High school or less
Giver	Yes	88.6%$_{a,b}$	91.3%$_{a}$	88.6%$_{a,b}$	83.9%$_{b}$
Volunteer	Yes	58.1%$_{a}$	46.7%$_{b}$	45.1%$_{b,c}$	37.3%$_{c}$
Combined volunteer & giver	Volunteer and giver	55.9%$_{a}$	43.8%$_{b}$	44.1%$_{b,c}$	35.3%$_{c}$
	Volunteer, not a giver	2.2%$_{a}$	2.9%$_{a}$	0.9%$_{a}$	2.0%$_{a}$
	Not a volunteer, but a giver	32.7%$_{a}$	47.5%$_{b}$	44.4%$_{b}$	48.6%$_{b}$
	Neither volunteer nor giver	9.2%$_{a}$	5.8%$_{b}$	10.5%$_{a,b}$	14.1%$_{a}$

Source: Public use microdata files Canada Survey of Giving, Volunteering and Participating, 2010

Commonly used in the context of neighbourhood research, collective efficacy is a term used to describe "social cohesion among neighbours combined with their willingness to intervene on behalf of the common good" (Sampson, Raudenbush & Earls, 1997, p. 1). The measures used in this analysis – helping a neighbour, receiving help from a neighbour, and the perception of one's neighbourhood as being a place where people help each other – are perceived to be reasonable proxies for collective efficacy as defined above.

When respondents were asked whether they lived in a neighbourhood where neighbours help each other, the majority of respondents indicated that they did, and no group of respondents (by level of education) was more likely to respond positively to this question.

Respondents were also asked if in the past month they had done a favour for a neighbour. A single significant difference was found between the five levels of education examined. High school and university graduates were significantly less likely than trade/technical graduates to have done a favour for a neighbour in the month prior to the interview. The largest percent of respondents, by level of education, who indicated that they had done a favour for a neighbour in the past month were trade/technical graduates, though this proportion was not significantly larger than college graduates or those with some PSE. While no substantive conclusions can be drawn about why trade/technical graduates were significantly more likely to do a favour for their neighbour than other graduates, it would be informative to know the types of favours performed as they may draw on the unique skill sets of trades people.

Respondents were also asked if a neighbour had done a favour for them in the past month. Graduates with a high school diploma or less were less likely than all others to indicate that a neighbour had done them a favour in the past month.

Table 3: Collective Efficacy by Level of Education

		Highest level of completed education				
		University	College	Trade/ technical	Some PSE (incl. trade/tech)	High school or less
Would you say this neighbourhood is a place where neighbours help each other?	Yes	82.6%$_{a}$	83.3%$_{a}$	84.5%$_{a}$	82.7%$_{a}$	81.3%$_{a}$
In the past month, have you done a favour for a neighbour?	Yes	66.9%$_{a}$	68.4%$_{a,b}$	73.0%$_{b}$	69.4%$_{a,b}$	66.7%$_{a}$
In the past month, have any of your neighbours done a favour for you?	Yes	62.6%$_{a}$	62.0%$_{a,b}$	62.5%$_{a,b}$	62.0%$_{a,b}$	57.1%$_{b}$

Source: Public use microdata files General Social Survey, 2010 (Cycle 24)

Health and Happiness

Drawing on the 2010 General Social Survey (GSS; Cycle 24), five measures of health and happiness were assessed by respondents' level of education, for those aged 25 to 64. The majority of measures presented are scored on different scales, but for all measures, the lower the score the more positive the result.

Self-rated health measures are not an objective measure but are thought to provide insight into individuals' general level of health. Respondents were asked to rate both their physical and mental health using a five-point scale. University graduates had the best self-rated health, and their average score was significantly better than those of respondents with other levels of education. There were additional differences in self-rated health by level of education, with college and trade/technical graduates having significantly better self-rated health than high school graduates, who on average had the lowest perceptions of their own health.

University graduates were the only educational group with significantly different perceptions of their mental health. Similar to the findings above, university graduates on average had more positive perceptions of their mental health than did other educational groups. It should be noted that respondents rated all measures of health – both physical and mental – between good and very good, indicating that Canadians have fairly good perceptions of their physical and mental health overall.

(1=excellent, 2=very good, 3=good, 4=fair, 5=poor)

Table 4: Self-Rated Health by Level of Education

	Highest level of completed education				
	University	College	Trade/ technical	Some PSE (incl. trade/ tech)	High school or less
	Mean				
Self-rated health	2.36$_{a}$	2.47$_{b}$	2.50$_{b}$	2.53$_{b,c}$	2.65$_{c}$
Self-rated mental health	2.18$_{a}$	2.31$_{b}$	2.31$_{b}$	2.32$_{b}$	2.34$_{b}$

Source: Public use microdata files General Social Survey, 2010 (Cycle 24)

While those with higher levels of attained education had better average self-rated health scores, they reported drinking more often on average than those with lower levels of education. For example, individuals with a high school education or less were less likely than university graduates to report drinking once a week, 2 to 3 times per week, and 4 to 6 times per week.

Table 5: Weekly Alcohol Consumption by Level of Education

		Highest level of completed education				
		University	College	Trade/ technical	Some PSE (incl. trade/ tech)	High school or less
How often did you drink alcoholic beverages during the past 12 months?	Never	18.3%$_{a}$	16.4%$_{a,b}$	16.1%$_{a,b}$	13.5%$_{b}$	23.0%$_{c}$
	Less than once a month	16.0%$_{a}$	21.4%$_{b,c}$	17.2%$_{a,b}$	23.3%$_{c}$	21.3%$_{b,c}$
	Once a month	9.6%$_{a}$	10.6%$_{a}$	13.0%$_{a}$	10.8%$_{a}$	10.7%$_{a}$
	2-3 times a month	13.6%$_{a}$	12.1%$_{a}$	10.6%$_{a}$	13.4%$_{a}$	13.6%$_{a}$
	Once a week	16.0%$_{a,b}$	19.4%$_{a}$	13.3%$_{b,d}$	13.6%$_{b,c,d}$	11.4%$_{d}$
	2-3 times a week	17.8%$_{a,b}$	14.7%$_{a,c}$	20.1%$_{b}$	16.2%$_{a,b,c}$	13.1%$_{c}$
	4-6 times a week	5.4%$_{a}$	2.1%$_{b}$	5.4%$_{a}$	5.2%$_{a}$	2.8%$_{b}$
	Every day	3.4%$_{a}$	3.5%$_{a}$	4.3%$_{a}$	4.0%$_{a}$	4.1%$_{a}$

Source: Public use microdata files Canadian Alcohol and Drug Use Monitoring Survey, 2011

Looking at smoking status by level of education, the pattern shown falls more in line with what would be expected given the results of self-rated health by education group. University graduates were significantly less likely than all others to be a current smoker, while college graduates and those with some PSE were more likely to be smokers when compared to university graduates but were less likely to smoke than those with a high school diploma or less.

A similar pattern was found for those who had never smoked. University graduates were most likely to report having never smoked, and respondents with a high school diploma or less were least likely to report never being a smoker. With the exception of being a former smoker, college graduates tend to sit in the middle of the pack and had similar outcomes to those with some PSE. The negative association between education and having ever smoked is also supported by Oreopoulos and Salvanes (2011), who control for income and other family background variables.

Table 6: Smoking Status by Level of Education

		Highest level of completed education			
		University	College	Some PSE	High school or less
Smoking status	Current smoker	9.3%$_{a}$	19.9%$_{b}$	20.7%$_{b}$	29.6%$_{c}$
	Former smoker	21.3%$_{a}$	29.6%$_{b}$	24.8%$_{c}$	27.7%$_{b,c}$
	Never smoked	69.4%$_{a}$	50.5%$_{b}$	54.5%$_{b}$	42.7%$_{c}$

Source: Public use microdata files Canadian Tobacco Use Monitoring Survey, 2011

While all of the scores fall between three and four, significant differences were found in life satisfaction by level of education. University and college graduates reported statistically significantly higher levels of life satisfaction than individuals with some PSE.

(1=very satisfied … 10=very dissatisfied)

Table 7: Life Satisfaction by Level of Education

	Highest level of completed education				
	University	College	Trade/ technical	Some PSE (incl. trade/ tech)	High school or less
	Mean				
Life satisfaction	3.47_{a}	3.50_{a}	$3.57_{a,b}$	3.76_{b}	$3.54_{a,b}$

Source: Public use microdata files General Social Survey, 2010 (Cycle 24)

In addition to providing self-assessments of physical and mental health, 2010 GSS respondents were asked to assess their daily stress levels. All education groups reported daily stress levels between “not very stressful” and “a bit stressful”. However, high school graduates and those with less than a high school diploma reported significantly lower daily stress levels than all other education groups. While the magnitude of the difference is fairly small, it is nonetheless statistically significant.

(1=not at all stressful, 2=not very stressful, 3=a bit stressful, 4=quite a bit stressful, 5=extremely stressful)

Table 8: Self-Rated Daily Stress by Level of Education

	Highest level of completed education				
	University	College	Trade/ technical	Some PSE (incl. trade/ tech)	High school or less
	Mean				
Self-rated daily stress level	2.95_{a}	2.94_{a}	2.84_{a}	2.89_{a}	2.72_{b}

Source: Public use microdata files General Social Survey, 2010 (Cycle 24)

In addition to asking about daily stress levels, the 2010 GSS provided a number of sources of stress and asked respondents to identify those that are a main source of stress for them. There were a number of significant differences in sources of stress by level of education, and some of these differences support findings presented throughout this report. While work was the most commonly referenced point of stress for all education groups, half of all university graduates reported that this was a source of stress, significantly more than other education groups. The proportion of respondents who cited work as their main source of stress decreased with level of education, with those whose highest level of education did not exceed high school being least likely to report work as a main source of stress. This relationship between level of education and source of stress is predicted to be a result of the positions these individuals hold in the workplace, as additional responsibilities at work often coincide with higher-level positions, which in turn tend to require higher levels of education.

Two other sources of stress worth noting are financial concerns and health. University graduates were less likely than all others to indicate that financial concerns were their main source of stress. This is thought to result from the better labour market outcomes often associated with higher levels of education, including better wages. While only some indicated health as a main source of stress, there were substantive differences between education groups. Those with a high school education or less were more likely than all

others to indicate that their health was a main source of stress and, in general, as education increased, the proportion who reported that their health was their main source of stress decreased.

Table 9: Main Source of Stress by Level of Education

	Highest level of completed education				
	University	College	Trade/ technical	Some PSE (incl. trade/ tech)	High school or less
Work	50.4%$_{a}$	44.0%$_{b}$	41.9%$_{b}$	33.2%$_{c}$	25.5%$_{d}$
Financial concerns	8.1%$_{a}$	12.5%$_{b}$	14.8%$_{b}$	14.2%$_{b}$	14.3%$_{b}$
Family	12.1%$_{a}$	16.3%$_{b}$	15.8%$_{b}$	16.7%$_{b}$	21.1%$_{c}$
School work	3.2%$_{a}$	1.6%$_{b}$	0.6%$_{b}$	12.3%$_{c}$	7.9%$_{d}$
Not enough time	15.3%$_{a}$	14.1%$_{a,b}$	11.3%$_{b,c}$	9.8%$_{c}$	9.8%$_{c,d}$
Health	4.0%$_{a}$	4.7%$_{a,b}$	6.8%$_{b}$	5.4%$_{a,b}$	10.0%$_{c}$
Other	7.0%$_{a}$	6.8%$_{a}$	8.7%$_{a,b}$	8.4%$_{a,b}$	11.3%$_{b}$

Source: Public use microdata files General Social Survey, 2010 (Cycle 24)

While most respondents reported being fairly satisfied with their work/life balance, those with a high school education or less were more likely to be report being satisfied than university graduates and respondents with some PSE. This again is thought to be attributed to the types of positions held by those with higher levels of education.

(1=very satisfied, 2=satisfied, 3=neither satisfied nor dissatisfied, 4=dissatisfied, 5=very dissatisfied)

Table 10: Satisfaction with Work/Life Balance by Level of Education

	Highest level of completed education				
	University	College	Trade/ technical	Some PSE (incl. trade/ tech)	High school or less
	Mean				
Satisfaction with work/life balance	2.17$_{a}$	2.14$_{a,b}$	2.15$_{a,b}$	2.18$_{a}$	2.04$_{b}$

Source: Public use microdata files General Social Survey, 2010 (Cycle 24)

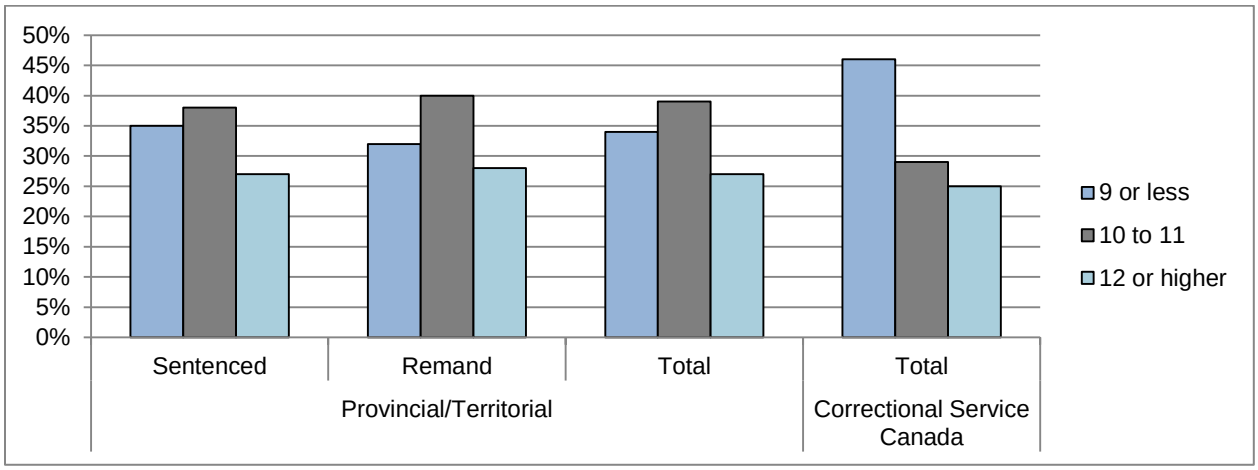
Crime

While many types of social returns can be assessed using Statistics Canada datasets like the GSS, only a limited number of crime datasets provide sociodemographic information about offenders, and in particular their level of education. One source of data is the One-Day Snapshot of Inmates in Canada's Adult Correctional Facilities. While the data are informative because they include sociodemographic information, they are also dated, as the study was conducted in 1996. Given the large amount of missing data[4] from the Correctional Service of Canada, caution should be used when interpreting One-Day Snapshot results. With that said, the approach taken in this paper is that it is better to provide dated data than no data at all.

[4] Data are missing for 3,782 provincial/territorial inmates and for 8,860 inmates in the Correctional Service of Canada (64%).

While the data do not reveal a linear relationship between level of education and incarceration, there is a notable decrease in the percentage of inmates who have education at the grade 12 level or higher. This result falls in line with findings from previous research. While the analysis does not control for the type of crime committed, it would be informative to see this breakdown as previous research notes how there is a positive association between higher levels of education and white collar crimes (e.g., Lochner, 2004).

Figure 1: Percentage of Inmates by Level of Education



Adapted from *A One-Day Snapshot of Inmates in Canada's Adult Correctional Facilities* by S. Trevethan, G. Carrière, B. MacKillop and A. Finn, Canadian Centre for Justice Statistics, and by D. Robinson, F. J. Porporino and W. A. Millson, T3 AssociatesTraining and Consulting. 1996, Ottawa, Ontario: Statistics Canada.

Robison and Christophersen (2004) contracted with the Association of Community College Trustees in 1999 to create a model that allows for an assessment of estimates of the economic benefits associated with higher education, both at an individual and a societal (taxpayer) level. Drawing on the One-Day Snapshot data and other Statistics Canada sources, Robison and Christophersen (2004) report incarceration rates by level of education, as well as the reduction in incarceration rates associated with additional educational attainment.

The magnitude of reduction in incarceration rates by level of education varies, with the largest drop seen between less than a high school diploma and a high school diploma, followed by the jump from one year of PSE to two years of PSE.

Table 11: Incarceration Rates by Level of Education

Level of education	Incarceration rates	
	Average	Reduction
	%	
Less than a high school diploma	0.2	NA
High school diploma or equivalent	0.2	15.5
One year post high school or less	0.1	8.8
Two years post high school or less	0.1	10.7
More than two years post high school	0.1	5.6

Adapted from *The Socioeconomic Benefits Generated by 24 Colleges of Applied Arts and Technology in Ontario. Volume 1: Main Report*, by M. H. Robison and K. A. Christophersen, 2004, CCbenefits, Inc.

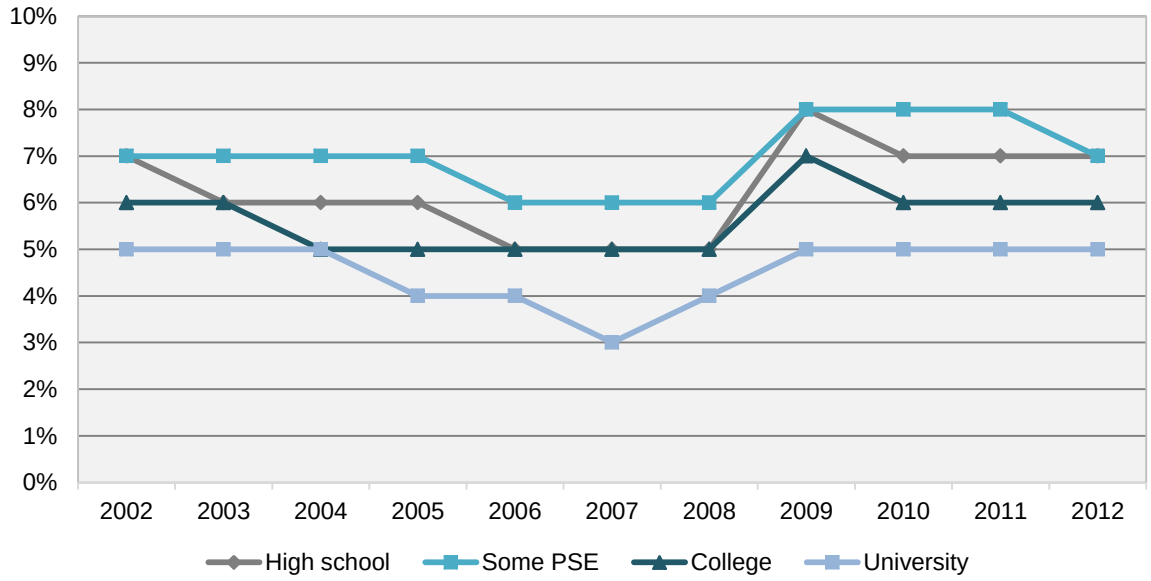
More recent but less detailed data are found in *Adult Correctional Statistics in Canada, 2010/11*. This report notes that three Canadian provinces (Saskatchewan, New Brunswick, and Newfoundland and Labrador) captured and reported offenders' level of education at the time of admission to sentenced custody. While the three provinces represent only 7.7% of those in custody[5], there is little reason to assume that the pattern found in the three provinces deviates significantly from that in other provinces. The aggregated provincial data for Saskatchewan, New Brunswick, and Newfoundland and Labrador show that just under half of offenders (44%) aged 25 years or older at the time of admission had not completed high school, which was dramatically higher than the general population (21%) (Canadian Centre for Justice Statistics, 2012).

Welfare and Unemployment

When examining unemployment rates[6] by level of education, some clear trends can be identified. Looking at a ten-year span of time, a consistent trend in the rank order of unemployment rates by level of education can be observed. University graduates consistently report the lowest unemployment rates and, perhaps unexpectedly, high school graduates with some PSE report the highest. During the recession, the unemployment rates for high school graduates with and without some PSE were approximately equal but began to deviate during the recovery period, with high school graduates without some PSE faring better.

As noted in the literature review, the recent recession had a different impact on individuals' unemployment rates depending on their level of education. University graduates were least affected, while those with college education were affected to a greater extent but still fared better than high school graduates. The unemployment rates of high school graduates with some PSE increased steadily between 2008 and 2011, and it was not until 2012 that the rate decreased.

Figure 2: Unemployment Rate by Level of Education (aged 25-64 years), 2002-2012



Source: Statistics Canada, Labour Force Survey (282-0004)

[5] Custody includes sentenced custody, remand and other forms of temporary detention (or a combination thereof).
[6] Defined as the number of unemployed individuals divided by the number of individuals in the labour force (working or looking for a job).

Table 12 below replicates one found in Robison and Christophersen's (2004) report and shows the probabilities of individuals applying for employment insurance (EI) and/or social assistance by educational attainment level. There is a clear association between educational attainment and assistance, whereby as education increases, the proportion of individuals receiving assistance – be it welfare or EI – decreases.

Table 12: Social Assistance and Unemployment by Level of Education

	Social assistance		Unemployment	
	Average	Reduction	Average	Reduction
Level of education	**%**		**%**	
Less than a high school diploma	11.2	NA	11.2	NA
High school diploma or equivalent	8.6	23.0	8.3	25.9
One year post high school or less	7.4	14.4	6.9	16.9
Two years post high school or less	6.0	18.6	5.4	22.4
More than two years post high school	5.4	10.6	4.6	13.4

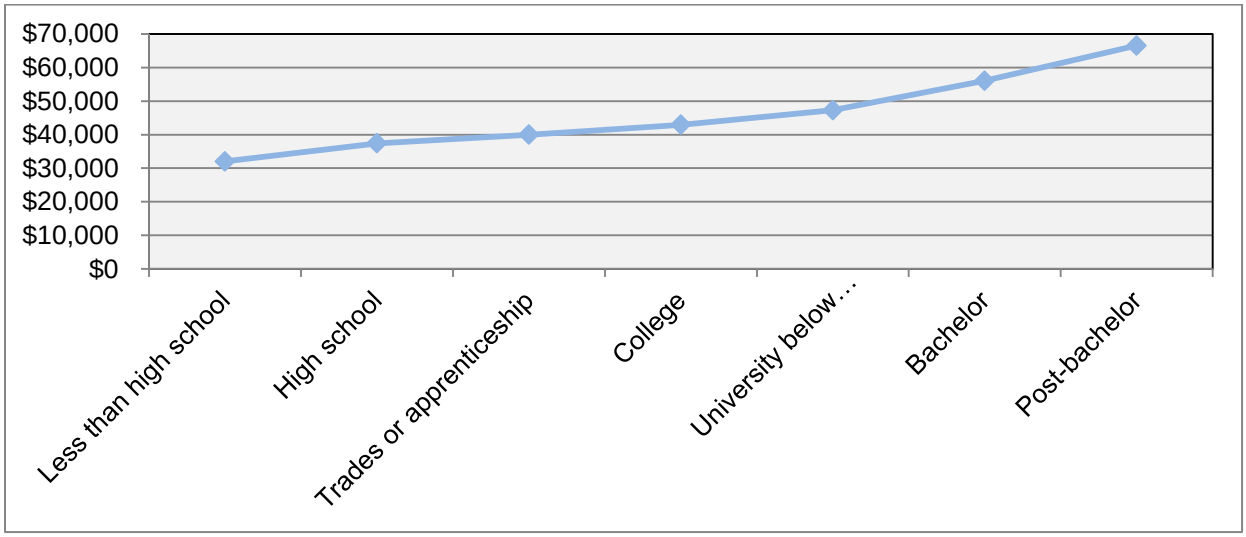
Adapted from *The Socioeconomic Benefits Generated by 24 Colleges of Applied Arts and Technology in Ontario. Volume 1: Main Report*, by M. H. Robison and K. A. Christophersen, 2004, CCbenefits, Inc.

Overall, the data on unemployment and social assistance highlights that education is associated with better outcomes.

Income

While annual personal income does not fall into the realm of social returns it is important to draw attention to the relationship between education and income as it can be thought to play a mediating role. Figure 3 demonstrates that there is a linear relationship between median earnings and educational attainment.

Figure 3: Median Earnings for Full-Year, Full-Time Earners by Educational Attainment (aged 25-64 years), 2005



Source: Statistics Canada, Income and Earnings Highlight Tables, 2006 Census

Income was controlled when assessing the relationship between charitable giving and education as it is a clear mediating variable. However, income was not controlled in any other analysis presented in this paper. Interestingly, while a clear linear relationship is found between education and income, the same does not hold true for the relationship between education and the social returns examined. Rather, there seems to be a clear breakpoint –high school education or less. This is not to suggest that income is irrelevant to our understanding of social returns but rather that it cannot solely explain the social returns to education.

Conclusion

This paper examines existing research that considers the social returns associated with education and presents new analyses of data relevant to social returns in the Canadian context. Two clear messages emerge.

First, it is important to move beyond the economic realm when estimating the benefits associated with education. All too often, individuals and society at large focus on the economic benefits of education but fail to recognize that returns are much broader. While shorter-term economic gains may seem more compelling because they are more immediate and tangible, long-term gains such as improved health outcomes are equally important.

Second, while no consistent pattern was found between level of education and the social returns examined, for the most part there is a clear dividing line between those with no more than a high school diploma and those with some form of PSE. It appears that individuals are more likely to reap social returns if they pursue some type of higher education.

Research suggests that individuals who have been to college or university are more likely to volunteer, donate money and vote, have lower unemployment rates and are less likely to require social assistance. So perhaps it is not surprising that happiness and life satisfaction also tend to increase with education.

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