Educational Support

Overview

This paper outlines our approach to measuring the impact of educational support programs in the Canadian context. In particular, we have explored research related to the short- and long-term benefits to individuals and society of improved education. Appendix III provides a partial bibliography of the studies that we used to inform our model[1]. Studies were selected based on their relevancy to different aspects of our model and availability of quantitative results. Results were weighted according to things like recency, geography, research design, and overall strength. These studies represent a fraction of the existing research literature on the benefits of improved education, a comprehensive review of which would exceed the limits of our resources. We acknowledge this limitation and have done our best to provide as thorough a survey of the research as possible with the studies we have selected.

The Social Return on Investment (SROI) to Educational Support Programs

Outcome Categories

Our research finds several categories of outcomes connected to improved education – see Table I. This is not intended as an exhaustive list of all possible outcomes connected to improved education.

Table I – Educational Support Outcome Categories

Outcome Category	Description
Income	Increased income through improved education, and income foregone while in school.
Tuition	The cost of tuition for higher education.
Mortality	Lesser risk of mortality due to improved education.
Quality of Life	Improved quality of life due to improved education.
Health Care System	Lesser health care system usage due to improved education.
Social Assistance	Lesser social assistance usage due to improved education.
Crime	Lesser crime perpetration due to improved education.

Social Return on Investment Model

We use a Social Return on Investment methodology to measure the impact of charitable activities. The SROI is an estimate of the total dollar value of social benefits that are realized as a result of a charity's programs divided by the charity's costs. Costs include program, administration, and fundraising costs, as well as the cost of goods in kind used in charitable activities and amortization on assets. Data informing the costs side of the SROI equation come from a charity itself and generally are readily accessible. As such, we focus our research and this paper on the data informing the benefits side of the SROI equation.

[1] We focus on studies that were chosen as relating specifically to educational support, and exclude more general sources of data that inform multiple program models.

Educational Support

The total dollar value of social benefits is the sum of the dollar values of often dozens of individual outcomes (or changes) brought about by a charity's programs. The calculation of the dollar value of a particular outcome requires knowledge of several pieces of information. We summarize these in Table II, providing examples in the context of educational support.

Table II – Basic Components of Social Benefits Model

Model Component	Description	Example
Number of Clients	The total unique number of clients provided a service or involved in a program (i.e., the total number of clients where each client is counted only once).	The number of clients involved in an educational support program (e.g., 100).
Baseline Distribution	The percentage of clients in one of potentially multiple, mutually exclusive groups which differ in some important way, leading to different outcomes.	In the context of support for high school students, the percentage of high school graduates whose highest level of education is expected to be high school, college[2], university at the bachelor's level, or university at above the bachelor's level (e.g., 32, 42, 17, and 9 percent).
Marginal Success Rate	The percentage of clients who achieve an outcome, net of the percentage of clients who would have achieved the outcome anyway, even without the program.	The percentage of clients who complete high school, net of the percentage who would have completed high school anyway (e.g., 5 percentage points).
(Annual) Outcome Value	The annual, per person dollar value of a particular change that has happened due to a program or service.	The annual value per person of improved quality of life related to physical health due to improved education (e.g., $2,700).
Start and End Years	The number of years that must pass after completion of a program, 1) before the annual outcome value begins to take effect (start year), and 2) after which the annual outcome value is no longer considered (end year).	In the context of income, 1) the average number of years until high school completion, and 2) the expected age at retirement minus the average age of clients (e.g., 2 and 49).
(Annual) Drop-Off	The percentage of clients who initially achieve an outcome but lose it over time.	*There is no drop-off value in the context of educational support.*
Baseline Attribution	The amount of credit a charity gets for a particular outcome, typically based on its contribution to the total cost of a service or program.	The share of the total cost of an educational support program borne by a focal charity (e.g., 100 percent).
In addition to the above, we consider various elements of outcome value depreciation over time. In this context, *attribution decay* accounts for the fact that, over time, other factors besides the initial intervention will contribute to a client's success, such that the original (baseline) attribution percentage should fall incrementally (we have chosen a rate of 10 percent per year). Similarly, *time discounting* is a standard adjustment in the field of economics to value outcomes that are achieved earlier in time more highly than those achieved later in time (we have chosen a discount rate of 3 percent per year). These adjustments apply to all programs.		

[2] This category includes apprenticeships, university below the bachelor's level, and other non-university credentials, as well as CEGEP in Quebec.

An Example SROI

The total dollar value of social benefits of an educational support program will change based on several factors. We identify in Table III the variables affecting the educational support social benefits model.

Table III – Educational Support Social Benefits Model Variables

Variable	Description	Example
Number of Clients	The number of clients served.	100
Geography	The province or territory wherein clients are served, or Canada as a whole.	Canada
Population	The economic group to which clients belong (low-income or general population).	Low-Income
Gender	The gender of clients (female or male[3]).	Female
Age	The average age of clients.	16
Attribution	The portion of program costs borne by the focal charity.	100 percent
Prospective Education	The immediate next level of education which clients are helped to achieve (high school, college, university at the bachelor's level, or university at above the bachelor's level[4]).	High School
Marginal Success Rate, School Completion	The percentage of clients who achieve a particular level of education minus the percentage of clients expected to have achieved that level of education even without the program.	5 percentage points
Highest Level of Education	The distribution of graduates of a particular level of education based on the highest level of education achieved (high school, college, university at the bachelor's level, or university at above the bachelor's level)	32, 42, 17, and 9 percent.

It is beyond the scope of this paper to identify all of the data that go into the impact model for an educational support program, as each outcome category involves several specific values for each of the components of our model, described in Table II. As such, a full account of each outcome would overwhelm this paper. Instead, based on the information in Table III, we present final estimates of social benefits of an example educational support program. In Appendix II we identify the types of data that inform the various components of our model. Some of these data are from program-specific research (e.g., annual income among individuals with different levels of education), while others are common to multiple program models (e.g., the costs of crime).

As part of our process, we identify certain 'final' outcomes downstream from the outcome categories identified in earlier sections of this paper. We estimate the total social benefits of a program by summing the values of final outcomes. In cases where the same final outcomes are connected with multiple outcome categories, those with the greatest absolute values are included in the sum. This is to

[3] Note that the binarization of this variable is for technical reasons, as we do not yet have research specific to non-binary individuals.

[4] If clients are high school students, the immediate next level of education to achieve is high school. If clients are high school graduates, the immediate next level of education to achieve is college or university at the bachelor's level.

simplify the presentation of our findings and to account for potential double-counting in our model (e.g., overlapping values connected to income and crime outcomes). We present in Table IV the total social benefits of our example educational support program. In Appendix I, we present our formula for bringing together all of the various components of our approach to valuing a particular final outcome – for example, in the context of educational support, improved quality of life related to physical health.

Table IV – Total Social Benefits, Example Educational Support Program

Outcome Category	Final Outcome	Total Social Benefits ($)
Income	Cash on Hand, Income (Employment Income)	576,542
	Public Systems, Income Tax	175,932
Tuition	Cash on Hand, Cost Savings (Tuition)	(51,480)
Mortality	Mortality, All Causes	233,089
Quality of Life	Quality of Life, Mental Health	29,209
	Quality of Life, Physical Health	116,836
Health Care System	Public Systems, Health Care	7,641
Social Assistance	Public Systems, Social Assistance	85,926
Crime	Cash on Hand, Income (Employment Income)	~~1,622~~
	Crime Victim Costs	62,552
	Public Systems, Criminal Justice	5,172
	Public Systems, Income Tax	~~491~~
		1,241,420

Note: Numbers with strikethrough format do not factor into the sum total social benefits. These represent values of particular final outcomes that are common to multiple outcome categories, where only the greatest absolute value of a particular outcome is included in the sum. Negative values are in parentheses.

As can be seen in Table IV, the total social benefits of our example educational support program is about $1,200,000, or $12,000 in short- and long-term benefits per client. The SROI to this example program would then be calculated by dividing the total social benefits by the total cost of the program. Thus, if the program costs $12,000 per client, the SROI would be 1.0. If it costs $2,400, the SROI would be 5.0. That is, $5 of social value created for every $1 of costs.

These estimates are based on a particular set of circumstances, and there is a wide range of possible results for educational support programs. As identified in Table III, our educational support model involves several variables, differences in any one of which will affect the estimate of total social benefits. Depending on the unique circumstances of and data available from a charity, estimates of the impact of a program could vary considerably. In particular, the onus is on charities to present evidence showing that the effectiveness of their program matches or exceeds what we have found through our research. When charity data are not available, we make conservative assumptions about things like the effectiveness of a program, such that specific estimates of total social benefits may be smaller than those in this paper.

Appendix I – Charity Intelligence Outcome Valuation Formula

As it relates to the total social benefits of a charity program, we calculate the total dollar value of a particular outcome, for all clients who are candidate for it, using the following formula.

$$TV = \frac{\left(ba \times c \times bd \times msr \times ov \times \left((1-do)\times(1-ad)\right)^{-ys} \times \left(\left((1-do)\times(1-ad)\times(1-td)\right)^{ys} - \left((1-do)\times(1-ad)\times(1-td)\right)^{ye}\right)\right)}{1-\left((1-do)\times(1-ad)\times(1-td)\right)}$$

where:
TV is the total value of a particular outcome, for all clients
ba is baseline attribution
c is the total number of clients candidate for a particular outcome
bd is baseline distribution percentage
msr is the marginal success rate
ov is the annual per person value of an outcome
do is drop-off
ys is year start
ye is year end
ad is attribution decay
td is time discounting

Based on our example educational support program, we estimate the total dollar value of improved quality of life related to physical health due to improved education. This value is a summation of four estimates, based on the highest level of education to which clients attain (high school, college, university at the bachelor's level, or university at above the bachelor's level). Below, we identify the data informing the components of our model for valuing an outcome, for clients who complete high school and whose highest level of education is high school. Our intention here is not to explain the derivation of these data, but just to illustrate how the formula for valuing a given outcome works.

Model Component	Value
Number of Clients	100
Baseline Distribution	32.3 percent
Marginal Success Rate	5.0 percentage points
(Annual) Outcome Value	$2,718
Start Year	2.0
End Year	70.8
Drop-Off	0.0 percent
Baseline Attribution	100.0 percent
Attribution Decay	10.0 percent
Time Discounting	3.0 percent

Inputting these data into the formula, we get:

$$= \frac{\left(100.0\% \times 100 \times 32.3\% \times 5.0\% \times \$2{,}718 \times \left((1-0.0\%)\times(1-10.0\%)\right)^{-2.0} \times \left(\left((1-0.0\%)\times(1-10.0\%)\times(1-3.0\%)\right)^{2.0} - \left((1-0.0\%)\times(1-10.0\%)\times(1-3.0\%)\right)^{70.8}\right)\right)}{1-\left((1-0.0\%)\times(1-10.0\%)\times(1-3.0\%)\right)}$$

$$= \$32{,}529^{5}$$

The comparable values for clients whose highest level of education is college, university at the bachelor's level, and university at above the bachelor's level, are $44,651, $26,356, and $13,300. Summing these together, we get $116,836 for the total value of improved quality of life related to physical health.

[5] The difference between this figure and what you would get by the formula is due to rounding in the provided data.

Appendix II – Types of Data Informing Social Benefits Model Components

Income	
Number of Clients	• The number of clients provided an educational support service.
Baseline Distribution	• The distribution of clients based on the highest level of education achieved – high school, college, university at the bachelor's level, or university at above the bachelor's level.
Marginal Success Rate	• The difference in the percentage of individuals who do and do not participate in an educational support program who achieve a particular, prospective level of education.
(Annual) Outcome Value	• The annual value per person of income at a particular level of education, net of income achievable at a lower level of education[6]. • The annual value per person of income that is foregone while in school[7].
Start and End Years	• The age at commencement of schooling at the level of high school. • The average age of clients. • The number of years required to complete schooling at the level of high school, college, university at the bachelor's level, and university at above the bachelor's level. • The age at retirement.
(Annual) Drop-Off	*There is no drop-off value in the context of educational support.*
Baseline Attribution	• The charity's costs relative to the total cost of the program.
Tuition	
Number of Clients	• The number of clients provided an educational support service.
Baseline Distribution	• The distribution of clients based on the highest level of education achieved – high school, college, university at the bachelor's level, or university at above the bachelor's level.
Marginal Success Rate	• The difference in the percentage of individuals who do and do not participate in an educational support program who achieve a particular, prospective level of education.
(Annual) Outcome Value	• The annual cost per person of tuition for an education at the level of college, university at the bachelor's level, and university at above the bachelor's level.
Start and End Years	• The age at commencement of schooling at the level of high school. • The average age of clients.

[6] Thus, for someone who achieves a high school diploma and whose highest level of education is high school, the annual value of income is that expected of someone whose highest level of education is high school minus that expected of someone whose highest level of education is no high school, taking into account things like the likelihood of employment at each level of education.

[7] Thus, for someone who enrolls in postsecondary, some amount of income will be sacrificed while they are in school. Foregone income considers how much income someone was likely to make had they not remained in school, taking into account things like income earned while in school, which would offset some of what they forego.

	• The number of years required to complete schooling at the level of high school, college, university at the bachelor's level, and university at above the bachelor's level.
(Annual) Drop-Off	*There is no drop-off value in the context of educational support.*
Baseline Attribution	• The charity's costs relative to the total cost of the program.
Mortality	
Number of Clients	• The number of clients provided an educational support service.
Baseline Distribution	• The distribution of clients based on the highest level of education achieved – high school, college, university at the bachelor's level, or university at above the bachelor's level.
Marginal Success Rate	• The difference in the percentage of individuals who do and do not participate in an educational support program who achieve a particular, prospective level of education.
(Annual) Outcome Value	• The cost per person of a full year of lost life.
Start and End Years	• Life expectancy among individuals with different levels of education. • The average age of clients.
(Annual) Drop-Off	*There is no drop-off value in the context of educational support.*
Baseline Attribution	• The charity's costs relative to the total cost of the program.
Quality of Life	
Number of Clients	• The number of clients provided an educational support service.
Baseline Distribution	• The distribution of school graduates based on the highest level of education achieved – high school, college, university at the bachelor's level, or university at above the bachelor's level.
Marginal Success Rate	• The difference in the percentage of individuals who do and do not participate in an educational support program who achieve a particular, prospective level of education.
(Annual) Outcome Value	• The annual value per person of improved quality of life related to mental health, from moving from a lower to a higher level of education. • The annual value per person of improved quality of life related to physical health, from moving from a lower to a higher level of education.
Start and End Years	• The age at commencement of schooling at the level of high school. • The average age of clients. • The number of years required to complete schooling at the level of high school, college, university at the bachelor's level, and university at above the bachelor's level. • Life expectancy among individuals with different levels of education.
(Annual) Drop-Off	*There is no drop-off value in the context of educational support.*
Baseline Attribution	• The charity's costs relative to the total cost of the program.
Health Care System	
Number of Clients	• The number of clients provided an educational support service.
Baseline Distribution	• The distribution of clients based on the highest level of education achieved – high school, college, university at the bachelor's level, or university at above the bachelor's level.

Marginal Success Rate	• The difference in the percentage of individuals who do and do not participate in an educational support program who achieve a particular, prospective level of education.
(Annual) Outcome Value	• The annual value per person of lesser health care system costs, from moving from a lower to a higher level of education.
Start and End Years	• The age at commencement of schooling at the level of high school. • The average age of clients. • The number of years required to complete schooling at the level of high school, college, university at the bachelor's level, and university at above the bachelor's level. • Life expectancy among individuals with different levels of education.
(Annual) Drop-Off	*There is no drop-off value in the context of educational support.*
Baseline Attribution	• The charity's costs relative to the total cost of the program.
Social Assistance	
Number of Clients	• The number of clients provided an educational support service.
Baseline Distribution	• The distribution of clients based on the highest level of education achieved – high school, college, university at the bachelor's level, or university at above the bachelor's level.
Marginal Success Rate	• The difference in the percentage of individuals who do and do not participate in an educational support program who achieve a particular, prospective level of education. • The difference in rates of social assistance usage among individuals of different levels of education.
(Annual) Outcome Value	• The annual public cost per person of social assistance.
Start and End Years	• The age at commencement of schooling at the level of high school. • The average age of clients. • The number of years required to complete schooling at the level of high school, college, university at the bachelor's level, and university at above the bachelor's level. • Life expectancy among individuals with different levels of education.
(Annual) Drop-Off	*There is no drop-off value in the context of educational support.*
Baseline Attribution	• The charity's costs relative to the total cost of the program.
Crime[8]	
Number of Clients	• The number of clients provided an educational support service.
Baseline Distribution	• The distribution of clients based on the highest level of education achieved – high school, college, university at the bachelor's level, or university at above the bachelor's level.
Marginal Success Rate	• The difference in the percentage of individuals who do and do not participate in an educational support program who achieve a particular, prospective level of education.
(Annual) Outcome Value	• The annual values per person of lesser crime, from moving from no high school education to a high school education.

[8] For more information on crime, see the Crime Prevention methodology paper.

Educational Support

Start and End Years	• The age at commencement of schooling at the level of high school. • The average age of clients. • The number of years required to complete schooling at the level of high school. • The age at cessation of criminal activity.
(Annual) Drop-Off	*There is no drop-off value in the context of educational support.*
Baseline Attribution	• The charity's costs relative to the total cost of the program.

Appendix III – Bibliography of Studies Used to Inform Educational Support Model

2011 National Household Survey: Data tables: Income in 2010 (34), age groups (10B), sex (3), and highest certificate, diploma or degree (11) for the population aged 15 years and over in private households in Canada, provinces, territories, Census Metropolitan Areas and Census Agglomerations, 2011 National Household Survey. (2013, September 11). Statistics Canada. https://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/dt-td/Rp-eng.cfm?TABID=2&LANG=E&A=R&APATH=5&DETAIL=0&DIM=0&FL=A&FREE=0&GC=01&GL=-1&GID=1118296&GK=1&GRP=0&O=D&PID=106637&PRID=0&PTYPE=105277&S=0&SHOWALL=0&SUB=0&Temporal=2013&THEME=98&VID=0&VNAMEE=&VNAMEF=&D1=0&D2=0&D3=0&D4=0&D5=0&D6=0

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