



*SOCIAL PLANNING COUNCIL OF OTTAWA*

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# **Estimating the Community Costs of Young Adults with Low Levels of Education**

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*With Support from the Canada Council on Learning*

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### Introduction

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Understanding the public costs of poor educational performance is crucial to educational reform. While the individual costs of choosing not to graduate from high school are well documented, the public costs, those which we all share in, are less well known but are often the ones which serve to motivate collective change. In addressing the issue of youth with low levels of education, for instance, one can not help but ask, how big of a problem is it? What is the nature of the costs that the public bears when students choose not complete their education? Educational performance is clearly an important public policy issue, one that provincial governments have long attended to but why would a community become interested and engaged in dealing with youth with low levels of education? Is it a big enough problem to garner the attention and resources of the community to deal with it? Such questions lead us to examine the status quo and to consider adjustments to the current system in order to reduce those costs.

Social scientists and economists have for some time suggested that educational outcomes include not only those for individuals but also benefits for society as well. These “social returns to education” are being increasingly documented, particularly in the US. In a recent paper for CPRN, Riddell (2006) summarizes these benefits as:

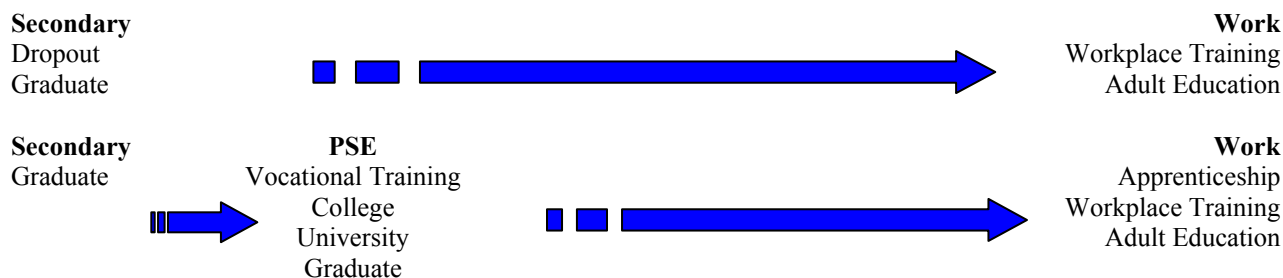
- *Innovation, Knowledge Creation and Economic Growth*: The impact of education in developing new knowledge, fostering innovation, and promoting economic growth
- *Knowledge Spillovers*: The vibrancy of post secondary education has a spill over effect on individuals who have not attained the same level of education
- *Non-market Effects of Education*: The impact of education on improving consumer choices, finding jobs and finding the right job, adapting to new jobs and careers, selecting a spouse, encouraging individual savings, and family size
- *Intergenerational Effects*: Effect of parents’ education on their children’s education, values and cognitive development
- *Health and Longevity*: Effect of education on health literacy and the health choices made by an individual and their family
- *Criminal Activity*: Effect of schooling on reducing justice and incarceration costs by improving the opportunity of individuals to achieve their goals in more socially acceptable ways
- *Civic Participation*: Effect of education on charitable giving, volunteering, social cohesion, voting behaviour, and reducing alienation and other social inequalities
- *Tax and Transfer Effects*: Effect of education on reducing reliance on unemployment assistance, welfare and other social programs

Riddell concludes by saying that, “The social benefits of education appear to be substantial [7-10%], perhaps as large as the private market returns to education from higher lifetime earnings. Thus the benefits of education are considerable, and any decisions regarding public support for education and the design of educational policies should take social and non-market benefits into account.”(Riddell, 2006:29)

Over the past century, Canada’s model for social and economic sustainability has been based upon a public system of providing mass education to its younger generations to sufficiently enable them to move into various positions of employment and eventually replace the oldest existing generation workers who eventually retired from the workforce. The model originates from an early industrial era need for uniformly trained workers to feed the ranks of burgeoning

manufacturing firms that required employees who had a standardized set of basic skills and knowledge – they could read, write, had some facility with numbers and knew how to fit into institutional settings. It was a model that was largely a linear pathway from childhood to workplace. During the first half of the nineteenth century the concept of “youth transition” ceased to be a “coming of age” process of moving into adulthood but a largely mechanical process of transforming children into workers through schooling, much like any other industrial processes.

**Table 1: Industrial Model of Youth Transitions**



In addition the costs associated with failing to complete higher levels of education were at the time minimal. During the 1950s, 60s and 70s industrial employment was high and growing ensuring that workers with minimal knowledge and skills could still find productive and rewarding employment. Jobs that truly required university and graduate levels of education were few basically guaranteeing that anyone with a degree and who wanted work could find well paid employment. The focus was on getting people into waiting jobs as soon as possible.

The costs of youth failing to achieve higher levels of education were essentially represented by the opportunity costs of higher individual incomes and slower rates of economic growth. Broad public awareness of these costs fuelled the development of cultural attitudes that assumed more education was better and that university education was better and more financially rewarding than either college or trades education.

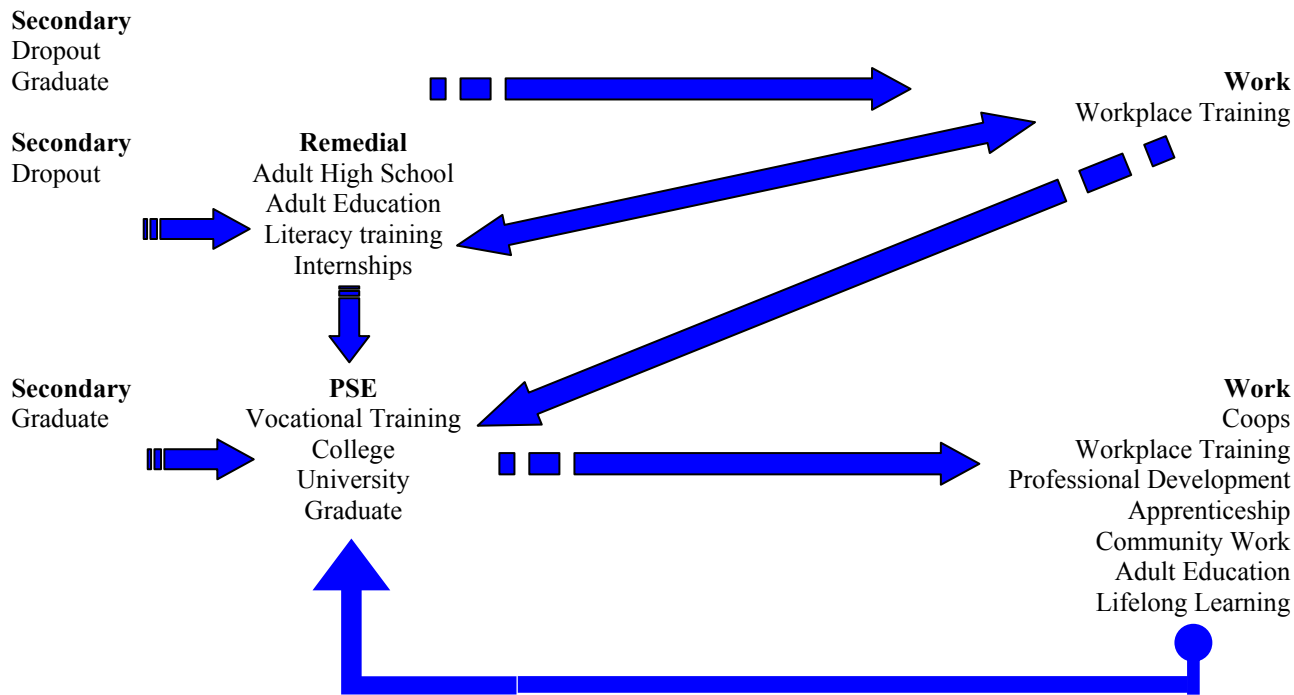
In more recent years the process of transitioning youth into the workforce has become less linear and much more than simply replacing older, tired workers with younger, more energetic ones. The current model has acquired multiple loops between education and work allowing for the adoption multiple careers and skill sets.

In the context of a knowledge economy, the new model for transitioning youth has become a process of rejuvenating the economy with newer knowledge and newer forms of technologies and different and therefore more innovative attitudes. Yahoo, Google, and You-Tube are all examples of that youthful innovation that have produced major new forms of economic activity. That transformation process has also become part of a process that substitutes those new technologies for workers themselves, particularly in routine jobs, and it is increasingly shifting the workforce to higher value skill sets that continually require more advanced levels of education or training.

The costs of low levels of education today may still be expressed as the opportunity costs of individual income and economic growth but the value of those opportunity costs may, on the one hand, be significantly greater. These days the economic loss of the next Larry Page or Sergey Brin, founders of Google, could be enormous. The very nature of the knowledge economy is that it can hinge on the innovative potential of single individuals. On the other hand, the links

between more education and more innovation are not causal and according to some, like the UK's Sir Kenneth Robinson (2001), our system of education methodically destroys individual creativity and innovativeness.

**Table 2: Today's Model of Learning Transitions**



But there also appears to be social costs beyond reductions of income and economic growth. There has been a growing litany of social problems that are being linked to low levels of education, including: increased social welfare (Behrman & Stacey, 1997), poorer child development (Lam & Duncan, 1999; Duniform, Duncan & Brooks-Gunn, 2000), increased crime and recidivism (Lochner & Moretti, 2001; Sherman et al. 1998), poorer health (Sander 1995; Canadian Council on Learning, 2007), reduced tax revenues (Vernez et al. 1999; Davies 2002), increased homelessness (Luby, Jane and Welch, 2006), increased unemployment (Riddell, 2006), and decreased social cohesiveness (Hauser, 2000; Helliwell & Putnam, 1999). When taken together across an entire community and extended over the productive lifetime of an individual, these costs can be enormous – more than even the individual gains from education (Wolfe & Haveman, 2002). They provide an extremely persuasive social argument to keep kids in school -- at least until they can complete a degree or diploma.

However, in a recent report by the Canadian Council on Learning, entitled *Post-Secondary Education in Canada: Strategies for Success*, Statistics Canada figures were cited that showed, among other things, that one out of every four post secondary graduates earned less than those who had only completed high-school (Canadian Council on Learning, 2007). Said Denise Savoie, the federal NDP post-secondary education critic, "We can't continue to assume that post-secondary education is the key to financial success." (Tibbetts, 2007:A10)

Such comments represent a condemnation of an educational system that has been constructed almost entirely to facilitate the transition of youth into the workforce and to promote their expectation of a smooth road to prosperity from the achievement of some sort of post secondary

degree or diploma. It begs for a fundamental discussion of why we fund public education and to what end.

Moreover, it appears that from an economic perspective we may have reached the position of having a surplus of post secondary graduates while having an under-supply of people with non-skilled or semi-skilled qualifications. An oversupply of well educated workers tends to devalue the worth of education while encouraging the relative value of not seeking higher education. When 25% of university graduates are competing with high school graduates and dropouts for Macjobs, the public and private investment for four years of post secondary study becomes hard to justify in economic terms. According to the Canadian Council on Learning, Canada has a duty to “examine why so many [post-secondary education] graduates are earning below their expected potential and determine whether their skill sets are being under-utilized, thereby undermining potential gains” (Canadian Council on Learning, 2007:12).

Furthermore, this over capacity in education also represents a significant public cost that needs to be explored. Creating an expensive university/college infrastructure that supplies many more well educated youth than our economy can actually absorb may be much more costly than the ongoing opportunity costs born by individuals and society. Should education just be a path to employment? Are there other social benefits from education that are altogether economic?

This paper is intended to provoke further discussion on the status of youth in Ottawa with low levels of education with the view that it is not only individuals but the community as a whole that suffers from a decision to drop out of school. It is not meant to answer the question of why they drop out. That discussion has been catalyzed by a recent report by The Hospital for Sick Children in Toronto (2005) and picked by the United Way in Ottawa.

Nor is it meant to provide a definitive answer on the full costs of kids dropping out of school. Addressing these concerns is beyond the scope and limited resources of this paper. However, this paper is meant to serve as an encouragement to further research and community discussion of both why and how much low levels of education cost the community.

As a way of catalyzing public discussion on the costs of low levels of education among young adults in Ottawa, this paper examines four of Riddell’s basic “social returns to education” (the four for which data is most easily accessible) in an Ottawa context, including:

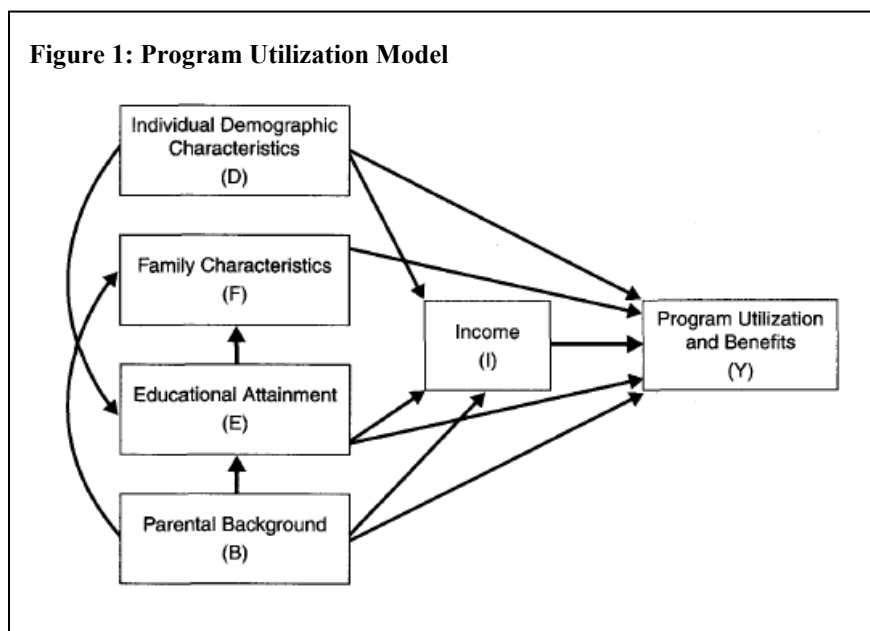
- Income effects,
- Tax and transfer effects,
- Health effects, and some extent
- Economic growth effects

Yet even from this cursory review it is apparent that significant social gains may be obtained by further attention to both the costs and responses to low levels of education in young people. The following section outlines costing approaches that have been applied elsewhere.

## Calculating the Costs of Low Levels of Education

In its groundbreaking report on the benefits and costs of education, the RAND Corporation suggested (1999: 13-14) that higher educational attainment leads to reduced crime, improved social cohesion, technological innovation, and intergenerational benefits. It also identified links between education levels and improved individual and social health; increased productivity; benefits to co-workers and employers; and ultimately the performance of the economy. Further external benefits from education included a reduction of social assistance and other social redistributive programs; increased tax revenues; and reduced net costs of government to society.

The study estimated the benefits and costs of education using a program utilization model (See Figure 1).



This yielded the estimation model  $Y_{ij} = f(E_i, D_i, B_i)$  where:

$Y_{ij}$  = benefits received (cost) from program  $j$  by person  $i$

$E_i$  = education of person  $i$  defined as fewer than 12 years, 12 years, 13-15 years, or 16 years or more of education

$D_i$  = characteristics of individual  $i$ , including ethnicity, age, gender and nativity.

$B_i$  = parental characteristics

The approach of the RAND study focused on three primary areas:

- **Program Savings** that were determined by Federal/state unemployment insurance; Supplemental Security Income; food programs such as food stamps; low income energy assistance; Medicaid; Medicare; school breakfast programs; Social Security; welfare, including Aid to Families with Dependent Children; and the costs of the criminal justice (jails and prisons).

## Community Costs of YALLE

- **Tax revenues** that were determined by using the US Census Bureau *Survey of Income and Program Participation* to estimate the relationship between education and income. Income levels were used to calculate federal payroll taxes for Social Security and Medicare; federal income taxes; and state income, sales and property taxes.
- **Disposable Income** that was determined by subtracting tax revenues from per person income at a given educational level and demographic at age thirty (30).

The report's conclusions included that:

- The average annual welfare costs per person declines with age, most sharply for high school dropouts and then for high school graduates.
- The costs of welfare per person drops sharply as educational attainment increase. The sharpest drop in costs occurs when educational attainment increases from high school dropout to high school graduate. Table 1 presents in 1997 US dollars the benefits per person of obtaining a high school diploma in the United States.

**Table 3: Per Person Savings in Public Social Programs and Increases in Tax Revenues and Disposable Income Associated with an Improvement from High School Dropout to High School Graduate**

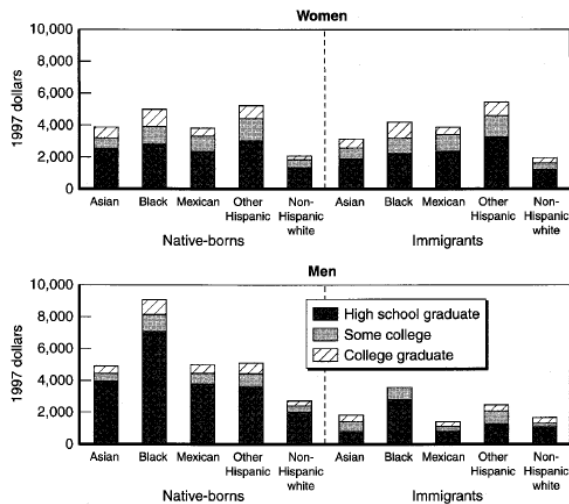
Benefit Source	U.S. High School Dropout to High School Graduate					
	Asian	Black	Mexican	Other Hispanic	White Non-Hispanic	Average
<b>Native Born Men Age 30 (1997 Dollars)</b>						
Program Savings	3963	7064	3849	3692	2037	4121
Tax revenue	1860	1039	1522	1736	1930	1617
Disposable Income	2677	2257	2184	2262	2866	2449
<b>Native Born Women Age 30 (1997 Dollars)</b>						
Program Savings	2256	2841	2438	3080	1409	2465
Tax revenue	2378	1819	1843	1951	2295	2057
Disposable Income	3397	2487	2588	2655	3376	2900

Source: *Closing the Education Gap*, RAND Corp, 1999: 142-143

- Savings on welfare spending that are due to increased education are cumulative, meaning that improvements in education early on, especially among youth, will generate continuous and growing savings throughout an individual's lifetime.
- The same increase in educational attainment produces different average savings for different ethnic groups
- The bulk of cost savings from increasing education among native born men tends to come from savings from correctional spending (see Figure 2). Excluding the savings from correctional spending, women benefit more from educational improvements due to their being more likely recipients of social programming and differences between native born and immigrants are minimal.
- Increases in disposable income are most dramatic when going from 'some college' to 'college graduation' (1.5 X the rate from dropout to high school graduate). See Figure 3.

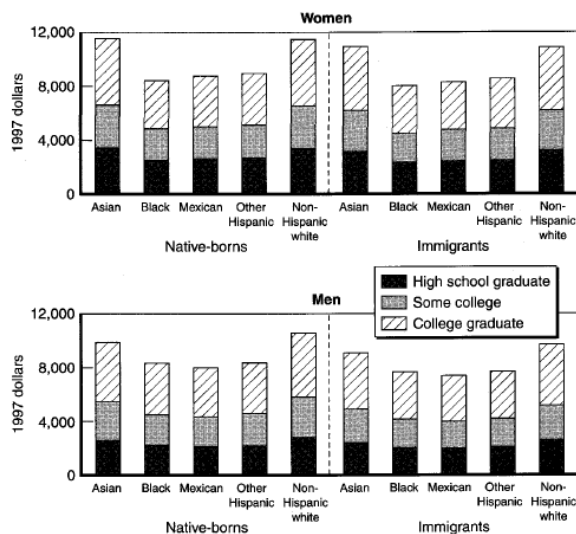


**Figure 2: Total Annual Per-Person Savings in Public Social Programs with Increase in Education (relative to high school dropout) for a 30-year old, by Education, Gender, Ethnicity and Nativity**



Source: *Closing the Gap*, RAND Corp., 1999:25

**Figure 3: Increases in Per-Person Disposable Income with Increases in Education (relative to high school dropout) for a 30 year old, by Gender, Ethnicity, and Nativity**



Source: *Closing the Gap*, RAND Corp., 1999:26

A more recent attempt to determine the costs of low levels of education was conducted in North Carolina (Gottlob, 2007), and a similar but less comprehensive approach was used that identified impacts of low levels of education on:

- annual individual earnings;
- state tax revenues (including income taxes and sales taxes); and
- state program spending (exemplified by the use of Medicaid and the cost of incarceration).

This approach was used to support public investment in charter schools in North Carolina with the view that small investments that could potentially improve the graduation rate by 1% could yield much larger returns to the state owing to the lifetime stream of benefits that would accrue for each person individual who did not drop out of high school.

The Gottlob study found (2007: 5) that:

- In 2005 more than 38,135 North Carolina students failed to graduate.
- The annual public costs for just one year’s class of dropouts is \$169 million, or about \$4,437 per dropout.
- Over 50 years, one year’s class of dropouts will cost North Carolina taxpayers \$8.5 billion based on costs from only three sources:
  - lost revenue from taxes and fees (\$995 per dropout per year),
  - increased Medicaid costs (\$1,496 per dropout per year), and
  - increased incarceration costs (\$1,946 per dropout per year).
- Since dropouts also incur many other public costs, the true public cost of dropouts was likely larger than \$4,437 per dropout per year.

In Canada, Oreopoulos (2005; 2006) compared several U.S. jurisdictions and N.B., where the age of compulsory schooling was raised and found that each additional year of schooling beyond age 16 had the following effects:

- it lowers the probability of being unemployed (defined as not working but looking for work) by 2.5 - 5.6 percentage points;
- lowers the probability of not working (irrespective of whether one is looking for work or not) by 2.7 -13.3 percentage points; and
- boosts weekly earnings among those working more than 25 hours per week by between 9.9 and 25.8 percentage points.

Given this background, we are encouraged to examine the extent of potential program savings and other benefits that may be reaped by improving levels of educational attainment among Ottawa's youth.

An awareness of the social costs of low levels of education among youth identifies neither problems nor solutions. It does, however, create flexibility to entertain alternatives to the status quo as any alternative which purports to reduce costs should become worthy of consideration. How the problem is ultimately defined and resolved would be the combined responsibility of young people, their parents and the various community stakeholders, including their governments, who desire to support them.

Therefore the purpose of this report is to begin to estimate the potential for social gains from engaging in a community of practice dedicated to understanding low levels of education in Ottawa's youth and designing collective responses that may improve social welfare overall. This next section looks to estimate the extent of the dropout problem in Ottawa. Subsequently, we will look at the effects on the community from low levels of education among Ottawa's youth in terms of income, reduced tax revenues, program spending, health and economic growth.

## The Burden of Low Education in Ottawa

Several organizations have estimated the size of the population who have not completed high school or are high school graduates but have not chosen to pursue additional post secondary education. Statistics Canada estimates 42,510 people between 15-24 years of age (most of whom are still in school) and 38,455 people between 25 and 64 and who have not completed high school (Table 4).

**Table 4: Persons in Ottawa who have not completed HS**

	15+	15-24	25-34	35-64	Total 25-64
<b>Total</b>	685,525	42,510	5,965	32,490	38,455
<b>Male</b>	329,635	22,360	3,320	15,950	19,270
<b>Female</b>	355,890	20,155	2,645	16,540	19,185

Source: *Census 2006*

In 2006, 8,400 young adults aged 15 to 24 in Ottawa had not completed high school and were not in school. Of all young adult early school leavers, 60% (5,055) were aged 15 to 19 and 40% (3,345) were aged 20 to 24. Young adults who had not completed high school and were not in school were 7.2% of the total Ottawa population aged 15 to 24 (8.9% of the total population aged 15 to 19 and 5.6% of the total population aged 20 to 24). (Table 5)

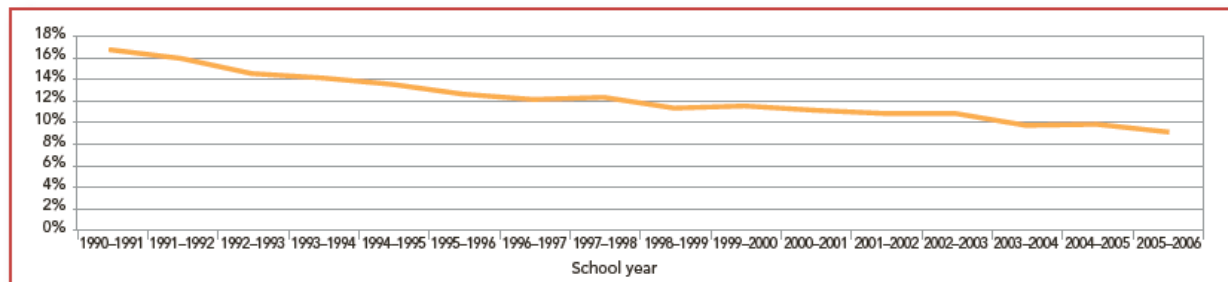
**Table 5: Persons in Ottawa who have not completed HS and not in school**

	15-19	20-24	15-24	25-64
<b>Total</b>	5,055	3,345	8,400	38,455
<b>Male</b>	2688	2016	4704	19,270
<b>Female</b>	2352	1344	3696	19,185

Source: *Social Planning Council of Ottawa (2008) & Census 2006*

The Canadian Council on Learning (CCL) has tracked the annual *Dropout Rate* in Canada since 1990 and has observed a steady decline from 16% in 1990-1991 to approximately 9% in 2005-2006 representing an average annual decrease of 0.47% (see Figure 3). The CCL defines the dropout rate as “the proportion of Canadians aged 20 to 24 who have not completed high school and who are no longer attending school” (Canada Council on Learning, 2007) using the definition adopted by the Organization for Economic Cooperation and Development (OECD) for

**Figure 4: Canadian high-school dropout rates, 1990–1991 to 2005–2006**



Source: Statistics Canada. *Labour Force Historical Review* (Ottawa: Statistics Canada, Labour Statistics Division, February 2006)

Source: *State of Learning in Canada: No Time for Complacency*, Canadian Council on Learning, 2007

international comparisons.

## Community Costs of YALLE

In 2005–2006, the Canadian dropout rate for men was 11%, compared with 7% for women. The CCL also reported that according to Statistics Canada’s Youth in Transition Survey, dissatisfaction with school and a desire to earn money are key factors in young men’s decisions to leave high school without a diploma. The CCL has also documented the dropout rate in different provinces and in different large urban areas or census metropolitan areas (CMAs).

In 2005 The CCL estimates that the dropout rate in Ottawa was 8.3%. According to the Ontario Ministry of Education website, in 2005 the high school enrolment in the four Ottawa area boards of education was 46,842. Applying the 2005 dropout rate against the enrolment in the Ottawa area school boards yields an estimated annual number of dropouts in Ottawa of 3,888.

**Table 6: Secondary School Enrolment and Estimated Dropout Levels by Board 2004-2005<sup>1</sup>**

	OCDSB		CEPEO		OCCSB		CECLF		All Boards		Rate
	HS Pop.	Dropout <sup>†</sup>	HS Pop.	Dropout <sup>†</sup>	HS Pop.	Dropout <sup>†</sup>	HS Pop.	Dropout <sup>†</sup>	HS Pop.	Dropout <sup>†</sup>	
<b>Total</b>	26,217	2500	3,287	273	13,464	1118	3,874	322	46,842	3,888	8.3

Source: High School Population from the MOE School Board Profiles, 2004-2005. Dropout rate from the Canadian Council on Learning.

<sup>†</sup> Estimated

## Reduced Income

The above estimates of dropout rates for Ottawa allow us to begin calculating costs. In 2006 the average personal income (before taxes) per capita in Ottawa-Gatineau was \$39,168 and the average personal disposable income (after income taxes) was \$29,943 (Lefebvre, et. al., 2007). Discretionary income would be 25.21% (Froats & McGugan, 2008) of this. This implies an average of \$9,225 was collected in income taxes, and \$377 was collected in federal GST and provincial \$790 in PST (based on discretionary income).

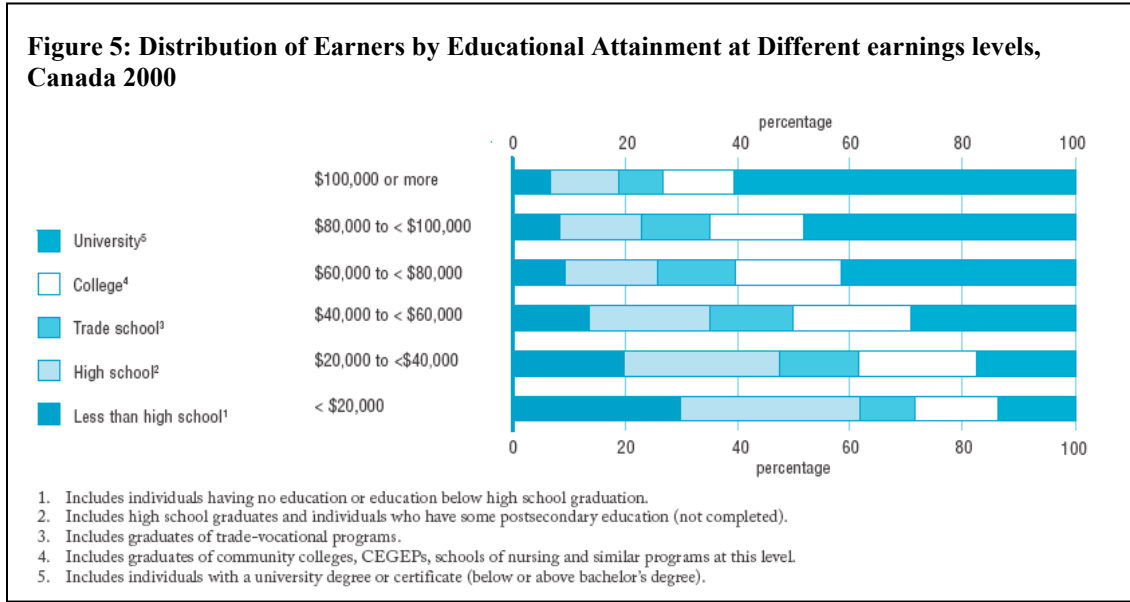
**Table 7: Relative earnings of the 25 to 64-year-old population with income from employment, by level of educational attainment**

	Below high school	Post secondary non-tertiary education	College (tertiary Type B education)	University & Advanced Research	All Postsecondary
<b>CANADA (2004)</b>	<b>78</b>	<b>102</b>	<b>110</b>	<b>168</b>	<b>138</b>
Men	79	103	111	169	140
Women	70	96	120	176	146
<i>(High school = 100)</i>					
<b>Source: OECD, Education at a Glance, 2007 (Table A9.1a).</b>					

The relative lifetime earnings of a person without a high school diploma are 22% less than some one with a high school diploma (OECD, 2007 & Statistics Canada, 2007). See Table 6 for a comparison by gender and level of educational attainment.

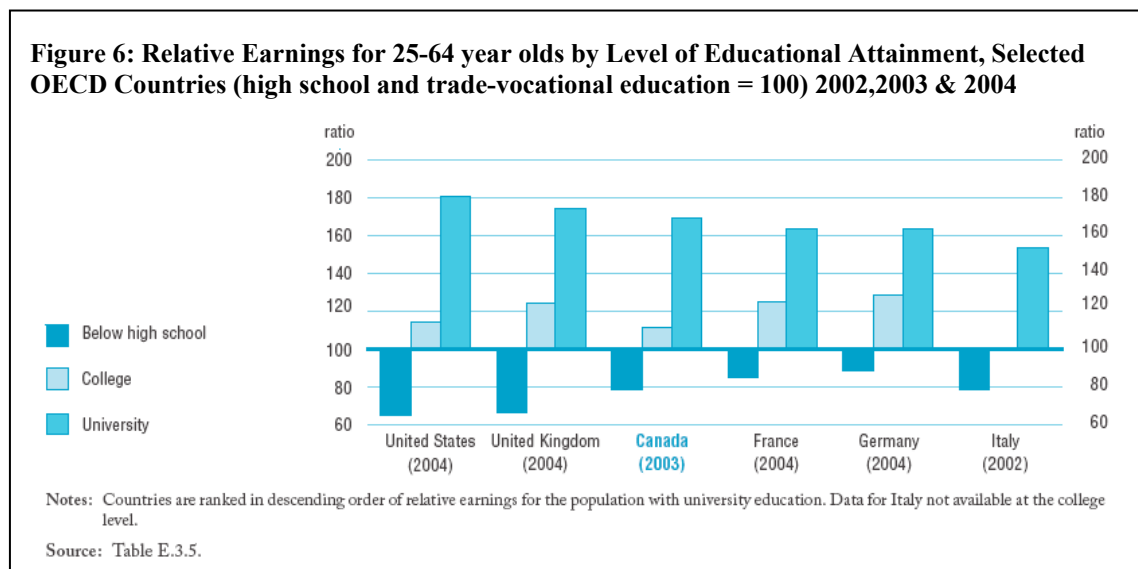
<sup>1</sup> Dropout rates vary significantly by neighbourhood. The recent Pathways to Education project for instance currently being conducted by the Pinecrest Queensway Health Centre estimates the dropout rate in their catchment area to be 49%

Statistics Canada too reports (2007) that educational attainment has a strong impact on earnings. The distribution of earners by educational attainment demonstrates a polarization of earnings, with higher levels being largely dominated by those with the highest amount of educational achievement. In 2000, more than 60% of earners in the lowest annual earnings category (less than \$20,000) had a high school education or less. However, more than 60% of earners in the top category (\$100,000 or more) had a university degree (See Figure 5).



In 2003, mean annual earnings (before taxes) were 69% higher for university graduates and 12% higher for college or trade graduates than for individuals with high school diplomas. Those who did not complete high school earned 22% less than those who did. Comparable differences exist across industrialized countries (See Figure 6).

In another study (Green & Riddell, 2001), the researchers found that each additional year of education raises earnings by approximately 8%, a result similar to results obtained by other studies.



Such conclusions allow us to begin estimating the income effects of low levels of education in Ottawa. The variation in individual earnings potential tells us the marginal social cost in terms of income of not having a high school diploma. Even if the focus of intervention was directed solely towards raising the level of youth education to a minimum of high school completion, significant income gains for both individuals and the economy.

**Reduction of average annual income for a person 25-64 without HS diploma vs one with**

The reduction of average annual income associated with a person without a high school diploma compared to one with a high school diploma can be estimated at  $(\$39,168 \times .22^2) = \$8,617$  per dropout.

- Total reduction of annual income due to not having a HS diploma in Ottawa is  $(\$8,617 \times 38,455 \text{ dropouts } 25-64 \text{ years old}) = \$331,367,000$
- over 40 years (assuming 2% inflation and a steady state in the dropout population) = ~\$20 B
- $PV^3 = \$5 \text{ B}$

The second measure looks at the reduction in average income generally, since a person who returns to school may do more than simply obtain high school graduation. This calculation is based on the application of the discount associated with not having a high school diploma taken from Table 7 and applying it to the average Ottawa income in 2006.

**Reduction in the average per person annual income among dropouts 25-64 years old**

This can be estimated at  $\$39,168 - (\$39,168 \times .539^4) = \$18,056$

- Total reduction of average annual income in Ottawa per year is  $(\$18,056 \times 38,455 \text{ dropouts}) = \$694,343,000$
- over 40 years (assuming 2% inflation and a steady state of dropout population) = \$42 B
- $PV^{18} = \$10.6 \text{ B}$

<sup>2</sup> See Figure 5

<sup>3</sup> Assume here and elsewhere a discount rate of 3.5%

<sup>4</sup> See Table 8

## Community Costs of YALLE

**Table 8: Average earnings of the population 15 years and over by highest level of schooling, by census metropolitan area (2001 Census)**

	2001	
	Ottawa-Gatineau	Disc/Prem.
	<b>Earnings</b>	
<b>Average all levels</b>	<b>38,011</b>	
Less than high school graduation certificate	20,478	.539
High school graduation certificate and / or some postsecondary	28,026	.737
Trades certificate or diploma	33,995	.894
College certificate or diploma	38,027	1.000
University certificate, diploma or degree	54,620	1.437

*Source:* Statistics Canada, Census of Population. Last modified: 2004-09-01.

The annual reduction of average income associated with each annual cohort of dropouts may be estimated as (\$18,056 X 3,888 dropouts) or ~\$70,202,000. This is consistent with Oreopoulos (2005) who found that each additional year of schooling beyond age 16 boosts weekly earnings among those working more than 25 hours per week by between 9.9 and 25.8 percentage points.

### Reduced Taxation

If the average individual income for a dropout is reduced to \$21,111 (53.9% of \$39,168 ave. ann. inc.) this reduces federal and provincial income taxes to \$2,403. As a result disposable income goes from \$29,943 to \$18,708. GST is reduced from \$377 to \$266 and PST is reduced from 790 to \$425. Applying this average total reduction of tax revenue to all 38,455 dropouts aged 25-64 suggests a community wide reduction of tax revenues equal to \$2,879.

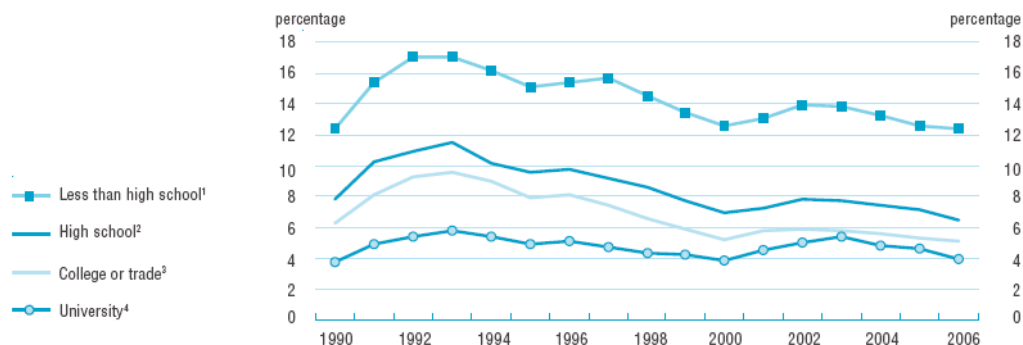
#### Reduced taxation

a. Annual Federal income tax reduced by lowered income levels	\$1577
b. Annual Provincial income tax reduced by lowered income levels	826
c. Annual Federal GST forgone on reduced disposable income	111
d. Annual Provincial PST forgone on reduced disposable income	365
Total of Annual Per Dropout Reduction in Taxes	\$2879
e. Reduced average annual taxation for all dropouts in Ottawa	~\$110,712,000
f. Combined Fed/Prov taxes reduced over 40 years (assume inflation 2%)	\$6.7 B
g. PV (discount rate 3.5%)	\$1.7 B

### Direct Program Costs (Unemployment)

According to Statistics Canada (2007), Canadian unemployment rates in 2006 fell to 6.6% overall and 4% for university graduates but for those with less than high school they remained stubbornly high at 12% (see Figure 7). However, the unemployment rate for 25- to 29-year-olds with less than high school stood at 13% compared during that same period. The unemployment gap between high school and non high school was approximately 5.5%.

**Figure 7: Canadian Unemployment Rates for Population aged 15 and over, by level of education, 1990-2006**



1. Includes individuals having no education or education below high school graduation.
  2. Includes high school graduates and individuals who have some postsecondary education (not completed).
  3. Includes individuals with trade certificate or diploma from a vocational school or apprenticeship training; non-university certificate or diploma from a community college, CEGEP, school of nursing and similar programs at this level; university certificate below bachelor's level.
  4. Includes individuals with bachelor's degree or university degree/certificate above bachelor's level.
- Notes: The data for 1995 to 1998 have been revised and are different from those previously published in 2005 PCEIP Report (Statistics Canada and Council of Ministers of Education, Canada. 2005. *Education indicators in Canada: Report of the Pan-Canadian Education Indicators Program*. Catalogue no. 81-582-XIE. Ottawa.).  
The unemployment rate is based on a monthly average from January to December.

Source: *Education Indicators in Canada*, Statistics Canada, 2007: 133

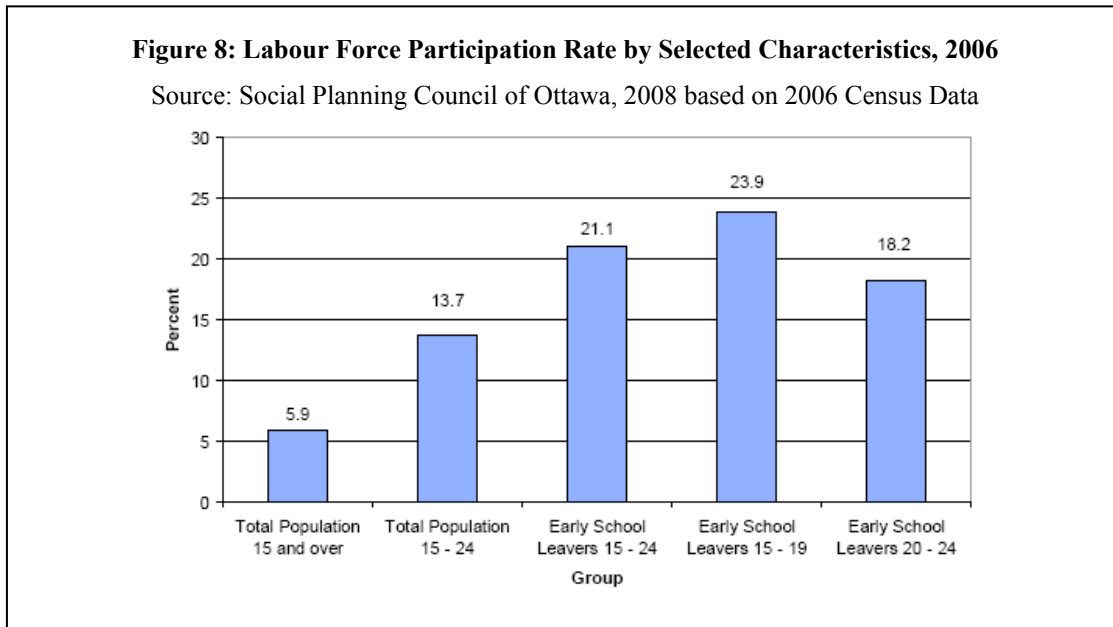
Overall, unemployment rates in 2006 for people with less than high school education were at least double those of university graduates in all provinces except for British Columbia and in more than half of the provinces, they were more than three times higher. Youth with low educational attainment were the most at risk of economic marginalization, especially in weaker labour markets.

In addition, young adult early school leavers have an unemployment rate, which is 7.4% higher than all 15 to 24 year olds (see Figure 8). For Ottawa's population of 8,400 young people who had not completed high school and were not in school, this suggests that 1,208 15-19 year olds and 609 20-24 year olds were unemployed in Ottawa in 2006.

### **Loss of income due to unemployment among 15-24 year olds**

The aggregate loss of employment income amounts to an estimated \$38,359,000 (1,817 unemployed X \$21,111 average annual income). While this would ordinarily be partially made up for by public transfers to individuals, it still represents an economic drag on the community.





## Health Literacy Costs

According to a report by the Canadian Council on Learning (2007), with respect to health literacy Canadian adults with less than a high-school education perform well below adults with higher levels of education and this gap widens with age (see Figure 9).

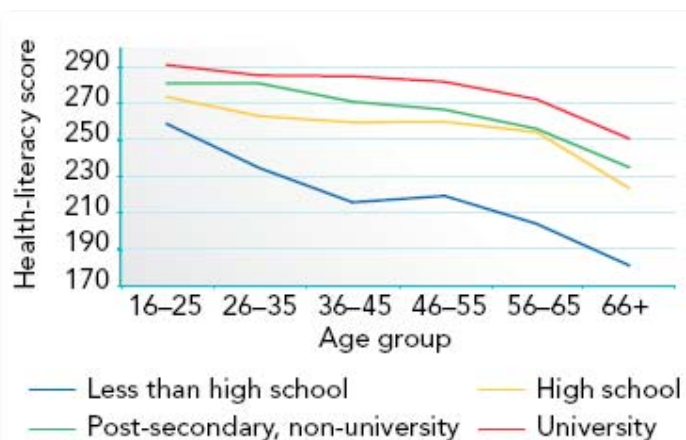
For example, older adults who scored in the Level 1 to Level 2 range (ie. score of 0-275) are performing below the average proficiencies of adults who just graduated from high school.

The Canadian Council on Learning also suggests that people with low health literacy are 2.5 times more likely to be in only fair or poor health.

The report goes on to say that low health literacy contributes to poorer health outcomes by:

- causing people to misuse medication or misunderstand information.
- encouraging people to use health services, such as emergency care, inappropriately.
- encouraging people to wait too long before seeking medical help, making their conditions worse.

**Figure 9: Health Literacy in Canada by age and educational attainment**



Source: Adult Literacy and Life Skills Survey, 2003

## Community Costs of YALLE

- causing people to make poor lifestyle choices. Poor lifestyle choices are more likely to lead to chronic health problems, such as diabetes or high blood pressure.

“Less-literate Canadians tend to place greater demands on our health care system, due in part to their relative poverty and poorer overall health; as well as to the likelihood of misunderstanding health information and inappropriate use of medication and/or health services including emergency care.” In another report by Health Canada it was noted that people with literacy issues tend not to seek medical advice until a health problem has reached a point of crisis (Burt Perrin, 1998).

In a study on health literacy reported in the *Journal of the American Medical Association* (Movement for Canadian Literacy, 2003), patients with the lowest literacy levels had average annual health care costs of \$12,974 compared with \$2,969 (US) for the overall population studied. In another study, documented by the Council on Scientific Affairs (Ad Hoc Committee on Health Literacy, 1999), of the 958 low-income patients the study followed over 2 years, patients with weak literacy were nearly twice as likely to be hospitalized during the previous year (31.5% vs 14.9%), a relationship that persisted after adjustment for health status and various socio-economic characteristics.

In 2003, the National Assessment of Adult Literacy (NAAL) in the U.S.

conducted an assessment of health literacy (Kutner et al.2006) among a random sample of over 19,000 American adults. The US Department of Health and Human Services and the Institute of Medicine (IOM) have defined health literacy as: *The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.*

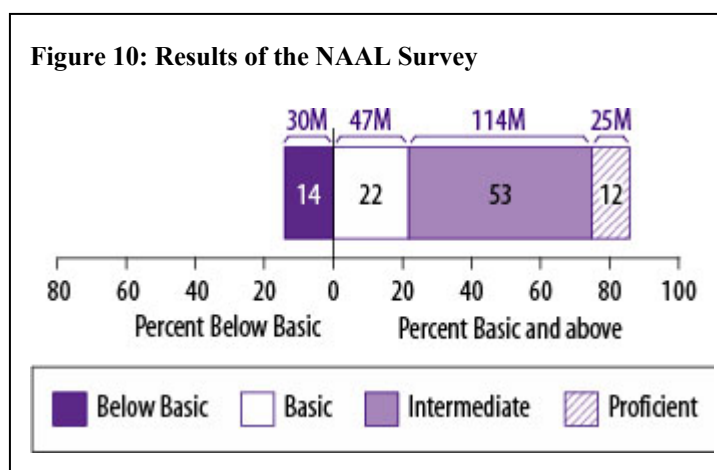
The IOM states that health literacy skills are needed for dialogue and discussion, reading health information, interpreting charts, making decisions about participating in research studies, using medical tools for personal or family health care—such as a peak flow meter or thermometer—calculating timing or dosage of medicine, or voting on health or environment issues.

A ‘basic’ level of health literacy proficiency is identified by tasks such as being able to give two reasons a person with no symptoms of a specific disease should be tested for the disease, based on information in a clearly written pamphlet.

The results of the NAAL survey were sobering (see Figure 10). Only 12 % of US adults were proficient in health literacy skills<sup>5</sup>.

Almost half (47%) of US adults cannot:

- Determine for themselves a healthy weight range, based on a graph that relates height and weight to body mass index.



<sup>5</sup> [http://socialmarketing.blogs.com/r\\_craig\\_lefebvres\\_social/2006/10/few\\_adults\\_have.html](http://socialmarketing.blogs.com/r_craig_lefebvres_social/2006/10/few_adults_have.html)

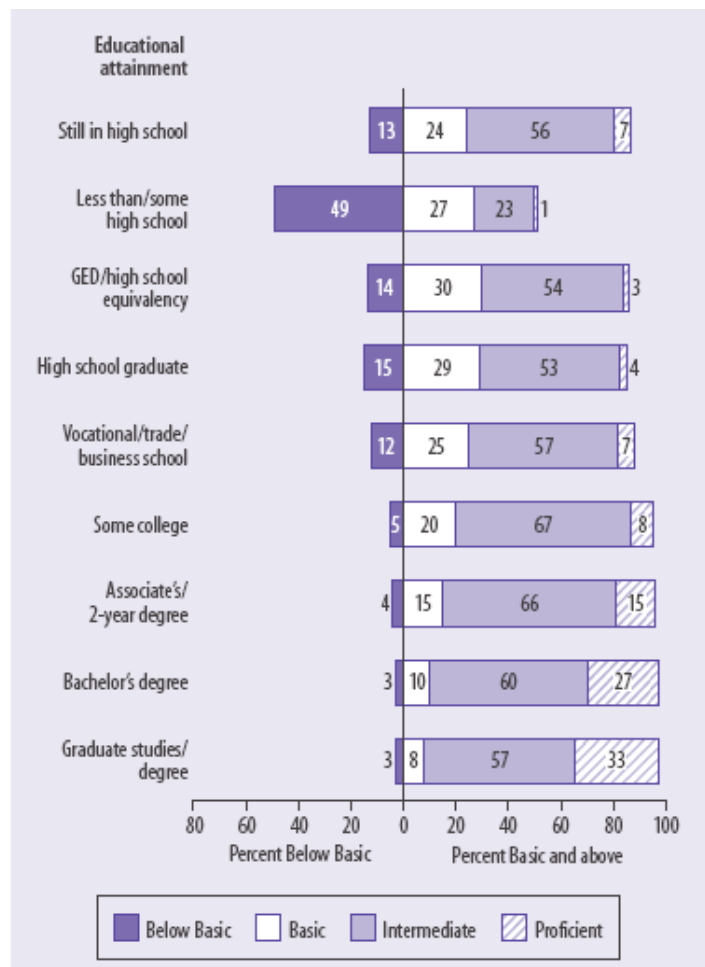
## Community Costs of YALLE

- Find the age range during which children should receive a particular vaccine, using a chart that shows all the childhood vaccines and the ages children should receive them.
- Determine the time they should take a prescription medication, based on information on a prescription drug label that relates the timing of the medication to eating.
- Identify three substances that may interact with an over-the-counter drug to cause a side effect, using the information contained on over-the-counter drug labels.

As Figure 11 illustrates, health literacy is strongly correlated with educational attainment. One can assume, therefore, that there would be increased health literacy costs on average for people with less than high school compared to the general population. As the US experience suggests the costs of health care for persons with health illiteracy is likely to be 2-4 times the average.

For instance, the 2008-09 budget for the Champlain Local Health Information Network (LHIN) was \$2,075,200,000 for a population of approximately 1.1 million people in the Ottawa region. This amounts to an average expenditure of \$1,886 per person. This is a conservative estimate of health care costs as it only includes costs for those facilities and programs operating under the LHIN and does not include private care, or public care not under the LHIN umbrella.

**Figure 11: Percentage of adults in each health literacy level, by highest educational attainment: 2003**



Source: *The Health Literacy of America's Adults*, NCES, Sept. 6, 2006

### Added Health Care Costs

These figures suggest that the additional burden of health illiteracy in Ottawa annually is **38,455 X \$1,886 = \$72,526,130**, assuming health illiteracy only doubles health care costs. Over 40 years this would amount to \$2.9 B or a PV of \$732 million at disc rate of 3.5%

### Summary

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The social costs of low levels of education and literacy among youth are not confined to young people themselves nor are they confined to a particular period or time frame. As a consequence, these costs are relevant not only to discussions of how to keep kids from dropping out of school but also to considerations for lifelong learning.

They in fact impact everyone in the community and they do so for a lifetime. Each year the decision to withdraw from education has an effect that not only depresses personal income and quality of life, but it also reduces taxation revenue, constraining the scope of all forms of public investment. Lower levels of education are strongly correlated with increased levels of illiteracy which has the effect of slowing economic growth, especially in a knowledge based economy such as Ottawa's. Lower levels of educational attainment also increase public program spending on human and social services. Finally it increases the burden on our health care system.

More local research is required to complete the costing of low education among Ottawa's youth, particularly in the five areas identified by Riddell not addressed in this paper, including:

- *Knowledge Spillovers*
- *Non-market Effects of Education*
- *Intergenerational Effects*
- *Criminal Activity*
- *Civic Participation*

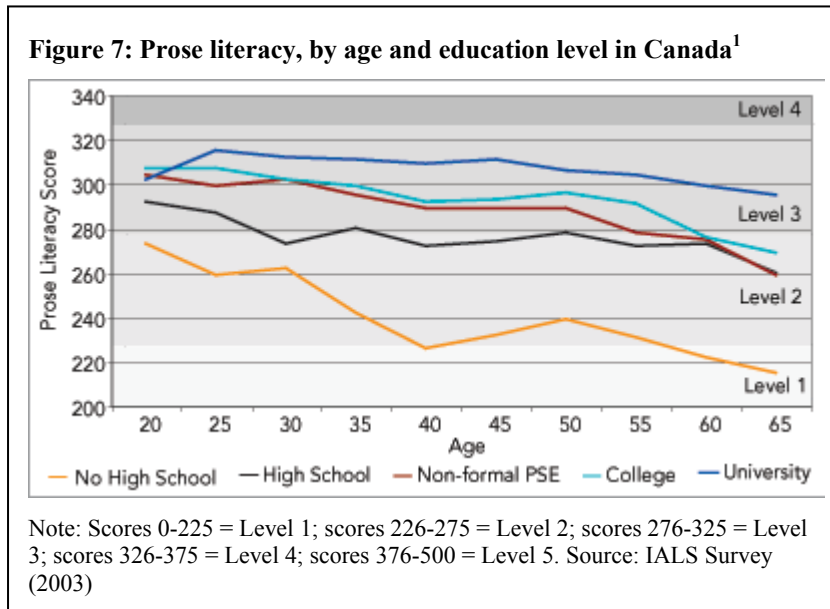
#### **Beginning to Estimate Costs of Low Levels of Education in Ottawa (PV over 40 years)**

<b>Reduced average annual income among 25-64 year olds</b>	\$694,000,000
Annual reduction for single cohort \$70,202,000	
<b>Marginal reduction of average annual income 25-64 yr olds</b>	\$331,367,000
(between no high school and high school graduation)	
<b>Loss of income due to unemployment</b>	\$585,200,000
Annual reduction for 15-24 year olds \$38,359,000	
<b>Reduced Tax Revenues from 25-64 year olds</b>	\$148,500,000
<b>Increased Costs of Health Illiteracy among 25-64 year olds</b>	<u>\$732,500,000</u>
(\$72,526,130 annually)	
<b>Total</b>	<b>\$2,160,000,000</b>

This report with only very limited resources is not meant to be an exhaustive or definitive assessment of the costs of low levels of education in Ottawa. It has presented a cursory view of four of Riddell's "social returns to education". However, it is hoped that this report can begin a community based conversation on the basis of the following rough estimate of the annual costs of low levels of education. The argument being that we could spend \$2 billion over the next 40 years to improve the graduation rate among young adults and still be ahead!

## Postscript: The Economic Impacts of Literacy

Poor literacy skills tend to be concentrated among particular groups of Canadians. One such group, for example, are those Canadians with lower levels of educational attainment who tend to score lower on literacy assessments according to the results of the 2003 International Adult Literacy and Skills Survey



(see Figure 7).

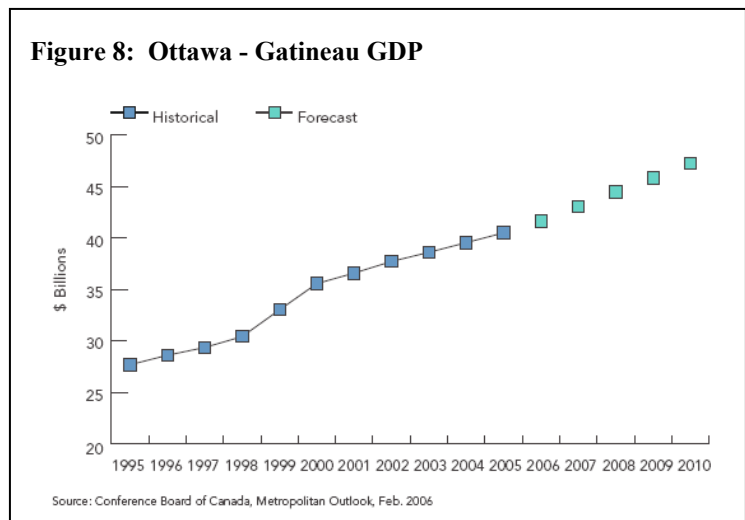
A recent Statistics Canada study (Coulombe, Tremblay & Marchand, 2004) investigated the relationship between educational attainment, literacy skills and economic growth and found that investment in education and skills training is three times more important to economic growth over the long term as investments in physical capital, such as machinery and equipment. It also found that literacy scores

were better indicators of explaining growth in output per capita and per worker than years-of-schooling indicators.

Further, a recent OECD study showed that a 1% increase in adult literacy levels would generate a 1.5% *permanent* increase in GDP per capita (House Committee on Finance, 2004). Figure 8 shows the growth of Ottawa area GDP since 1995.

In 2006 the economic activity in the Ottawa region was \$41.5 billion (OCRI, 2007) as measured by GDP, therefore a **1% literacy improvement in 2006 would according to the OECD generate \$622.5 million in additional annual GDP each year thereafter!** Over a 40 year period this would contribute another \$37 billion to the local economy or a present value of \$9.3 B.

As investigation of the relationship between literacy and early school leaving is beyond the scope of this paper, it is a dynamic in Ottawa that also warrants further study.



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