

**FROM POVERTY
TO PROSPERITY:
Literacy's Impact
on Canada's
Economic Success**



in focus: labour market engagement





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FROM POVERTY TO PROSPERITY: Literacy's Impact on Canada's Economic Success

a research report prepared for
Canadian Literacy and Learning Network
by Scott Murray and Richard Shillington
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Chapter 1

Introduction

This report was produced by DataAngel Policy Research Incorporated on behalf of the Canadian Literacy and Learning Network (CLLN). The report provides a succinct summary of how literacy skill and low income are related and what these relationships imply for public policy.

All errors and omissions are those of the authors. Readers are invited to direct questions of clarification to:

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Chapter 2

Rationale for the study

This study was motivated by a belief that policy makers should consider investing in adult literacy as a means to reduce income inequality and the incidence of poverty in Canada. The rationale for doing so is simple - research has identified literacy skill has the single most important determinant of Canadians' labour market success. Among other things, literacy influences their likelihood of being in the labour force, their ability to get a job, the length of time they get to keep a job, their likelihood of promotion, the likelihood that they will become unemployed, the number of weeks that they take to find a new job and, most importantly, their rate of pay. The fact that most of the poverty in Canada is the result of people failing to find and keep good paying jobs creates an interest in how investments in literacy might serve to reduce poverty. Apart from these direct effects on adult's ability to earn, low literacy has been shown to impair individuals' health, access to adult education and training and access to power and influence in the broader society – all factors that further impair the labour market success of Canada's poor.

Apart from its impact on individual outcomes, literacy has been shown to have a marked impact on macro-economic outcomes. Differences in average literacy skill explain over 55% of differences in the rate of GDP per capita and productivity growth over the long term. More importantly, the proportion of adults with low literacy skill has been shown to have an impact on long term growth rates. The higher the proportion of low skilled adults, the lower the employment rate and the lower the rate of growth. We thus have a collective interest in reducing skill-based barriers to participation and growth.

In light of these data, it reasonable to assume that weak literacy skills explain a significant proportion of who becomes poor and, by extension, a significant fraction of what we spend by way of income replacement and support through Worker's Compensation, Employment Insurance and Social Assistance. It is thus reasonable to assume that investments designed to raise adult literacy and numeracy skill would serve to reduce the number of adults living in poverty in Canada and would contribute to the reduction in the growing rate of income inequality we see.

Research suggests that it would take an investment of \$13.7B to eliminate Canada's occupational literacy skill shortages and an additional \$2B to raise the prose literacy skills of those outside the labour force to Level 3 - the level needed to support full and active participation in our information-rich society. The same research suggests that investments of these magnitudes would precipitate annual increases in earnings of some \$62.8B for those already in the labour market and an additional \$52.5B for those currently out of the labour market, enough to raise incomes by an average of \$4,515. (DataAngel, 2011).

The higher the proportion of low skilled adults, the lower the employment rate and the lower the rate of growth. We thus have a collective interest in reducing skill-based barriers to participation and growth.

Investment on this scale would represent an important departure for Canadian public policy - away from passive income support to active education policy.

It is important to note that investment on this scale would represent an important departure for Canadian public policy - away from passive income support to active education policy. Philosophically this departure would also signal a move away from treating the symptoms of the poverty “disease” to addressing one of its root causes.

Maintaining the status quo on the manner in which we currently manage poverty will become increasingly difficult as government fiscal capacity comes under pressure from health, education and pension expenditures and falling employment population ratios.

Literacy Defined

Before we turn to what is known about the relationship between literacy and poverty, it is worthwhile to review what literacy is, lest readers mistakenly think that is simply recognizing the letters of the alphabet. The most recent international assessment – the International Adult and Skills Survey (IALSS) tested three distinct literacy domains:

Prose literacy – the knowledge and skills needed to understand and use information from texts including editorials, news stories, brochures and instruction manuals.

Document literacy – the knowledge and skills required to locate and use information contained in various formats, including job applications, payroll forms, transportation schedules, maps, tables and charts.

Numeracy – the knowledge and skills required to effectively manage the mathematical demands of diverse situations.

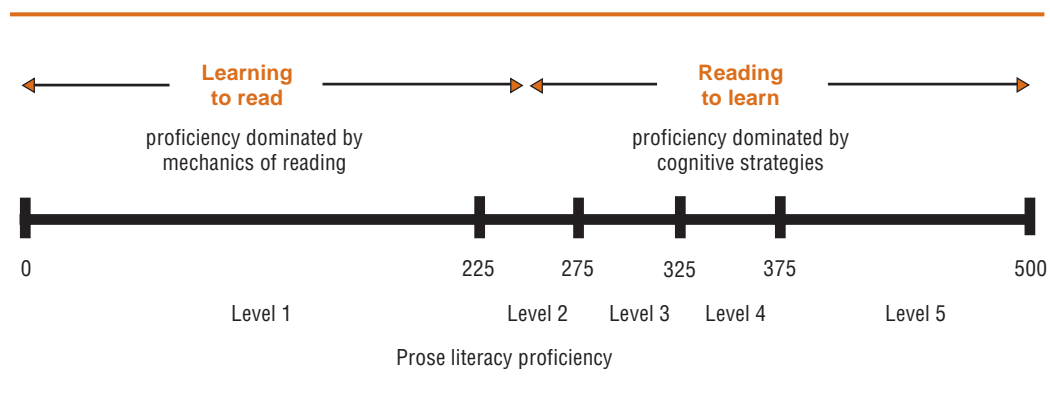
Proficiency data from the study is summarized on a 500-point scale and then grouped into 5 proficiency levels. These proficiency levels reveal what skills people have. These levels can be compared to the occupational skill standards identified in HRSDC's Essential Skills Profiles to identify workers whose skills are below, at or above the requisite levels. (DataAngel, 2010).

It is also important to clarify why our analysis restricts it self to literacy. The theory upon which IALSS rests posits a hierarchy of skills acquisition and application. Sensory and motor skills sit at the bottom of the hierarchy followed by oral fluency, prose literacy, document literacy and numeracy. Relatively small numbers of adults face physical and mental barriers that limit their earnings potential. Even fewer adults have oral fluency levels that impair their labour market success. In contrast roughly half of all adults have literacy skills below the level demanded by the economy, a fact that renders literacy singularly important to reducing the incidence of poverty in Canada.

Recent research has clarified the nature of prose literacy and document literacy proficiency levels in a way that carries great import for thinking about how literacy influences poverty and what sort of upgrading would be required to reduce current levels of skill based poverty. Figure 2.1 highlights the fact that below a score of 250 adults are still in the process of learning to read, in the sense that they have yet to master the mechanics of reading that underlie the emergence of fluid and automatic reading. Above a score of 250 adults are fluid and automatic readers, a fact that frees up space for building meaning and higher order problem-solving. The majority of jobs in Canada require at least Level 3 literacy skill, yet 43% of all students leaving the Canada's high schools still do so with Level 1 and 2 skills. (DataAngel, 2011).

Figure 2.1

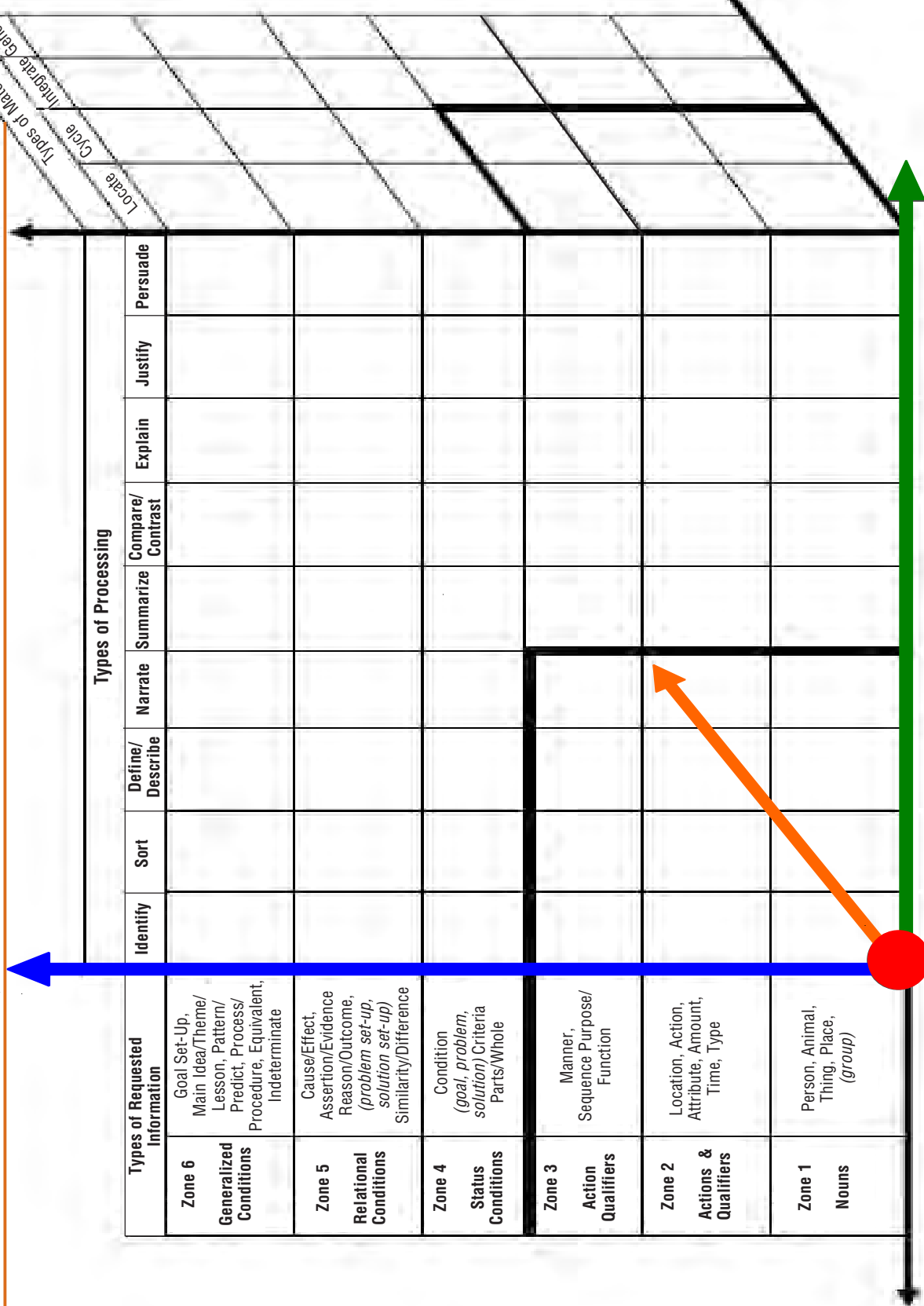
The transition from learning to read to reading to learn



Improving the utility of IALSS

In an effort to improve the utility of the IALSS assessment framework for informing instruction Hardt extended and refined the framework to include a more detailed set of predictive variables (Performance by Design, 2010). As illustrated below, the refined framework includes three dimensions – type of requested information, type of processing and type of match – that define a matrix of 216 combinations that can be used to predict the relative difficulty of any literacy task with great accuracy.

Figure 2.2
The Mosenthal Taxonomy



Source: Performance by Design Inc, 2000.

The variables identified in this framework, plus a fourth dimension that introduces the notion of plausible distractors¹, allows one to predict the difficulty of any reading task. The same variables can be used to systematically reduce the relative difficulty of tasks to render them accessible to a higher proportion of the population.

Hardt also was able to link the framework explicitly to the underlying cognitive functions taking place in the brain. Based on a refinement of the IALSS framework, researchers have been able to conclude that tasks at Levels 1 and 2 involves the activation of very simple mental models and, more importantly, depend almost exclusively on the retrieval of information from the parietal lobe. This is the part of the brain that supports the lower order functions of remembering, understanding and applying information presented in print (Performance by Design, 2010). In contrast, the mental processes underpinning Level 3 and more difficult tasks engender increasingly complex mental models that involve reasoning. They utilize the pre-frontal cortex, which is involved with reasoning and higher level functions of analyzing and evaluating alternatives.

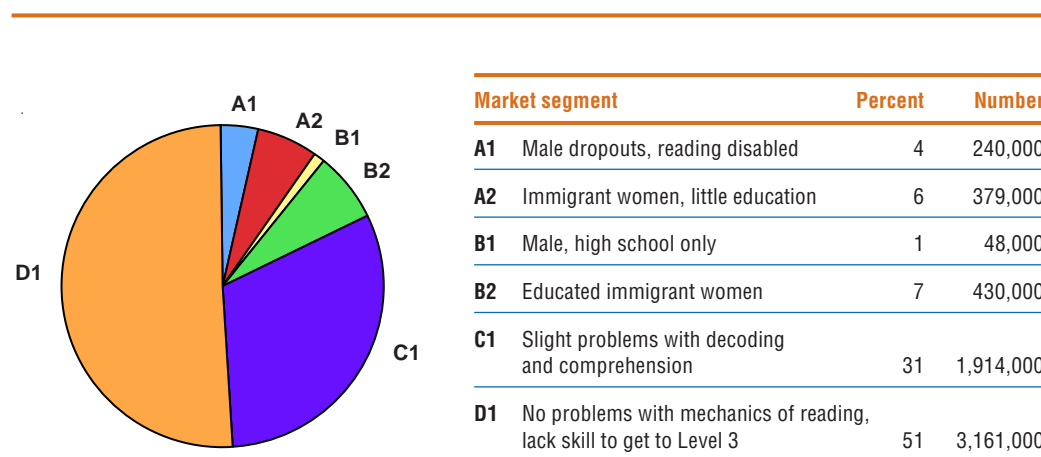
Finally, instructors who are able to explicit by embed these determinants in their practice achieve better results.

Recent research has identified distinct groups of adults with literacy and numeracy skills below the level needed to take full advantage of the educational, economic and social opportunities (Statistics Canada and HRSDC, 2007; CCL, 2008). Borrowing terminology from the world of marketing, each of these groups can be described as a literacy market segment with shared patterns of strength and weakness in the mechanics of reading, learning needs and demographic characteristics. Figures 2.3.A and 2.3.B show the numbers of adults in each literacy market segment.

Recent research has identified distinct groups of adults with literacy and numeracy skills below the level needed to take full advantage of the educational, economic and social opportunities

Figure 2.3.A

Estimated numbers of adults by literacy market segment, English market, population aged 16 and over, Canada, 2006

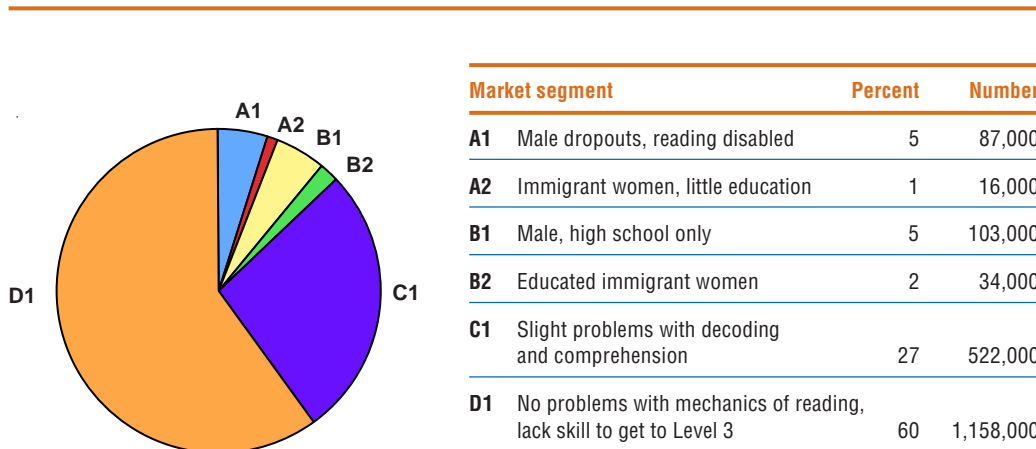


Source: IALSS 2002 and ISRS 2005.

1. Plausible distractors are text features that resemble the correct answer, but are not, in fact, the correct answer. The presence of distractors makes tasks more difficult.

Figure 2.3A

Estimated numbers of adults by literacy market segment, French market, population aged 16 and over, Canada, 2006



Source: DataAngel, 2010

The key insight afforded by this analysis is that most adults in need of literacy skill up grading would require small investments of time and effort to increase their skills to the desired levels. As we will see later in this report these investments would yield modest increases in worker productivity and wage rates.

In contrast, the least skilled adults would require 350-375 hours of focused instruction to raise their skill levels. These investments would yield dramatic increases in both employment and wage rates and would, by extension, precipitate rapid reductions in the number of adults in poverty

Chapter 3

Understanding the relationship between literacy and poverty

This chapter sets out what is known about the relationship between literacy and poverty.

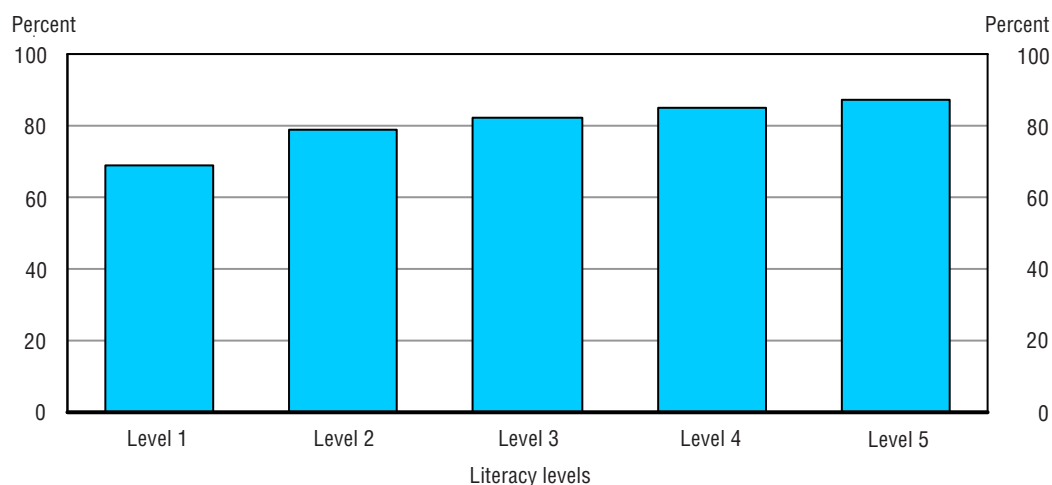
3.1 Impact of literacy on participation rates

The first and most important impact that literacy has on individuals' labour market outcomes is on the probability that they will be in the labour market.

Individuals with low levels of literacy skill are much less likely to be employed at some point in the course of a year than their more skilled peers. Figure 3.1 plots the rate of labour market participation by literacy skill proficiency level. The chart reveals that adults with Level 1 and 2 literacy skills appear to be systematically excluded from paid employment.

Figure 3.1

Labour market participation rate by literacy skill proficiency level, adults aged 16 to 65, Canada, 2003



Source: IALSS 2003.

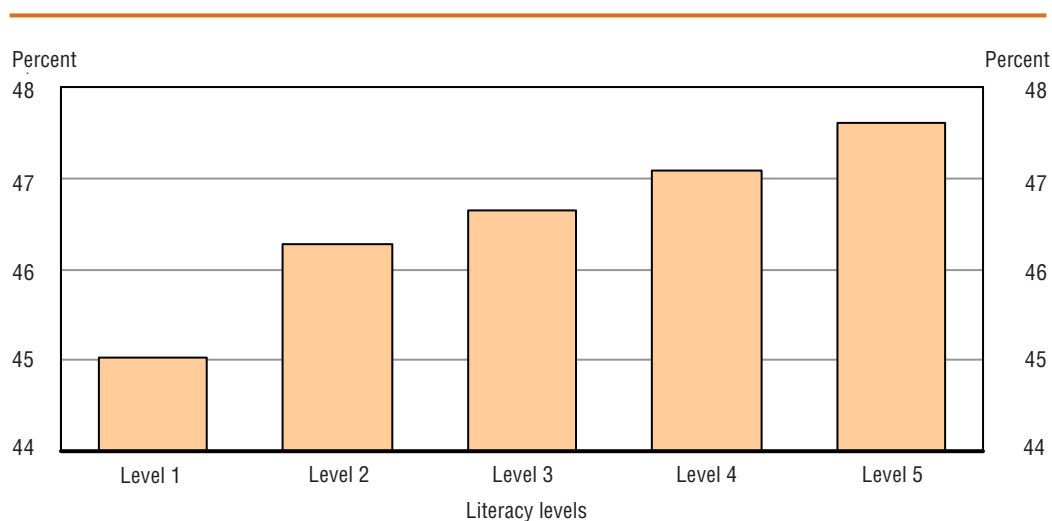
3.2 The impact of literacy on the quantity of labour supplied

Literacy skill also influences the amount of work adults are able to find. Individuals with low levels of literacy skill work fewer weeks on average, are more likely to experience periods of unemployment and remain unemployed for much longer periods.

Figure 3.2 plots the relationship between prose literacy skill and the number of weeks worked in the course of a year for adults that were employed at some point in the year.

Figure 3.2

Average weeks worked per year by prose literacy level, adults aged 16 and over who were employed at some in the year, Canada, 2003



Source: IALSS 2003.

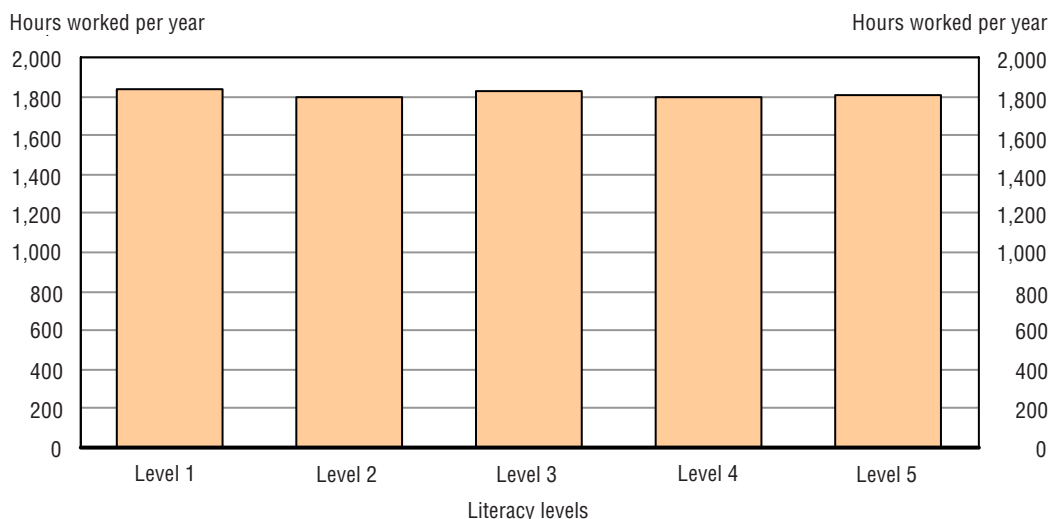
The figure reveals that the number of weeks of employment increases steadily with skill level. Adults with Level 1 prose literacy skills appear to be at a particular disadvantage in this regard – they work an average of 21 fewer weeks per year when looking at all adults and of adults that work, 3 fewer weeks per year.

These data show that the primary effect of skill on labour market success is to exclude the lowest skilled from employment entirely.

Figure 3.3 plots the average hours worked in the course of a year.

Figure 3.3

Average hours worked per year, adults aged 16 and over who were employed at some in the year, Canada, 2003



Source: IALSS 2003.

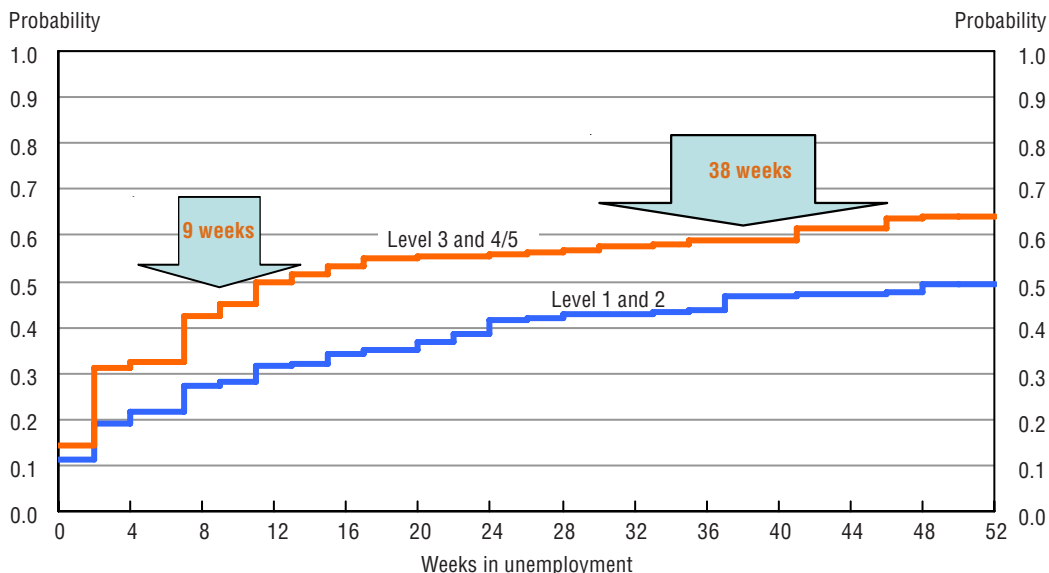
This chart reveals a different relationship between literacy skill and hours worked. The number of hours worked per year is drops slightly with rising prose literacy skill level. Adults with Level 1 prose skills work an average of 22 more hours per year than their Level 5 peers.

It is important to put these results in international context. Notwithstanding the strong relationship between skills and hours worked within Canada, one of the most striking IALS finding is that the overall average hours worked per year at the country level falls with rising average prose skill scores. More skilled workforces actually work fewer hours than their less skilled peers. Economists interpret this as a sign that more skilled workers are able to take some of the collective productivity benefits that accrue to skill in the form of shorter work hours.

Figure 3.4 plots the average number of weeks it takes for half of individuals in two skill levels to exit unemployment, once unemployed. This analysis groups compares those in prose literacy Levels 1 and 2 to those in Levels 3, 4 and 5.

Figure 3.4

Average half-life of unemployment, by skill level, Canada, 2003



Source: IALSS 2003.

The figure shows that the low skilled group bears a disproportionate share of unemployment. It takes an average of 38 weeks for half of low skilled workers to find a job compared to nine weeks for high skilled workers, over 4 times longer.

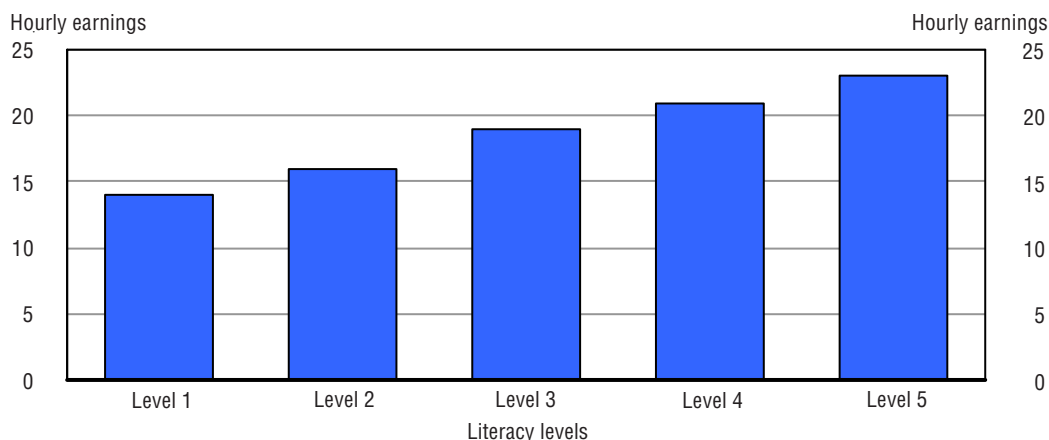
Collectively, these charts show that prose literacy skill has a marked influence on the amount of work that workers are able to find.

3.3 The impact of literacy on wage rates

Literacy also has a marked impact on adults' wage rates, a finding that economists interpret as an indication of higher skills on worker's productivity.

Figure 3.5

Average hourly earnings by prose literacy level, adults aged 16 and over who were employed at some in the year, Canada, 2003



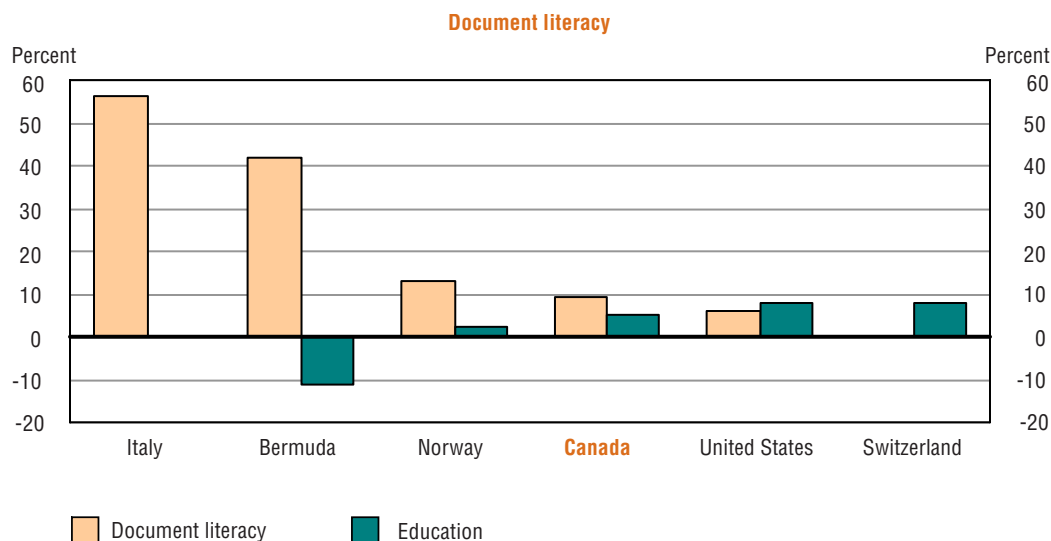
Source: IALSS 2003.

The figure shows that wage rates are highly correlated with literacy skill. Adults with Level 5 skills earn \$9 more per hour, or roughly 68% more than their Level 1 peers do.

Figure 3.6 documents just how big the effect of literacy on earnings is.

Figure 3.6

Percent increase in weekly earnings per increase of 10-percentiles on the document literacy scale, and per increase of additional year of schooling, adjusted three stage least squares model, labour force populations aged 16 to 65, 2003



The figure shows that a 10% increase in skill yields an average of a 7% increase in annual earnings

Countries are ranked by the effect of numeracy.

Source: IALSS 2003.

The figure shows that a 10% increase in skill yields an average of a 7% increase in annual earnings (Green and Riddell, 2007). Some of the observed wage differences are attributable to the selection of higher skilled workers into higher paid occupations, with the balance being attributed to higher skilled workers being more productive than their peers within their occupations.

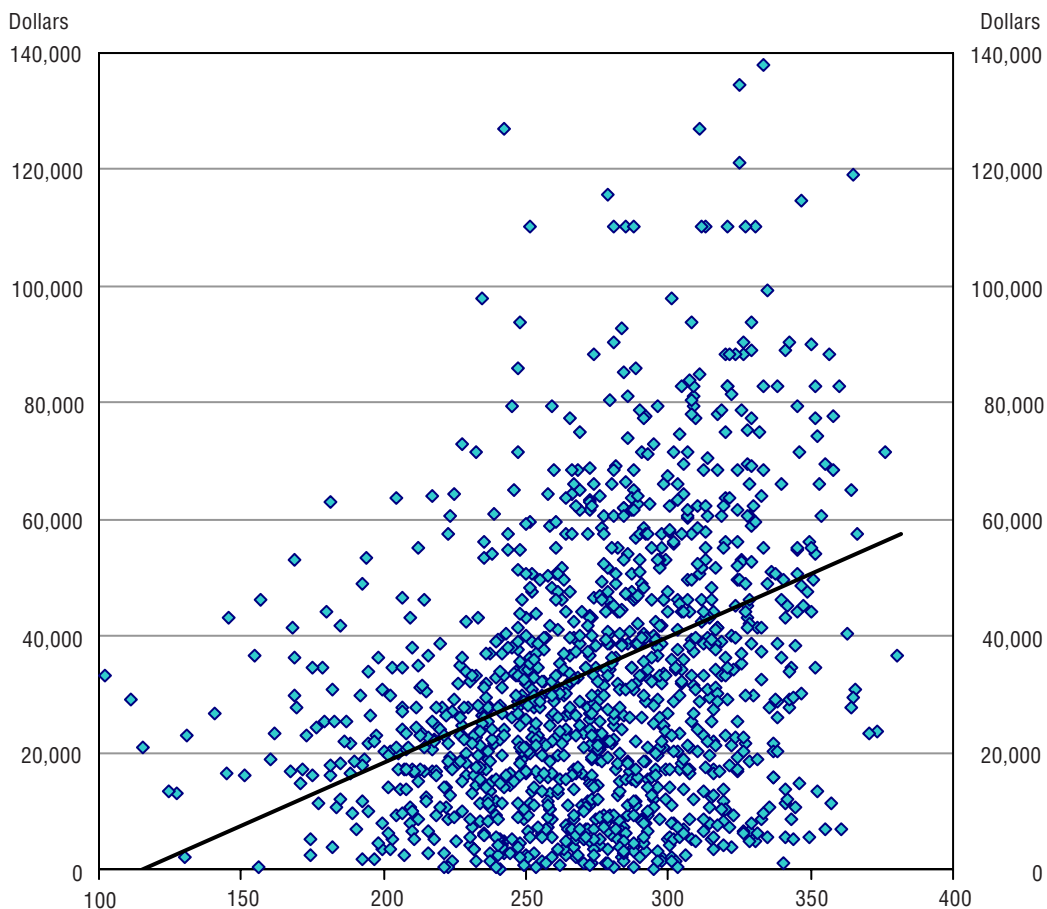
It is important to remember that these effects are not simply the effect of education on wages observed one step removed. While it is true that average literacy skill rises with average years of schooling the relationship is far from perfect, in the sense that one sees significant variance in literacy skill at every level of education². Literacy has been shown to have a strong and independent effect that is stronger than work experience or education. The inescapable conclusion is that lower skilled adults work less and earn less when they do work, effects that greatly increase their probability of finding themselves in poverty.

Figure 3.7 captures the net effect of literacy skill-based disadvantage on employment, wage rates and earnings.

2. If you doubt this think about the incredible range of skill that was evident in your own high school graduating class, all people with notionally the same credential.

Figure 3.7

The relationship between prose literacy skill and earnings, Canada, 2003



Source: IALSS 2003.

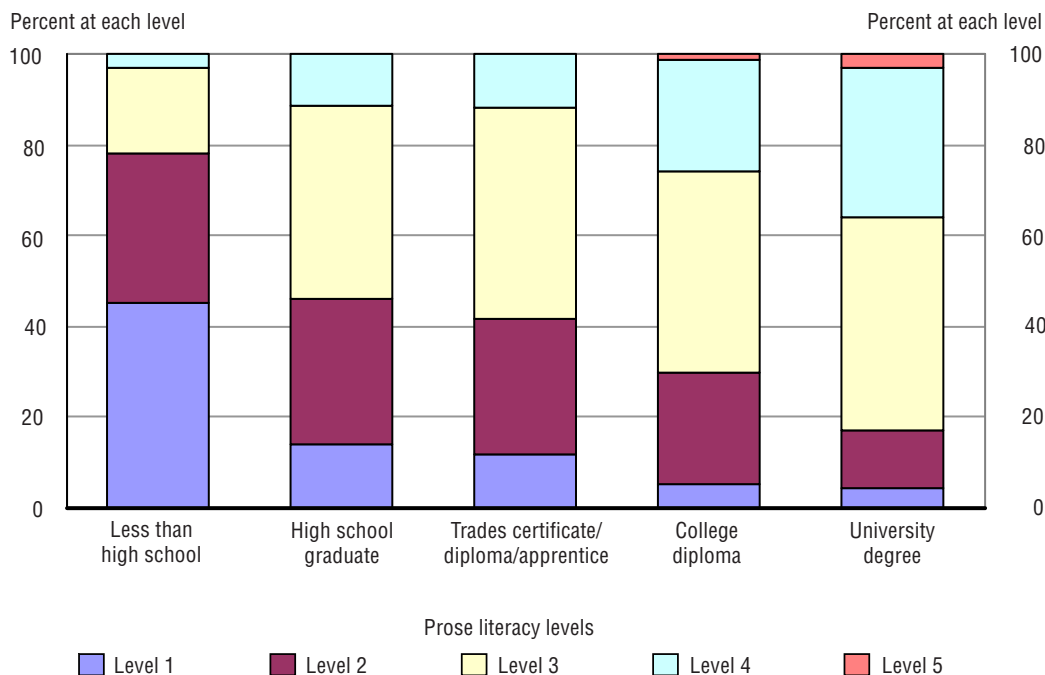
As expected the figure shows what appears to be a strong linear relationship between document literacy skill across the entire range of skill.

Before turning to how these effects translate into reliance on Canada's social transfer systems it is necessary to take the time to dispel a myth i.e. that differences in literacy skill are simply a reflection of differences in education among groups.

The following chart illustrates the basic relationship between education and literacy skill level. Based on an analysis of the 2003 International Adult Literacy and Skills Survey (IALSS), it demonstrates, not too surprisingly, that literacy levels vary with educational attainment. Very few of those with low level of educational attainment have literacy at levels 4 or 5 and very few of those with post-secondary education are at literacy level 1.

Figure 3.8

Population by education and literacy level, adults aged 16 and over, Canada, 2003



Source: IALSS 2003.

The following chart is also taken from the IALSS. It shows the average earnings of respondents by literacy level and educational attainment. Average earnings increase by education from \$23,000 for those with “Less than High School” to \$60,000 for those a “University Degree”. This pattern persists with small adjustments for literacy levels 1 to 4.³

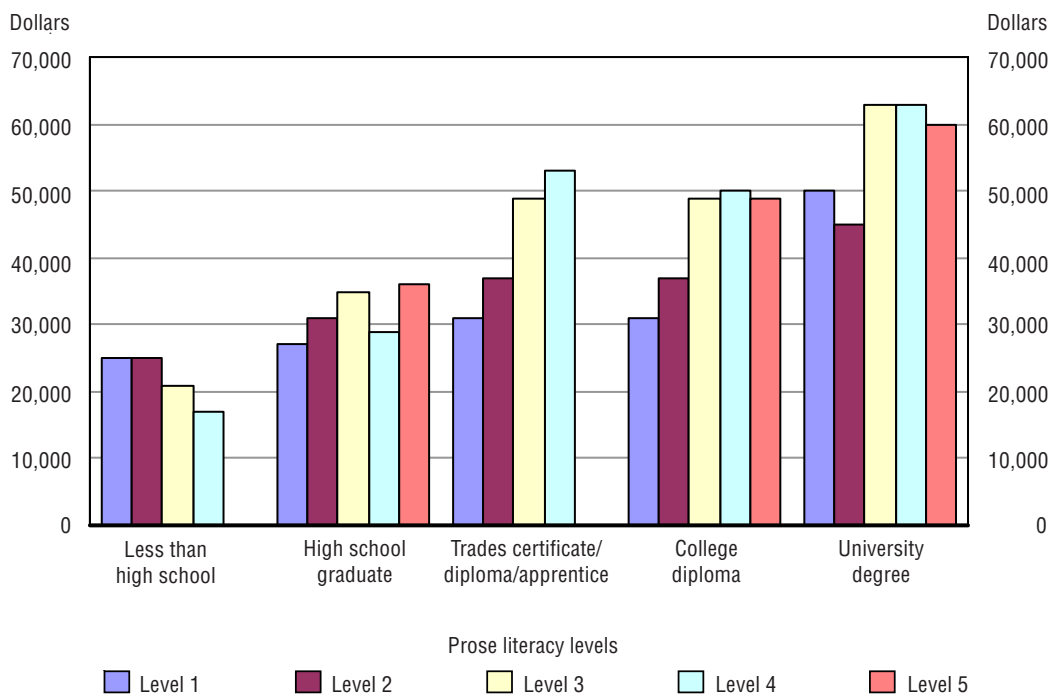
Of more interest is that the are significant economic returns to literacy exist regardless of educational level. For example, for those with a college diploma average earnings rise from \$37,000 at level 2 to roughly \$50,000 at levels 4 and 5.

The chart below illustrates that at each level of education those with higher levels of literacy have high average earnings. This pattern is stronger for those with some level of education after high school.

3. For this analysis earnings includes wages and self-employed income but not investment income or government transfers. The averages include those with no earnings so the result is the average for the population as a whole. Part of the pattern observed is due to the increasing participation rate for those with high education and high literacy.

Figure 3.9

Unadjusted average annual earnings by education and literacy level, adults aged 16 and over, Canada, 2003



Source: IALSS 2003.

These patterns are influenced by the age distributions of the population. Age is also known to influence literacy independently of other factors. Those with lower levels of education will tend to be older than those at higher literacy levels. The next section removes the influence of age on the findings.

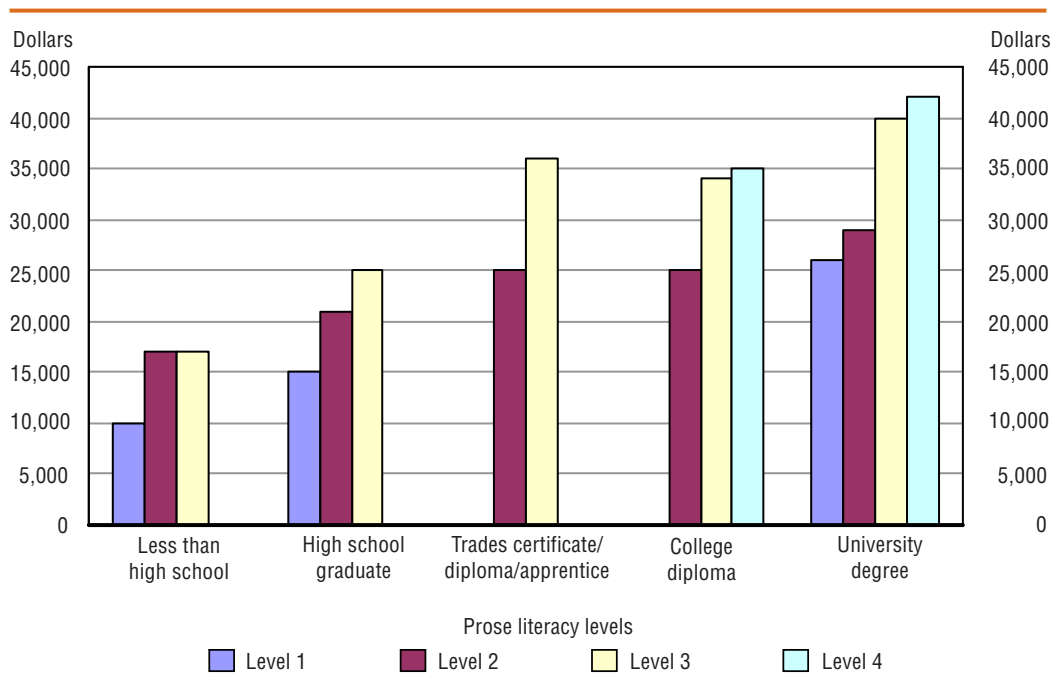
Figure 3.10 shows average earnings by literacy and education standardized for age. These are the average earnings that would have existed if the distributions of education had been the same at all ages⁴.

The same pattern persists i.e. average earnings levels increase with literacy, this is in part due to the increases in participation rates.

4. Some cells were suppressed because the underlying sample size is too small for some combinations of literacy level, education and age group.

Figure 3.10

Average earnings by education and literacy level, age standardized, adults aged 16 and over, age standardized, Canada, 2003



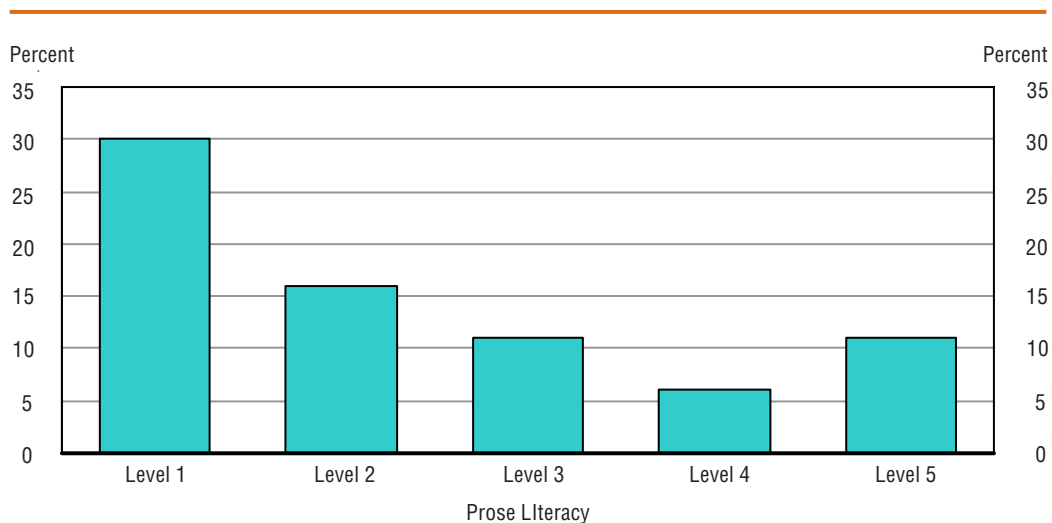
Source: IALSS 2003.

So literacy is highly correlated with education but at each education level one sees a great deal of variation in skill levels.

Just how much literacy skill influences adults' chances of being in poverty is provided in Figure 3.11 that plots the proportions of individuals living below Statistics Canada's low income cut-offs by literacy skill level.

Figure 3.11

Estimate¹ of the population below the LICO (before tax), by prose literacy level, 2003



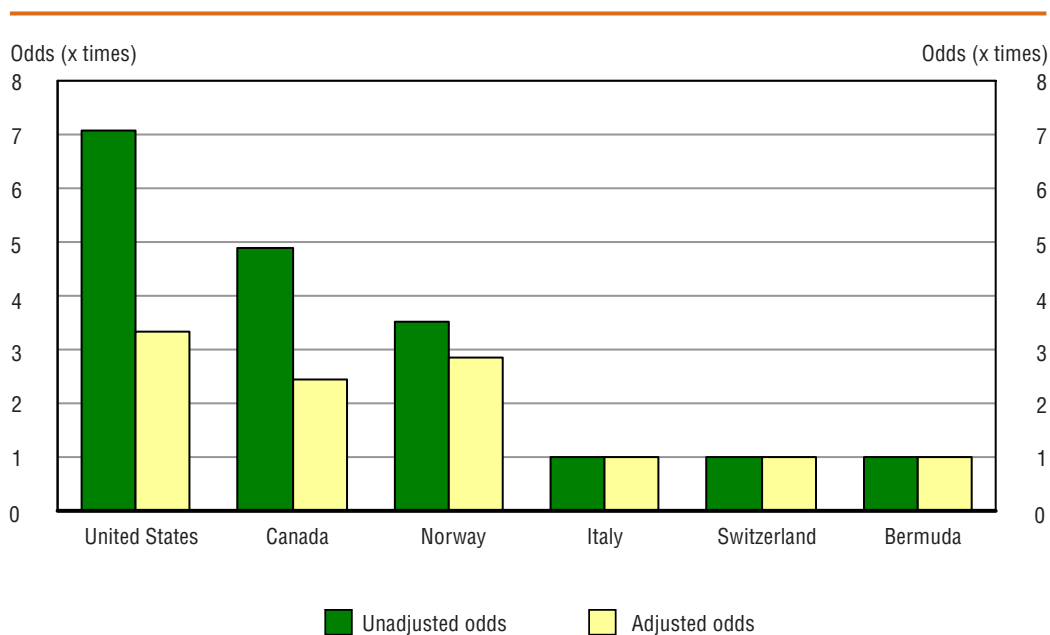
1. The estimate is approximate as the urban/rural categories were not the same as that used for LICO's.

The figure shows that low skilled adults are much more likely than their more skilled peers to be classified as poor. The analysis uses odds ratios to reveal the size of the gap in risk among income groups.

Figure 3.12 confirms the profound impact that literacy skill has on poverty in Canada. The figure plots the proportions of Canadian adults in receipt of social assistance by prose skill level.

Figure 3.12

Adjusted and unadjusted odds ratios¹ showing the likelihood of low-skilled adults (Levels 1 and 2) collecting social assistance payments, numeracy scale, populations aged 16 to 65, selected countries, 2003



Countries are ranked according to the difference in the unadjusted odds.

1. Odds estimates that are not statistically different from one at conventional levels of significance are set to one in the figure.

Source: IALSS 2003.

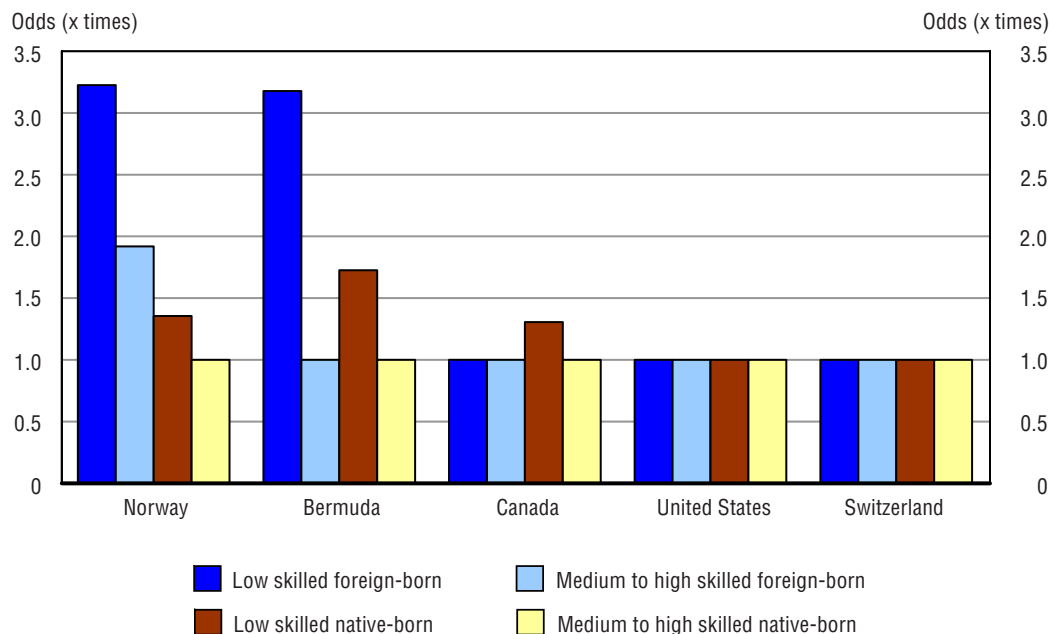
The figure shows that adults with Level 1 and 2 numeracy skill are 5 times more likely to be in receipt of Social Assistance Benefits. Even after adjusting for differences in the characteristics between those at Levels 1 and 2 and Level 3 and over, low skilled adults are 2.5 times more likely to be in receipt of Social Assistance benefits.

The effects of literacy on income effect some groups than others. Figure 3.13 shows how much more likely low skilled foreign-born workers are to have earnings in the lowest quartile.

An odds ratio is the ratio of the odds of occurring in one group. If for example 25% adults with level 1 prose literacy are in poverty and 10% of level 5 adults are in poverty the level 1 adults and 2.5 times as likely to be poverty than level 5 adults (.25/.10).

Figure 3.13

Adjusted odds ratios¹ indicating the likelihood of low skilled (Levels 1 and 2) and medium to high skilled (Levels 3 and 4/5) foreign-born and native-born populations aged 16 to 65 of being in the lowest personal earnings income quartile, prose literacy scale, selected countries 2003



Countries are ranked by the odds ratios of foreign-born adults who score at Levels 1 and 2.

1. Odds estimates that are not statistically different from one at conventional levels of significance are reported as one in the figure.

For the actual estimate and its corresponding significance, see Table 9.7 in the annex to this chapter.

Source: IALSS 2003.

The figure shows that only low-skilled Canadian born adults face elevated risks of having incomes in the lowest quartile after controlling for background characteristics.

3.4 The value of increased literacy

While the previous section makes it clear that literacy has a profound effect on what people earn and their incomes, the available evidence is somewhat contradictory about whether the economic benefits of higher literacy are distributed equally among all groups in the population. Analysis that looks at how much wages increase in response to 10 percentile increase in literacy scores suggests that returns are stable across the distribution (Riddell and Green, 2007). DataAngel found similar results using different methods. The DataAngel analysis, that looked at the wage returns after controlling for a large number of variables including province/territory education, age, gender, immigrant status and Aboriginal status, found that each additional point of literacy point yielded an estimated \$155 more per year in earnings across the entire skill distribution (DataAngel, 2010). The DataAngle analysis goes to estimate the magnitude of the potential economic benefits that would accrue to an investment that was large enough to ensure that all workers have the literacy skill level demanded by their occupations. The estimated annual increase in earnings of \$100+B is large enough to move a large number of adults out of poverty, provided that the benefits are shared equally across the skill distribution.

Unfortunately, some analyses suggest that this will not be the case. Desjardins and Murray both find that wage returns to literacy skill are largely restricted to jobs that demand prose literacy Level 3 or above, so called knowledge jobs in which job performance depends on workers handling large amounts of information (Desjardins, 2011; Murray, 2010). Other research has found that wage returns to literacy are highest in knowledge jobs (Raudenbush and Kasim, 1998). Given that the majority of jobs in the Canadian labour market demand Level 3 skills or above there is reason to believe that most of the benefits would accrue to relatively skilled workers.

Analysis undertaken in 2010 by the authors provides a clear sense of how the economic benefits of a literacy investment would be shared (DataAngel, 2010). The analysis estimated the size of wage increases that would be precipitated by moving workers to prose literacy Level 3 using a technique called propensity matching. Propensity matching reduces differences between those receiving the “treatment”, in this case literacy upgrading, and a group of adults that are identical in all other respects. This analysis suggests that training investments that are large enough to precipitate large increases in earnings and significant reductions in the proportions of Canadians using the Employment Insurance and Social Assistance systems.

The following table, reproduced from DataAngel’s analysis, reveals just how large these implied effects are for Level 1 adults moving to Level 3.

Table 3.14

Estimates of the increase in earnings and income taxes associated with moving adults with Level 1 prose literacy skills to level 3, Canada and the jurisdictions 2003

Actual employment and earnings of adults at prose literacy Level 1 aged 16 and over														
Jurisdiction	Population level 1	Inci- dence of employ- ment	Average months worked	Average hours worked per month	Inci- dence of wel- fare	Inci- dence of EI	Hourly wage rate (approx.)	Average earnings for those with earnings	Average earnings including those with no earnings	Aggre- gate ear- nings level 1	Average federal and pro- vincial income tax rates	Current income tax revenue for level 1	Number with welfare income	Number with EI income
	number	%	months	hours	%	%	dollars	\$ millions	\$ millions	\$ millions	%	\$ millions	number	number
N.L.	68,041	53	7.1	187	27	25	14	20,675	11,057	752	13	100	19,000	17,000
P.E.I.	13,248	81	8.2	184	43	13	11	18,143	14,678	194	13	\$26	6,000	2,000
N.S.	72,942	54	8.5	158	16	16	13	21,950	11,930	870	13	115	12,000	12,000
N.B.	87,920	71	8.5	170	28	11	17	23,888	16,934	1,489	14	208	25,000	10,000
Que.	800,749	63	9.0	157	14	21	18	26,074	16,488	13,203	14	1,844	112,000	164,000
Ont.	1,348,495	65	9.6	165	6	9	20	33,611	21,937	29,582	16	4,690	83,000	120,000
Man.	93,182	66	9.6	162	9	16	18	29,052	19,125	1,782	15	268	8,000	15,000
Sask.	46,276	70	8.4	178	17	16	15	25,111	17,541	812	14	113	8,000	7,000
Alta.	212,393	79	9.1	161	8	12	18	26,395	20,740	4,405	14	615	17,000	26,000
B.C.	407,495	54	7.9	165	9	18	15	22,632	12,273	5,001	14	699	38,000	73,000
Yukon	1,717	75	7.7	149	13	27	21	25,152	18,936	\$33	14	5	-	-
N.W.T.	4,051	72	7.4	164	11	8	22	28,249	20,314	\$82	15	12	-	-
Nunavut	5,389	68	7.7	161	10	36	20	22,731	15,429	\$83	14	12	1,000	2,000
Canada	3,161,899	64	9.0	163	10	14	18	28,503	18,254	58,288		8,708	329,000	448,000

Table 3.14 (continued)

Estimates of the increase in earnings and income taxes associated with moving adults with Level 1 prose literacy skills to level 3, Canada and the jurisdictions 2003

Projected employment and earnings of adults at prose literacy Level 1 who move to Level 3 aged 16 and over														
Jurisdiction	Population level 1	Incidence of employment	Average months worked	Average hours worked per month	Incidence of welfare (at level 3)	Incidence of EI (at level 3)	Average wage rate	Average earnings for those with earnings	Average earnings including those with no earnings	Aggregate earnings level 1's promoted to 3	Average federal and provincial income tax rates	Income tax revenue for level 1 at level 3 literacy	Number with welfare income	Number with EI income
	number	%	months	hours	%	%	dollars	\$ millions	\$ millions	\$ millions	%	\$ millions	number	number
N.L.	68,041	78	8.4	186.2	21	4	15.20	26,373	20,494	1,394	14	195	14,000	3,000
P.E.I.	13,248	79	8.3	176.1	22	4	13.06	20,227	16,043	213	13	\$28	3,000	1,000
N.S.	72,942	61	8.0	149.7	16	3	15.67	22,916	14,030	1,023	14	143	12,000	2,000
N.B.	87,920	88	7.9	154.0	14	2	20.38	23,504	20,687	1,819	14	254	12,000	1,000
Que.	800,749	66	9.8	168.5	12	3	22.14	37,973	24,915	19,951	17	3,430	97,000	25,000
Ont.	1,348,495	83	9.4	161.6	7	1	20.11	33,157	27,500	37,083	16	5,880	95,000	12,000
Man.	93,182	84	9.9	160.6	10	3	22.05	36,004	30,337	2,827	16	448	9,000	3,000
Sask.	46,276	94	9.4	187.7	6	3	35.12	68,927	64,726	2,995	20	587	3,000	1,000
Alta.	212,393	91	10.0	177.3	6	2	20.81	37,185	33,975	7,216	16	1,144	13,000	4,000
B.C.	407,495	68	8.5	161.4	13	3	18.99	29,105	19,716	8,034	15	1,210	53,000	12,000
Yukon	1,717	92	9.3	174.7	9	4	24.65	41,040	37,738	65	17	\$11	-	-
N.W.T.	4,051	94	9.4	185.6	11	3	29.92	54,250	50,746	206	20	\$40	-	-
Nunavut	5,389	51	9.1	178.5	14	8	22.47	33,680	17,044	92	16	\$15	1,000	-
Canada			3,161,899											
Total projected earnings for Canada									82,918			13,385	312,000	64,000
Change														
Jurisdiction	Incidence of employment	Average months worked	Average hours worked per month	Incidence of welfare (at level 3)	Incidence of E.I. (at level 3)	Average wage rate	Average earnings for those with earnings	Estimated increase in annual earnings associated with moving from prose level 2 to level 3	Estimated increase in aggregate moving from prose level 2 to level 3	Estimated increase in income tax associated with moving from prose level 2 to level 3	Reduction in the number on welfare recipients	Change in the number on E.I.		
	%	months	hours	%	%	dollars	\$ millions	\$ millions	\$ millions	\$ millions	number	number		
N.L.	24	1.3	(0.8)	-6	-21	1.17	5,698	9,437	642	95	5,000	14,000		
P.E.I.	-2	0.1	(8.4)	-21	-9	1.69	2,085	1,365	18	2	3,000	1,000		
N.S.	7	(0.5)	(8.8)	0	-13	2.26	966	2,100	153	28	-	10,000		
N.B.	17	(0.6)	(16.1)	-14	-9	2.98	(385)	3,754	330	46	13,000	9,000		
Que.	2	0.8	11.4	-2	-17	4.39	11,898	8,427	6,748	1,585	15,000	139,000		
Ont.	18	(0.2)	(3.5)	1	-8	0.51	(454)	5,563	7,501	1,189	(12,000)	108,000		
Man.	18	0.4	(1.0)	1	-12	3.68	6,952	11,212	1,045	180	(1,000)	12,000		
Sask.	24	1.0	9.6	-11	-13	20.07	43,817	47,185	2,184	474	5,000	6,000		
Alta.	13	0.9	16.6	-2	-10	2.94	10,790	13,235	2,811	529	4,000	22,000		
B.C.	14	0.6	(4.1)	4	-15	3.59	6,473	7,442	3,033	512	(15,000)	61,000		
Yukon	17	1.6	25.4	-4	-23	3.36	15,888	18,802	32	7	-	-		
N.W.T.	22	2.0	21.7	0	-5	7.53	26,001	30,432	123	28	-	-		
Nunavut	-17	1.4	17.8	5	-28	2.46	10,949	1,615	9	3	-	2,000		
Canada									24,629	4,677	17,000	384,000		

Source: Special computations using the 2003 Adult Literacy and Life Skills Survey and the 2004 International Survey of Reading Skills by Doug Willms and Richard Shillington.

Among other things the table reveals:

Dramatic improvements in the quantity of work adults with Level 1 and 2 literacy skill are able to find. The incidence of employment and, the average number of months both rise. As expected the average hours worked per month fall as skill rises.

Marked reductions in the proportions of adults drawing benefits from the Employment Insurance and Social Assistance systems.

Significant increases in wage rates

Overall, annual earnings are projected to rise by \$25B, 17,000 fewer Social Assistance recipients and 384,000 fewer Employment Insurance recipients. These latter reductions translate into savings in the Social Assistance of \$115M and \$3.3B respectively.

The following table presents parallel information for moving adults at Level 2 to Level 3.

Table 3.15

Estimates of the increase in earnings and income taxes associated with moving adults with level 2 prose literacy skills to level 3, Canada and the jurisdictions 2003

Actual employment and earnings of adults at prose literacy Level 2 aged 16 and over, Canada and the provinces, 2003														
Jurisdiction	Population level 2	Incidence of employment	Average months worked	Average hours worked per month	Incidence of welfare	Incidence of E.I.	Average wage rate	Average earnings for those with earnings	Average earnings including those with no earnings	Aggregate earnings level 2	Average federal and provincial income tax rates	Current income tax revenue for level 2	Number with welfare income	Number with E.I. income
	number	%	months	hours	%	%	dollars	\$ millions	\$ millions	\$ millions	%	\$ millions	number	number
N.L.	71,291	68	8.1	164	29	11	17	22,690	15,358	1,095	14	153	21,000	8,000
P.E.I.	19,757	81	8.6	166	33	5	13	19,739	15,922	315	13	42	6,000	1,000
N.S.	110,053	74	8.9	161	19	6	19	25,128	18,608	2,048	14	286	21,000	7,000
N.B.	124,261	77	9.0	173	26	5	27	32,333	24,848	3,088	15	465	32,000	6,000
Que.	1,241,940	79	9.8	157	14	5	21	35,198	27,875	34,619	16	5,489	178,000	67,000
Ont.	1,595,153	79	9.5	158	9	5	19	34,119	27,107	43,240	16	6,856	138,000	76,000
Man.	142,048	84	10.0	167	8	3	31	48,216	40,472	5,749	20	1,127	12,000	5,000
Sask.	112,957	78	10.2	162	5	9	17	28,636	22,306	2,520	15	380	6,000	11,000
Alta.	435,327	84	9.9	165	6	6	19	33,501	28,275	12,309	16	1,952	24,000	24,000
B.C.	391,871	79	9.3	156	10	3	23	33,934	26,878	10,533	16	1,670	40,000	11,000
Yukon	2,729	81	8.9	162	16	13	23	37,801	30,572	83	17	14	-	-
N.W.T.	5,212	86	9.7	167	10	9	27	38,782	33,389	174	17	30	-	-
Nunavut	2,125	82	8.1	151	12	23	26	34,581	28,220	60	16	10	-	-
Canada	4,254,724	79	9.6	159	11	5	21	34,063	27,068	115,831		18,472	478,000	216,000

Table 3.15 (concluded)

Estimates of the increase in earnings and income taxes associated with moving adults with level 2 prose literacy skills to level 3, Canada and the jurisdictions 2003

Projected employment and earnings of adults at prose literacy Level 2 who move to Level 3 aged 16 and over, Canada and the provinces, 2003														
Jurisdiction	Population level 2	Incidence of employment	Average months worked	Average hours worked per month	Incidence of welfare (at level 3)	Incidence of EI (at level 3)	Average wage rate	Average earnings for those with earnings	Average earnings including those with no earnings	Aggregate earnings level 2's promoted to 3	Average federal and provincial income tax rates	Current income tax revenue for level 2	Number with welfare income	Number with E.I. income
	number	%	months	hours	%	%	dollars	\$ millions	\$ millions	\$ millions	%	\$ millions	number	Number
N.L.	71,291	77	8.3	163.6	21	4	17	22,652	17,362	1,238	14	173	15,000	3,000
P.E.I.	19,757	79	9.6	166.4	22	4	12	21,579	17,066	337	13	45	4,000	1,000
N.S.	110,053	82	8.8	151.4	16	3	20	24,610	20,067	2,208	14	309	17,000	3,000
N.B.	124,261	79	8.9	171.0	14	2	29	33,269	26,320	3,270	16	519	17,000	2,000
Que.	1,241,940	80	10.1	159.2	12	3	23	40,073	32,093	39,857	17	6,852	151,000	38,000
Ont.	1,595,153	87	9.4	159.6	7	1	22	38,128	33,220	52,991	17	9,110	112,000	15,000
Man.	142,048	90	10.0	173.4	10	3	32	52,501	47,104	6,691	20	1,311	14,000	4,000
Sask.	112,957	92	10.8	163.8	6	3	23	39,587	36,528	4,126	17	709	7,000	3,000
Alta.	435,327	89	10.7	177.1	6	2	23	45,203	40,072	17,444	18	3,199	26,000	8,000
B.C.	391,871	88	9.5	161.9	13	3	27	42,558	37,330	14,629	18	2,683	51,000	12,000
Yukon	2,729	96	9.9	180.8	9	4	26	52,535	50,347	137	20	27	-	-
N.W.T.	5,212	92	10.0	169.2	11	3	30	44,292	40,577	211	18	39	1,000	-
Nunavut	2,125	87	8.0	145.9	14	8	28	35,455	30,851	66	16	10	-	-
Canada	4,254,724									143,207		24,984	415,000	89,000
Jurisdiction	Incidence of employment	Average months worked	Average hours worked per month	Incidence of welfare (at level 3)	Incidence of E.I. (at level 3)	Average wage rate	Average earnings for those with earnings	Estimated increase in annual earnings associated with moving from prose level 2 to level 3	Estimated increase in aggregate with moving from prose level 2 to level 3	Estimated increase in income tax associated with moving from prose level 2 to level 3	Reduction in the number on welfare recipients	Change in the number on E.I.		
	%	months	hours	%	%	dollars	\$ millions	\$ millions	\$ millions	\$ millions	number	number		
N.L.	9	0.2	(0.7)	-8	-7	(0.38)	(38)	2,004	143	20	6,000	5,000		
P.E.I.	-2	1.0	0.1	-11	-1	(0.32)	1,840	1,144	23	3	2,000	-		
N.S.	7	(0.1)	(9.2)	-3	-3	0.96	(519)	1,459	161	22	4,000	4,000		
N.B.	2	(0.0)	(2.2)	-12	-4	1.31	936	1,471	183	53	15,000	4,000		
Que.	1	0.2	2.2	-2	-2	2.05	4,876	4,218	5,238	1,363	27,000	29,000		
Ont.	8	(0.1)	1.5	-2	-4	2.37	4,009	6,113	9,751	2,254	26,000	61,000		
Man.	6	-	6.2	1	0	1.55	4,285	6,631	942	185	(2,000)	1,000		
Sask.	14	0.6	1.9	1	-7	5.13	10,951	14,222	1,607	330	(1,000)	8,000		
Alta.	4	0.8	12.1	0	-4	3.23	11,702	11,797	5,136	1,248	(2,000)	16,000		
B.C.	9	0.2	5.5	3	0	4.17	8,624	10,452	4,096	1,013	(11,000)	(1,000)		
Yukon	15	1.0	19.0	-6	-9	2.61	14,734	19,776	54	13	-	-		
N.W.T.	6	0.3	1.8	1	-6	2.59	5,510	7,188	37	9	(1,000)	-		
Nunavut	5	(0.1)	(5.0)	3	-14	1.81	874	2,631	6	1	-	-		
Canada								27,376	6,513	63,000	127,000			

Source: Special computations using the 2003 Adult Literacy and Life Skills Survey and the 2004 International Survey of Reading Skills by Doug Willms and Richard Shillington.

The predicted increases in labour market outcomes for Level 2 adults moving to Level 3 translate into large gains in both estimated annual labour earnings and income tax revenues. At the national level labour earnings of the group are predicted to rise \$27.4B per year. Predicted reductions in the number of welfare recipients and employment insurance beneficiaries are expected to yield expenditure reductions of an additional \$427 million and \$1.1B respectively.

The following table summarizes the predicted direct economic benefits of moving all adults at Levels 1 and 2 to Level 3.

Table 3.16

Estimated aggregate economic benefits and associated rate of return of raising literacy skill levels to Level 3 for all adults aged 16 and over, Canada, 2003

	Impact of taking level 1's and 2's to level 3		
	Level 1 to 3	Level 2 to 3	Combined
	\$ million		
Return in public taxes/savings	8,062	8,021	16,083
Income tax revenue	4,677	6,513	11,190
Social assistance	115	427	542
Total cost of raising skill to level 3		6,401	
Estimated simple annual rate of return		251%	

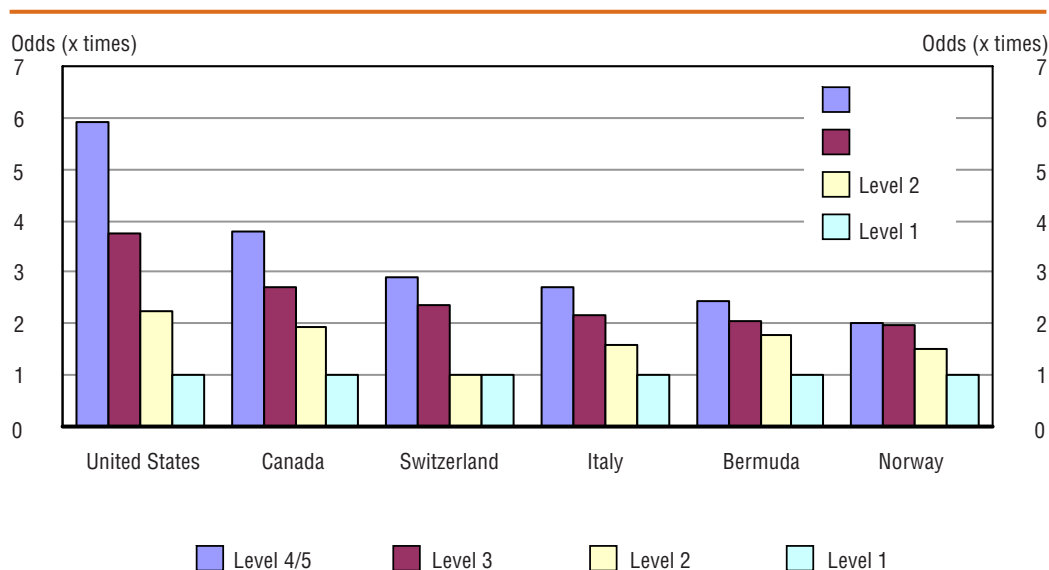
The table indicates annual Social Assistance (SA) savings of over half a billion dollars and 84,000 fewer (SA) recipients per year. Clearly, investments in literacy represent a powerful tool that might be deployed in the fight against poverty in Canada.

3.5 Other economic benefits

Literacy is an asset that has economic value other than its impact on employment and wage rates. Among other things, literacy influences adults access to adult learning, individual health and levels of community engagement.

Figure 3.17

Adjusted odds ratios showing the likelihood of adults aged 16 to 65 receiving adult education and training during the year preceding the interview, by document literacy levels, 2003



Countries are ranked according to the odds of persons who score at Level 4/5.

1. Odds estimates that are not statistically different from one at conventional levels of significance are reported as one in the figure. For the actual estimate and its corresponding significance, see Table 4.4 in the annex to this chapter.

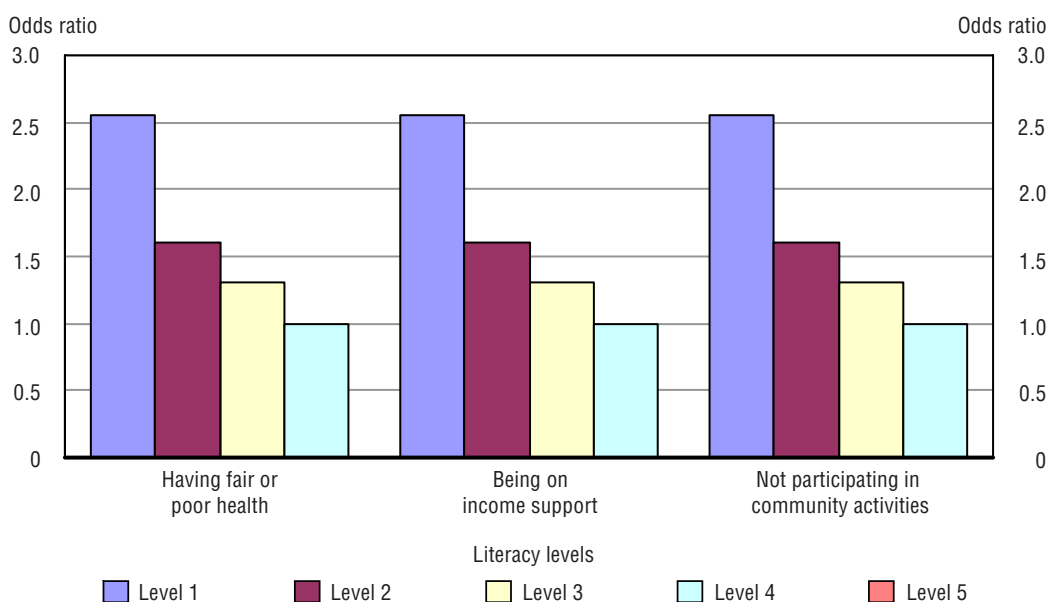
Source: IALSS 2003.

The figure reveals that less skilled workers have far less access to adult education and training. Adults with document literacy skills at levels 4/5 are almost 4 times more likely than their level 1 peers to have participated.

Figure 3.18 plots the impact that health literacy - literacy and numeracy applied to health information - have on the probability of being in fair or poor health and on not participating in community activities.

Figure 3.18

Odds of having fair or poor health, being on income support and of not participating in community activities by health literacy level, adults aged 16 and over, Canada, 2003



Source: International Adult Literacy and Skills Survey, 2003

The figure shows that adults at Level 1 are over 2.5 times more likely to be in fair or poor health, Level 2 adults over 1.5 times more likely to be in fair or poor health. These results are the product of several factors. Adults with low skills are less able to afford a healthy diet and health-promoting recreation, have less access to health information and tend to work in occupations that expose them to more risk of workplace illness and accident. Similar results are seen for community participation.

3.6 Future rewards to skill

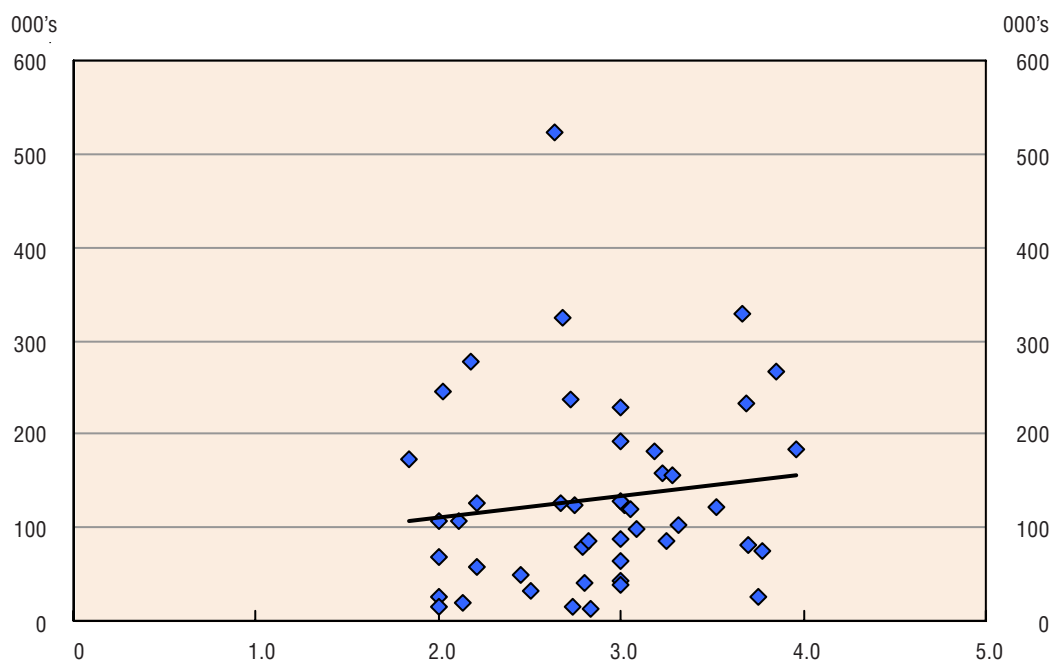
The economic effects of literacy are a function of skill supply and demand. The demand for literacy skill is projected to grow over the coming decade as jobs become more knowledge and skill intense.

How skill demand is expected to change

Figure 3.19 plots the projected changes in the occupational distribution of employment by the level of literacy skill demanded by the job.

Figure 3.19

Projected aggregate job gains by average literacy skill demand, selected occupations, Canada, 2006/2016



Source: DataAngel, 2010.

The figure shows that the economic demand for literacy skill is likely to grow rapidly, continuing a trend that has been evident over the past decade.

How skill supply is expected to change

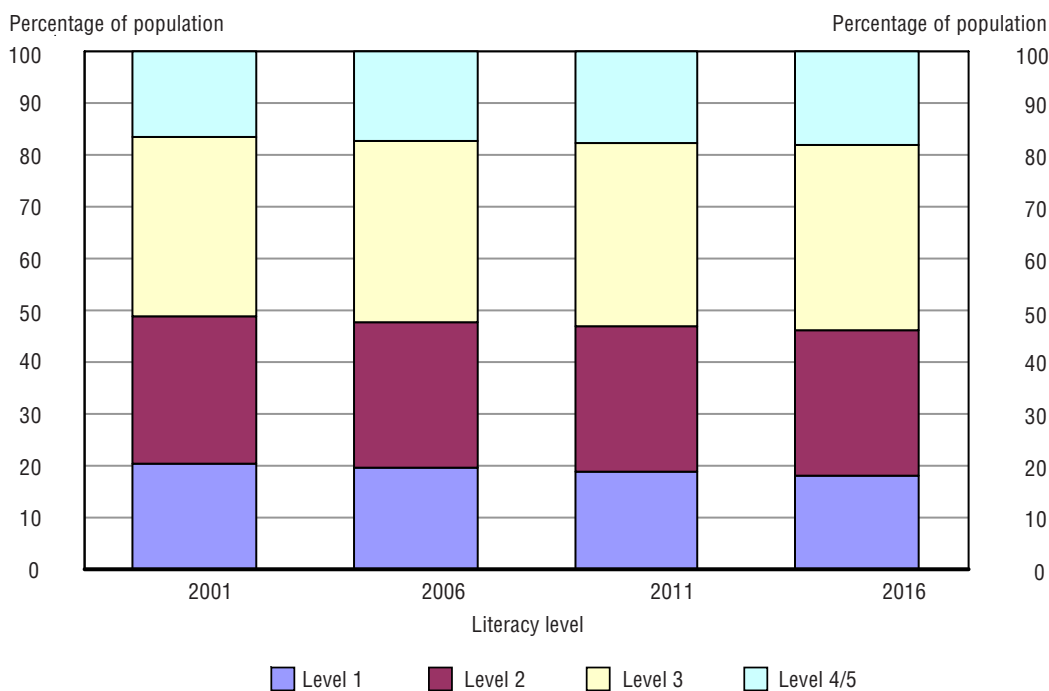
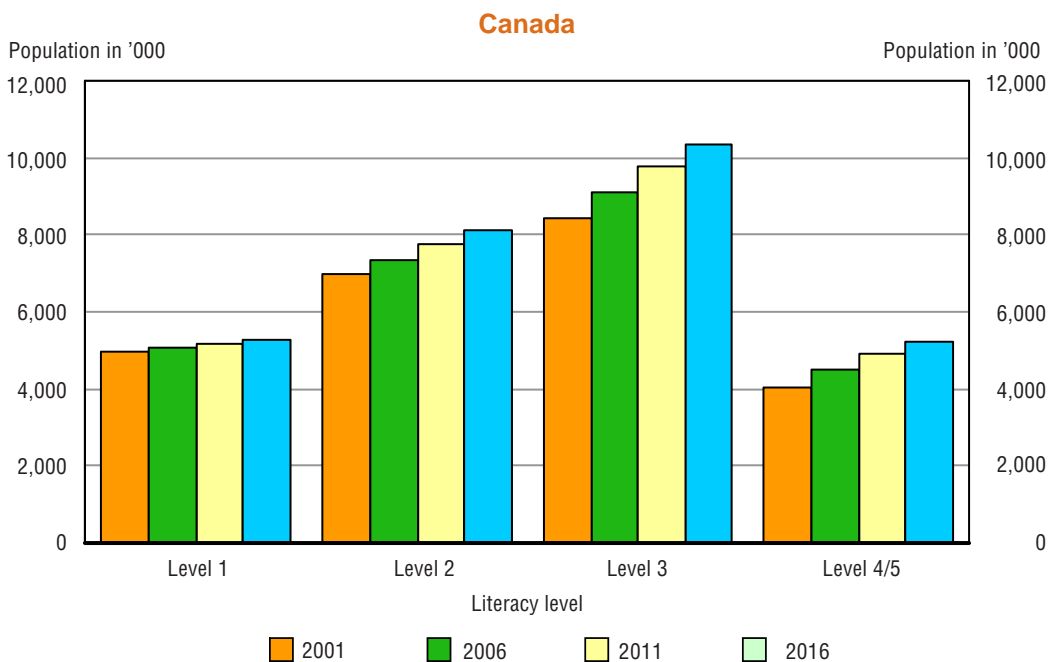
Figures 3.20A and 3.20B plot the projected supply of literacy skill over the coming decade.

The first figure reveals a disconcerting fact – the absolute numbers of adults with Level 1 and 2 prose literacy skills rises over the period. By 2016 the projections suggest that there will be 996,950 additional adults with skills below prose literacy level 3, the average level of literacy skill demanded by the Canadian economy.

The second figure reveals an even more disconcerting fact, that the proportion of adults whose skill level is judged to place them at risk remains virtually unchanged out to 2016. This spells trouble for the Canadian economy given the degree to which Canadian employers have relied on attracting workers from other jurisdictions to meet rising demand. The fact that the supply of literate workers is expected to remain stable suggests a need to look elsewhere for skill. Immigration, inter-provincial migration and adult upgrading are the three obvious options open to jurisdictions.

Figures 3.20.A and 3.20.B

Projected number and proportion of adults aged 16 and over by prose literacy proficiency level, Canada, 2001-2016



Source: DataAngel, 2010.

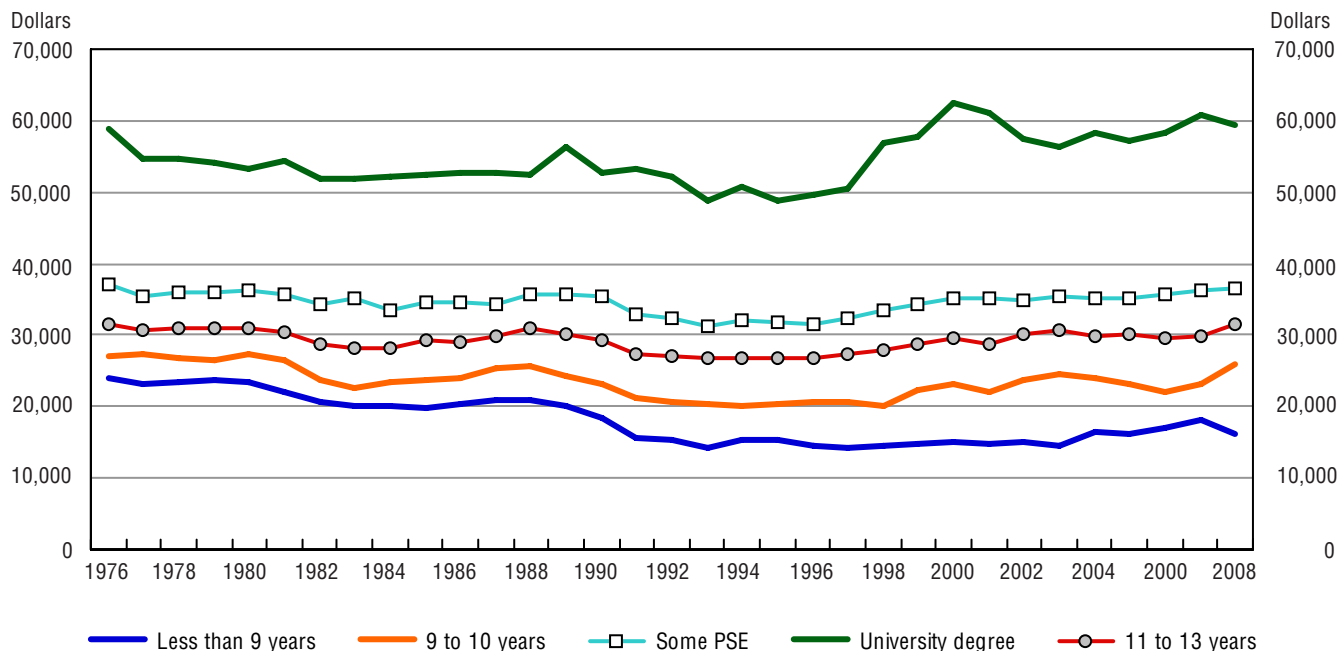
How unbalanced skill supply and demand are driving increases in earnings inequality

The combination of rising demand for literacy skill and flat literacy skill supply is almost certain to create even larger literacy skill shortages than currently exist. It is also highly likely that growing literacy skill shortages will lead to much higher levels of skill-based inequality in wage rates. Ideally, one would like to track long term trends in the relative wage returns to literacy skill to see if this has been the case. Unfortunately, comparable assessment data is only available for two years – 1994 and 2003 – not enough to look at trends.

The following analysis uses data on education as a proxy for literacy skill. It uses data from the Survey of Consumer Finances (1976-1995) and the Survey of Labour Income Dynamics (SLID for 1996-2008) to explore trends in The relative earnings of adults with different levels of education over the long term. The results are the average earnings for the population by age group and by education⁵.

Figure 3.21

Average earnings by education level (including those without earnings), 1976/2008, 2008\$, both sexes, adults aged 25 to 54



Source: SCF/SLID tabulation.

5. The methods for measuring educational attainment have changed in these surveys over time so the categories are a compromise of those groups that can be identified consistently over time. It was not possible, in all years, to identify high school graduates.

The following series of charts use earning data that has been adjusted to account for inflation over the reference period. All earnings are expressed in 2008 dollars.

The first chart uses the age group 25 to 54, avoiding the period of post-secondary education and early retirement. The average earnings for those with a university degree have increased markedly. For the lowest educational groups average earnings have been falling. For the middle educational groups average earnings have been reasonably flat.

The following charts are for various age groups. There is some consistency in the findings that over the last 15 years. Since about 1996, the average earnings for those with a university degree have increased markedly. For the lowest educational groups average earnings have been falling. For the middle educational groups average earnings have been reasonably flat for older age groups and have been falling for younger groups, for example, 25 to 34.

Thus, the data show that skilled adults have seen their earnings increase more than other groups, in part because their higher literacy levels as jobs become more knowledge and skill are more valuable.

Figure 3.22

Average earnings of the population (including those without earnings), 1976-2008, 2008\$s, both sexes, adults aged 25 to 34, Canada

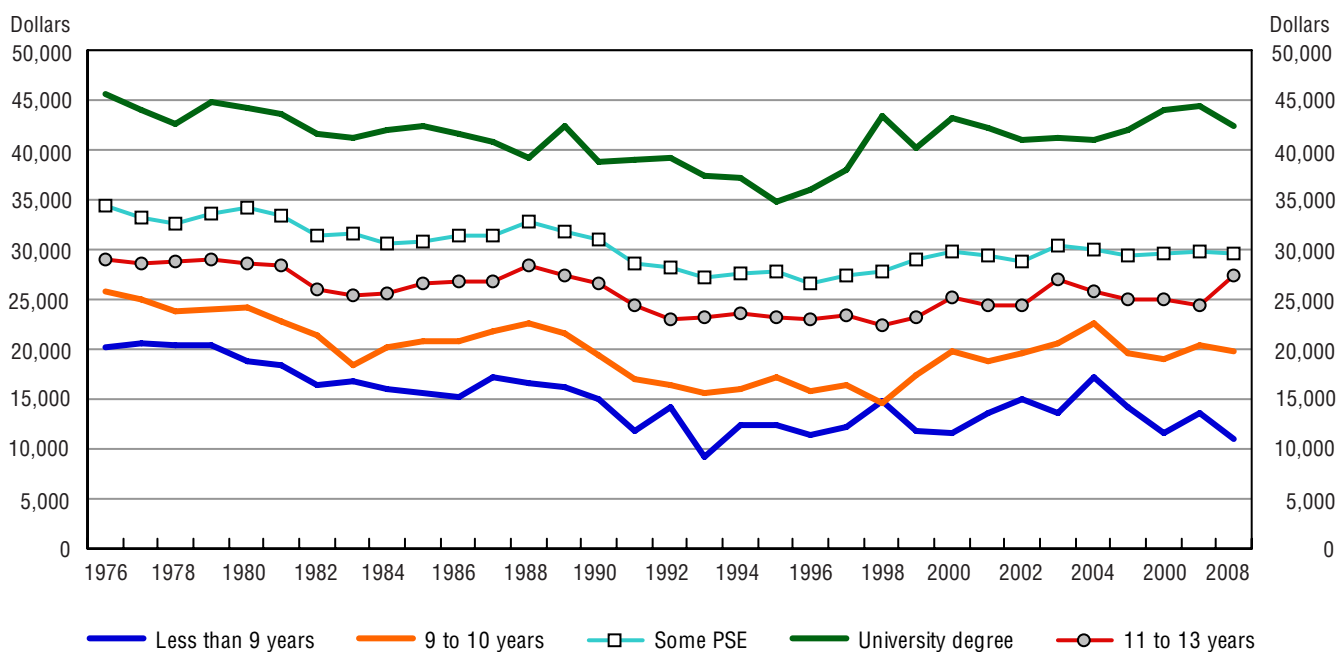


Figure 3.23

Average earnings of the population (including those without earnings), 1976-2008, 2008\$, both sexes, adults aged 35 to 44, Canada

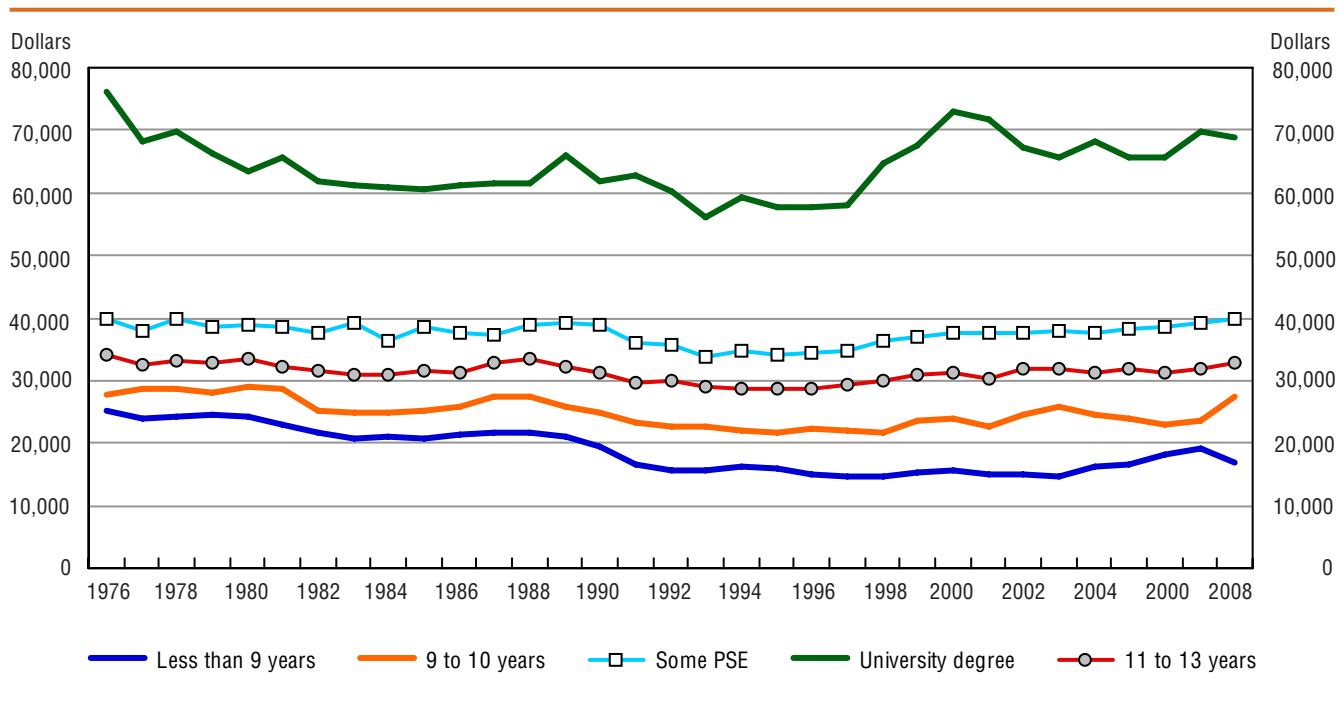


Figure 3.24

Average earnings of the population (including those without earnings), 1976-2008, 2008\$, both sexes, adults aged 35 to 44, Canada

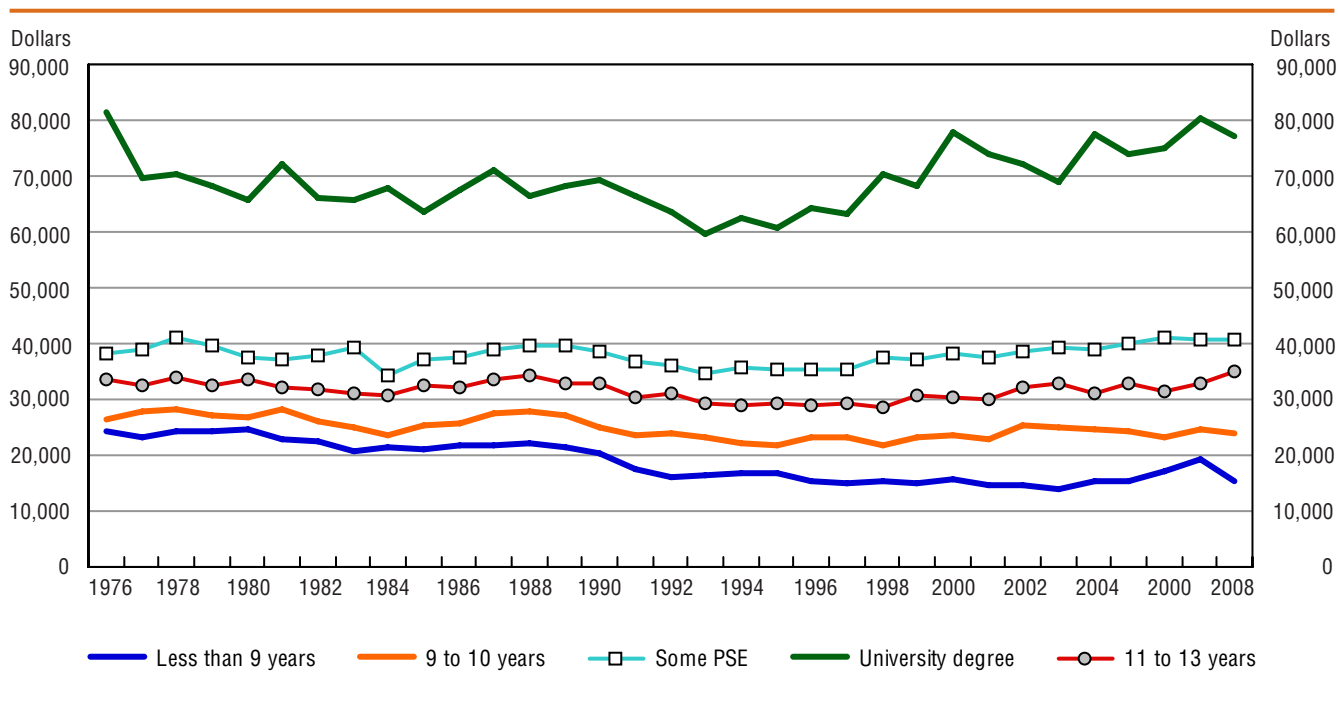


Figure 3.25

Average earnings of the population (including those without earnings), 1976-2008, 2008\$, both sexes, adults aged 55 to 64, Canada

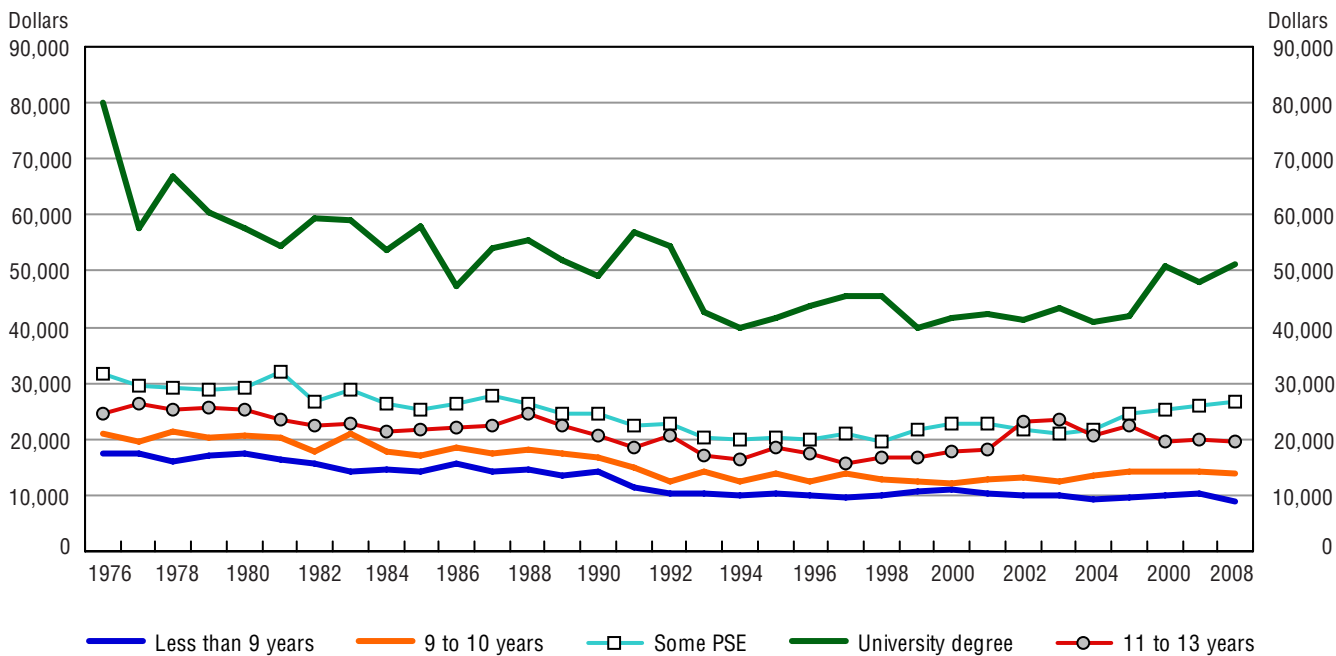
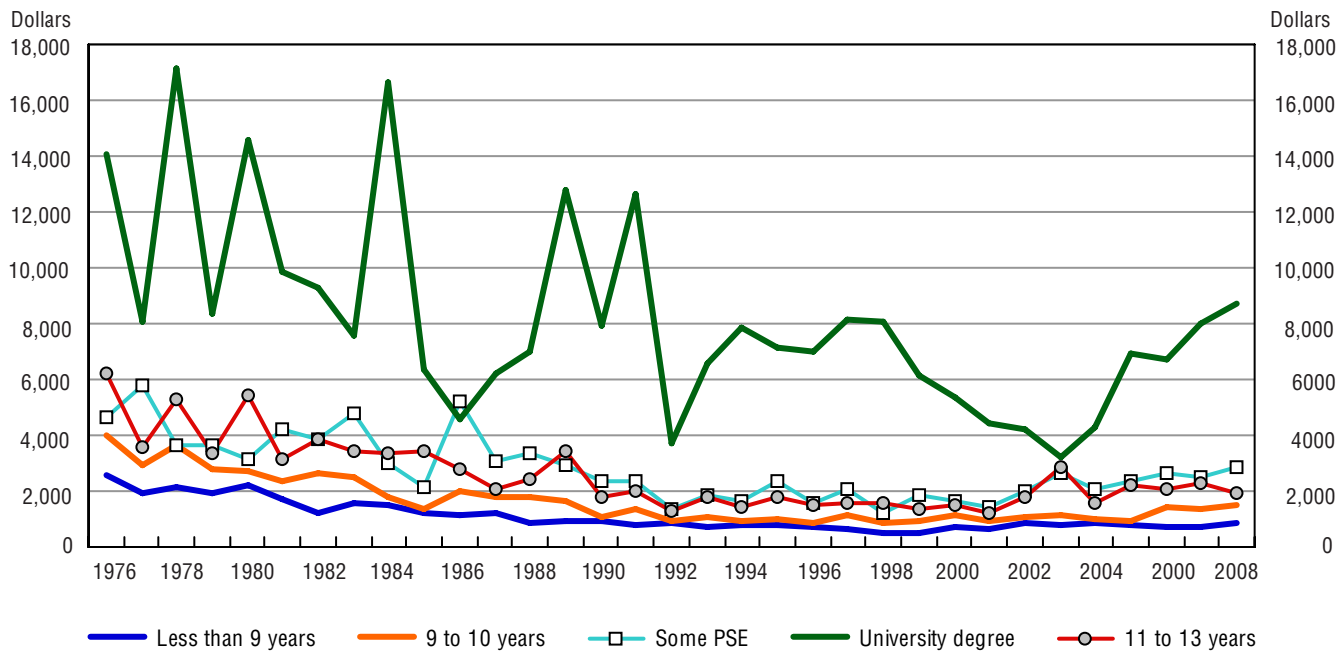


Figure 3.26

Average earnings of the population (including those without earnings), 1976-2008, 2008\$, both sexes, adults aged 65 and over, Canada



Chapter 4

Summary and implications for policy

The evidence summarized in this report leaves little doubt that literacy and poverty are closely linked. On the positive side, adults with higher levels of literacy skill are more likely to work, work about the same hours but earn more than their less literate peers. These adults are also considerably more likely to be in good health, are more engaged in their communities and have far greater access to adult learning. Adults with low literacy skill are much more likely to have low incomes and rely to a much greater extent on income support than their more skilled peers. They are also less healthy and have much less access to adult education and training opportunities.

There is reason to believe that investment in literacy would precipitate significant increases in earnings and significant reductions in the numbers of adults receiving Employment Insurance and Social Assistance benefits. Raising every Canadian adult to Level 3 would reduce Social Assistance rolls by 84,000 and generate annual benefits savings of \$542M.

Research suggests that it would require an investment of roughly \$18B to eliminate occupational literacy skills shortages in Canada. As high as this amount seems this investment is likely to generate an additional \$100B in annual earnings. Few would turn down an investment that would yield an annual rate of return well in excess of 500%. At a minimum the increased tax revenues associated with the increased earnings precipitated by such an investment would provide fiscal room at a time when government finances will be under great pressure from rising health and pension costs.

Projections of literacy skill supply and demand suggest that the economy will have to deal with rising literacy skill shortages over the medium term. These shortages are likely to drive increases in skill-based wage inequality and dampen productivity growth as employers are forced to hire more workers with weak skills. Rising employment to population ratios are not likely to precipitate large increases in labour earnings. The numbers of adults receiving Social Assistance may shrink but the ranks of the working poor are likely to grow.

Realizing the returns on a literacy investment implied above would require government action on three fronts. As noted above, the majority of workers do not have the literacy skills demanded by their occupations. Governments should encourage employers to assess their employees literacy and numeracy skills and to upgrade skills where needed. Doing so would increase labour market efficiency and overall productivity while increasing the available supply of skill. Notwithstanding the fact that there are significant literacy skill shortages in the Canadian economy, the skill loss observed between 1994 and 2003 implies a need for governments to increase the economic demand for literacy skill. Doing so would involve replacing passive income support with active education policies, avoiding job creation programs that do not include skill measures and

There is reason to believe that investment in literacy would precipitate significant increases in earnings and significant reductions in the numbers of adults receiving Employment Insurance and Social Assistance benefits.

creating tax incentives for individuals and employers to invest in skill upgrading. Taking these steps would reduce skill loss and ensure that any skill surpluses get put to good use.

Realizing these returns also requires a significant shift in how Canada's poverty advocates think. As a group they need to focus less on income replacement and more on removing barriers to full and equal participation of Canada's poor.

Annex A

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Annex B

Statistical Tables

Figure 2.2

Estimated numbers of adults by literacy market segment, English market, population aged 16 and over, Canada, 2006

Market segment	Number of potential learners ¹	Average hours of instruction required to raise to level 3
English A1	268,000	375
English A2	424,000	375
English B1	54,000	350
English B2	482,000	350
English C1	2,144,000	75
English D1	3,540,000	40
Total Potential English-Language Learners and hours	6,911,000	669,051,725
French A1	97,000	375
French A2	18,000	375
French B1	115,000	350
French B2	39,000	350
French C1	584,000	75
French D1	1,297,000	40
Total Potential French-language Learners and hours	2,150,000	171,885,470
Total Potential Learners and hours	9,061,000	840,937,195

1. The coverage of the ISRS study excluded roughly 12% of the estimated numbers of adults at Levels 1 and 2 derived from the IALSS study. The number of potential learners derived from the ISRS has been inflated by 12% to ensure that the cost-benefit analyses reflect the true magnitude of the potential literacy market.

Source: ISRS, 2005

Table 3.1

Labour market participation rate by literacy skill proficiency level, adults aged 16 to 65, Canada, 2003

	Prose literacy level					Total
	Level 1	Level 2	Level 3	Level 4	Level 5	
	Percent					
Participation rate	69	79	82	85	87	80

Table 3.2

Average Weeks worked, hours and hourly earnings by literacy level, adults aged 16 and over, 2003

Prose literacy level	Weeks worked per year	Weeks worked per year for those who worked at some time in the year	Hours worked per year	Hours worked per year for those who worked at some time in the year	Hourly earnings
	Hours				Dollars
Level 1	18	45	923	1,832	14
Level 2	31	46	1,405	1,800	16
Level 3	36	47	1,625	1,828	19
Level 4	41	47	1,702	1,800	21
Level 5	42	48	1,763	1,811	23

Table 3.4

Average half-life of unemployment, by skill level, Canada, 2003

Weeks	Levels 1 and 2	Levels 3 and 4/5
	Probability	
0	0.124	0.161
2	0.253	0.363
4	0.281	0.392
7	0.345	0.511
9	0.350	0.530
11	0.395	0.578
13	0.397	0.583
15	0.420	0.621
17	0.423	0.626
20	0.448	0.643
22	0.453	0.647
24	0.468	0.660
26	0.469	0.663
28	0.474	0.673
30	0.475	0.675
33	0.484	0.683
35	0.485	0.683
37	0.494	0.687
39	0.495	0.687
41	0.500	0.694
43	0.500	0.696
46	0.502	0.700
48	0.502	0.701
50	0.502	0.701
52	0.502	0.701

Source: Adult Literacy and Life Skills Survey, 2003.

Table 3.6

Percent increase in weekly earnings per increase of 10-percentiles on the document literacy scale, and per increase of additional year of schooling, adjusted three stage least squares model, labour force populations aged 16 to 65, 2003

	Prose literacy		Document literacy		Numeracy		Problem solving ¹	
	10 percentiles	Standard error	10 percentiles	Standard error	10 percentiles	Standard error	10 percentiles	Standard error
Bermuda								
Observed skills (percentiles)	0.18***	(0.05)	0.37***	(0.06)	0.25***	(0.05)	0.29***	(0.07)
Years of schooling	0.01	(0.02)	-0.07	(0.03)	-0.02	(0.02)	-0.01	(0.02)
Years of experience	0.04***	(0.00)	0.04***	(0.01)	0.04***	(0.00)	0.03***	(0.01)
Years of experience-squared	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)
Male	0.39***	(0.04)	0.26***	(0.04)	0.16***	(0.05)	0.41***	(0.04)
Urban resident	4.98***	(0.10)	5.16***	(0.12)	5.25***	(0.12)	4.71***	(0.12)
Canada								
Observed skills (percentiles)	0.09***	(0.01)	0.11***	(0.01)	0.13***	(0.01)	0.08***	(0.01)
Years of schooling	0.06***	(0.00)	0.05***	(0.00)	0.04***	(0.01)	0.07***	(0.00)
Years of experience	0.06***	(0.00)	0.06***	(0.00)	0.06***	(0.00)	0.06***	(0.00)
Years of experience-squared	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)
Male	0.42***	(0.02)	0.37***	(0.01)	0.30***	(0.02)	0.39***	(0.01)
Urban resident	0.04	(0.02)	0.04	(0.02)	0.02	(0.02)	0.03	(0.02)
Italy								
Observed skills (percentiles)	0.35***	(0.09)	0.40***	(0.19)	-0.06	(0.10)	0.38***	(0.10)
Years of schooling	-0.03	(0.02)	-0.05***	(0.04)	0.07***	(0.03)	-0.03	(0.02)
Years of experience	0.01	(0.01)	0.01***	(0.01)	0.02***	(0.01)	0.00	(0.01)
Years of experience-squared	0.00	(0.00)	0.00***	(0.00)	0.00**	(0.00)	0.00**	(0.00)
Male	0.37***	(0.05)	0.21***	(0.05)	0.24***	(0.03)	0.34***	(0.05)
Urban resident	0.00	(0.04)	0.00***	(0.06)	0.07***	(0.04)	-0.05	(0.05)
Norway								
Observed skills (percentiles)	0.05	(0.08)	0.08	(0.08)	0.05	(0.07)	0.00	(0.07)
Years of schooling	0.06***	(0.02)	0.05***	(0.02)	0.06**	(0.02)	0.07***	(0.02)
Years of experience	0.07***	(0.01)	0.07***	(0.01)	0.07***	(0.01)	0.07***	(0.01)
Years of experience-squared	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)
Male	0.34***	(0.04)	0.29***	(0.07)	0.28***	(0.08)	0.34***	(0.04)
Urban resident	0.30***	(0.05)	0.30***	(0.05)	0.31***	(0.05)	0.32***	(0.05)
Switzerland								
Observed skills (percentiles)	0.03	(0.03)	0.04*	(0.02)	0.02	(0.02)	0.03	(0.03)
Years of schooling	0.07***	(0.01)	0.07***	(0.01)	0.08***	(0.01)	0.08***	(0.01)
Years of experience	0.04***	(0.00)	0.04***	(0.00)	0.04***	(0.00)	0.04***	(0.00)
Years of experience-squared	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)
Male	0.72***	(0.03)	0.69***	(0.03)	0.69***	(0.03)	0.72***	(0.03)
Urban resident	0.18***	(0.03)	0.18***	(0.03)	0.18***	(0.03)	0.18***	(0.03)
United States								
Observed skills (percentiles)	0.05*	(0.03)	0.06	(0.03)	0.08**	(0.04)	...	...
Years of schooling	0.09***	(0.02)	0.09***	(0.02)	0.07***	(0.02)	...	...
Years of experience	0.06***	(0.01)	0.06***	(0.01)	0.06***	(0.01)	...	...
Years of experience-squared	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)	...	...
Male	0.50***	(0.04)	0.47***	(0.04)	0.42***	(0.05)	...	...
Urban resident	0.15***	(0.05)	0.15***	(0.05)	0.15***	(0.06)	...	...

* p<0.10, statistically significant at the 10 per cent level.

** p<0.05, statistically significant at the 5 per cent level.

*** p<0.01, statistically significant at the 1 per cent level.

... Not applicable.

1. Switzerland (Italian) and the United States did not field the problem solving skills domain.

Note: The results reported in the table are from the first equation of the three equation system. The estimates for the other two equations are available upon request.

Source: Adult Literacy and Life Skills Survey, 2003.

Table 3.8

Population by education and literacy level, adults aged 16 and over, 2003

	Literacy Level				
	Level 1	Level 2	Level 3	Level 4	Level 5
	Number				
Less than high school	5,500,000	4,000,000	2,300,000	400,000	-
High school graduate	2,200,000	5,100,000	6,700,000	1,800,000	-
Trades certificate/diploma/apprentice	500,000	1,300,000	2,000,000	500,000	-
College diploma	400,000	1,900,000	3,400,000	1,900,000	100,000
University degree	400,000	1,200,000	4,400,000	3,100,000	300,000
Total	9,000,000	13,500,000	18,800,000	7,600,000	400,000

Table 3.9

Average earning of the population by education and literacy level, no adjustment for the age distribution, adults aged 16 and over, 2003

	Literacy Level					
	Total	Level 1	Level 2	Level 3	Level 4	Level 5
	Dollars					
Less than high school	23,000	25,000	25,000	21,000	17,000	n/a
High school graduate	32,000	27,000	31,000	35,000	29,000	36,000
Trades certificate/diploma/apprentice	45,000	31,000	37,000	49,000	53,000	n/a
College diploma	46,000	31,000	37,000	49,000	50,000	49,000
University degree	60,000	50,000	45,000	63,000	63,000	60,000
Total	40,000	28,000	32,000	44,000	48,000	55,000

n/a: could not be calculated because of a small sample size.

Source: Calculations using the IALSS 2003.

Table 3.10

Average earnings of the population (including those without earning) by education and literacy level, age standardized, 2004

	Literacy Level				
	Level 1	Level 2	Level 3	Level 4	Level 5
	Dollars				
Less than high school	10,000	17,000	17,000	...	...
High school graduate	15,000	21,000	25,000	...	...
Trades certificate/diploma/apprentice	...	25,000	36,000	...	...
College diploma	...	25,000	34,000	35,000	...
University degree	26,000	29,000	40,000	42,000	...
Total	14,000	21,000	31,000	35,000	...

... could not be calculated because of a small sample size.

Source: Calculations using the IALSS 2003.

Figure 3.11

Proportions of individuals living below Statistics Canada's low income cut-offs by prose literacy skill level, Canada, 2003

Prose literacy level	Proportion below low income cut-off (%)
Level 1	30
Level 2	16
Level 3	11
Level 4	6
Level 5	11
Total	15

Figure 3.12

Adjusted and unadjusted odds ratios¹ showing the likelihood of low-skilled adults (Levels 1 and 2) collecting social assistance payments, numeracy scale, populations aged 16 to 65, selected countries, 2003

	Adjusted odds ¹		Unadjusted odds	
	Odds ratios	Standard error	Odds ratios	Standard error
Bermuda	1.00	(1.0)	2.11	(1.0)
Canada	2.45***	(0.2)	4.89***	(0.2)
Italy	2.13	(0.8)	3.49	(0.8)
Norway	2.86**	(0.4)	3.52***	(0.4)
Switzerland	1.92	(0.7)	2.61	(0.6)
United States	3.32**	(0.5)	7.06***	(0.4)

* p<0.10, statistically significant at the 10 per cent level.

** p<0.05, statistically significant at the 5 per cent level.

*** p<0.01, statistically significant at the 1 per cent level.

1. Odds are adjusted for gender, age, educational attainment and total personal income.

Note: Standard errors are of the logarithm of the odds ratios.

Source: Adult Literacy and Life Skills Survey, 2003.

Figure 3.13

Adjusted odds ratios¹ indicating the likelihood of low skilled (Levels 1 and 2) and medium to high skilled (Levels 3 and 4/5) foreign-born and native-born populations aged 16 to 65 of being in the lowest personal earnings income quartile, prose literacy scale, 2003

	Foreign-born				Native-born			
	Low skilled (Levels 1 and 2)		Medium to high skilled (Levels 3 and 4/5)		Low skilled (Levels 1 and 2)		Medium to high skilled (Levels 3 and 4/5)	
	Odds ratios	Standard error	Odds ratios	Standard error	Odds ratios	Standard error		
Bermuda	2.51	(0.69)	1.26	(0.51)	1.41	(0.44)	1.00	
Canada	2.32***	(0.23)	1.83**	(0.29)	1.52***	(0.15)	1.00	
Norway	1.53	(0.66)	0.39	(0.76)	2.17**	(0.32)	1.00	
Switzerland	2.34**	(0.32)	1.07	(0.60)	0.83	(0.40)	1.00	
United States	2.82**	(0.45)	1.00	(0.43)	2.06***	(0.19)	1.00	

* p<0.10, statistically significant at the 10 per cent level.

** p<0.05, statistically significant at the 5 per cent level.

*** p<0.01, statistically significant at the 1 per cent level.

Notes: Odds are adjusted for gender, age, educational attainment and language status.

Standard errors are of the logarithm of the odds ratios.

Source: Adult Literacy and Life Skills Survey, 2003.

Figure 3.17

Adjusted odds ratios showing the likelihood of adults aged 16 to 65 receiving adult education and training during the year preceding the interview, by document literacy levels, 2003

	Level 1	Level 2		Level 3		Level 4/5	
	Odds ratio	Odds ratio	Standard error	Odds ratio	Standard error	Odds ratio	Standard error
Bermuda	1.00	1.77**	(0.25)	2.04***	(0.22)	2.42**	(0.31)
Canada	1.00	1.93***	(0.12)	2.72***	(0.11)	3.78***	(0.14)
Italy	1.00	1.60***	(0.16)	2.16***	(0.17)	2.69***	(0.25)
Norway	1.00	1.52**	(0.19)	1.97***	(0.18)	2.00**	(0.25)
Switzerland	1.00	1.53	(0.25)	2.37***	(0.22)	2.90***	(0.26)
United States	1.00	2.24***	(0.19)	3.75***	(0.16)	5.91***	(0.23)

* p<0.10, statistically significant at the 10 per cent level.

** p<0.05, statistically significant at the 5 per cent level.

*** p<0.01, statistically significant at the 1 per cent level.

Notes: Odds are adjusted for gender, age, educational attainment and labour force participation status.

Standard errors are of the logarithm of the odds ratios.

Source: Adult Literacy and Life Skills Survey, 2003.

Figure 3.18

Odds of having fair or poor health, being on income support and of not participating in community activities by health literacy level, adults aged 16 and over, Canada, 2003

	Health literacy level			
	Level 1	Level 2	Level 3	Level 4/5
Civic engagement	2.53	1.63	1.22	1.00
Income support	2.56	1.72	1.25	1.00
General health	2.56	1.59	1.23	1.00

Table 3.19

Projected aggregate job gains by average literacy skill demand, selected occupations, Canada, 2006 to 2016

Occupation	Projected rate of change 2006 to 2016	Projected absolute change in employment 2006 to 2016
	Percent	Number
Senior management occupations	120.1	100
Specialist managers	25.1	88
Managers in retail trade, food and accommodation services	42.4	237
Other managers N.E.C.	42.9	228
Professional occupations in business and finance	48.3	232
Finance and insurance administrative occupations	51.0	123
Secretaries	20.0	42
Administrative and regulatory occupations	47.0	159
Clerical supervisors	42.3	65
Clerical occupations	32.8	523
Professional occupations in natural and applied sciences	42.7	268
Technical occupations related to natural and applied sciences	33.9	181
Professional occupations in health	63.6	122
Nurse supervisors and registered nurses	69.4	184
Technical and related occupations in health	66.7	156
Assisting occupations in support of health services	42.8	126
Judges, lawyers, psychologists, social workers, ministers of religion, and policy and program officers	7.1	25
Teachers and professors	46.9	328
Paralegals, social services workers and occupations in education and religion, N.E.C.	86.6	324
Professional occupations in art and culture	33.8	75
Technical occupations in art, culture, recreation and sport	36.1	98
Sales and service supervisors	36.1	78
Wholesale, technical, insurance, real estate sales specialists, and retail, wholesale and grain buyers	24.3	129
Retail salespersons and sales clerks	34.7	192
Cashiers	19.0	67
Chefs and cooks	37.9	86
Occupations in food and beverage service	69.6	174
Occupations in protective services	38.3	85
Occupations in travel and accommodation including attendants in recreation and sport	35.3	40
Childcare and home support workers	63.8	125
Sales and service occupations N.E.C.	22.8	278
Contractors and supervisors in trades and transportation	40.9	103
Construction trades	34.9	126
Stationary engineers, power station operators and electrical trades and telecommunications occupations	45.2	82
Machinists, metal forming, shaping and erecting occupations	18.7	39
Mechanics	33.1	119
Other trades N.E.C.	9.6	13
Heavy equipment and crane operators including drillers	16.8	19
Transportation equipment operators and related workers, excluding labourers	48.1	246
Trades helpers, construction, and transportation labourers and related occupations	28.4	107
Occupations unique to agriculture excluding labourers	28.2	106
Occupations unique to forestry operations, mining, oil and gas extraction, and fishing, excluding labourers	34.7	48
Primary production labourers	20.5	25
Supervisors in manufacturing	11.1	15
Machine operators in manufacturing	6.4	31
Assemblers in manufacturing	25.9	59
Labourers in processing, manufacturing and utilities	7.3	15

Source: COPS, 2009.

Table 3.20

Projected number and proportion of adults aged 16 and over by prose literacy proficiency level, Canada, 2001-2016

	Canada				
	Total	Level 1	Level 2	Level 3	Level 4/5
	Number (000)				
2001	17,000	3,000	5,000	6,000	3,000
2006	20,000	3,000	6,000	7,000	3,000
2011	22,000	4,000	6,000	8,000	4,000
2016	24,000	4,000	7,000	9,000	4,000
2021	26,000	4,000	7,000	10,000	5,000
2026	27,000	4,000	8,000	10,000	5,000
2031	29,000	4,000	8,000	11,000	6,000
	Total	Level 1	Level 2	Level 3	Level 4/5
	Percentage				
2001	100	18	29	35	18
2006	100	15	30	35	15
2011	100	18	27	36	18
2016	100	17	29	38	17
2021	100	15	27	38	19
2026	100	15	30	37	19
2031	100	14	28	38	21

Table 3.21
Average earnings by education level (including those without earnings), 1976-2008, 2008\$, Earnings Including Negative and Zero

Year	CPI	Less than 9 years			9 to 10 years			11 to 13 years			11 to 13 years			High School PSE	University degree	High School PSE	University degree
		years	years	years	years	years	years	years	years	years	years	years	years				
1976	3.7	24,037	27,081	-	31,457	-	37,097	58,874	-	33,194	31,457	76	86	100	-	118	187
1977	3.3	23,140	27,283	-	30,639	-	35,406	54,705	-	31,985	30,639	76	89	100	-	116	179
1978	3.1	23,406	26,876	-	30,979	-	35,856	54,709	-	32,409	30,979	76	87	100	-	116	177
1979	2.9	23,692	26,492	-	31,022	-	35,838	54,013	-	32,331	31,022	76	85	100	-	116	174
1980	2.5	23,292	27,249	-	31,031	-	36,296	53,258	-	32,913	31,031	75	88	100	-	117	172
1981	2.3	22,010	26,606	-	30,336	-	35,773	54,251	-	32,577	30,336	73	88	100	-	118	179
1982	2.1	20,668	23,841	-	28,819	-	34,314	51,891	-	31,021	28,819	72	83	100	-	119	180
1983	1.9	19,974	22,711	-	28,266	-	35,113	51,774	-	31,222	28,266	71	80	100	-	124	183
1984	1.9	20,210	23,313	-	28,247	-	33,357	52,085	-	30,987	28,247	72	83	100	-	118	184
1985	1.8	19,863	23,657	-	29,181	-	34,604	52,434	-	31,935	29,181	68	81	100	-	119	180
1986	1.7	20,271	24,054	-	29,104	-	34,651	52,774	-	32,484	29,104	70	83	100	-	119	181
1987	1.6	20,956	25,366	-	29,856	-	34,431	52,723	-	33,156	29,856	70	85	100	-	115	177
1988	1.6	20,796	25,680	-	31,078	-	35,833	52,435	-	34,049	31,078	67	83	100	-	115	169
1989	1.5	20,062	24,216	27,607	-	30,735	35,816	56,424	-	34,489	30,067	67	81	-	102	119	188
1990	1.4	18,483	23,013	25,106	-	30,434	35,388	52,698	-	33,297	29,269	63	79	-	104	121	188
1991	1.4	15,634	21,105	24,635	-	28,221	32,802	53,319	-	31,770	27,462	57	77	-	103	119	194
1992	1.337032724	15,430	20,591	23,151	-	28,059	32,464	52,133	-	31,759	27,034	57	76	-	104	120	193
1993	1.313450092	14,176	20,491	24,212	-	27,334	31,096	48,929	-	30,800	26,674	53	77	-	102	117	183
1994	1.310435287	15,443	20,080	23,762	-	27,620	31,980	48,929	36,359	31,649	26,838	58	75	-	103	119	189
1995	1.282950502	15,345	20,477	24,135	-	27,317	31,801	48,818	31,131	31,489	26,679	58	77	-	102	119	183
1996	1.25779461	14,395	20,561	22,825	-	27,622	31,522	49,649	27,442	31,589	26,739	54	77	-	103	118	186
1997	1.23313197	14,282	20,564	24,188	-	28,110	32,218	50,379	27,019	32,265	27,396	52	75	-	103	118	184
1998	1.22177164	14,621	19,995	24,291	-	28,597	33,423	56,939	27,773	34,032	27,823	53	72	-	103	120	205
1999	1.200769231	14,788	22,365	24,238	-	29,800	34,260	57,631	29,986	35,223	28,851	51	78	-	103	119	200
2000	1.169030837	14,970	23,139	25,718	-	29,486	35,115	62,385	30,412	36,614	29,658	50	78	-	103	118	210
2001	1.129234043	14,719	22,005	24,187	-	29,730	35,020	60,994	31,782	36,437	28,782	51	76	-	103	122	212
2003	1.08463035	15,084	23,585	27,371	-	30,561	34,889	57,535	31,351	36,775	30,024	50	79	-	102	116	192
2002	1.115	14,484	24,644	26,846	-	31,418	35,499	56,452	33,038	36,847	30,648	47	80	-	103	116	184
2004	1.064947469	16,508	24,120	26,646	-	30,630	35,234	58,153	32,988	37,587	29,947	55	81	-	102	118	194
2005	1.042056075	16,211	23,281	28,445	-	30,536	35,252	57,302	34,240	37,681	30,184	54	77	-	101	117	190
2006	1.021998167	17,116	22,146	26,459	-	30,327	35,686	58,185	34,237	38,174	29,665	58	75	-	102	120	196
2007	1	18,243	23,126	26,786	-	30,639	36,171	60,881	33,092	39,311	29,965	61	77	-	102	121	203
2008	0.977212971	16,141	25,842	27,046	-	32,537	36,470	59,271	37,477	40,073	31,575	51	82	-	103	116	188

Dollars

Figure 3.22
Average earnings of the population (including those without earnings), 1976-2008, 2008\$, Both Sexes, 25 to 34

Year	CPI	Less than 9 years			9 to 10 years		11 to 13 years		11 to 13 years		11 to 13 years		11 to 13 years		High School Graduate		University degree		
		years	years	years	years	no grad	many grad	no grad	no grad	no grad	no grad	no grad	no grad	no grad	no grad	Some PSE	High School Graduate	Some PSE	University degree
1976	3.605766147	20,295	25,887	-	28,913	-	34,432	45,568	-	31,203	28,913	-	30,427	30,427	28,684	28,684	28,684	28,684	28,684
1977	3.338672359	20,543	24,960	-	28,684	-	33,134	43,953	-	30,427	28,684	-	30,427	30,427	28,684	28,684	28,684	28,684	28,684
1978	3.063933667	20,341	23,751	-	28,832	-	32,544	42,601	-	30,165	28,832	-	30,165	30,165	28,832	28,832	28,832	28,832	28,832
1979	2.807768721	20,350	23,923	-	29,082	-	33,579	44,700	-	30,895	29,082	-	30,895	30,895	29,082	29,082	29,082	29,082	29,082
1980	2.548718631	18,882	24,163	-	28,596	-	34,134	44,166	-	30,982	28,596	-	30,982	30,982	28,596	28,596	28,596	28,596	28,596
1981	2.268528371	18,326	22,814	-	28,438	-	33,349	43,625	-	30,522	28,438	-	30,522	30,522	28,438	28,438	28,438	28,438	28,438
1982	2.046283059	16,413	21,349	-	26,061	-	31,346	41,506	-	28,484	26,061	-	28,484	28,484	26,061	26,061	26,061	26,061	26,061
1983	1.935298215	16,712	18,379	-	25,497	-	31,593	41,182	-	28,271	25,497	-	28,271	28,271	25,497	25,497	25,497	25,497	25,497
1984	1.85361355	16,010	20,202	-	25,580	-	30,567	41,995	-	28,293	25,580	-	28,293	28,293	25,580	25,580	25,580	25,580	25,580
1985	1.784103042	15,543	20,806	-	26,539	-	30,848	42,319	-	28,905	26,539	-	28,905	28,905	26,539	26,539	26,539	26,539	26,539
1986	1.71273892	15,235	20,749	-	26,894	-	31,417	41,677	-	29,199	26,894	-	29,199	29,199	26,894	26,894	26,894	26,894	26,894
1987	1.640584521	17,256	21,888	-	26,749	-	31,418	40,776	-	29,392	26,749	-	29,392	29,392	26,749	26,749	26,749	26,749	26,749
1988	1.577107661	16,505	22,506	-	28,481	-	32,829	39,121	-	30,294	28,481	-	30,294	30,294	28,481	28,481	28,481	28,481	28,481
1989	1.502402561	16,175	21,506	25,489	-	27,946	31,834	42,421	-	30,309	27,946	-	30,309	30,309	27,946	27,946	27,946	27,946	27,946
1990	1.433254326	15,019	19,465	22,198	-	27,960	31,029	38,886	-	28,932	22,198	-	28,932	28,932	22,198	22,198	22,198	22,198	22,198
1991	1.357162377	11,807	16,904	20,279	-	25,603	28,663	39,033	-	27,120	20,279	-	27,120	27,120	25,603	25,603	25,603	25,603	25,603
1992	1.337032724	14,169	16,454	18,980	-	23,897	28,179	39,179	-	26,925	18,980	-	26,925	26,925	23,897	23,897	23,897	23,897	23,897
1993	1.313450092	9,275	15,567	20,420	-	23,856	27,232	37,354	34,152	26,249	20,420	-	26,249	26,249	23,856	23,856	23,856	23,856	23,856
1994	1.310435287	12,342	16,037	19,981	-	24,414	27,603	37,156	17,620	26,814	19,981	-	26,814	26,814	24,414	24,414	24,414	24,414	24,414
1995	1.282950502	12,486	17,141	19,936	-	23,993	27,768	34,826	25,466	26,754	19,936	-	26,754	26,754	23,993	23,993	23,993	23,993	23,993
1996	1.25779461	11,467	15,861	19,740	-	23,911	26,684	36,082	24,362	26,411	19,740	-	26,411	26,411	23,911	23,911	23,911	23,911	23,911
1997	1.23313197	12,158	16,318	21,083	-	24,034	27,448	37,938	22,868	27,398	21,083	-	27,398	27,398	24,034	24,034	24,034	24,034	24,034
1998	1.22177164	14,830	14,696	18,680	-	23,441	27,827	43,432	25,868	28,720	18,680	-	28,720	28,720	23,441	23,441	23,441	23,441	23,441
1999	1.200769231	11,887	17,327	18,264	-	24,400	29,074	40,131	28,202	29,297	18,264	-	29,297	29,297	24,400	24,400	24,400	24,400	24,400
2000	1.169030837	11,549	19,775	18,936	-	26,521	29,749	43,295	29,523	30,926	18,936	-	30,926	30,926	26,521	26,521	26,521	26,521	26,521
2001	1.129234043	13,529	18,833	17,625	-	25,791	29,362	42,153	29,951	30,653	17,625	-	30,653	30,653	25,791	25,791	25,791	25,791	25,791
2003	1.08463035	14,902	19,652	21,546	-	25,078	28,891	41,093	28,945	30,654	21,546	-	30,654	30,654	25,078	25,078	25,078	25,078	25,078
2002	1.115	13,559	20,622	22,532	-	27,959	30,308	41,255	30,338	31,731	22,532	-	31,731	31,731	27,959	27,959	27,959	27,959	27,959
2004	1.064947469	17,272	22,625	24,355	-	26,097	30,076	41,007	30,987	31,929	24,355	-	31,929	31,929	26,097	26,097	26,097	26,097	26,097
2005	1.042056075	14,255	19,653	23,778	-	25,202	29,620	41,900	30,887	31,365	23,778	-	31,365	31,365	25,202	25,202	25,202	25,202	25,202
2006	1.021998167	11,639	18,941	21,095	-	26,103	29,323	44,098	31,225	32,042	21,095	-	32,042	32,042	26,103	26,103	26,103	26,103	26,103
2007	1	13,564	20,397	20,224	-	25,696	29,704	44,378	29,456	32,185	20,224	-	32,185	32,185	25,696	25,696	25,696	25,696	25,696
2008	0.977212971	11,019	19,729	21,516	-	29,343	29,533	42,398	36,255	32,858	21,516	-	32,858	32,858	29,343	29,343	29,343	29,343	29,343

Table 3.23
Average Earnings of the Population (including those without earnings), 1976-2008\$, Both Sexes, 35 to 44

Year	CPI	Less than 9 years	9 to 10 years	11 to 13 years		High school graduate	Some PSE	University degree	Other	Total	11 to 13 years	Less than 9 years	9 to 10 years	11 to 13 years no grad	11 to 13 years grad	High School PSE	University degree	
				11 to 13 years no grad	11 to 13 years grad													
1976	3.605766147	25,156	27,789	-	33,974	-	39,889	76,033	-	34,665	33,974	74	82	-	100	-	117	224
1977	3.338672359	23,904	28,711	-	32,540	-	37,971	68,217	-	33,157	32,540	73	88	-	100	-	117	210
1978	3.063933667	24,231	28,735	-	33,144	-	39,774	69,772	-	34,120	33,144	73	87	-	100	-	120	211
1979	2.807768721	24,601	27,986	-	32,883	-	38,664	66,270	-	33,441	32,883	75	85	-	100	-	118	202
1980	2.548718631	24,376	29,049	-	33,603	-	38,847	63,466	-	34,420	33,603	73	86	-	100	-	116	189
1981	2.268528371	22,939	28,653	-	32,268	-	38,603	65,501	-	34,171	32,268	71	89	-	100	-	120	203
1982	2.046283059	21,679	25,232	-	31,659	-	37,637	61,740	-	32,968	31,659	68	80	-	100	-	119	195
1983	1.935298215	20,785	24,895	-	30,984	-	39,172	61,156	-	33,471	30,984	67	80	-	100	-	126	197
1984	1.85361355	21,166	25,003	-	30,864	-	36,382	61,009	-	33,031	30,864	69	81	-	100	-	118	198
1985	1.784103042	20,854	25,261	-	31,700	-	38,520	60,687	-	34,221	31,700	66	80	-	100	-	122	191
1986	1.71273892	21,474	25,932	-	31,198	-	37,743	61,352	-	34,942	31,198	69	83	-	100	-	121	197
1987	1.640554521	21,833	27,313	-	32,695	-	37,358	61,657	-	35,939	32,695	67	84	-	100	-	114	189
1988	1.577107661	21,796	27,395	-	33,359	-	38,736	61,663	-	36,771	33,359	65	82	-	100	-	116	185
1989	1.502402561	20,970	25,700	29,293	-	33,157	39,148	65,955	-	37,438	32,306	65	80	91	-	103	121	204
1990	1.433254326	19,303	24,988	27,539	-	32,436	38,804	61,804	-	36,278	31,378	62	80	88	-	103	124	197
1991	1.357162377	16,687	23,332	27,937	-	30,099	35,931	62,864	-	34,824	29,650	56	79	94	-	102	121	212
1992	1.337032724	15,726	22,480	25,731	-	31,008	35,664	60,122	-	34,794	29,858	53	75	86	-	104	119	201
1993	1.313450092	15,469	22,771	26,639	-	29,615	33,691	56,100	37,731	33,526	28,980	53	79	92	-	102	116	194
1994	1.310435287	16,160	21,943	25,863	-	29,508	34,767	59,332	35,845	34,471	28,763	56	76	90	-	103	121	206
1995	1.282950502	15,937	21,769	26,664	-	29,108	34,260	57,768	33,856	34,071	28,634	56	76	93	-	102	120	202
1996	1.25779461	15,079	22,266	24,552	-	29,467	34,323	57,706	29,275	34,284	28,591	53	78	86	-	103	120	202
1997	1.23313197	14,745	22,028	25,766	-	29,891	34,817	57,884	29,858	34,678	29,169	51	76	88	-	102	119	198
1998	1.221777164	14,579	21,617	26,865	-	30,513	36,299	64,635	29,028	36,537	29,891	49	72	90	-	102	121	216
1999	1.200769231	15,278	23,727	26,798	-	31,727	36,893	67,699	30,972	37,905	30,921	49	77	87	-	103	119	219
2000	1.169030837	15,525	23,931	28,192	-	31,826	37,748	72,993	30,905	39,124	31,205	50	77	90	-	102	121	234
2001	1.129234043	14,900	22,735	26,490	-	30,996	37,766	71,568	32,752	38,969	30,239	49	75	88	-	103	125	237
2002	1.084630335	15,118	24,519	29,436	-	32,178	37,674	67,362	32,602	39,454	31,734	48	77	93	-	101	119	212
2002	1.115	14,652	25,660	28,145	-	32,447	37,910	65,672	34,449	39,085	31,724	46	81	89	-	102	119	207
2004	1.064947469	16,371	24,454	27,448	-	31,872	37,645	68,310	34,068	40,065	31,149	53	79	88	-	102	121	219
2005	1.042056075	16,538	24,043	30,493	-	32,138	38,132	65,539	35,949	40,452	31,884	52	75	96	-	101	120	206
2006	1.021998167	18,140	22,836	28,914	-	31,592	38,660	65,556	35,756	40,876	31,176	58	73	93	-	101	124	210
2007	1	19,168	23,732	29,927	-	32,126	39,287	69,754	35,011	42,484	31,780	60	75	94	-	101	124	210
2008	0.977212971	16,965	27,303	29,943	-	33,496	39,817	68,839	38,069	43,334	32,951	51	83	91	-	102	121	209

Dollars

Table 3.24
Average earnings of the population (including those without earnings), 1976-2008, 2008\$, both sexes, 45 to 54

Year	Earnings Including Negative and Zero										Dollars									
	CPI	Less than 9 years	9 to 10 years	11 to 13 years no grad	11 to 13 years many grand	High school graduate	Some PSE	University degree	Other	Total	11 to 13 years	Less than 9 years	9 to 10 years	11 to 13 years no grad	11 to 13 years may grad	High School PSE	Univer- sity degree			
1976	3.605766147	24,326	26,327	-	33,577	-	38,088	81,502	-	32,930	33,577	72	78	-	100	-	113	243		
1977	3.338672359	23,265	27,930	-	32,473	-	39,047	69,586	-	31,949	32,473	72	86	-	100	-	120	214		
1978	3.063933667	24,286	28,362	-	33,958	-	40,902	70,394	-	32,838	33,958	72	84	-	100	-	120	207		
1979	2.807768721	24,380	27,308	-	32,410	-	39,771	68,354	-	32,010	32,410	75	84	-	100	-	123	211		
1980	2.548718631	24,775	26,750	-	33,407	-	37,417	65,703	-	32,625	33,407	74	80	-	100	-	112	197		
1981	2.268528371	22,743	28,229	-	32,206	-	37,312	72,234	-	32,627	32,206	71	88	-	100	-	116	224		
1982	2.046283059	22,336	25,897	-	31,651	-	37,777	66,231	-	31,874	31,651	71	82	-	100	-	119	209		
1983	1.935298215	20,760	24,822	-	30,927	-	39,228	65,812	-	31,641	30,927	67	80	-	100	-	127	213		
1984	1.85361355	21,497	23,475	-	30,827	-	34,184	67,773	-	31,119	30,827	70	76	-	100	-	111	220		
1985	1.784103042	21,041	25,179	-	32,489	-	37,092	63,396	-	32,457	32,489	65	78	-	100	-	114	195		
1986	1.71273892	21,659	25,874	-	32,208	-	37,555	67,328	-	33,833	32,208	67	80	-	100	-	117	209		
1987	1.640554521	21,839	27,660	-	33,456	-	38,811	70,958	-	35,493	33,456	65	83	-	100	-	116	212		
1988	1.577107661	22,017	28,024	-	34,218	-	39,755	66,341	-	36,025	34,218	64	82	-	100	-	116	194		
1989	1.502402561	21,489	27,154	30,038	-	33,908	39,504	68,379	-	36,057	32,974	65	82	91	-	103	120	207		
1990	1.433254326	20,264	25,081	28,013	-	34,560	38,594	69,209	-	36,002	32,903	62	76	85	-	105	117	210		
1991	1.357162377	17,506	23,631	29,088	-	30,917	36,763	66,273	-	34,754	30,503	57	77	95	-	101	121	217		
1992	1.337032724	15,936	23,952	25,840	-	32,590	35,952	63,492	-	34,486	30,913	52	77	84	-	105	116	205		
1993	1.313450092	16,427	23,351	24,901	-	30,292	34,630	59,689	39,453	33,662	29,160	56	80	85	-	104	119	205		
1994	1.310435287	16,777	22,103	25,837	-	29,757	35,727	62,356	35,354	34,339	28,959	58	76	89	-	103	123	215		
1995	1.282950502	16,609	21,798	26,927	-	29,739	35,345	60,545	34,570	34,346	29,205	57	75	92	-	102	121	207		
1996	1.25779461	15,251	23,385	25,396	-	29,728	35,239	64,349	27,872	35,136	28,942	53	81	88	-	103	122	222		
1997	1.23313197	15,092	23,231	27,214	-	29,796	35,294	63,082	29,273	35,341	29,351	51	79	93	-	102	120	215		
1998	1.221777164	15,200	21,961	28,164	-	28,653	37,529	70,303	28,988	37,144	28,579	53	77	99	-	100	131	246		
1999	1.200769231	15,002	23,301	28,188	-	31,191	37,297	68,084	30,397	37,264	30,750	49	76	92	-	101	121	221		
2000	1.169030837	15,541	23,493	28,572	-	30,512	38,073	77,947	30,700	39,124	30,230	51	78	95	-	101	126	258		
2001	1.129234043	14,592	22,977	29,136	-	30,072	37,661	74,012	33,230	38,627	29,924	49	77	97	-	100	126	247		
2003	1.08463035	14,568	25,372	31,511	-	32,194	38,633	72,141	33,556	40,039	32,080	45	79	98	-	100	120	225		
2002	1.115	13,844	24,940	29,296	-	33,434	39,115	68,971	35,170	39,827	32,746	42	76	89	-	102	119	211		
2004	1.064947469	15,359	24,488	29,610	-	31,320	38,876	77,481	37,114	41,376	31,023	50	79	95	-	101	125	250		
2005	1.042056075	15,341	24,153	33,680	-	32,869	40,094	73,908	36,359	41,888	32,994	46	73	102	-	100	122	224		
2006	1.021998167	17,098	23,143	30,417	-	31,764	40,912	75,088	36,223	42,558	31,557	54	73	96	-	101	130	238		
2007	1	19,221	24,754	31,326	-	32,969	40,604	80,521	34,784	43,904	32,720	59	76	96	-	101	124	246		
2008	0.977212971	15,351	23,777	31,819	-	35,480	40,573	77,320	41,886	44,300	34,939	44	68	91	-	102	116	221		

Table 3.25
Average Earnings of the Population (including those without earnings), 1976-2008, 2008\$, 55 to 64

Year	CPI	Less than 9 years	9 to 10 years	11 to 13 years no grad	11 to 13 years many grand graduate	High school graduate	Some PSE	University degree	Other	Total	11 to 13 years	Less than 9 years	9 to 10 years	11 to 13 years no grad	11 to 13 years may grad	High School PSE	Univer- sity degree
1976	3.605766147	17,392	21,058	-	24,615	-	31,610	79,906	-	24,509	24,615	71	86	-	100	128	325
1977	3.338672359	17,496	19,453	-	26,322	-	29,371	57,748	-	23,256	26,322	66	74	-	100	112	219
1978	3.063933667	16,093	21,194	-	25,328	-	29,346	66,901	-	23,555	25,328	64	84	-	100	116	264
1979	2.807768721	17,168	20,243	-	25,689	-	28,794	60,405	-	23,621	25,689	67	79	-	100	112	235
1980	2.548718631	17,566	20,620	-	25,184	-	29,162	57,538	-	24,067	25,184	70	82	-	100	116	228
1981	2.268528371	16,406	20,347	-	23,556	-	32,027	54,440	-	22,786	23,556	70	86	-	100	136	231
1982	2.046283059	15,619	17,628	-	22,338	-	26,813	59,461	-	21,840	22,338	70	79	-	100	120	266
1983	1.935298215	14,299	20,980	-	22,902	-	28,751	58,995	-	22,272	22,902	62	92	-	100	126	258
1984	1.85361355	14,747	17,789	-	21,428	-	26,478	53,827	-	20,950	21,428	69	83	-	100	124	251
1985	1.784103042	14,303	17,131	-	21,586	-	25,233	57,882	-	21,169	21,586	66	79	-	100	117	268
1986	1.71273892	15,518	18,347	-	22,109	-	26,339	47,328	-	21,581	22,109	70	83	-	100	119	214
1987	1.640554521	14,202	17,268	-	22,315	-	27,724	54,048	-	22,028	22,315	64	77	-	100	124	242
1988	1.577107661	14,475	18,013	-	24,498	-	26,172	55,515	-	22,725	24,498	59	74	-	100	107	227
1989	1.502402561	13,633	17,294	19,527	-	23,297	24,553	52,028	-	21,448	22,258	61	78	88	-	105	234
1990	1.433254326	14,295	16,822	16,602	-	22,115	24,716	49,092	-	21,362	20,553	70	82	81	-	108	239
1991	1.357162377	11,436	14,949	18,049	-	18,556	22,541	57,027	-	20,001	18,415	62	81	98	-	101	310
1992	1.337032724	10,418	12,279	17,887	-	21,550	22,841	54,323	-	20,011	20,630	50	60	87	-	104	263
1993	1.313450092	10,339	14,242	15,900	-	17,522	20,390	42,715	19,290	18,086	17,137	60	83	93	-	102	249
1994	1.310435287	9,793	12,601	13,737	-	17,015	20,026	39,814	15,735	17,192	16,251	60	78	85	-	105	245
1995	1.282950502	10,164	13,699	19,855	-	17,841	20,236	41,517	14,821	18,471	18,324	55	75	108	-	110	227
1996	1.25779461	10,036	12,616	20,845	-	16,521	19,819	43,597	20,112	18,299	17,480	57	72	119	-	95	249
1997	1.23313197	9,563	13,977	15,197	-	15,842	20,929	45,503	14,642	18,610	15,703	61	89	97	-	101	290
1998	1.221777164	9,848	12,684	17,009	-	16,501	19,673	45,383	16,108	18,454	16,594	59	76	102	-	99	273
1999	1.200769231	10,795	12,538	17,161	-	16,509	21,660	39,874	17,443	19,116	16,625	65	75	103	-	99	240
2000	1.169030837	11,185	12,111	13,504	-	18,507	22,789	41,562	19,262	20,454	17,613	64	69	77	-	105	236
2001	1.129234043	10,196	12,710	13,591	-	18,941	22,932	42,221	20,989	21,268	17,978	57	71	76	-	105	235
2002	1.084630335	9,805	13,043	15,790	-	24,881	21,691	41,254	22,865	22,662	23,191	42	56	68	-	107	178
2002	1.115	9,998	12,535	16,046	-	25,466	20,967	43,333	21,405	22,253	23,580	42	53	68	-	108	184
2004	1.064947469	9,409	13,356	13,572	-	22,241	21,850	41,046	20,539	22,157	20,676	46	65	66	-	108	199
2005	1.042056075	9,679	14,253	14,462	-	24,051	24,568	41,974	23,609	24,467	22,325	43	64	65	-	108	188
2006	1.021998167	9,848	14,236	13,441	-	20,802	25,299	50,736	22,964	25,970	19,487	51	73	69	-	107	260
2007	1	10,432	14,364	15,658	-	20,614	25,922	47,989	22,704	26,068	19,774	53	73	79	-	104	243
2008	0.977212971	8,744	13,949	17,961	-	19,679	26,614	51,271	29,054	27,062	19,424	45	72	92	-	101	264

Table 3.26
Average earnings of the population (including those without earnings), 1976-2008, 2008\$, 65+

Year	Earnings Including Negative and Zero										Dollars							
	CPI	Less than 9 years	9 to 10 years	11 to 13 years no grad	11 to 13 years many grand graduate	High school graduate	Some PSE	University degree	Other	Total	11 to 13 years	Less than 9 years	9 to 10 years	11 to 13 years no grad	11 to 13 years may school graduate	High Some PSE	Univer- sity degree	
1976	3.605766147	2,576	3,976	-	6,199	-	4,625	14,085	-	3,877	6,199	42	64	-	100	-	75	227
1977	3.338672359	1,936	2,925	-	3,540	-	5,795	8,082	-	2,929	3,540	55	83	-	100	-	164	228
1978	3.063933667	2,147	3,635	-	5,286	-	3,625	17,120	-	3,549	5,286	41	69	-	100	-	69	324
1979	2.807768721	1,929	2,813	-	3,333	-	3,632	8,389	-	2,688	3,333	58	84	-	100	-	109	252
1980	2.548718631	2,243	2,744	-	5,435	-	3,166	14,547	-	3,499	5,435	41	50	-	100	-	58	268
1981	2.268528371	1,690	2,345	-	3,157	-	4,204	9,891	-	2,622	3,157	54	74	-	100	-	133	313
1982	2.046283059	1,201	2,611	-	3,859	-	3,851	9,302	-	2,538	3,859	31	68	-	100	-	100	241
1983	1.935298215	1,574	2,497	-	3,404	-	4,794	7,578	-	2,615	3,404	46	73	-	100	-	141	223
1984	1.853613550	1,485	1,752	-	3,340	-	3,014	16,623	-	2,802	3,340	44	52	-	100	-	90	498
1985	1.784103042	1,250	1,392	-	3,403	-	2,110	6,335	-	2,053	3,403	37	41	-	100	-	62	186
1986	1.712738920	1,165	1,975	-	2,799	-	5,218	4,596	-	2,272	2,799	42	71	-	100	-	186	164
1987	1.640554521	1,234	1,794	-	2,064	-	3,093	6,216	-	1,969	2,064	60	87	-	100	-	150	301
1988	1.577107661	880	1,797	-	2,452	-	3,346	6,985	-	1,997	2,452	36	73	-	100	-	136	285
1989	1.502402561	904	1,653	1,490	-	4,127	2,959	12,798	-	2,461	3,433	26	48	43	-	120	86	373
1990	1.433254326	903	1,057	1,754	-	1,811	2,356	7,895	-	1,723	1,793	50	59	98	-	101	131	440
1991	1.357162377	751	1,354	1,502	-	2,221	2,334	12,650	-	2,072	2,013	37	67	75	-	110	116	628
1992	1.337032724	845	913	640	-	1,644	1,378	3,686	-	1,230	1,301	65	70	49	-	126	106	283
1993	1.313450092	738	1,079	1,292	-	1,933	1,879	6,581	7,908	1,619	1,751	42	62	74	-	110	107	376
1994	1.310435287	800	938	1,528	-	1,390	1,659	7,836	12,812	1,559	1,426	56	66	107	-	97	116	550
1995	1.282950502	766	1,016	1,404	-	1,888	2,322	7,163	472	1,718	1,757	44	58	80	-	107	132	408
1996	1.25779461	692	847	1,312	-	1,586	1,590	6,994	2,562	1,514	1,520	46	56	86	-	104	105	460
1997	1.23313197	651	1,175	1,288	-	1,698	2,040	8,119	2,122	1,723	1,598	41	74	81	-	106	128	508
1998	1.221777164	512	828	1,660	-	1,550	1,234	8,062	799	1,379	1,577	32	53	105	-	98	78	511
1999	1.200769231	501	962	1,192	-	1,422	1,828	6,172	913	1,360	1,374	36	70	87	-	104	133	449
2000	1.169030837	713	1,124	1,476	-	1,545	1,666	5,323	1,171	1,426	1,531	47	73	96	-	101	109	348
2001	1.129234043	656	913	970	-	1,261	1,458	4,408	1,503	1,277	1,199	55	76	81	-	105	122	368
2003	1.084630335	834	1,067	1,837	-	1,777	2,021	4,207	1,989	1,666	1,790	47	60	103	-	99	113	235
2002	1.115	787	1,167	1,229	-	3,356	2,611	3,243	1,896	1,897	2,887	27	40	43	-	116	90	112
2004	1.064947469	868	1,023	2,220	-	1,430	2,068	4,306	2,966	1,791	1,599	54	64	139	-	89	129	269
2005	1.042056075	754	923	3,617	-	1,817	2,364	6,963	1,343	1,946	2,221	34	42	163	-	82	106	313
2006	1.021998167	739	1,400	3,044	-	1,752	2,651	6,705	1,377	2,085	2,039	36	69	149	-	86	130	329
2007	1	695	1,362	3,016	-	2,091	2,485	7,991	2,608	2,414	2,297	30	59	131	-	91	108	348
2008	0.977212971	829	1,493	1,647	-	2,027	2,834	8,680	2,555	2,629	1,949	43	77	84	-	104	145	445

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