Catching up with the Swedes: Probing the Canada-Sweden Literacy Gap

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PROBING THE CANADA-SWEDEN LITERACY GAP

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EXECUTIVE SUMMARY

a) Introduction

Among 12 countries that participated in the International Adult Literacy Survey (IALS), Sweden had the lowest incidence of low literacy skills, while Canada ranked around the middle with twice as high a low literacy rate .

The objective of this study is to find out what factors account for the wide Canada-Sweden literacy gap, and what lessons can be learned from such a comparison that may help reduce the incidence of low literacy skills in Canada. The study:

- excludes from the analysis of both Sweden and Canada immigrants and those over 65 years of age; and
- focuses on the incidence of low literacy, defined here as: failing to exceed level 2 in all three literacy domains (prose, document, and quantitative).

b) Findings

The incidence of low literacy skills (as defined above) among non-immigrants, age 16 to 65 was twice as high in Canada (29%) than Sweden (14%).

In both countries, the incidence of low literacy skills is concentrated primarily among those with less than post secondary education. However there are important differences between the two countries:

- Most Swedish youth start their working lives with at least a minimum of literacy skills, regardless of level of education. By contrast, Canadian youth, unless they continue into post-secondary education, have a high probability of having low literacy skills.
- The incidence of low literacy rises with age in both countries. However, relative to Sweden, the rise occurs in Canada at an earlier age and at a more precipitous rate.

c) Explaining the literacy gap

The analysis here suggests that the Swedish education system may be more successful than the Canadian education system in equipping individuals with a certain minimum of literacy skills by the time they leave high school.

At the same time, half of the blame for the current Canada-Sweden literacy gap could be placed on the fact that Canadians engage less frequently in activities that have been shown to be positively associated with literacy skills. For example:

- Canadian youth are less likely to participate in volunteer activities (38%) than Swedish youth (68%); they are also less likely to use public libraries (62% vs. 82%).
- Employed adults age 26 to 65 are less likely to participate in life-long learning in Canada (43%) than in Sweden (62%); they are also less likely to use public libraries (49% vs. 69%).
- Not-employed adults age 26 to 65 are less likely to participate in life-long learning in Canada (26%) than in Sweden (39%); they are also less likely to use public libraries (40% vs. 66%) or participate in volunteer activities (36% vs. 56%).

d) Swedish features

Among Sweden's features that contribute to high literacy skills are:

- a "welfare society" which promotes adult learning among individuals with a low initial level of education;
- a strong union sector, covering more than 90% of employed Swedes, which promotes literacy through its "study circles;" members discuss a wide range of non-work related issues and participation typically requires and promotes reading and writing;[1]
- foreign films and TV-programs are not dubbed but have Swedish sub-titles, which means that people who never read books but watch TV still get a daily reading refresher; this factor is especially important for children in low literacy homes.

[1] In the case of Sweden, "study circles" will tend to be reported as part of voluntary activities.

e) Conclusion

There are several areas that require more policy attention in order to narrow the Canada-Sweden literacy gap:

- The weak literacy skills of Canadians without post-secondary education raises issues about the adequacy of literacy skills acquired at the primary and secondary level.
- Canada has a strong post-secondary education record. But what needs more recognition is that there is a continuous need for maintaining and upgrading skills -- much in the same way as physical capital needs continuous investment to replace what has been depreciated and meet new production requirements.
- Finally, there is a need for wider recognition in Canada that much can be achieved in the literacy front by promoting volunteer activities, primarily among youth, as well as encouraging the use of public libraries and getting people more interested in following current events.

Among the questions that are a high priority for Canada are: What explains the better literacy record of public schools in Sweden? what explains Sweden's high participation in adult learning? what accounts for Sweden's highly developed volunteer sector and widespread use of public libraries? and, how can Sweden's more successful policies adapted to the Canadian reality.

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A. INTRODUCTION

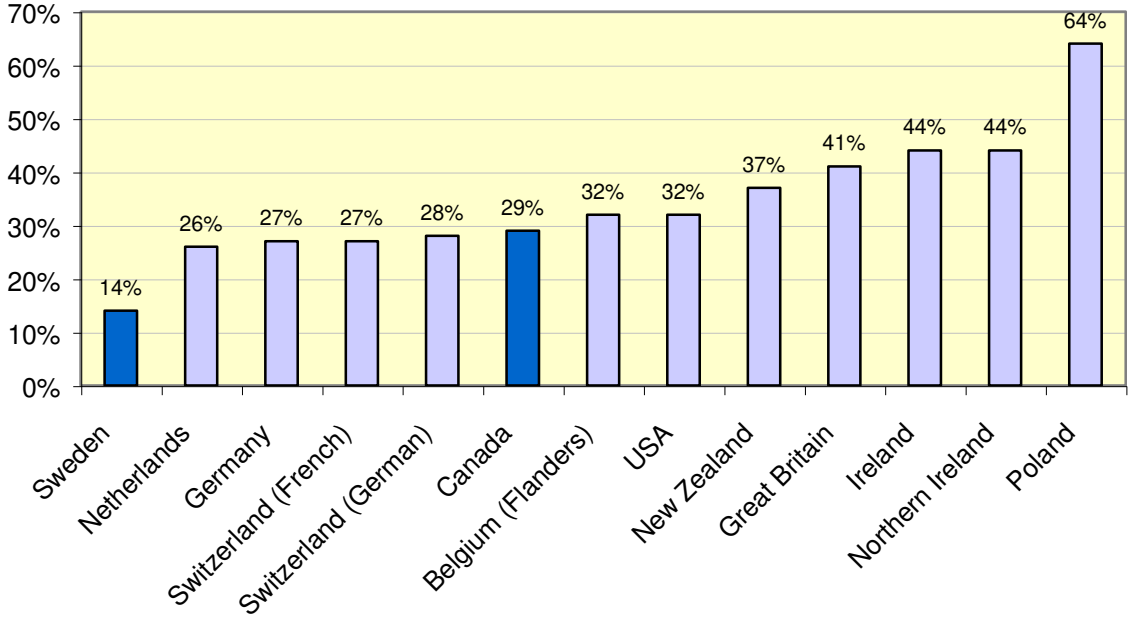
The International Adult Literacy Survey (IALS), was a seven country initiative conducted in the Fall of 1994. Its goal was to create comparable literacy profiles across national, linguistic and cultural boundaries. Successive waves of the survey now encompass 21 countries around the world.

Without question, no other single event has done more to promote public awareness of the importance of literacy than IALS. The survey has provided strong empirical evidence of the benefits of literacy to individuals and society, and it has opened new opportunities to researchers and policy makers for exploring the factors that contribute to higher literacy skills.

Among the 12 countries whose surveys results have been analyzed so far, Sweden had the lowest incidence of low literacy skills, significantly below the remaining countries, while Canada ranked around the middle (*Chart 1*).

Chart 1: Literacy Skills Below Level 3 in All Three Domains

Population Age 16 to 65 - Excluding Foreign-Born



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The low literacy rate is defined here as the percentage of adults age 16 to 65, excluding foreign-born, who failed to exceed level 2 in all three literacy domains: prose, document, and quantitative.

The objective of this study is to explore the reasons why Sweden's literacy performance is superior to that of Canada's. For example, is the literacy gap similar within similar levels of education? does the literacy gap widen at higher ages? to what extent can the gap be attributed to differences between the two countries in the extent of life-long learning? to what extent can it be attributed to differences in literacy activities in every-day life?

The results of the study can serve as the first step toward identifying practical means for improving literacy skills in Canada. For example, suppose the study finds that volunteerism is more common in Sweden and that this difference explains part of the Canada-Sweden literacy gap. This finding opens the way for a second wave of investigation: why is volunteerism more common in Sweden? and, which Swedish policies could be adopted in Canada to promote volunteerism?

In what follows, Chapter B provides a brief overview of IALS, describes the sample selection, and defines basic concepts. Chapter C provides an overview of basic literacy results. Chapter D explores Canada-Sweden differences with respect of literacy skills by level of education and age. Chapter E compares the level of participation in literacy activities between Canada and Sweden. Chapter F examines the impact of the differences in literacy activities on the Canada-Sweden literacy gap. Chapter G summarizes the main conclusions and identifies priorities for further research.

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B. BASIC CONCEPTS

1. ABOUT IALS

IALS conducted an in-depth assessment of the literacy skills of a sample of adults in each participating country. This assessment involved visiting people at their homes and administering different tests aimed at assessing their ability to process textual and quantitative information.

IALS did not establish a minimum literacy standard. Such a standard would not only have been arbitrary, but would have failed to acknowledge the multifaceted nature of literacy and complexity of the literacy problem. Instead, IALS defined literacy in terms of a mode of adult behaviour, namely: using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential.

Literacy scores were converted by IALS researchers into 5 levels of literacy, ranging from level 1 (lowest) to level 4/5 (highest).[2] Literacy scores or levels are mostly useful in a comparative sense -- such as measuring the relative literacy strengths of individuals or countries, or ranking the importance of various factors influencing literacy.

IALS recognizes that literacy cannot be narrowed down to a single skill. Instead the IALS team defined literacy in terms of three domains, each encompassing a common set of skills relevant for diverse tasks. The three literacy domains are:

- 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 graphics;
- prose literacy: the knowledge and skills required to understand and use information from texts including editorials, news stories, poems, and fiction; and

[2] The number of individuals who reached level 5 in the literacy scale was small. As a result, for statistical reasons, Statistics Canada collapsed levels 4 and 5 into a single level.

- quantitative literacy: the knowledge and skills required to apply arithmetic operations, either alone or sequentially, to numbers embedded in printed materials, such as balancing a checkbook, figuring out a tip, completing an order form, or determining the amount of interest on a loan from an advertisement.

2. SAMPLE SELECTION

This study is based on analysis of the Canadian and Swedish results from the 1994 IALS. IALS covers the total population, immigrant and non-immigrant, age 16 and over. Canada has a relatively larger share of foreign-born adults (21% vs. 9%). On the other hand, among the non-immigrant population, Sweden has a relatively larger share of adults over 65 years of age (20% vs. 13%).

In order to improve comparability between the two countries, the study excludes from the analysis foreign-born individuals and individuals over 65 years of age.

The selected sample for Canada consists of 4,175 respondents and for Sweden 2,403 respondents. The two samples were weighted to provide estimates of the corresponding populations size in each country (*Table 1*).

Table 1: IALS Sample Size
Population Age 16 to 65 - Excluding Foreign-Born

	Sample size	Estimated population
Canada	4,175	14,632,560
Sweden	2,403	4,869,838

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Where the sample size permitted, the analysis focussed within specific subgroups. Three of the main sub-groups were youth (ages 16 to 25), and employed adults (ages 26 to 65), and not-employed adults (ages 26 to 65). As a general rule, the study avoided producing estimates that are based on less than 100 responses.

3. LITERACY INDICATORS

The main focus of the study is on the incidence of low literacy. There is no official definition of low literacy. Often analysts equate low literacy with scoring below level three in document literacy.

Individuals scoring at the lowest two literacy levels may experience difficulties at the workplace, especially when looking for new employment, and are more likely to need help with everyday tasks -- like filling applications forms.

Document literacy is the most comprehensive of the three literacy domains, since it contains elements of both prose and quantitative tasks. However, one could make the argument that higher literacy skills in one domain could, at least in part, offset deficiencies in another literacy domain. Therefore, the following measure of low literacy skills was employed here:

> Low Literacy Skills Indicator: Respondents failed to exceed level 2 in *all* three literacy domains (document, prose, and quantitative).

The adopted measure is more comprehensive than simply relying on a single literacy domain. However, as it will be shown in the next section, the choice between the two measures of low literacy (i.e. below level 3 in document literacy vs. below level 3 in all three literacy domains) does not affect the relative comparisons between Sweden and Canada.

C. OVERVIEW OF THE LITERACY GAP

The incidence of low literacy among those with post-secondary education is low in both Canada and Sweden (6% and 4% respectively). However, the incidence is considerably higher among those without post-secondary education, particularly in Canada (39.0% and 17.7% respectively). These comparisons exclude foreign-born individuals.

This section looks at the overall difference in literacy levels between Canada and Sweden. *Table 2* compares the distribution of adult population by level of literacy between Canada and Sweden. Throughout the study, the focus is on adults age 16 to 65 who were born in the country. The table shows that the distribution of the Swedish population is more skewed toward the upper end of the literacy scale, than the Canadian population. This is equally true across all three literacy domains.

With respect to low literacy, which is the main focus of this study, the incidence is significantly higher in Canada than in Sweden in all three literacy domains (*Chart 2*). For example:

- In terms of document literacy, 41% of Canadians age 16 to 65, who were born in Canada, failed to exceed level 2, compared to 22% in Sweden.
- In terms of measure of low literacy adopted here (i.e. failed to exceed level 2 in all three domains) 29% of Canadians had low literacy skills, compared to 14% in Sweden.

According to both measures, Canada's incidence of low literacy skills was double that of Sweden's. So, in that sense, the choice of indicator of low literacy skills does not affect the results of the analysis.

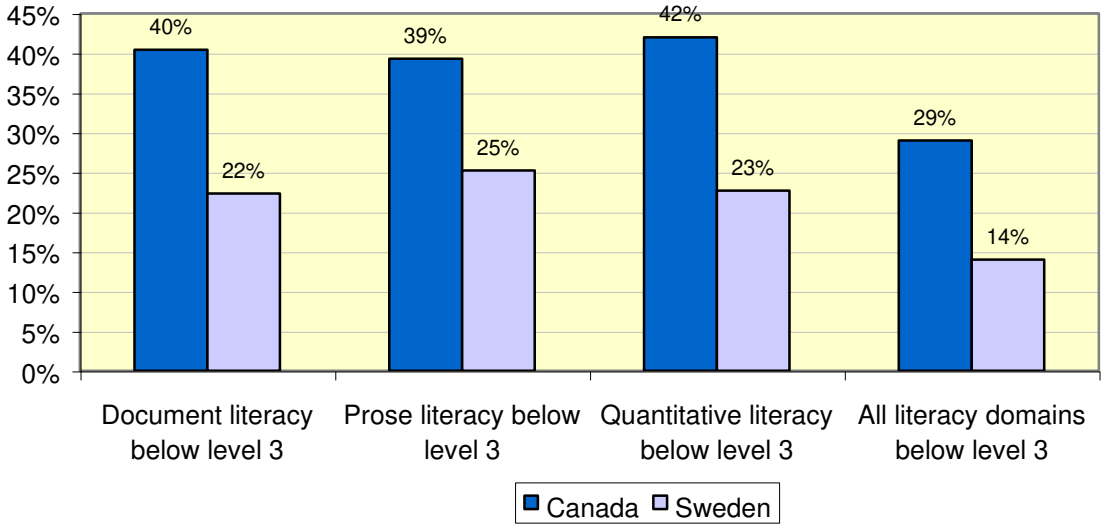
Further probing shows that 28% of Canadians who failed to exceed level 2 in document literacy scored higher in at least one of the remaining two literacy domains: 19% scored above level 2 in prose or quantitative literacy, while an additional 9% scored above level 2 in both prose and quantitative literacy.

Table 2: Level of Literacy Skills: Canada vs. Sweden
Population Age 16 to 65 - Excluding Foreign-Born

	Literacy Domain					
Literacy	***Document***		***Prose***		***Quantitative***	
Level	Canada	Sweden	Canada	Sweden	Canada	Sweden
1	14.8%	4.3%	12.9%	5.1%	13.8%	4.8%
2	25.6%	18.0%	26.4%	20.1%	28.2%	17.9%
3	35.4%	40.3%	38.9%	40.4%	37.4%	39.9%
4/5	24.2%	37.3%	21.8%	34.3%	20.6%	37.4%
All	100.0%	99.9%	100.0%	99.9%	100.0%	100.0%

Note: Percentages may not add up to 100% due to rounding error.

Chart 2: Percentage with Literacy Skills Below Level 3
Population Age 16 to 65 - Excluding Foreign-Born



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The incidence of low literacy among those with post-secondary education is low in both Canada and Sweden (6% and 4% respectively). However, the incidence is considerably higher among those without post-secondary education. This observation is true in both Canada and Sweden.

Among those without post-secondary education there is a wide literacy gap in favour of Sweden - ranging from 13 percentage points among youth, to 24 percentage points among not-employed adults age 26 to 65 (*Table 3*). All comparisons exclude foreign-born individuals.

One of the prime focuses of the study is to probe the reasons why Canadians without post-secondary education have a higher incidence of low literacy skills than their Swedish counterparts. Among the factors that will be explore later on is the quality of education, and participation in life-long learning and everyday-life literacy activities.

Table 3: Literacy Skills Below Level 3 in All Three Literacy Domains by Level of Education, Age and Employment Status
Population Age 16 to 65 - Excluding Foreign-Born

	Canada	Sweden	Gap
Without Post-Secondary Education	**39%**	**18%**	**21%**
Youth age 16-25	26%	12%	13%
Employed age 26-65	36%	16%	20%
Not employed age 26-65	55%	31%	24%
With Post-Secondary Education	**6%**	**4%**	**2%**
All Individuals Age 16-25	**29%**	**14%**	**15%**

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D. THE EFFECT OF EDUCATION AND AGE

The relationship between education and literacy is much steeper in Canada than Sweden. In other words, the lower the level of education (or years of education) the greater the Canada-Sweden literacy gap.

The incidence of low literacy rises with age in both countries. Relative to Sweden, however, the rise occurs in Canada at an earlier age and at a more precipitous rate.

Most Swedish youth start their working lives with at least a minimum of literacy skills, regardless of level of education. By contrast, Canadian youth, unless they continue into post-secondary education, have a high probability of having low literacy skills.

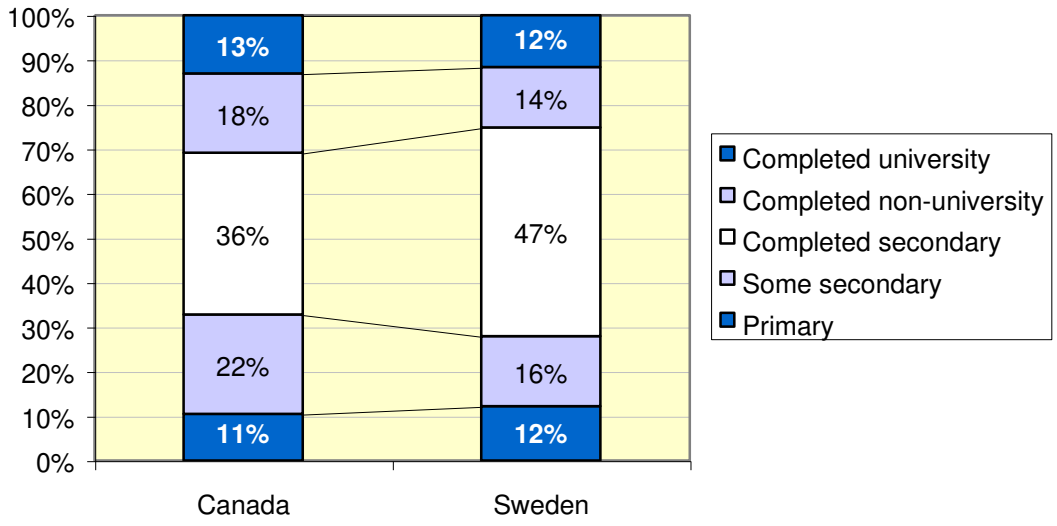
1. THE EFFECT OF EDUCATION

One of the most important determinants of literacy is the level of education. Comparing levels of education between different countries is challenging because of differences in education systems. Two complementary measures were used: (a) level of education; and (b) years of education.

Chart 3 shows that Canada's level of education compares favourably to that of Sweden's at the upper end of the education scale: 31% have completed post-secondary education, compared to 26% in Sweden. Also, on average Canadians have more years of education than Swedes (12.3 vs. 11.7 years respectively).

At the lower end, however, there are more Canadians than Swedes with less than a high school diploma (33% vs. 28%). Since low levels of education are closely correlated with low literacy skills, this difference may explain in part the Canada-Sweden literacy gap. Overall, the distribution of education in Canada is more unequal than in Sweden -- i.e. both the high-end and the low-end of the education distribution are larger than in Sweden.

Chart 3: Distribution by Level of Education
Population Age 16 to 65 - Excluding Foreign-Born



What is more striking, however, is the difference between the two countries with respect to the effect of education on literacy skills. Thus, while the incidence of low literacy skills among those with post-secondary education is similar in both countries, there is a wide gap at lower levels of education (*Chart 4a*).

Chart 4b shows similar results, except education is measured now in terms of years of schooling, rather than the highest level of education achieved. The dots in the chart represent the average incidence of low literacy corresponding to a specific years of education. The continuous line was fitted using logit regression analysis. [3]

Both Chart 4a and 4b reveal that the relationship between education and literacy is much steeper in Canada than Sweden. In other words, the lower the level of education (or years of education) the greater the Canada-Sweden literacy gap.

[3] The curve in Chart 4b is based in two separate regressions, one for Canada and one for Sweden. The dependent variable was the logit of the incidence of low literacy. The years of education was the only independent variable. So far the influence of other factors, like age or level of education of parents, has not been controlled for.

Chart 4a: Low Literacy by Level of Education

Population Age 16 to 65 - Excluding Foreign-Born

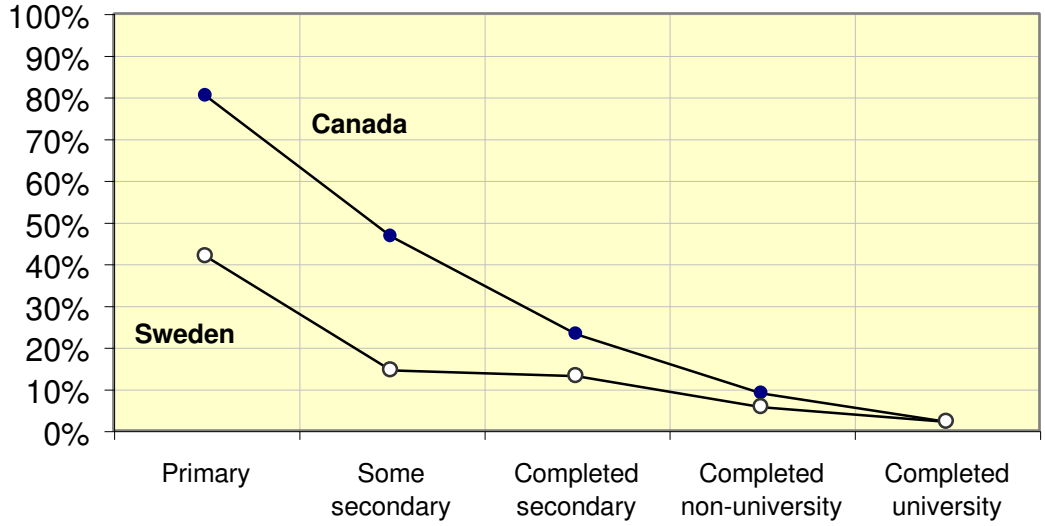
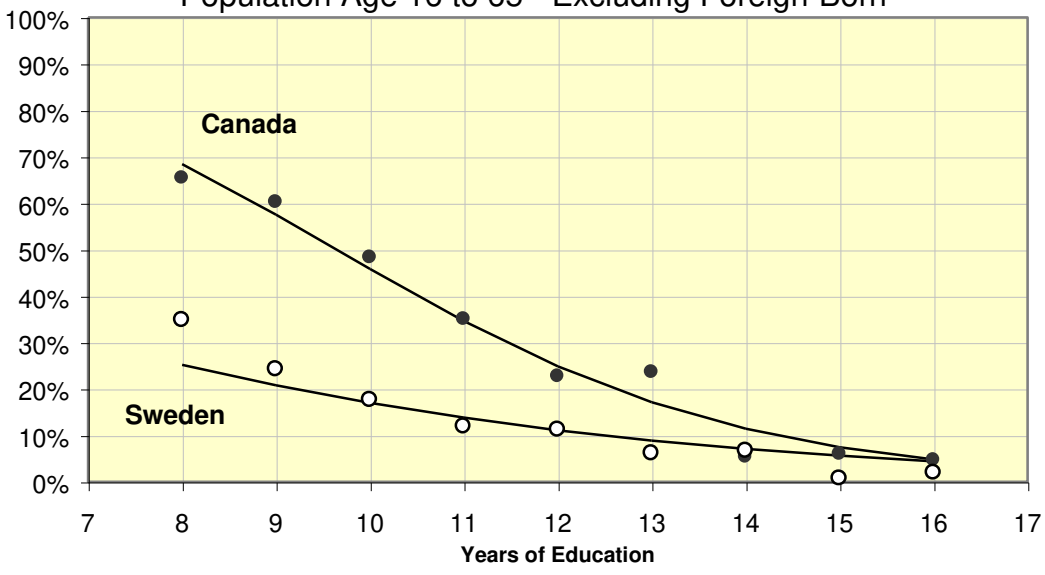


Chart 4b: Low Literacy by Years of Education

Population Age 16 to 65 - Excluding Foreign-Born



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What factors could explain the above results? Here are some basic questions that will be addressed later in this study:

- Is it possible that the quality of education at earlier grades is superior in Sweden? That could be a plausible explanation of the observation that, among Swedes with eight years of schooling, only 25% had low literacy skills, compared to 70% in Canada. This issue will be pursued further by probing the Canada-Sweden literacy gap among youth.
- Is it possible that Swedes keep their skills more current through greater emphasis on training and retraining than Canadians do? This issue will be pursued further by examining whether the Canada-Sweden literacy gap grows at higher ages. Also, by examining the effect of life-long learning on literacy skills in the two countries.
- Is it possible that Swedes use literacy activities in every-day life more intensively than Canadians do? This issue will be explored further by comparing the two populations in terms of such activities as: visiting public libraries; attending cultural events; participating in sports; or being involved in voluntary activities.

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2. THE EFFECT OF AGE

Older individuals tend to have lower literacy skills than younger individuals. This in part reflects the fact that younger generations have a higher level of education than older generations. Canada has a younger age distribution than Sweden, which helps raise the average Canadian skills closer to the Swedish level (*Chart 5*). There are two additional important differences between Canada and Sweden:

- In Canada the incidence of low literacy skills rises significantly around age 46 to 55, while in Sweden this does not happen in until around age 56 to 65 (*Chart 6*).
- Not only does the rise in low incidence occurs at an earlier age in Canada, but it is also more pronounced than in Sweden (23 percentage point rise vs. 13 percentage point rise).

What could explain the earlier and more precipitous increase in the incidence of low literacy skills with age in Canada?

- is it possible that there is a wider educational gap between older and younger age cohorts in Canada than in Sweden?
- is it possible that the quality of education in Canada has improved over time to a greater extent than in Sweden?
- is it possible that life-long learning and participation in literacy activities in every-day life are less common in Canada than in Sweden?

These are some of the questions that need to be addressed by the study.

Chart 5: Distribution by Age Group
Population Age 16 to 65 - Excluding Foreign-Born

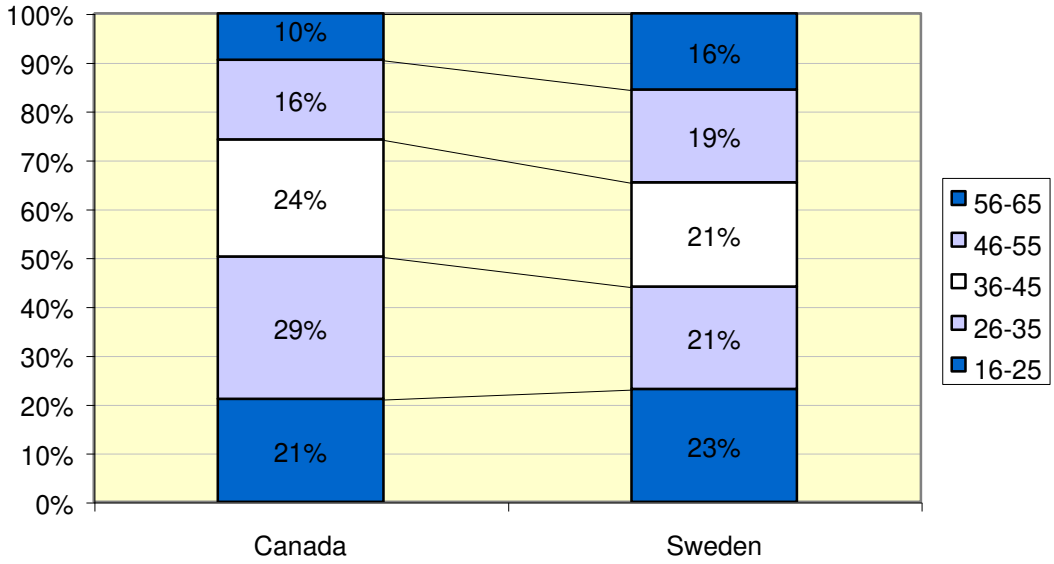
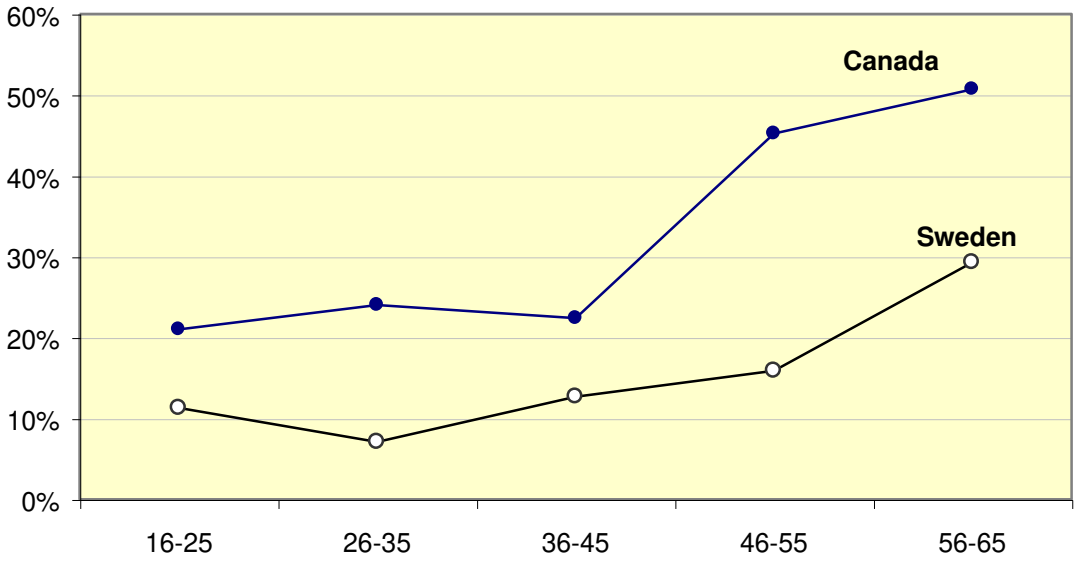


Chart 6: Incidence of Low Literacy by Age
Population Age 16 to 65 - Excluding Foreign-Born



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3. THE COMBINED EFFECT OF EDUCATION AND AGE

Charts 7a to 7d show that the relationship between incidence of low literacy and years of education is steeper in Canada than in Sweden, regardless of age. Also, in both countries, the relationship becomes steeper at higher ages, indicating a deterioration of skills over time. Two of the most interesting observations are the following:

- *The Canada-Sweden literacy gap appears at an early age*: The relationship between incidence of low literacy and years of education is very flat among Swedish youth, but very steep among Canadian youth. This finding suggests that, as a result of either a superior quality of education and/or greater participation in literacy activities outside the school, most Swedish youth start their working lives with at least a minimum of literacy skills, regardless of level of education. By contrast, Canadian youth, unless they continue into post-secondary education, they have a high probability of having low literacy skills.

- *Education is not enough to maintain high skills over time*: Equally interesting is the observation that the dots in the Charts 7a to 7d become more dispersed around the fitted line at higher ages. This phenomenon is an indication that as individuals age, other factors besides education become increasingly important.

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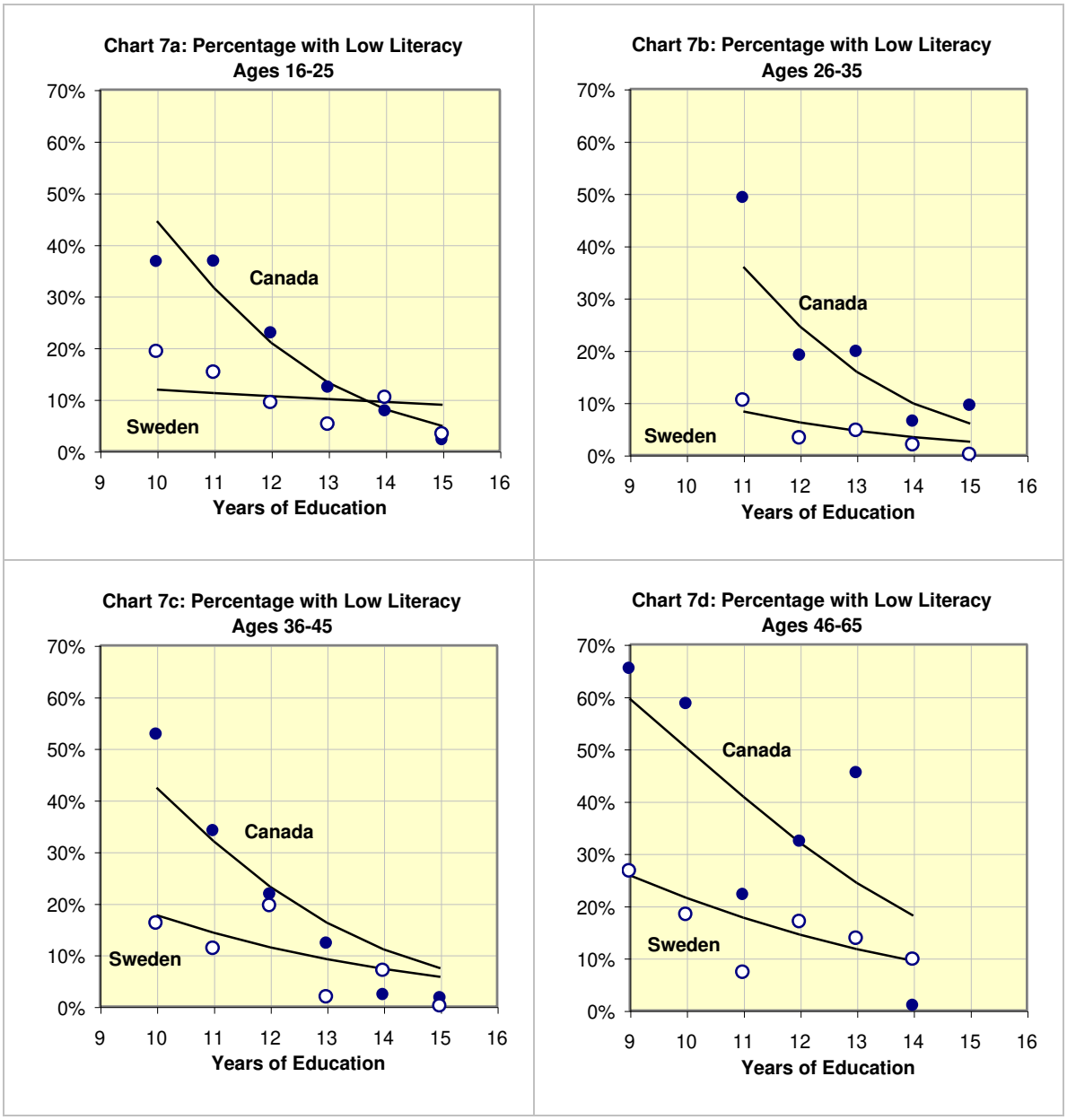

Source: 1994 Int'l Adult Literacy Survey

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E. LITERACY ACTIVITIES AT HOME AND WORK

Canada has a significantly lower participation rate in literacy activities that have a positive correlation with literacy skills: participating in life-long learning, using public libraries, participating in volunteer activities, and following regularly current events.

In this section, the focus is on the differences in the participation in literacy activities in everyday life between Canadians and Swedes. The next section examines the implications of these differences in terms of the Canada-Sweden literacy gap. The comparisons here are made within the following three population subgroups, excluding foreign-born:

- youth (age 16 to 25);
- employed adults (age 26 to 65); and
- not-employed adults (age 26 to 65).

The discussion concentrates in those areas where there is a significant difference in the level of activities between Canada and Sweden. A more complete comparison of literacy activities is presented in Appendix B (Tables B1 to B4).

1. PARTICIPATION IN EDUCATION AND TRAINING

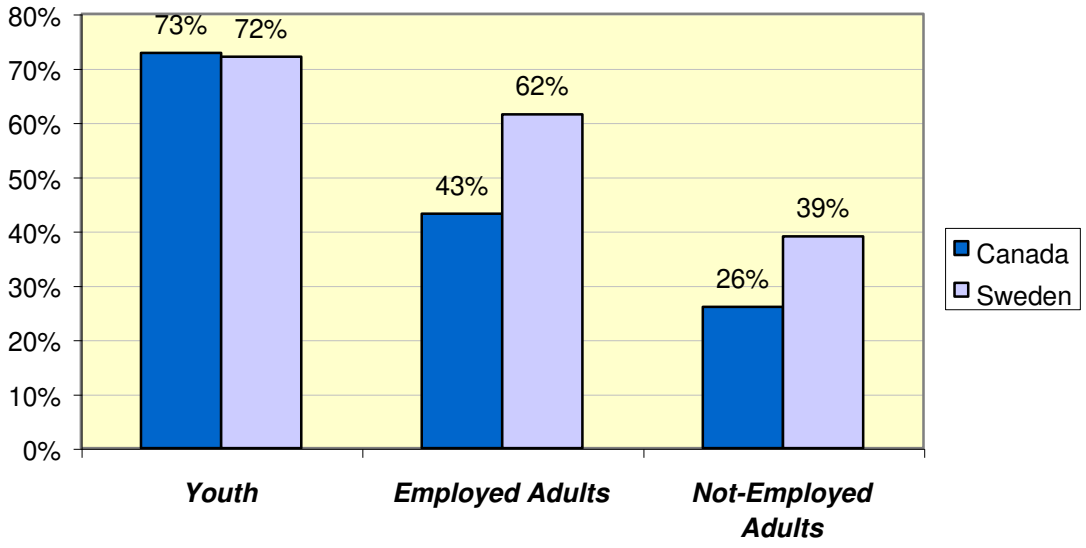
Chart 8 shows the percentage of Canadians and Swedes who participated in adult education or training during the survey year. The definition includes full-time students, as well as those who participated in courses, workshops, apprenticeship and on-the-job training (regardless of who financed these activities).[4] Although this statistic is too broad, it provides an indication of the level of life-long learning in the two countries.

[4] Individuals are identified as participants in education or training if they took any courses in 1994 or they declared their labour force status as students.

Chart 8 shows that the participation in education and training activities among Canadian and Swedish youth is similar (73% and 72% respectively. However, Canada does not fare as well with respect to life-long learning. Thus, among adults age 26 to 65, both employed and not-employed, participation in education and training activities is much more common in Sweden than in Canada. This finding is likely one of the possible reasons why literacy skills may be deteriorating more rapidly with age in Canada than in Sweden.

Chart 8: Received Education or Training

Population Age 16 to 65 - Excluding Foreign-Born



Adult Learning in Sweden

A prominent feature of the Swedish "welfare society" is an adult education system that recruits extensively individuals with a low initial level of education. It is most likely a causal factor behind the higher literacy rate among people with low levels of education in Sweden, as compared to Canada.

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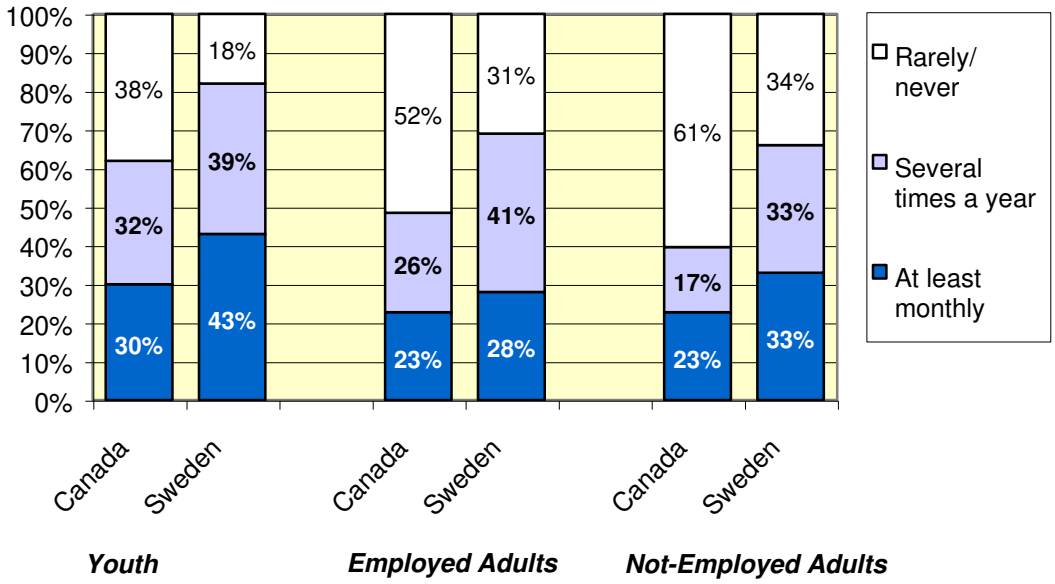
2. PUBLIC LIBRARIES

Swedes use public libraries to a larger extent than Canadians (*Chart 9*). This is true among all three population subgroups examined here. Moreover, it is interesting to notice that in Sweden the frequency of use of public libraries among working and non-working adults is similar. By contrast, in Canada the frequency is lower among non-working adults. As it will be seen later, use of public libraries has a positive correlation with literacy skills and the lower use of public libraries in Canada explains part of the Canada-Sweden literacy gap.

Chart 9: Frequency of Using Public Libraries

Population Age 16 to 65 - Excluding Foreign-Born



Public Libraries in Sweden

There are public libraries in every town in Sweden, even places with only a few thousand inhabitants. They all have a good supply of children's books. Children and their parents utilize libraries frequently, as do older people. Libraries often have a range of local, national and foreign newspapers, which means that for example immigrants go their to get news from their home country. Furthermore, there are libraries at hospitals, jails (in fact, prisoners improve their reading while they are in jail!), homes for the elderly etc. Most schools have libraries of their own.

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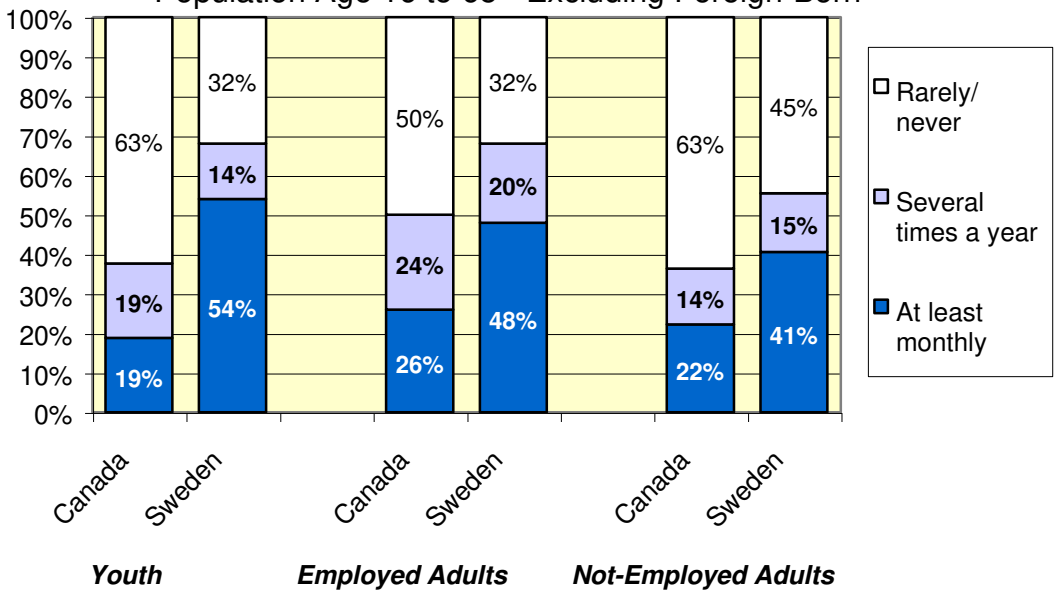
3. VOLUNTEER ACTIVITIES

The frequency of volunteer activity is dramatically higher in Sweden than in Canada. Thus, while about one-third of Canadians participated in volunteer activities, the rate in Sweden is double (*Chart 10*). This is an important finding since volunteerism is correlated with stronger literacy skills. The difference between the countries is so significant that it merits a study on its own.

Chart 10: Frequency of Volunteering

Population Age 16 to 65 - Excluding Foreign-Born



Volunteer Activities in Sweden

There is a long standing tradition of volunteerism and participation in trade unions in Sweden. The tradition dates back to the 18th century, and has had a significant impact on the democratic development in Sweden.

Around 90 percent of the labor force is organized in labor unions -- higher among older people; lower among younger people. The unions supplement their activities with ”study circles” for their members. These study circles take up a lot of issues which are not directly related to the workplace (e.g. Sweden's membership in the European Community; environmental issues, information technology, music, sports and other issues).

Participation in many of these volunteer organizations require and promote reading and writing. It is a good guess that this has an impact on literacy skills also among people who are not frequent readers and writers in other respects.

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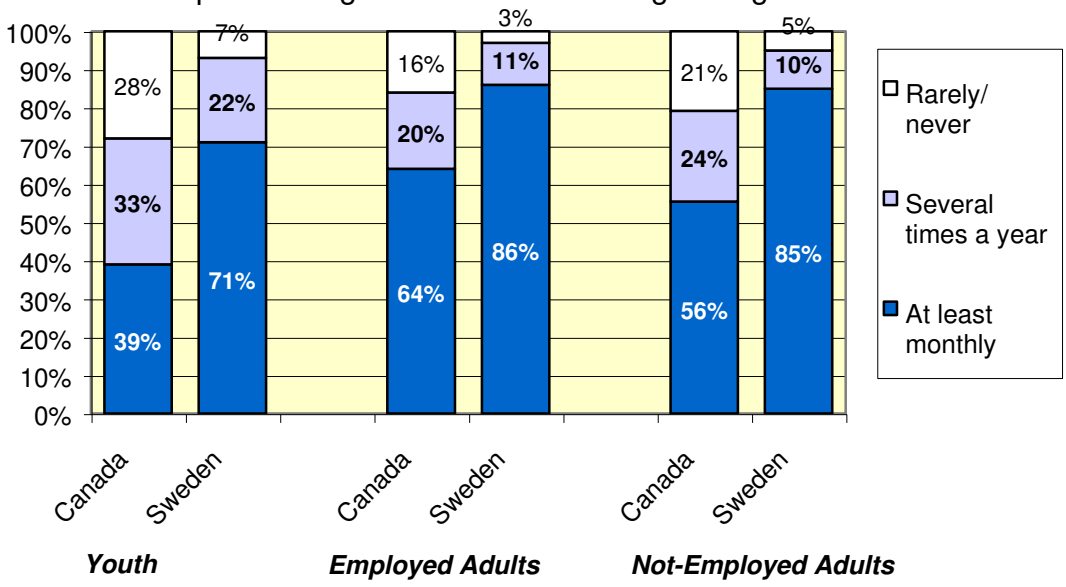
4. Following Current Events

Another difference that stands out between Canada and Sweden is the frequency with which the population keeps up with current events and government and public affairs. In Canada about one-fifth of the population rarely or never keep up with current events and public affairs, while the corresponding percentage in Sweden is about 5% (*Chart 11*).

Chart 11: Frequency of Following Current Events

Population Age 16 to 65 - Excluding Foreign-Born



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5. LITERACY ACTIVITIES AT WORK

IALS looked at a long list of literacy activities in the work place, including: reading letters, reports, manuals, diagrams and bills; and writing letters, bills, reports, and technical estimates. With the exception of education or training activities which are more common among employees in Sweden than Canada, there are not significant differences between the two countries with respect to the frequency of literacy activities in the workplace (See Appendix B, *Table B4*).

The forms of daily text exposure where Sweden has an advantage over most other countries are daily newspaper-reading and library use. Another factor with a strong impact is ”Number of books at home”. Professor Elbro, a prominent Danish reading researcher, has argued that leisure reading does not necessarily contribute to reading skills. People tend to engage in ”confirmatory reading”, avoiding challenging texts when they read newspapers or books of their own choice. Elbro says, on the other hand, that daily reading at the workplace is a major contributor to reading development.

Reading Habits in Sweden

In Sweden, foreign films and TV-programs are not dubbed, which means that people who never read books but watch TV still get a daily literacy refresher. This is especially important for children in low literacy homes.

Also, there is a lot of consumer information: information from local authorities; product offers from shops are distributed by regular mail in Sweden. The vast majority of households get leaflets and brochures in their postbox daily, which means quite a lot of daily reading even for people who avoid contact with books.

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F. EXPLAINING THE CANADA-SWEDEN LITERACY GAP

At least half of the blame for the current Canada-Sweden literacy gap could be placed on the lower frequency of literacy activities among Canadians relative to Sweden -- primarily:
- lower participation in life-long learning;
- lower participation in volunteer activities
  (a factor that is particularly important among youth);
- lower use of public libraries; and
- less interest in current affairs.

1. OBJECTIVE

The objective of this chapter is to see what portion of the literacy gap between the two countries could be explained by differences in literacy activities in every-day life. The population studied is broken into three similar groups:
- youth (age 16-25);
- employed adults (age 26-65); and
- not-employed adults (age 26-65).

The analysis focuses exclusively on those without post-secondary education. As it was noted earlier (*Table 3*), individuals with post-secondary education have about the same rate of low literacy skills in Canada and Sweden (6% vs. 4%). However, there is a wide literacy gap among individuals without post-secondary education (39% vs. 18%).

The following six charts highlight graphically the basic elements of the methodology:

- *Charts 12a to 12c* highlight the four literacy activities where Canada lags significantly behind Sweden: participation in education and training; use of public libraries; participation in volunteer activities, and following current events. With the exception of participation in education among youth, the participation in these literacy activities are considerably higher in Sweden than in Canada.

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- *Charts 13a to 13c* provide initial indication that a higher participation in the above four literacy activities is associated with a lower incidence of inadequate literacy skills. The charts relate specifically to Canada, but the results for Sweden are similar.

The information provided by *Charts 13a to 13c* are replaced in the next section by regression analysis. The reason is that the charts do not take into account the presence of other factors. For example, those participating in volunteer activities tend to have higher levels of education. Since education has a positive effect on literacy skills, part of the reason why the literacy skills of those who volunteer are higher is likely to be because they have higher education levels. Regression analysis is a common technique used to separate the effect of various factors from each other.

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Chart 12a: Literacy Activities of Youth
(Age 16-25; Excluding Foreign-Born)

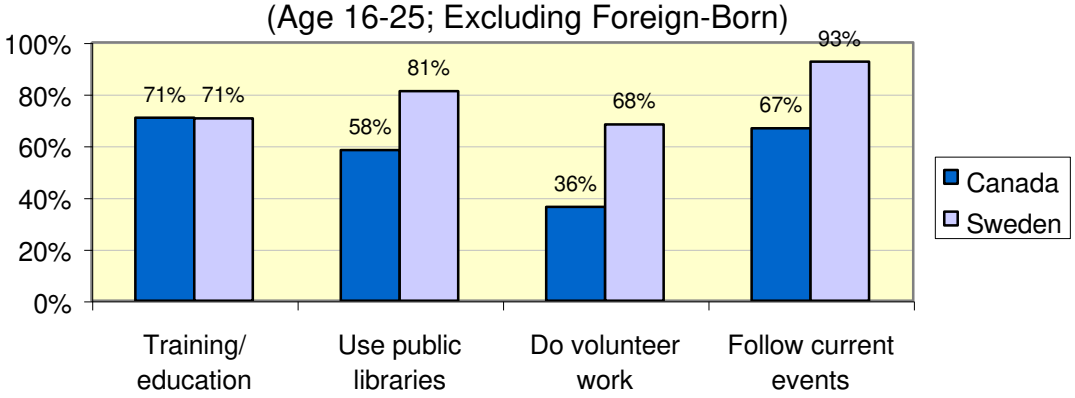

Chart 12b: Literacy Activities of Employed Adults
(Age 26-65; Excluding Foreign-Born)

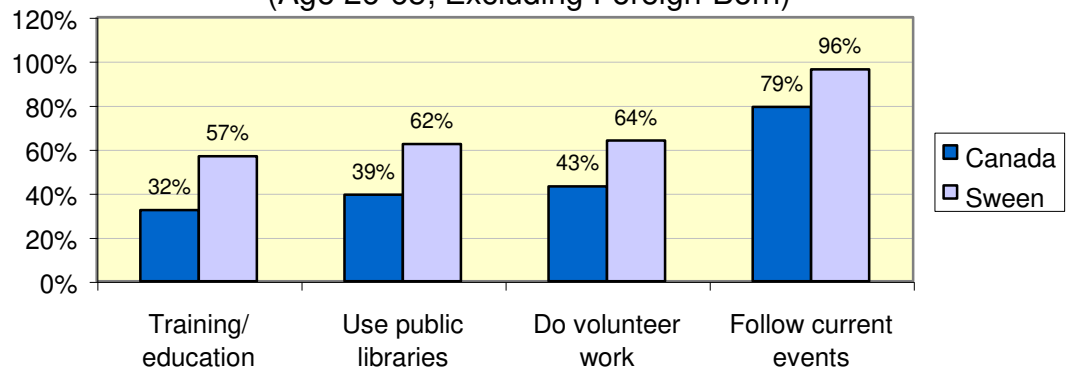

Chart 12c: Literacy Activities: Not-Empl'd Adults
(Age 26-65; Excluding Foreign-Born)

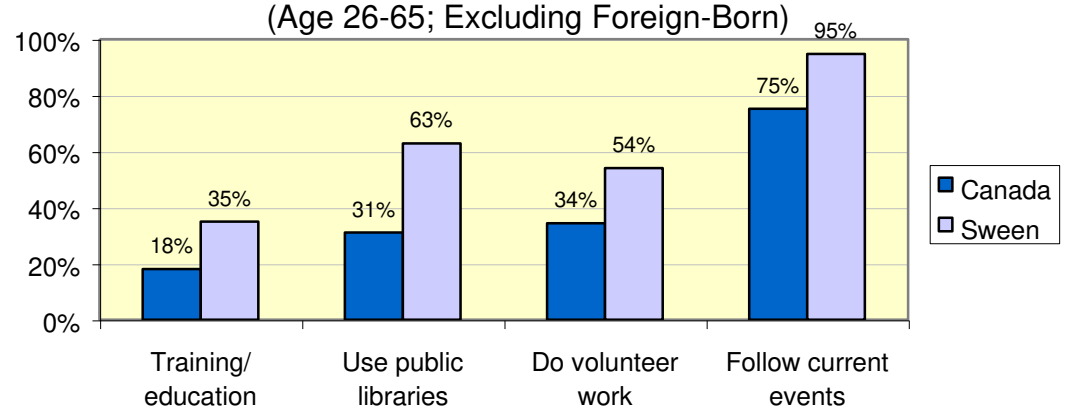

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Chart 13a: Low Literacy Rate by Literacy Activities
Canadian Youth (age 16-25; excluding foreign-born)

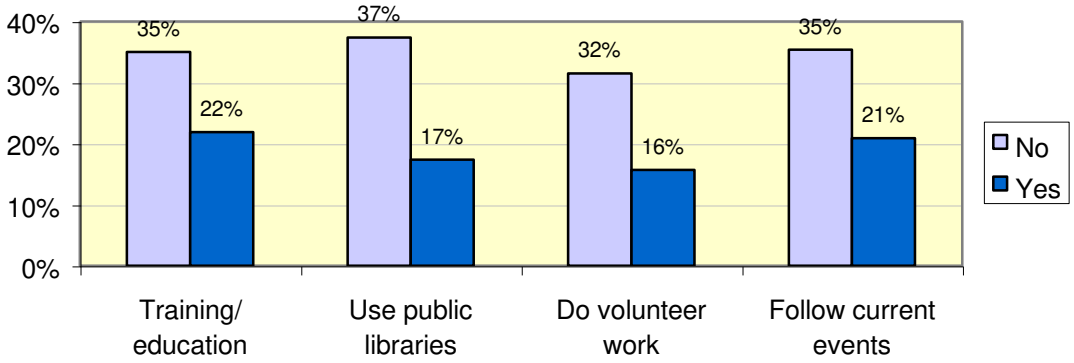


Chart 13b: Low Literacy Rate by Literacy Activities
Employed Adults (age 26-65; excluding foreign-born)

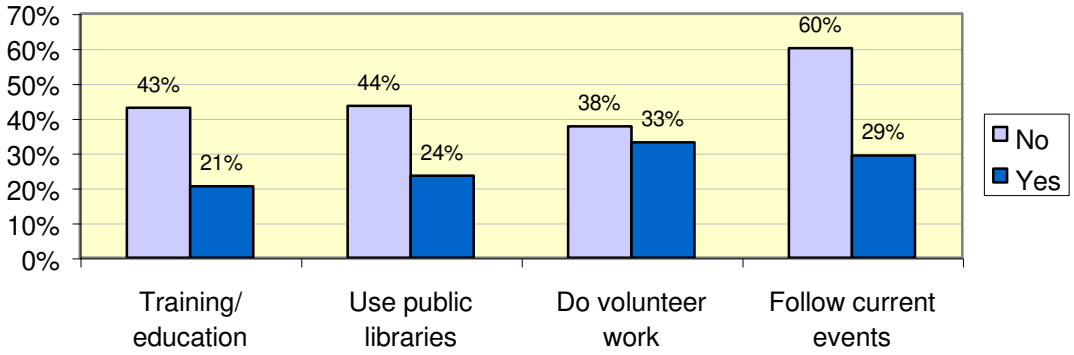
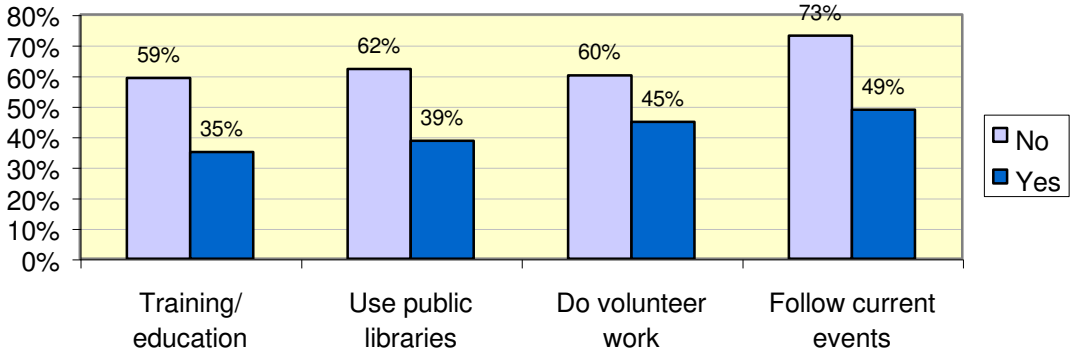


Chart 13c: Low Literacy Rate by Literacy Activities
Not-Employed Adults (age 26-65; excluding foreign-born)



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2. METHODOLOGY

The methodology employed here tries to answer the following basic question: how much lower would the incidence of low literacy skills in Canada have been, if the participation of Canadians in selected literacy skills was raised to the same levels as in Sweden?

The methodology is based on the widely used Oaxaca model. The model was initially developed to explain how much of the male-female wage gap is due to differences in qualifications (e.g. level of education, years of experience) and how much is due to unexplained factors, that could possibly be attributed to gender discrimination.[5]

The Oaxaca model is used here to explain how much of the Canada-Sweden literacy gap is due to differences in participation rates in literacy activities and how much to other factors (e.g. quality of education; participation in other literacy activities not taken into consideration in the analysis).

The methodology is explained in more detail in Appendix C. Separate analysis was conducted within each of the following three population sub-groups: youth (age 16-25); employed adults (age 26-65) and not employed adults (age 26-65). In all cases, foreign-born individuals and those with post-secondary education were excluded from the analysis.

It is important to recognize that regression analysis is subject to an important limitation: correlation between the phenomenon that is being analyzed (incidence of low literacy) and the explanatory factors (literacy activities) does not necessarily prove causality.

While it is difficult to dispute the fact that a higher participation in literacy activities is good for literacy skills, it has to be recognized that in part the direction of causality may also go the other way -- i.e. individuals with higher literacy skills may be more inclined to be involved in literacy activities.

Consequently, the estimated impact of differences in literacy activities between Canada and Sweden on the literacy gap between the two countries is most likely over-stated. However, the results of the analysis still provide a useful indicator of the potential value of promoting literacy activities in Canada.

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[5] See Oaxaca, 1973.

3. FINDINGS

The results of the analysis are summarized in *Table 4*. They show that:

Youth

- Among youth, at least one-third of the Canada-Sweden literacy gap could be attributed to the fact that more Swedish youth use public libraries than Canadian youth (81% vs. 51%). About another one-third could be explained by the fact that more Swedish youth are involved in volunteer activities than Canadian youth (68% vs. 36%). These results imply that attracting more youth to public libraries and encouraging volunteerism among youth would have significant benefits in terms of narrowing the literacy gap between Canadian and Swedish youth.

Employed Adults

- Among employed adults three types of activities stand out as the most significant factors that could explain the Canada-Swedish literacy gap: lower participation in life-long learning and less interest in following current events, each of which explain about one-third of the literacy gap; lower use of public libraries explains about one-fifth. These results provide new evidence of the benefits of promoting employer training and adult learning in general.

Not-Employed Adults

- Among not-employed adults, about a quarter of the Canada-Sweden literacy gap could be attributed to a lower participation in life-long learning and less interest in following current events. Other activities such as reading books and writing letters appear to explain another quarter of the gap. The balance is likely due to other factors not taken into account in the analysis, including possibly a lower quality of education.

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Table 4: Contribution of Selected Factors to the Canada-Sweden Literacy Gap
Among those with Less than Post-Secondary Education
Population Age 16 to 65 - Excluding Foreign-Born

		Adults Age 26-65	
	Youth	***Employed***	***Not Empl'd***
Low literacy rate			
Canada	25.7%	35.7%	54.8%
Sweden	12.4%	16.0%	31.0%
Canada-Sweden literacy gap	13.4%	19.8%	23.9%
Part of literacy gap attributable to less...			
- participation in education/training	**	33.1%	8.8%
- use of public libraries	36.4%	19.3%	*
- participation in volunteer activities	32.7%	*	*
- following current events	*	33.0%	18.8%
Part of literacy gap attributable to...			
The all the above factors combined	65.1%	78.5%	27.7%
Remaining literacy gap...			
Attributable to other factors, including possibly a lower quality of education.	34.9%	21.5%	72.3%

(*) *The effect of this factor was positive, but not statistically significant.*

(**) *The effect of this factor was positive and statistically significant, but the level of activity in Canada was not inferior to that in Sweden.*

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G. CONCLUSION

1. MAIN FINDINGS

Canada has a significantly higher incidence of low literacy skills than Sweden. The Canada-Sweden literacy gap is concentrated primarily among those without post-secondary education.

The results of the analysis suggest that the Swedish education system may be more successful than the Canadian education system in equipping individuals with adequate literacy skills by the time they leave high school.

At the same time, at least half of the blame for the current Canada-Sweden literacy gap could be placed on the lower frequency of literacy activities among Canadians relative to Sweden.

Life-long learning is an area of relative weakness for Canada. Canada has a strong education record. But what needs more recognition in Canada is that there is a continuous need for maintaining and upgrading skills, much in the same way as physical capital needs continuous investment to replace what has been depreciated and in order to meet new production requirements.

Also, there is a need for wider recognition in Canada that much can be achieved in the literacy front by promoting volunteer activities, primarily among youth, as well as encouraging the use of public libraries and getting people more interested in following current events.

2. FURTHER RESEARCH

The results of the study point to a number of promising research directions that can help identify practical ways to narrowing the literacy gap between Canada and Sweden:

- Why Swedes can achieve a minimum level of literacy skills without necessarily going into post-secondary education? are Swedish school curricula better? is there more emphasis on minimum skills? are more resources devoted to early childhood education?

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- Why adult participation in education and training is higher in Sweden? are Swedish employers more committed to training? is the Swedish education system financially more accessible? are government measures to encourage adult learning more effective?

- What factors explain the greater participation in volunteer activities among Swedes? are there any unique features to the Swedish system that could explain the gap in volunteerism between Canada and Sweden? particularly with respect to youth where the literacy benefits of volunteerism are greater? what explains Sweden's higher participation rate?

- Why public libraries are used much more widely in Sweden than in Canada? what makes Swedish libraries more attractive? are libraries being used in the same way or for the same type of services in the two countries?

In all the above cases, a key task is to identify ideas that appear to be working in Sweden and then take the next step of seeing how these ideas could be adopted to the Canadian reality.

In closing, it should be added that literacy activities -- such as life-long learning or volunteer activities -- are worth pursuing for a variety of reasons. But the fact that they also contribute to higher literacy skills makes even stronger the case for promoting further such activities.

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APPENDICES

APPENDIX A: LITERACY SKILLS BY SELECTED CHARACTERISTICS

Table A1. Literacy Skills by Selected Characteristics Among Non-Immigrant Population, Age 16-65

	Population Distribution		*Corresponding Incidence of Low Literacy*	
	Canada	Sweden	Canada	Sweden
AGE				
16 - 25	21%	23%	21%	11%
26 - 35	29%	21%	24%	7%
36 - 45	24%	21%	22%	13%
46 - 55	16%	19%	45%	16%
56 - 65	10%	16%	51%	29%
GENDER				
Male	50%	50%	30%	13%
Female	50%	50%	28%	16%
EDUCATION				
Primary	10%	12%	80%	42%
Some secondary	22%	15%	46%	14%
Completed secondary	37%	49%	23%	13%
Completed non-university	18%	13%	9%	6%
Completed university	13%	11%	2%	2%
MOTHER'S EDUCATION				
Primary or less	33%	59%	44%	19%
Some secondary	21%	11%	23%	8%
Completed secondary	28%	18%	14%	10%
Completed non-university	10%	6%	24%	5%
Completed university	7%	5%	12%	5%
FATHER'S EDUCATION				
Primary or less	41%	57%	39%	19%
Some secondary	18%	8%	22%	9%
Completed secondary	23%	21%	14%	9%
Completed non-university	8%	6%	22%	9%
Completed university	10%	9%	9%	4%
LABOUR FORCE STATUS				
Employed	65%	69%	23%	13%
Unemployed	8%	5%	43%	17%
Student	8%	14%	20%	9%
Homemaker/Other	19%	12%	48%	29%
ALL	100%	100%	29%	14%

Illustration: The first row/second column shows that 23% of Swedish population covered by IALS are youth. The first row/fourth column shows that 11% of Swedish youth have low literacy skills.

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APPENDIX B: LITERACY ACTIVITIES IN EVERY-DAY LIFE AND AT WORK

Table B1. Literacy Activities in Every-Day Life
Non-Immigrant Youth (Age 16-25)

	Population Distribution		*Incidence of Low Literacy*	
	Canada	Sweden	Canada	Sweden
TRAINING/EDUCATION IN 1994				
Yes	73%	72%	17%	10%
No	27%	28%	32%	16%
USE PUBLIC LIBRARIES				
Rarely/never	38%	18%	33%	24%
Several times a year	32%	39%	13%	13%
At least monthly	30%	43%	14%	5%
ATTEND MOVIES, THEATRE ETC.				
Rarely/never	7%	2%	41%	35%
Several times a year	29%	33%	24%	14%
At least monthly	63%	64%	17%	9%
ATTEND/PARTICIPATE IN SPORTS				
Rarely/never	21%	21%	33%	13%
Several times a year	27%	41%	15%	12%
At least monthly	53%	37%	19%	10%
WRITE LETTERS ETC 1+ PAGES				
Rarely/never	23%	20%	35%	14%
Several times a year	27%	31%	22%	11%
At least monthly	50%	49%	14%	10%
DO VOLUNTEER WORK				
Rarely/never	63%	32%	25%	13%
Several times a year	19%	14%	15%	12%
At least monthly	19%	54%	11%	10%
READ BOOKS				
Rarely/never	15%	8%	35%	28%
Several times a year	15%	21%	24%	16%
At least monthly	70%	71%	17%	8%
FOLLOW CURRENT EVENTS				
Now and then/hardly at all	28%	7%	34%	36%
Some of the time	33%	22%	17%	11%
Most of the time	39%	71%	16%	9%
ALL	**100%**	**100%**	**21%**	**11%**

Illustration: First row/second column: it shows that 41% of Swedish youth covered by the survey participated in training or education activities in 1994. First row/fourth column: It shows that 11% of Swedish youth who participated in training or education in 1994 had low literacy.

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Table B2. Literacy Activities in Every-Day Life Non-Immigrant Employed Adults (Age 26-65)	*Population Distribution*		*Incidence of Low Literacy*	
	Canada	Sweden	Canada	Sweden
TRAINING/EDUCATION IN 1994				
Yes	43%	62%	12%	9%
No	57%	39%	34%	18%
USE PUBLIC LIBRARIES				
Rarely/never	52%	31%	34%	19%
Several times a year	26%	41%	16%	11%
At least monthly	23%	28%	11%	7%
ATTEND MOVIES, THEATRE ETC.				
Rarely/never	21%	9%	44%	24%
Several times a year	51%	66%	19%	13%
At least monthly	28%	24%	19%	8%
ATTEND/PARTICIPATE IN SPORTS				
Rarely/never	29%	36%	29%	16%
Several times a year	32%	37%	24%	9%
At least monthly	39%	27%	21%	13%
WRITE LETTERS ETC 1+ PAGES				
Rarely/never	42%	30%	34%	20%
Several times a year	24%	42%	13%	10%
At least monthly	34%	28%	20%	8%
DO VOLUNTEER WORK				
Rarely/never	50%	32%	30%	20%
Several times a year	24%	20%	24%	8%
At least monthly	26%	48%	14%	9%
READ BOOKS				
Rarely/never	22%	8%	28%	31%
Several times a year	16%	24%	26%	16%
At least monthly	62%	68%	22%	9%
FOLLOW CURRENT EVENTS				
Now and then/hardly at all	16%	3%	50%	16%
Some of the time	20%	11%	22%	12%
Most of the time	64%	86%	19%	12%
ALL	**100%**	**100%**	**24%**	**12%**

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Table B3. Literacy Activities in Every-Day Life Non-Immigrant Not-Employed Adults (Age 26-65)	*Population Distribution*		*Incidence of Low Literacy*	
	Canada	Sweden	Canada	Sweden
TRAINING/EDUCATION IN 1994				
Yes	26%	39%	21%	14%
No	74%	61%	54%	34%
USE PUBLIC LIBRARIES				
Rarely/never	61%	34%	58%	36%
Several times a year	17%	33%	34%	25%
At least monthly	23%	33%	20%	18%
ATTEND MOVIES, THEATRE ETC.				
Rarely/never	41%	29%	58%	45%
Several times a year	43%	58%	37%	22%
At least monthly	15%	14%	33%	6%
ATTEND/PARTICIPATE IN SPORTS				
Rarely/never	51%	49%	54%	35%
Several times a year	30%	31%	39%	17%
At least monthly	19%	20%	31%	20%
WRITE LETTERS ETC 1+ PAGES				
Rarely/never	42%	32%	66%	32%
Several times a year	30%	41%	32%	25%
At least monthly	28%	27%	28%	21%
DO VOLUNTEER WORK				
Rarely/never	63%	45%	51%	29%
Several times a year	14%	15%	41%	20%
At least monthly	22%	41%	31%	25%
READ BOOKS				
Rarely/never	21%	8%	78%	50%
Several times a year	18%	23%	62%	27%
At least monthly	61%	69%	29%	23%
FOLLOW CURRENT EVENTS				
Now and then/hardly at all	21%	5%	73%	46%
Some of the time	24%	10%	46%	31%
Most of the time	56%	85%	35%	24%
ALL	**100%**	**100%**	**45%**	**26%**

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Table B4. Literacy Activities at Work (first part) Non-Immigrant Employed Adults (Age 26-65)	*Population Distribution*		*Incidence of Low Literacy*	
	Canada	Sweden	Canada	Sweden
READ LETTERS/MEMOS				
Rarely/never	18%	14%	42%	29%
Less than daily	27%	29%	25%	10%
Every day	55%	56%	18%	9%
READ REPORTS, ARTICLES				
Rarely/never	27%	15%	43%	25%
Less than daily	37%	47%	15%	11%
Every day	36%	38%	20%	9%
READ MANUALS				
Rarely/never	31%	22%	43%	22%
Less than daily	40%	55%	18%	10%
Every day	30%	23%	14%	8%
READ DIAGRAMS				
Rarely/never	53%	32%	30%	19%
Less than daily	28%	42%	18%	9%
Every day	20%	26%	18%	10%
READ BILLS, INVOICES				
Rarely/never	36%	38%	34%	18%
Less than daily	28%	38%	19%	10%
Every day	36%	24%	19%	8%

Table continues on the next page

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Table B4. Literacy Activities at Work (second part) Non-Immigrant Employed Adults (Age 26-65)	*Population Distribution*		*Incidence of Low Literacy*	
	Canada	Sweden	Canada	Sweden
WRITE LETTERS, MEMOS				
Rarely/never	30%	20%	37%	24%
Less than daily	31%	37%	14%	11%
Every day	39%	43%	22%	8%
WRITE BILLS, INVOICES				
Rarely/never	40%	48%	29%	17%
Less than daily	30%	36%	21%	8%
Every day	31%	16%	21%	10%
WRITE REPORTS, ARTICLES				
Rarely/never	39%	41%	34%	18%
Less than daily	35%	41%	17%	8%
Every day	26%	18%	20%	10%
WRITE TECHNICAL ESTIMATES				
Rarely/never	59%	68%	31%	14%
Less than daily	29%	23%	16%	8%
Every day	12%	9%	13%	11%
USE MATH TO ESTIMATE SIZE ETC.				
Rarely/never	42%	46%	27%	14%
Less than daily	21%	22%	27%	10%
Every day	37%	32%	19%	12%
USE MATH TO CALCULATE PRICES				
Rarely/never	40%	49%	34%	17%
Less than daily	28%	30%	16%	9%
Every day	33%	21%	20%	6%
ALL	**100%**	**100%**	**24%**	**12%**

Note: No distinction is made between employer and non-employer education and training. All education and training activities are reported in Table B2 under literacy activities in every-day life.

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APPENDIX C: DECOMPOSITION OF THE CANADA-SWEDEN LITERACY GAP

a) Methodology

The methodology employed here is based on the widely used Oaxaca model, originally developed to decompose the male-female wage gap into two components: (a) differences in the level of education and other characteristics; and (b) differences in the impact of education and other characteristics due on the level of earnings.[6]

The first component represents the explained gap; it is referred to in the literature as "endowment" differences. The second component represents the unexplained gap. In the case of analysis of male-female earnings differences, the gap is typically attributed to gender discrimination -- although part of the gap may reflect endowment differences not captured by the model.[7]

The Oaxaca model, applied to explaining the Canada-Sweden literacy gap, requires first the estimation of two separate regression equations: one for Canada and one for Sweden. The basic specification of the two regression models is as follows:

(1) $Y_c=C_c+b_cX_c+u_c$ (for Canada)

(2) $Y_s=C_s+b_sX_s+u_s$ (for Sweden)

where:

- subscript c refers to Canada, and subscript s to Sweden;
- Y is the incidence of low literacy (1 if literacy skills are below level 3 in all three literacy domains; zero otherwise);
- X is a vector of characteristics that affect literacy (e.g. own level of education; parents' level of education; participation in life long learning and other types of literacy activities);
- b are the regression coefficients; and
- u is the stochastic error term.

[6] See Oaxaca, 1973.

[7] For a critique of the Oaxaca model see Kapsalis, 1982.

The initial Oaxaca model used an OLS regression model. However in the present case, because the dependent variable is a dummy variable, a more appropriate model is logit regression.

The impact of differences in literacy activities between Canada and Sweden on the literacy gap between the two countries is measured by the following expression:

(3) $\Sigma(\overline{X}_c - \overline{X}_s)b_c$

where $\overline{X}$ represents the mean value of the characteristics in each respective country. Each element of expression (3) shows the effect of the corresponding difference in characteristics between the two countries on the literacy gap between the two.

The unexplained residual is:

(4) $(\overline{Y}_c - \overline{Y}_s) - \Sigma(\overline{X}_c - \overline{X}_s)b_c$

The unexplained residual of the Canada-Sweden literacy gap could be the result of several factors, such as: a possibly lower quality of education in Canada or the omission from the analysis of other relevant factors.

--

b) Logit regression analysis

Six logit regressions were estimated: one for each of the two countries, within each of the following three population sub-groups: youth (age 16-25); and employed and not employed adults (age 26-65). In all cases, foreign-born individuals and those with post-secondary education were excluded from the analysis.

Then, using the regression results, it was estimated what the impact would be on the incidence of low literacy in Canada, of increasing the level of selected literacy activities to same level as in Sweden -- either one activity at the time, or a whole group of activities at the same time.[8]

Following are the estimates of the six logit regressions. The dependent variable in all cases was the logit of the probability of having low literacy skills (i.e. below level 3 in all three literacy domains).

c) Interpretation of the logit regression statistics

- b coefficient: the probability for a given combination of characteristics can be estimated by using the following equation: $p = 1/(1+EXP(-b_0 + \Sigma(b_i * X_i))$
- SE: the standard error of the b coefficients
- Sigma: If Sigma less than 0.025, then b-coefficient is significantly different than zero.
- R: the partial R coefficient
- Exp(b): the ratio of odds (of the particular category relative to the omitted one).
- Percentage improvement in likelihood: This ahs a similar interpretation to the R-square of an OLS regression.

[8] The impact of increasing the rate of participation in a particular literacy activity on Canada's incidence of low literacy rate was estimated by replacing in the logit regression the actual participation rate with Sweden's participation rate. It should be noted that the combined effect of increasing the participation rate of several literacy activities is different than the sum of the effect of individual activities because the underlying relationship is non-linear.

C1. CANADIAN YOUTH (AGE 16-26)
EXCLUDING FOREIGN-BORN AND THOSE WITH POST-SECONDARY EDUCATION

Dependent variable: LOGIT of probability of having low literacy.

Variable	Explanation	B	S.E.	Sigma	R	Exp(B)
TRAINSTU(0)	Did not participate in education	*(omitted)*				
TRAINSTU(1)	Participated in education	-0.579	0.203	0.004	-0.075	0.561
G1A(0)	Did not use public libraries	*(omitted)*				
G1A(1)	Used public libraries	-0.890	0.181	0.000	-0.142	0.411
G1D(0)	Did not write letters etc.1+pages long	*(omitted)*				
G1D(1)	Wrote letters etc. 1+ pages long	-0.700	0.196	0.000	-0.099	0.497
G1E(0)	Did not participated in voluntary	*(omitted)*				
G1E(1)	Participated in voluntary activities	-0.568	0.189	0.003	-0.080	0.567
EDUC(0)	Has not completed high school	*(omitted)*				
EDUC(1)	Has completed high school	-1.145	0.169	0.000	-0.201	0.318
GMEDUC	Mother's education			0.000	0.118	
GMEDUC(0)	- not known	*(omitted)*				
GMEDUC(1)	- less than high school	-0.724	0.314	0.021	-0.055	0.485
GMEDUC(2)	- high school or more	-1.214	0.303	0.000	-0.113	0.297
GLFSTAT(0)	Was not employed	*(omitted)*				
GLFSTAT(1)	Was employed	-1.124	0.194	0.000	-0.169	0.325
Constant		2.505	0.400	0.000		

960	Total number of cases
1,095	-2 Log Likelihood before
899	-2 Log Likelihood after
17.8%	Percentage reduction

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C2. SWEDISH YOUTH (AGE 16-26)
EXCLUDING FOREIGN-BORN AND THOSE WITH POST-SECONDARY EDUCATION

Dependent variable: LOGIT of probability of having low literacy.

Variable	Explanation	B	S.E.	Sigma	R	Exp(B)
TRAINSTU(0)	Did not participate in education	*(omitted)*				
TRAINSTU(1)	Participated in education	-0.125	0.321	0.697	0.000	0.882
G1A(0)	Did not use public libraries	*(omitted)*				
G1A(1)	Used public libraries	-1.052	0.334	0.002	-0.148	0.349
G1D(0)	Did not write letters etc.1+pages long	*(omitted)*				
G1D(1)	Wrote letters etc. 1+ pages long	0.155	0.356	0.663	0.000	1.168
G1E(0)	Did not participated in voluntary	*(omitted)*				
G1E(1)	Participated in voluntary activities	-0.220	0.298	0.460	0.000	0.802
EDUC(0)	Has not completed high school	*(omitted)*				
EDUC(1)	Has completed high school	0.033	0.323	0.920	0.000	1.033
GMEDUC	Mother's education			0.900	0.000	
GMEDUC(0)	- not known	*(omitted)*				
GMEDUC(1)	- less than high school	0.260	0.568	0.647	0.000	1.297
GMEDUC(2)	- high school or more	0.210	0.559	0.707	0.000	1.234
GLFSTAT(0)	Was not employed	*(omitted)*				
GLFSTAT(1)	Was employed	0.328	0.311	0.292	0.000	1.388
Constant		-1.438	0.686	0.036		

485	Total number of cases
363	-2 Log Likelihood before
346	-2 Log Likelihood after
4.6%	Percentage reduction

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C3. CANADIAN EMPLOYED ADULTS (AGE 26-65) EXCLUDING FOREIGN-BORN AND THOSE WITH POST-SECONDARY EDUCATION

Dependent variable: LOGIT of probability of having low literacy.

Variable	Explanation	B	S.E.	Sigma	R	Exp(B)
TRAINSTU(0)	Did not participate in education	*(omitted)*				
TRAINSTU(1)	Participated in education	-0.942	0.167	0.000	-0.146	0.390
G1A(0)	Did not use public libraries	*(omitted)*				
G1A(1)	Used public libraries	-0.573	0.157	0.000	-0.090	0.564
G1B(0)	Did not attend movies, plays, concerts	*(omitted)*				
G1B(1)	Attended movies, plays, concerts	-0.358	0.168	0.034	-0.042	0.699
G8(0)	Did not followe current events	*(omitted)*				
G8(1)	Followed current events	-1.354	0.181	0.000	-0.196	0.258
EDUC(0)	Has not completed high school	*(omitted)*				
EDUC(1)	Has completed high school	-0.647	0.158	0.000	-0.103	0.524
GMEDUC	Mother's education			0.000	0.108	
GMEDUC(0)	- not known	*(omitted)*				
GMEDUC(1)	- less than high school	-0.531	0.198	0.008	-0.061	0.588
GMEDUC(2)	- high school or more	-1.023	0.227	0.000	-0.114	0.360
GAGEINT(0)	Age 26-45	*(omitted)*				
GAGEINT(1)	Age 46-65	0.568	0.163	0.001	0.085	1.764
Constant		1.960	0.273	0.000		

1,079	Total number of cases
1,406	-2 Log Likelihood before
1,155	-2 Log Likelihood after
17.9%	Percentage reduction

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C4. SWEDISH EMPLOYED ADULTS (AGE 26-65)
EXCLUDING FOREIGN-BORN AND THOSE WITH POST-SECONDARY EDUCATION

Dependent variable: LOGIT of probability of having low literacy.

Variable	Explanation	B	S.E.	Sigma	R	Exp(B)
TRAINSTU(0)	Did not participate in education	*(omitted)*				
TRAINSTU(1)	Participated in education	-0.552	0.181	0.002	-0.091	0.576
G1A(0)	Did not use public libraries	*(omitted)*				
G1A(1)	Used public libraries	-0.342	0.186	0.066	-0.039	0.710
G1B(0)	Did not attend movies, plays, concerts	*(omitted)*				
G1B(1)	Attended movies, plays, concerts	-0.453	0.243	0.063	-0.041	0.636
G8(0)	Did not followe current events	*(omitted)*				
G8(1)	Followed current events	-0.201	0.451	0.655	0.000	0.818
EDUC(0)	Has not completed high school	*(omitted)*				
EDUC(1)	Has completed high school	-0.652	0.194	0.001	-0.103	0.521
GMEDUC	Mother's education			0.123	0.015	
GMEDUC(0)	- not known	*(omitted)*				
GMEDUC(1)	- less than high school	-0.305	0.394	0.439	0.000	0.737
GMEDUC(2)	- high school or more	-0.965	0.517	0.062	-0.041	0.381
GAGEINT(0)	Age 26-45	*(omitted)*				
GAGEINT(1)	Age 46-65	0.359	0.194	0.065	0.040	1.432
Constant		-0.077	0.607	0.899		

1,006	Total number of cases
883	-2 Log Likelihood before
818	-2 Log Likelihood after
7.4%	Percentage reduction

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C5. CANADIAN NOT-EMPLOYED ADULTS (AGE 26-65) EXCLUDING FOREIGN-BORN AND THOSE WITH POST-SECONDARY EDUCATION

Dependent variable: LOGIT of probability of having low literacy.

Variable	Explanation	B	S.E.	Sigma	R	Exp(B)
TRAINSTU(1)	Did not participate in education	*(omitted)*				
TRAINSTU(1)	Participated in education	-0.552	0.217	0.011	-0.058	0.576
G1D(0)	Did not write letters etc.1+pages long	*(omitted)*				
G1D(1)	Wrote letters etc. 1+ pages long	-0.546	0.163	0.001	-0.083	0.579
G1G(0)	Did not read books	*(omitted)*				
G1G(1)	Red books	-1.193	0.217	0.000	-0.145	0.303
G8(0)	Did not followe current events	*(omitted)*				
G8(1)	Followed current events	-1.022	0.197	0.000	-0.136	0.360
EDUC(0)	Has not completed high school	*(omitted)*				
EDUC(1)	Has completed high school	-1.505	0.173	0.000	-0.234	0.222
GENDER(0)	Male	*(omitted)*				
GENDER(1)	Female	-0.633	0.175	0.000	-0.091	0.531
GMEDUC	Mother's education			0.001	0.089	
GMEDUC(0)	- not known	*(omitted)*				
GMEDUC(1)	- less than high school	0.489	0.206	0.018	0.052	1.631
GMEDUC(2)	- high school or more	-0.277	0.275	0.314	0.000	0.758
GAGEINT(0)	Age 26-45	*(omitted)*				
GAGEINT(1)	Age 46-65	0.737	0.170	0.000	0.112	2.089
Constant		2.556	0.322	0.000		

980	Total number of cases
1,349	-2 Log Likelihood before
1,030	-2 Log Likelihood after
23.7%	Percentage reduction

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C6. SWEDISH NOT-EMPLOYED ADULTS (AGE 26-65) EXCLUDING FOREIGN-BORN AND THOSE WITH POST-SECONDARY EDUCATION

Dependent variable: LOGIT of probability of having low literacy.

Variable	Explanation	B	S.E.	Sigma	R	Exp(B)
TRAINSTU(1)	Did not participate in education					
TRAINSTU(1)	Participated in education	-0.320	0.320	0.318	0.000	0.726
G1D(0)	Did not write letters etc.1+pages long					
G1D(1)	Wrote letters etc. 1+ pages long	0.117	0.302	0.699	0.000	1.124
G1G(0)	Did not read books					
G1G(1)	Red books	-0.999	0.446	0.025	-0.087	0.368
G8(0)	Did not followe current events					
G8(1)	Followed current events	-0.894	0.574	0.119	-0.033	0.409
EDUC(0)	Has not completed high school					
EDUC(1)	Has completed high school	-0.534	0.291	0.066	-0.059	0.587
GENDER(0)	Male					
GENDER(1)	Female	0.399	0.279	0.153	0.010	1.490
GMEDUC	Mother's education			0.821	0.000	
GMEDUC(0)	- not known					
GMEDUC(1)	- less than high school	-0.160	0.614	0.795	0.000	0.852
GMEDUC(2)	- high school or more	-0.388	0.714	0.587	0.000	0.678
GAGEINT(0)	Age 26-45					
GAGEINT(1)	Age 46-65	0.853	0.321	0.008	0.113	2.347
Constant		0.617	0.921	0.503		

322	Total number of cases
398	-2 Log Likelihood before
359	-2 Log Likelihood after
9.8%	Percentage reduction

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