Characteristics of adults who return to education: Understanding barriers to adult learning

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EXECUTIVE SUMMARY

This study seeks to determine what can be learned from a specific newly-available data source about the characteristics of adults who return to education, and the barriers to learning they may face. This project has examined the characteristics of two groups of Canadian adult learners aged 25 years and over:

- those with labour market experience who took further learning, including comparing them to those who did not and more typical, younger learners, and
- those with an unmet learning need and want.

It includes first a review of the recent literature, to better help inform the development and design of future government interventions – both at the federal and provincial/territorial levels. Then it attempts to use longitudinal data from Wave 1 (2012), Wave 2 (2014), and Wave 3 (2016) of Statistics Canada's Longitudinal International Study of Adults (LISA) to generate a better understanding of adult learners and the barriers to education and learning they face. However, our analysis has found data on training, as distinct from more formal education, to be limited for this purpose in LISA and we are not able to answer all the questions we set out to.

By exploiting the linkage between LISA data and other data sets, notably tax and skills assessments collected through the Program for the International Assessment of Adult Competencies (PIAAC), the research is able to explore the factors influencing the education and labour market pathways adults follow, the skills needs of adult learners and how these relate to their learning choices and outcomes.

LEARNINGS FROM THE LITERATURE

- A post-secondary education has become increasingly important for labour market success.
- Automation and other technological advancements have intensified the needs for workers to upgrade their skills by seeking further education and training.
- The adult learner population comprises diverse socio-demographic backgrounds, personal characteristics, and employment situations.
- The majority of adults go back to school for career-related reasons, such as to change jobs or to increase income. Many also view education as a way to cope with changes in family life and social roles, particularly following major life events such as childbirth, divorce, or a loss

of a spouse. For example, formal education can provide a new focus in life while grieving and the highly-structured nature of education courses adds a sense of organization to disrupted daily routines (Fritz, 2016; Compton et al., 2006; van Rhijn et al., 2016).

- Unlike youth, adult learners often enter PSE while juggling family and work responsibilities, which compete with their studies in terms of time and financial resources. Also, unlike youth, adults who have worked for some time may enter PSE with financial assets that would be counted against them when they apply for student financial aid.

- In general, the SFA system is designed to align with the youth student population's financial needs, putting adult learners at a disadvantage.

LEARNINGS FROM THE LISA DATASET

SRDC's analysis of adult learners using LISA adds to our understanding of who makes up this population.

- Compared to typical learners, adult learners were older, less likely to be born in Canada less likely to have parents who were postsecondary educated, more likely to be married or living in a common-law relationship, more likely to have children, less likely to live in Ontario (by 5.8 percentage points), and more likely to live in British Columbia (by 5.4 percentage points).

- Adult learners were much more likely to undertake paid work (by 30.5 percentage points) than typical learners and had higher earnings. Adult learners were also more likely to receive Employment Insurance (EI) benefits than typical PSE learners.

- Adult learners possessed higher levels of literacy and numeracy skills, compared to typical PSE learners.

- The majority of adult learners studied part-time. Still, 42 per cent were students in a full-time PSE program. Compared to typical learners, adult learners were less likely (by 27.4 percentage points) to study in a university program granting a diploma or bachelor's degree. This pattern is likely related to the finding that half of adult learners had already completed a university program at baseline.

- For funding, adult learners were less likely to use government or personal loans and slightly more likely to use private bank loans or lines of credit. They had the same propensity to use grants but were much less likely to use gifts or inheritance from parents or other relatives, or RESPs. Employment earnings were the most commonly used source of funding for both

typical learners and adult learners, but a significantly higher fraction of adult learners used employment earnings (by 17.8 percentage points).

The study went on to look at the triggers for adult education. Among many life events studied, those who lost a job or experienced a major worsening in their financial situation were significantly more likely to attend school for formal education than those who did not experience these events. When other characteristics were included in a multivariate model, these events were no longer significant influences on learning. The factors significantly influencing learning were:

- Age: older adults less likely to become learners
- Gender: women were more likely to become learners
- Immigration status: newcomers more likely to become learners
- Family status: those with dependent children were less likely to become learners.

The strongest predictor of becoming a learner was already being a learner at baseline.

One key finding is that being too busy at work or lacking employer support is possibly the most critical factor determining access to adult learning for Canadians. Having unmet learning needs was also positively associated with future education enrolment among those who were *not* already learners. Among people who were already learners at baseline, probabilities of seeking out more education were relatively high regardless of the presence of unmet learning need. There is only a small statistically insignificant increase over time in the transition to PSE associated with those who report the main barrier to education and training being its expense. This result implies that that financial constraints are not likely to be mitigated for many without access to new financial aid to support their education.

Finally, analysis of LISA found would-be learners to have significantly higher levels of essential skills than those with no reported unmet educational needs.

IMPLICATIONS

The vast majority of those the study identifies as having unmet learning needs do not go on to pursue PSE. Consequently, this group may benefit from program solutions, like the Canada Training Benefit, combining time out of work and financial support to enable their learning.

That would-be learners have higher skills than those with no reported unmet educational needs implies an informational- or behaviour-related market failure. There is likely a need for new programming to support life-long learning that can target less-skilled adults.

SRDC found LISA short of longitudinally repeated questions on topics of interest to adult learning and also short on sample size to support all its planned research. It recommends exploitation of further lines of evidence to improve understanding on related questions it left unanswered:

- Increased use of administrative data linkage to explore issues such as the relationship between life events and demands for education.
- Using data from Lifelong Learning Plans in RRSPs to determine the extent to which RRSPs provide adults with education financing.
- Additional research, possibly using the Census, to examine whether education participation is increasing for older age groups.
- More research on the social media habits and behavioural preferences of adults with low levels of education and/or who are more distant from the labour market to gain insights into techniques and messaging to engage potential future participants in adult education.

INTRODUCTION

BACKGROUND

The nature of work and the skills needed to successfully participate in the Canadian labour market are quickly changing. Automation and artificial intelligence, coupled with demographic changes and large sectoral disruptions, open up both opportunities and challenges for the future of work and the skills development priorities of Canada (Munro, 2019). Increasingly, a post-secondary education (PSE) is becoming more important for labour market success. From 1990 to 2010, the number of jobs for PSE graduates doubled to 4.4 million while jobs for people with only a high school diploma or less declined by 1.2 million (Association of Universities and Colleges of Canada, 2011). Assessments for major provinces suggests 77 per cent of job openings over the next decade will call for postsecondary credentials (Miner, BC Government, 2019).

PSE credentials also correlate with higher earnings. Recent Census data (2016) revealed that the median annual earnings for those with a high school diploma is about $55,000, whereas the median earnings for those with a bachelor's degree is more than $82,000 (Statistics Canada, 2017). Furthermore, a recent study utilizing Statistics Canada's Longitudinal International Study of Adults (LISA) dataset found that formal education credentials can significantly explain variations in individuals' incomes, even after controlling for literacy and essential Skills, which arguably can be acquired or enhanced through on-the-job learning (Milian, Seward, Zarifa, & Davies, 2019).

Thus, labour market conditions motivate and, in some cases, necessitate, participation in post-secondary education and training even for adult workers who have been in the labour market for some time (SRDC, 2019). Participation in adult training and education programs has increased significantly since the early 2000s and rose steadily and significantly between 2000 and 2014 (Knighton et al., 2009; SRDC calculations based on CANSIM data).

At the same time, those who return to education report a range of barriers that impede their access to PSE and/or successful completion of their chosen programs (see for example, van Rhijn et al., 2016). Barriers are hard to categorize because adult students comprise a diverse group with wide-ranging needs, experiences, and goals (Panacci, 2015).

Compared to traditional PSE students aged 18 to 24, adult learners need very different types of support to return to higher education or training. They may more often espouse career-related goals and have responsibilities that limit their involvement in on-campus activities and interactions outside the classroom. Panacci argues that given the wide range of needs they have,

there can be no one-size-fits-all classroom approach that supports their diverse needs. Adult learners are best supported when their classroom learning is connected to their career-related roles and goals and when active, collaborative, and interactive classroom approaches are employed.

Policymakers need to understand the scale and shape of the problems they are tackling. In designing policies to enhance access to PSE, the key target population is youth. Youth predominantly receive support to access higher education through the Canada Student Loans Program, Canada Education Savings Program and provincial and territorial aid programs. As well, a growing body of evidence on what works is informing strategies that enhance youth's access to PSE (see, for example, Ford & Hui, 2018 and Ford, Hui, & Nguyen, 2019). However, adults already in the labour market present an equivalent policy challenge that has garnered less attention (Sissel, Hansman, & Kasworm, 2001).

Although there have been many studies to inform adult learning policy, the findings need to be regularly updated to reflect current trends and utilize new sources of data. Federal initiatives such as the Future Skills Centre and Canada Training Benefit as well as federal/provincial/territorial student financial assistance programs require up-to-date information to help target the people and systems in need of adult learning support. Governments have also invested in systematic pilots of interventions that encourage workers' upskilling (see for example Gyarmati et al., 2014, also here, here, and here). However, without the knowledge of target populations and the barriers they face, such evidence risks being applied inefficiently, or the opportunity to apply it may be missed entirely.

CONTRIBUTION OF THE PRESENT STUDY

The Social Research and Demonstration Corporation (SRDC) is pleased to present this study seeking to determine what can be learned from a specific newly-available data source about the characteristics of adults who return to education, and the barriers to learning they may face. This project has examined the characteristics of two groups of Canadian adult learners aged 25 years and over:

a) those with labour market experience who took further learning, including comparing them to those who did not and more typical, younger learners, and

b) those with an unmet learning need and want.

Using longitudinal data from Wave 1 (2012), Wave 2 (2014), and Wave 3 (2016) of Statistics Canada's Longitudinal International Study of Adults (LISA), the study is intended to generate a better understanding of adult learners and the barriers to education and training they face. By exploiting the linkage between LISA data and other data sets, notably tax and skills assessments

collected through the Program for the International Assessment of Adult Competencies (PIAAC), the research has explored the factors influencing the education and labour market pathways adults follow. The skills needs of adult learners and how these relate to their learning choices and outcomes has been explored for a subset of LISA participants. Changes in outcomes can be plotted for the employed sample in relation to their education activities over time.

In this draft final report, the findings are first contextualized through a review of the recent literature, better to help inform the development and design of future government interventions – both at the federal and provincial/territorial levels. To add further value to adult learning policy development, we summarize policy lessons learned from our investigations and provide implications on how to mitigate some of the constraints to adult learners' participation in higher education. The report also includes a series of additional research questions that governments may wish to pursue to address remaining gaps in evidence to support adult learning policy.

RESEARCH QUESTIONS

This project sought to address the following overarching questions set by ESDC for SRDC to answer using the LISA dataset:

1. What are the characteristics of adult learners with previous labour force attachment? Do these characteristics differ in any meaningful way from the characteristics of other learners?
2. Are there major life events, such as job loss, change in family status or other life events that occur in adults' lives necessitating further education or training?
3. What characteristics are most strongly correlated to becoming an adult learner?
4. What are the characteristics of would-be adult learners (unmet learning need and want)?
5. What are the barriers to entry or re-entry into PSE for would-be learners?

The first four questions are answered in some detail in this report. But as explained below, the LISA data did not support the analysis of question 5 on barriers for would-be learners.

REPORT SECTIONS

This report first summarizes the key findings from our targeted literature review to help inform the quantitative analysis, then presents the results and conclusions from the analysis.

After outlining the methodology of the literature review, the rest of the report follows the structure of the research questions mentioned above. It does this first for the review and then for the analysis. Thus, the literature review starts with question 1: it first compares adult learners aged 25 to 64 to traditional post-secondary learners aged 18 to 24. Then the following section discusses the major life events that may act as 'catalysts' motivating or necessitating the return to education. It then turns to the characteristics often found to be correlated to becoming an adult learner. Next, theories and hypotheses explaining these trends are discussed, providing the contexts to help interpret the quantitative results. The review then examines would-be adult learners, or those with unmet learning needs and wants, to better understand their characteristics. The review wraps up with some initial conclusions and suggestions for further analysis. Each section of the literatures review considers how and how well the LISA dataset can be applied to different lines of analysis suggested by the existing literature.

The quantitative analysis starts with an overview of the LISA dataset and the scope it provides for analysis of adult learning. The structure of the five questions above then guide the analysis: we consider first the characteristics of adult learners; then the life events triggering further education; we present three multivariate models of the factors that predict becoming an adult learner *or would-be adult learner* over the time period observed (2012-2016); the analysis goes on to try to tease out the barriers to education for would-be learners. We conclude with recommendations for policy and future research.

LITERATURE REVIEW

METHODOLOGY

To conduct the literature review, SRDC searched electronic databases including ERIC, PsycINFO, CSA Sociological Abstracts, IDEAS, ECONLit, and ECONbase. Keywords included terms related to: adult learners; mature students in post-secondary education; their key characteristics; major life events acting as a catalyst to the return to education; unmet learning needs and wants; and, common barriers to entry into post-secondary education for adult or mature learners. Studies seeking to answer the research questions using empirical evidence were prioritized. As well, the key focus was on publications that contextualized the findings in the Canadian education environment, followed by studies conducted in the international context. Each section of the literature review signals how and how well the LISA dataset can brought to bear to update analysis on each question.

COMPARING ADULT LEARNERS TO TRADITIONAL PSE LEARNERS

The analysis of the LISA dataset provides a comprehensive, fairly up-to-date picture of the adult student population in Canada. To support the quantitative analysis, this section of the literature review highlights the key differences observed in other data between the adult learners and the conventional youth learners in PSE.

Adult learners aged 25 to 64 differ from the typical learners aged 18 to 24 in PSE in various ways. Unlike youth, adults often enter PSE while juggling other major responsibilities and roles, such as parenting, caregiving, employment, and community involvement (Palameta & Zhang, 2006; Panacci, 2015). These roles compete with their studies not only in terms of time but also in terms of financial resource allocation. For example, compared to youth, adult students are more likely to hold a job while studying, splitting their time between school and work (van Rhijn, Acai, & Lero, 2018). They are also more likely to have children and therefore need to allocate their financial resources toward childcare costs (Fritz, 2016). As well, they are more likely to own a home, which adds the financial burden of mortgage payment (SRDC, 2019).

We will revisit these multiple roles in the discussion on barriers to entry to PSE for adult learners. The way these roles interact may put the adult learners in a different financial position than the traditional youth learners, potentially posing additional barriers for them in terms of access to student financial aid.

MAJOR LIFE EVENTS TRIGGERING FURTHER EDUCATION OR TRAINING

Life events

Though adult students still consider the costs and benefits of a PSE degree in similar ways as the traditional students, research suggests that, more likely than not, there exists an 'action catalyst' or some form of life event that pushes them back to school (Fritz, 2016; Compton et al., 2006, Swain & Hammond, 2011). These catalysts tend to be significant life events that motivate an individual to study (Fritz, 2016; van Rhijn, Lero, & Burke, 2016). They may be employment-related such as wanting to get promoted, seeking a new job, or wishing to make a higher salary (Fritz, 2016; Davies & Williams, 2001). They may also be more personal, such as experiencing a divorce, grieving a loss of a spouse, wanting to provide more security for their children, or simply wanting to complete a life-long goal of learning (Fritz, 2016; Compton et al., 2006; van Rhijn et al., 2016).

Life events and personal characteristics

The ways major life events influence participation in adult education **vary by age** and **personal circumstances**. First, in terms of age, job-related changes tend to be significantly correlated to PSE participation among prime-age adults, typically defined in the literature as being between 25 and 54 years of age (although some studies also use 25 to 60 years of age). In recent years, the notion that formal education is something one completes before entering the labour market has become increasingly outdated (Palameta & Zhang, 2006; Elman & Weiss, 2014). Rapid technological changes intensify the demands for workers to update job-related skills and acquire new credentials. As a result, more and more prime-age Canadians find it necessary to enter or re-enter PSE, primarily for career-related reasons (Panacci, 2015).

In general, it is not surprising that the majority of adult learners participate for job-related reasons, since work is the predominant activity in their lives (Desjardins, Milana & Rubenson, 2006). Several studies in both the Canadian and international contexts confirm this trend. For example, analyzing the 2002 Adult Education and Training Survey in Canada, Myers and de Broucker (2006) found that the majority of prime-age adult students in Canada cited career-related reasons for going back to school. This group views participation in higher education as a gateway to find or change jobs (53 per cent of the sample), to do their job better (48 per cent), and/or to increase income (43 per cent). Another study using survey data from more than 2,000 prime-age adults in the United States found that 56 per cent of the events triggering learning were career-related, including promotion, job changes, or the enactment of legal requirements requiring updated or renewed license to practice.

On the other hand, for older adults, typically defined as aged 55 to 64,[1] participation in higher education tends to follow major changes in family life and perceived social role, such as divorce or loss of a spouse. Participation in formal education and training is seen to provide a new focus in life while grieving (Lin, 2011). Older adults often report that the highly structured nature of education courses give some sense of organization to their daily routine. Social contact and social interaction are also important motivations for older adult learners (Kim & Merriam, 2004). They value the chance to connect with and learn from younger classmates – activities that give them a sense of well-being.

Besides age, socio-demographic status in childhood and early adulthood also plays an important role. Particularly, for those who have experienced childhood abuse and/or poverty, the birth of their own children can be a key triggering event for participation in further education. Flynn et al. (2011) conducted a qualitative study with 25 marginalized participants who had been underserved by mainstream educational pathways due to childhood poverty and domestic abuse. All of them had been involved in illicit behaviour, resulting in incarceration for some. For these participants, a common theme was that having additional responsibilities, in particular, having and caring for children, significantly altered their expectations about the future and the role of education. They talked about the need to consider long-term goals and the desire to give their children a better life – a different one from their past. To build a better future, they concentrated on increasing their income and managing employment responsibilities, and they considered continued education to be the key to attaining these goals.

The implication for the quantitative data analysis is clear. When looking at life events triggering participation in further education, it is necessary to understand that these events vary across age groups as well as among socioeconomic groups. Stratifying the analysis of 'catalyst' life events where possible by these sub-groups will lead to a deeper understanding of the motivations for participation in education by adults.

CHARACTERISTICS RELATED TO BECOMING AN ADULT LEARNER

Commonly examined factors

Previous studies often investigate the relationship between participation in adult education and the following factors:

[1] Some studies also define this group as being age 60 and over.

Sociodemographic characteristics

- **Age**: In general, adult participation in formal education tends to decline with age (Statistics Canada, 2017; Knighton, Hujaleh, Iacampo, & Werkneh, 2009).

- **Gender**: Gender is another commonly examined factor. Findings on whether gender differences exist in adult education participation are mixed. Earlier studies found that men are more likely to participate in formal learning (see for example, Elman & O'Rand, 2002). However, more recent studies in the Canadian context have found no evidence to suggest that adult learning differs by gender (see for example, Statistics Canada, 2017; Desjardins, Milana, & Rubenson, 2006).

- **Marital status and financial responsibility for children**: both having dependent children living in household and providing child support are often examined in relation to gender. Previous studies found that married women with children are significantly less likely to participate in higher education than either married men with children or married women without children (see for example, Statistics Canada, 2017).

- **Parents' educational level**: Parents' educational level is often used as a proxy for socio-economic background. Studies in the Canada and the US found that adults whose parents have PSE degrees are more likely to participate in higher education than adults whose parents have high school diplomas or less (Desjardins, Milana, & Rubenson, 2006; Monaghan, 2015).

- **Marginalized status**: PSE plays an important role in levelling the playing field for traditionally disadvantaged groups. As a result, previous research often looked at the participation rates of visible minority groups, newcomers, and in Canada, Indigenous Peoples (Denice, 2017; Kyndt & Baert, 2013; Anisef, Sweet, Adamuti-Trache, & Walters, 2009; Joint, 2006).

  In terms of visible minority groups, Denice (2017) used the U.S. Current Population Survey to illustrate that the participation in PSE of adult black women rose steadily between 1978 and 2013. The article also highlighted that the increase was more substantial for black women who had some (two-year community) college education during their early life, compared those who only finished high school.

  In a systematic review, Kyndt and Baert (2013) highlighted that recent immigrants in European countries (such as the Netherlands) were more likely to participate in adult education than native-born, whereas recent immigrants in Canada and the United States were less likely to enroll in PSE as adults than native-born. Anisef et al. (2009) looked specifically at the PSE participation rate of adult immigrants who had obtained PSE credentials in their countries of origin. They found that within six months of arriving in

Canada, 10 per cent of immigrants enrolled in a Canadian post-secondary education. Within two years, 33 per cent were enrolled and, by the fourth year, 44 per cent had participated in either a college or university course or program. The study also examined not only the economic benefit but also the social capital benefit associated with PSE participation for recent immigrants. They found that adult immigrants who participated in PSE reported wider and more diverse social networks, and more active participation in community and cultural organizations than non-learners.

Multiple studies and policy reports documented the persistently low rates of PSE participation among Indigenous Peoples. Indigenous people who participate in PSE tend to do so at a later stage in life (i.e., being older, having more family responsibilities such as having children) than non-Indigenous people (Assembly of First Nations Fact Sheet, 2018; Kawalilak et al., 2012; Bekenn, 2016; Joint, 2006). Joint (2006) provided a snapshot of the history and political implications of formal education among Indigenous communities. Education was historically used as a means of assimilation, and the legacies of residential school had further amplified the deep-seated suspicions about mainstream Euro-Canadian PSE systems within Indigenous communities (Joint, 2006). The report emphasized the need to recognize this longstanding barrier to PSE participation of Indigenous learners when designing policies to support their access, entry, persistence, and completion.

Personal characteristics

- Previous levels of **education**: Educational attainment is consistently found to be strongly and positively correlated to participation in further education as adults (see for example, Elman & O'Rand, 2002; Palameta & Zhang, 2006; Knighton et al., 2009; Elman & Weiss, 2014). The higher a person's educational attainment, the more likely they are to participate in further education and training after some time in the labour market.

- **Basic literacy and essential skills**: Looking specifically at a sample of adult learners who used to work in the public sector, Bates (2001) found that **numeracy and reading** skills were positive predictors of PSE participation. The higher the participant scored on the assessments of basic literacy and essential skills, the more likely they were to have participated in formal education and training as an adult. As well, using the Access and Support to Education and Training Survey 2008 (ASETS), Cai (2011) found that self-reported **computer proficiency** showed a positive correlation with participation in adult education and training.

- **Personality factors**: In recent years, a growing body of research on adult learners documented that **conscientiousness** – defined as achievement-orientation and dependability in the workplace – shows a positive correlation of participation in further training and education as adults (Kyndt & Baert, 2013).

Job characteristics

- **Job tenure**: The longer a person works at the same company, the less likely they are to become an adult learner (Kyndt & Baert, 2013).
- Perceived **job quality**, including job flexibility, job satisfaction, and perceived sense of control over career development: A meta-analysis by Kyndt and Baert (2013) found that the more a person positively views their job, the more likely they are to participate in higher education for job-related goals, most likely in order to advance their careers.
- **Union status**: Interestingly, some studies found unionized workers slightly less likely to have participated in further education (Myers & de Broucker, 2006).
- Length of most recent bout of **unemployment**: Studies found that those who have long bouts of unemployment – defined as lasting three years or more – are less likely to participate higher education as adults (Kyndt & Baert, 2013).
- **Occupation**: Analyzing the 2002 Adult Education and Training Survey, Myers and de Broucker (2006) found high rates of participation among those who used to work in professional and managerial occupations, or in the public sector. In contrast, the participation rates among those who used to work in the trades or sales and services are comparatively lower.
- **Retirement planning**: Through a meta-analysis of more than 40 studies, Kyndt and Baert (2013) found that those who planned to retire later than the traditional age of 65 were more likely to participate in adult education. They also found no evidence to suggest that pension savings had any predictive value on education.

This study will seek to identify measures and proxies in the LISA dataset that capture these characteristics. The quantitative analysis will examine not only the correlation of these characteristics individually, but also (sample size permitting) any interactive effect that multiple combinations of these factors may have on adult education participation.

Possible explanation and interpretation

To further support the quantitative analysis, the literature review also investigated the common theories and hypotheses that provide contexts to help interpret survey results. One commonly supported conjecture in the literature is that education participation is part of a virtuous cycle: those with education seek out more. Equivalently a low level of education can precipitate a vicious cycle: those lacking education do not seek it out. A large volume of studies, both in the Canadian and interactional contexts, found previous levels of educational attainment act as a

strong predictor of participation in adult education (Elman & O'Rand, 2002; Palameta & Zhang, 2006; Knighton et al., 2009; Bowles, Gintis, & Groves, 2009; Kyndt & Baert, 2013). The higher one's level of education, the more likely one is to pursue adult learning subsequently.

However, these correlations are typically strong only when factors are examined individually. In multivariate models that include other factors such as minority/marginalized status (e.g., race, visible minority status), family conditions (e.g., marital status, having children in household), and labour market indicators (e.g., union membership, occupations, earnings), previous levels of education no longer act as significant predictors of participation in adult education (Elman & Angela, 2002).

Elman and Angela (2002) suggest that adult educational participation is more likely to be shaped by current labour market conditions than by past human capital advantages. Adults go back to school because current labour market conditions make it necessary to upgrade their credentials. With multivariate regression models, they found evidence suggesting that factors related to labour market vulnerability – such as working in sectors likely to have major restructuring – are consistent and strong predictors of adult learning participation, even after controlling for previous levels of education and years of work experience and demographic characteristics (Elman & Angela, 2002).

Indeed, recent evidence suggests that traditional labour market models – which assume a linear timeline from early-life general education to later-life labour market engagement – may no longer be entirely appropriate. Recent developments in the labour market have made unreliable the assumption of a developmental sequence of activities whereby individuals obtain formal credentials early in the life course and later employers provide industry-specific skills through on-the-job training or firm-sponsored training (Elman & Angela, 2002; Kyndt & Baert, 2013). With rapid technological changes in the workplace, workers may require skills not attained in their earlier education. As well, initial levels of education may not matter substantially to employability, and therefore may not offer guarantee of job security (Elman & Angela, 2002).

These explanations provide an interesting background to help shape the interpretation and potential implications of subsequent analysis using LISA. Particularly, access and participation in higher education for workers can be viewed through the lens of labour market vulnerability. For example, one possible line of analysis is determining the rate of participation among workers in occupations that are susceptible to automation or other types of sectoral restructuring. These workers should benefit substantially from further education and training and should be encouraged and supported to access PSE. But are these workers participating in PSE at a higher rate than workers in other sectors? Or are they identified instead as would-be adult learners with unmet learning needs?

CHARACTERISTICS OF WOULD-BE ADULT LEARNERS

Defining would-be adult learners

A key question for this review is how previous studies defined "would-be adult learners." The majority of studies utilize data sources that allow for direct or straightforward identification of would-be adult learners. For example, the 2008 Access and Support to Education and Training Survey (ASETS) asked respondents about training that they had wanted to take but did not, as well as about training that they had needed to take but did not. Knighton et al. (2009) combined these two groups to create a proxy for would-be adult learners – those who have unmet learning needs and wants.

Other studies in the United States examined the relationship between learning intention and learning actualization using longitudinal surveys (Kyndt & Baert, 2013). In these studies, respondents were asked to indicate their learning intention in baseline surveys, and then report their actual participation in follow-up surveys. Those who expressed a positive intention to learn but had not actually participated in any education or training by the time of follow-up were defined as would-be adult learners.

Characteristics of would-be adult learners

Although multiple studies have examined the barriers to entry into PSE for adult learners, few have described the characteristics of this group through bivariate analysis. For example, using ASETS data, Knighton et al. (2009) found a pattern related to **age**: a statistically larger proportion among those aged 25 to 44 report having unmet learning wants or needs than among those aged 55 to 64. **Educational attainment** was also correlated significantly with unmet learning demands. A higher proportion of those with post-secondary education (34 per cent) report an unmet need or want compared to those with a high school diploma (26 per cent), or those with less than a high school diploma (30 per cent).

Other studies confirmed these observations (Elman & O'Rand, 2002). Palameta and Zhang (2006) offered an explanation: the costs associated with PSE tend to be especially prohibitive for these groups, as older workers may have less time in the labour market to make up foregone earnings, and less-educated workers are usually less likely to have their educational activities supported by employers.

Occupation also matters. In their meta-analysis, Kyndt and Baert (2013) documented that employees in high-technology professions demonstrated a higher rate of learning intentions than other professions. However, their analyses indicated that these employees did not actually

engage in further education and training at a higher rate. This implies that they may have unmet learning demands.

Finally, **place of residence** appears to play a role. In the Canadian context, a study by Knighton et al. (2009) found that, a higher proportion of residents in Quebec and Ontario had an unmet demand for education or training, whereas a lower proportion of residents from Prince Edward Island and Newfoundland and Labrador had an unmet demand. Other studies in the international context found that adults living in rural areas are more likely to have unmet learning needs than those living in urban areas (Cullity, 2006).

Applying the lens of labour market vulnerability discussed above, a dilemma is apparent in the market for adult learning (Munro, 2019). On the one hand, job instability and employment risk, and therefore the need for re-skilling and upskilling, decrease as educational attainment increases. On the other hand, workers with characteristics and social backgrounds that put them in a favourable position in the labour market also have more opportunities to access training and education. Munro (2019) notes that it is precisely the workers who most need training and development opportunities who are the least likely to have access to them.

BARRIERS TO ENTRY FOR WOULD-BE LEARNERS

Common barriers

This section examines the nature and extent of barriers to adult learning identified in the literature. Barriers to adult education are commonly described as *situational, institutional, dispositional*, and *academic* (for a review see MacKeracher, Suart, & Potter, 2006; Cross, 1981; Potter & Alderman, 1992; Osam, Bergman, & Cumberland, 2017; SRDC, 2019).

Situational barriers are related to the current life situation or circumstances of the learners (SRDC, 2019; MacKeracher, Suart, & Potter, 2006). They are often understood as residing within the individual, arising from unique individual characteristics. The situational barriers often reported in the literature are:

- Multiple conflicting responsibilities for home, family, children, and work
- Financial problems
- Lack of adequate, appropriate, and affordable childcare services
- Scarcity of time
- Job commitments

- Transportation problems
- Being mobility disabled
- Having a learning disability
- Being in poor mental or physical health or having limited energy
- Lack of support from spouse, family members, or employers.

SRDC sought to use survey items in LISA to derive measures or proxies for these factors.

Institutional or structural barriers are related to the policies and practices of organizations that support and provide learning opportunities, including not only universities and colleges but also the workplace and the government (SRDC, 2019; MacKeracher, Suart, & Potter, 2006). These can include inadequate financial support, high costs of tuition and materials, lack of flexible course options, poor location, and gaps in programming. With regards to the LISA analysis, detailed information on institutional barriers is not available from the survey. Nevertheless, it is important to recognize that institutional barriers can interact with and exacerbate situational barriers. For example, lack of flexible scheduling and course options may make it more challenging for adult learners to balance their multiple work and family responsibilities they hold outside of school.

Dispositional or attitudinal barriers are related to the attitudes and values of the learner, which are in turn related to the attitudes and values of friends, family, and the broader community (SRDC, 2019; MacKeracher, Suart, & Potter, 2006). These can include low self-esteem, stigma from being a non-traditional student, feelings of isolation, and negative past experiences as a student. The commonly reported attitudinal barriers in the literature are:

- Low self-esteem, general nervousness about the ability to succeed
- Lack of personal or career development goals
- Feelings of being isolated in the learning environment
- Past negative experiences as a student.

Some of the self-reported scales in the LISA may be good proxies for these attitudinal factors. For example, the items labeled as “Personal Characteristics – Problem Solving” are part of a commonly-used Readiness to Learn scale. Another potential source for proxy measures may

come from the Big Five Inventory (BFI), although the underlying facets the Big Five captures may not be perfectly aligned with the attitudinal factors listed above.[2]

Finally, **academic** barriers are related to the essential or cognitive skills required to access and succeed in education, including literacy, numeracy, writing skills, and memory and attention skills (SRDC, 2019; MacKeracher, Suart, & Potter, 2006). The ones most often explored in the literature are:

- Reading and writing skills
- Numeracy
- Computer skills
- Skills in accessing information
- Critical and reflective thinking skills.

The essential skills assessments in PIAAC provide the opportunity to derive proxies for these academic barriers. Particularly, assessments of reading and numeracy can capture the basic literacy skills listed above. Assessments of problem-solving in technology-rich environments provides information not only on computer skills but also on critical thinking skills.

Several studies have studied these barriers in the Canadian adult education environment. The 2008 ASETS provided evidence that balancing family responsibilities and work created the most common barrier challenging Canadian adults' abilities to pursue further education (Knighton et al., 2009). Specifically, the top three reasons why Canadian adults aged 25 to 64 could not go back to school, even if they wanted to, were: 1) family responsibilities, 2) the need to work, and 3) the fact that training schedules conflicted with work schedules. On the other hand, the 2008 ASETS data also revealed that very few adults reported not being able to get a loan, not having the pre-requisites or not being able to find the information they were looking for as barriers to their education or training.

Interactions between barriers

It is important to note that barriers to adult education do not exist in isolation. As part of the complex social, psychological, and personal lives that people experience, these barriers tend to

[2] BFI is a 44-item inventory which uses psychometric items to measure the five personality domains: conscientiousness, extraversion, agreeableness, emotional stability, and openness to experience. There is a shortenened 10-item version (BFI-10).

interact and influence each other (SRDC, 2019). One key barrier that may be underestimated in the literature is education financing. This is because barriers captured within the domains of work and family may also be translated into the domain of finances (SRDC, 2019). For example, adult students who had not applied for financial aid experienced work-life balance stress because they often increased working hours to earn more money while sometimes decreasing course-load (SRDC, 2019). As well, barriers related to family responsibilities such as childcare, care of other family members, and children's education can translate into financial barriers. Furthermore, dispositional characteristics such as low self-esteem can affect whether a student believes she has the ability to complete her studies and pay back loans. Academic or essential skills, such as literacy and numeracy, can affect the understanding of financial aid options. Psycho-economic behaviours have not been traditionally thought of as barriers to adult learning in the broader literature. However, if we consider PSE as an investment with immediate costs and uncertain gains in the future, it is clear that these patterns of behaviour could both hinder and facilitate financial decision-making (SRDC, 2019).

In addition to the fact that other barriers may interact to exacerbate financial challenges, adults entering PSE may be in a financial position which puts them at a disadvantage in receiving student financial aid (SFA) relative to youth (Higher Education Strategy Associates, 2016). Adults entering or re-entering PSE after spending time in the labour market often have assets that are counted against their eligibility for SFA. At the same time, adults can have greater financial responsibilities and higher expenses than youth, such as mortgage payments and childcare costs (SRDC, 2019). This is a factor that needs to be taken into consideration if governments want to improve SFA policies to enhance access to adult education and training.

SUMMARY OF THE LITERATURE REVIEW

In recent years, a post-secondary education has become more important for labour market success. Automation and other technological advancements have intensified the needs for workers to upgrade their skills by seeking further education and training. Indeed, the number of workers who go back to school has increased steadily and significantly in the last two decades. The adult learner population comprises diverse socio-demographic backgrounds, personal characteristics, and employment situations.

The majority of adults go back to school for career-related reasons, such as to change jobs or to increase income. Many also view education as a way to cope with changes in family life and social roles, particularly following major life events such as childbirth, divorce, or a loss of a spouse.

Unlike youth, adult learners often enter PSE while juggling family and work responsibilities which compete with their studies in terms of time and financial resources. Also, unlike youth,

adults who have worked for some time may enter PSE with financial assets that would be counted against them when they apply for student financial aid. In general, the SFA system is designed to align with the youth student population's financial needs, putting adult learners at a disadvantage.

The remainder of this report examines empirical evidence from LISA on Canadian adults who return to education and the barriers to adult learning.

DATA ANALYSES

LISA OVERVIEW

For the following quantitative analyses, this project uses data from Wave 1 (2012), Wave 2 (2014), and Wave 3 (2016) of Statistics Canada's Longitudinal International Study of Adults (LISA). LISA is a longitudinal household survey, conducted every two years, which collects information about jobs, education, family, and health of residents of Canada's ten provinces as of Wave 1 (surveyed late 2011 to early 2012). LISA excludes those living in territories or on reserves and other aboriginal settlements in the provinces, those living full-time in institutions, and members of the Canadian Armed Forces stationed outside of Canada. This survey data set is used to explore factors influencing the education and labour market pathways of adults.

The LISA sample is stratified by eligibility for the International Study of Adults (ISA). The ISA subsample of 16 to 65-year-olds was surveyed for additional information, such as skills assessments through the Program for the International Assessment of Adult Competencies (PIAAC) and whether the respondent had unmet learning needs. This subsample is henceforth referred to as the PIAAC subsample.

For Wave 1 of the LISA sample, approximately 24,000 respondents were interviewed. About 70 per cent and 60 per cent of them responded to the survey for Waves 2 and 3, respectively. Attrition rates are similar for the PIAAC subsample.

Survey content varies by wave. Wave 1 collects a rich set of baseline demographic and socio-demographic information for the LISA sample. In addition, PIAAC essential skills were assessed, and questions were asked about unmet learning needs *but only for Wave 1*. For Waves 2 and 3, a subset of questions was the same as for Wave 1, but new questions about life events and funding sources of postsecondary education were added.

Survey weights were applied for the quantitative results presented in this report. A survey weight is given to each respondent in the sample. It corresponds to the number of persons in the entire population that are represented by the respondent. When longitudinal data from the first two Waves or from all three Waves are used, the longitudinal weights (AWRPW for the LISA sample and AWIRPW for the PIAAC sample) were applied to make the sample representative of the 2012 population living in the ten provinces. When cross-sectional Wave 1 data of the PIAAC sample are used, Wave-specific PIAAC weights applying to all responding individuals (Wave-1 PIAAC weights) were applied. For more information about LISA, see Statistics Canada (2018).

SCOPE: FOCUS ON ADULT EDUCATION

The focus is on experiences of two groups of Canadian adult learners aged 25 years and over: (a) those with labour market experience who may or may not have undertaken further education [both groups are included in order to distinguish between the two], and (b) those with an unmet learning need or want. This report limits the scope of adult learning to formal education, especially postsecondary education. Although LISA collects information about training and other learning activities for paid employees, the information is not as comprehensive as information on postsecondary education. For example, LISA asks whether a respondent took training or workshops within the last two years, as well as the objective and duration of the training. However, the survey lacks the information to create a training history. This deficiency means SRDC could not examine whether a life event triggered training because it was impossible to determine whether a training activity occurred before or after a life event. Also, because the topic of training was surveyed only for those who were paid employees, it is not possible to properly profile trainees nor identify training undertaken by the critical group of older adults who moved in or out of unemployment.

CHARACTERISTICS OF ADULT LEARNERS COMPARED TO TYPICAL PSE LEARNERS

The first question addressed is whether the characteristics of adult learners with previous labour force attachment differ from traditional learners. This section compares the characteristics of adult learners to those of typical PSE learners using longitudinal data from LISA Waves 1 and 2. Since the same population is being categorized for this comparison, including based on their labour market attachment at Wave 1, Wave 3 is not used because of attrition of responses between waves. The sample size of learners to be compared is larger using the two-year survey window than a four-year one.

The sample of interest includes those who were enrolled for a PSE program between 2012 and 2014. It distinguishes those enrolled for a PSE program at the time of LISA Wave 1 from those who were not enrolled for a PSE program at the time but attended a PSE program after January 2012.

For this analysis, as shown in the diagram below, *typical learners* are defined as those aged 18-24 in Wave 2 and enrolled in a PSE program between 2012 and 2014. Meanwhile, *adult learners* are defined as those who had previous labour market attachment (employed or worked within the last 12 months) in Wave 1, were aged 25-62 in Wave 2, and were enrolled in a PSE program between 2012 and 2014. More specifically, those aged 25-60 in Wave 1 and enrolled for a PSE program between 2012 and 2014 and those who were aged 25-26 and enrolled for a PSE program in Wave 2 are included as adult learners.

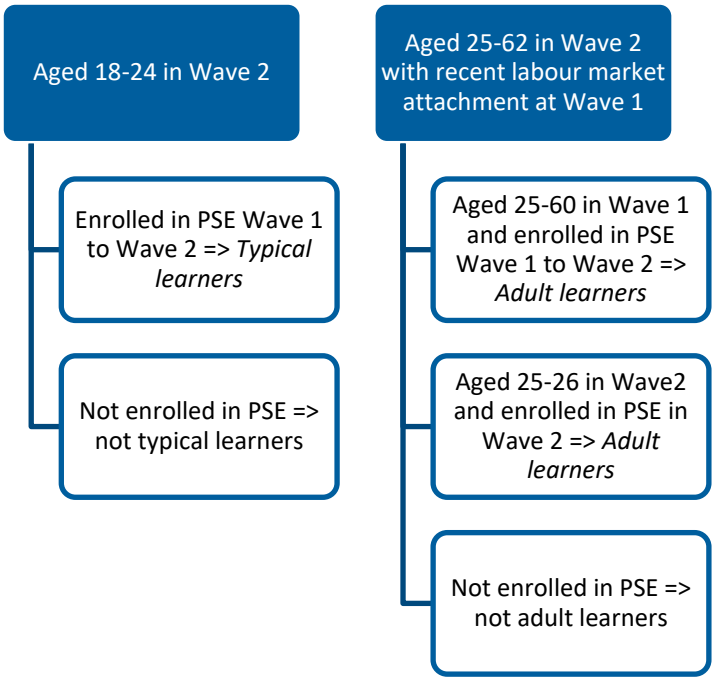


Table 1 provides the demographic and socio-economic characteristics of typical learners and adult learners for from LISA Wave 2 (except the cases specified otherwise). Adult learners were 37 years old, on average, 16 years older than typical PSE learners. Half of adult learners were aged 25-34 years, and 28 per cent of adult learners were aged 35-44 years.[3]

The observed characteristics of adult learners were quite different from those of typical PSE learners. Compared to typical learners, adult learners were less likely to be born in Canada (by 9.6 percentage points). Adult learners' parents were much less likely to be postsecondary educated. The lower level of parental education could be accounted for mainly by generational differences between typical and adult learners. Also, adult learners were more likely to be married or living in a common-law relationship, more likely to have children, less likely to live in

[3] The mean age of adult learners, at 37, is higher than the median due to the relatively large number of older adult learners.

Ontario (by 5.8 percentage points), and more likely to live in British Columbia (by 5.4 percentage points).

Adult learners also exhibited different economic characteristics compared to typical PSE learners. They were much more likely to work (by 30.5 percentage points) in 2014 and had higher earnings. Before attending a PSE program between 2012 and 2014, almost 80 per cent of adult learners were already postsecondary educated. Furthermore, 50 per cent of adult learners already had a university certificate, diploma, or degree.

Adult learners were more likely to receive Employment Insurance (EI) benefits in 2011 (by 9.7 percentage points) than typical PSE learners. Among adult learners who attended a PSE program between 2012 and 2014, 11.8 per cent were reported to receive EI benefits in 2011 in the tax data.[4]

Figure 1 compares PIAAC essential skills between typical PSE learners and adult learners. Literacy, numeracy, and problem-solving skills were directly assessed for the PIAAC subsample of LISA 2012. Adult learners were more likely to have higher levels of literacy and numeracy skills, compared to typical PSE learners. Note that some typical PSE learners in the sample had not yet graduated from high school at the time of LISA 2012, as seen in Table 1. A higher fraction of adult learners was not tested for problem-solving skills. Problem-solving skills were not assessed if the person had insufficient computer skills, or the person opted to do a paper-and-pencil-based assessment, or the person did not do the computer assessment for literacy-related reasons (Situ, 2015). At the other end of the distribution, adult learners were more likely to have the highest level of problem-solving skills.

[4] As the LISA data do not distinguish reasons for EI benefits, the receipt of EI benefits covers all types of EI benefits, such as unemployment benefits, benefits received during apprentice training, sick leave, and so on.

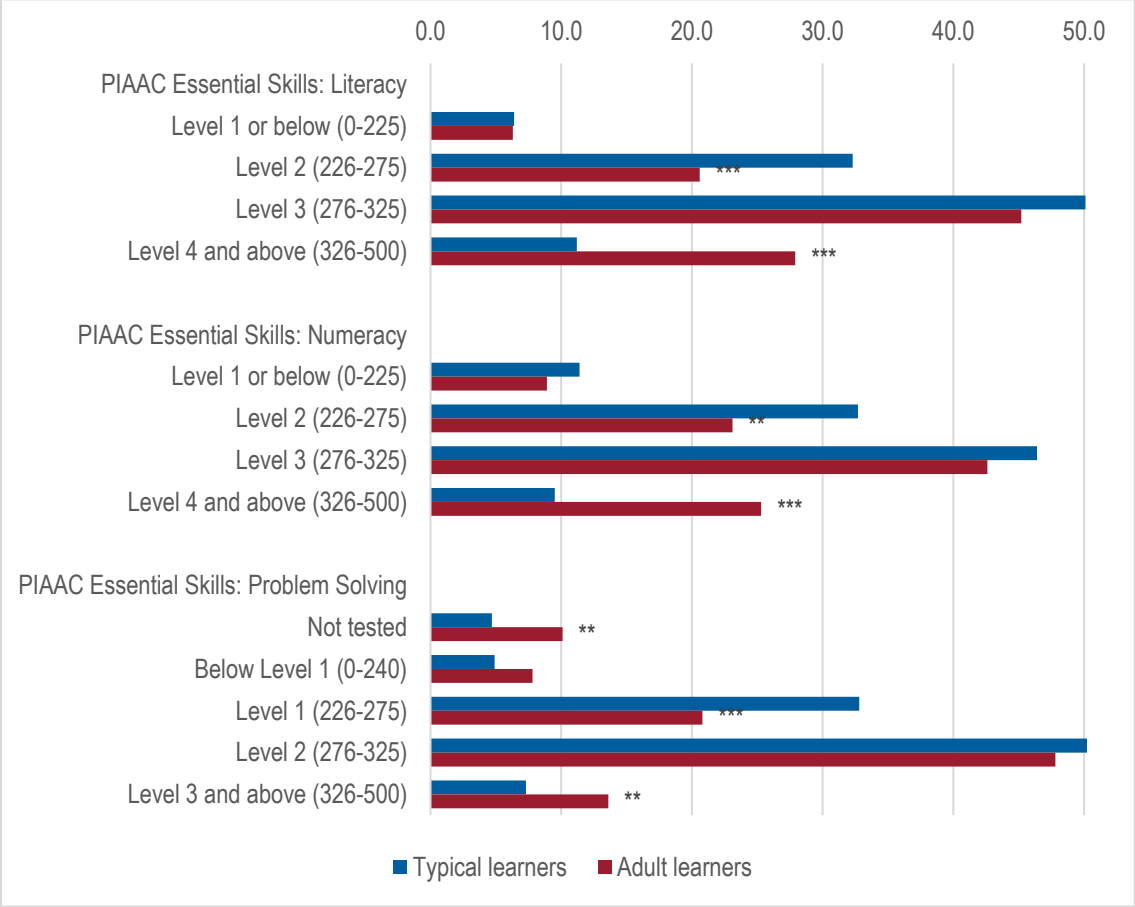
Table 1 Demographic and socio-economic characteristics of adult learners

Characteristics	Typical learners	Adult learners	Difference	(S.E.)
Average age	20.8	36.7	15.9***	(43.3)
Age group (%)				
Age 25-34		50.2		
Age 35-44		28.0		
Age 45-64		21.8		
Gender (%)				
Male	49.0	45.9	-3.0	(3.0)
Female	51.0	54.1	3.0	(3.0)
Born in Canada (%)				(0.0)
No	20.0	29.6	9.6***	(2.6)
Yes	80.0	70.4	-9.6***	(2.6)
Visible minority status (%)				
Aboriginal person	3.1	3.2	0.1	(1.6)
Visible minority	29.1	24.5	-4.6	(2.6)
None	67.7	72.3	4.5	(2.8)
Father's educational attainment (%)				
Less than high school	8.7	23.1	14.3***	(2.3)
High school	20.4	23.2	2.8	(2.4)
Non-university postsecondary	29.4	25.1	-4.2	(2.7)
University	41.5	28.6	-12.9***	(2.7)
Mother's educational attainment (%)				
Less than high school	6.8	21.4	14.7***	(2.1)
High school	20.5	30.0	9.5***	(2.6)
Non-university postsecondary	33.2	24.3	-8.9***	(2.6)
University	39.5	24.3	-15.3***	(2.7)
Marital status (%)				
Single, widowed, divorced, separated	92.6	36.8	-55.8***	(2.7)
Married or Common-law	7.4	63.2	55.8***	(2.7)
Presence of own children (%)				
No	98.5	56.6	-42.0***	(2.3)
Yes	1.5	43.4	42.0***	(2.3)
Province of residence (%)				
Newfoundland and Labrador	1.4	0.9	-0.4	(0.3)
Prince Edward Island	0.4	0.2	-0.2***	(0.1)
Nova Scotia	2.2	2.9	0.7	(0.6)
New Brunswick	1.6	1.6	0.0	(0.4)
Quebec	25.0	24.9	-0.1	(2.5)

Characteristics	Typical learners	Adult learners	Difference	(S.E.)
Ontario	43.1	37.3	-5.8*	(3.0)
Manitoba	3.0	3.2	0.3	(0.6)
Saskatchewan	2.4	2.1	-0.3	(0.5)
Alberta	10.2	10.8	0.6	(1.7)
British Columbia	10.7	16.1	5.4***	(2.0)
Rural/Population centre size (%)				
Rural area	11.3	9.3	-2.0	(1.6)
Small (pop. 1,000 to 29,999)	8.3	8.0	-0.2	(1.3)
Medium (pop. 30,000 to 99,999)	8.5	8.1	-0.5	(1.5)
Large urban (pop.100,000 to 499,999)	16.4	18.6	2.2	(2.4)
Large urban (pop.500,000 or greater)	55.4	55.9	0.5	(2.9)
Employment (%)				
Not employed	44.3	13.7	-30.5***	(2.4)
Employed	55.7	86.3	30.5***	(2.4)
Educational attainment, LISA 2012 (%)				
Less than high school	31.1	2.6	-28.5***	(1.8)
High school	57.1	15.9	-41.2***	(2.5)
Non-university postsecondary	8.5	29.4	20.9***	(2.3)
University	3.3	52.1	48.8***	(2.4)
Receipt of EI benefits in 2011 (%)				
No	97.9	88.2	-9.7**	(1.3)
Yes	2.1	11.8	9.7***	(1.3)
Receipt of social assistance payment in 2011 (%)				
No	98.7	98.4	-0.3	(0.7)
Yes	1.3	1.6	0.3	(0.7)
Income in 2011 (current dollars)				
Paid-employment income	6,101	36,831	30,730***	(1,592)
Total income before tax	7,787	41,490	33,602***	(1,591)
Household total income before tax	121,112	98,256	-22,857***	(4,466)
Income in 2013 (current dollars)				
Paid-employment income	11,075	40,921	29,846***	(1,586)
Total income before tax	14,048	46,840	32,792***	(1,631)
Household total income before tax	124,543	100,787	-23,756***	(5,474)
Observations	1,365	842		

Notes: Longitudinal data from LISA Waves 1 and 2 are used for the analysis. Survey weights are applied to calculate statistics. Standard errors are in parentheses. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

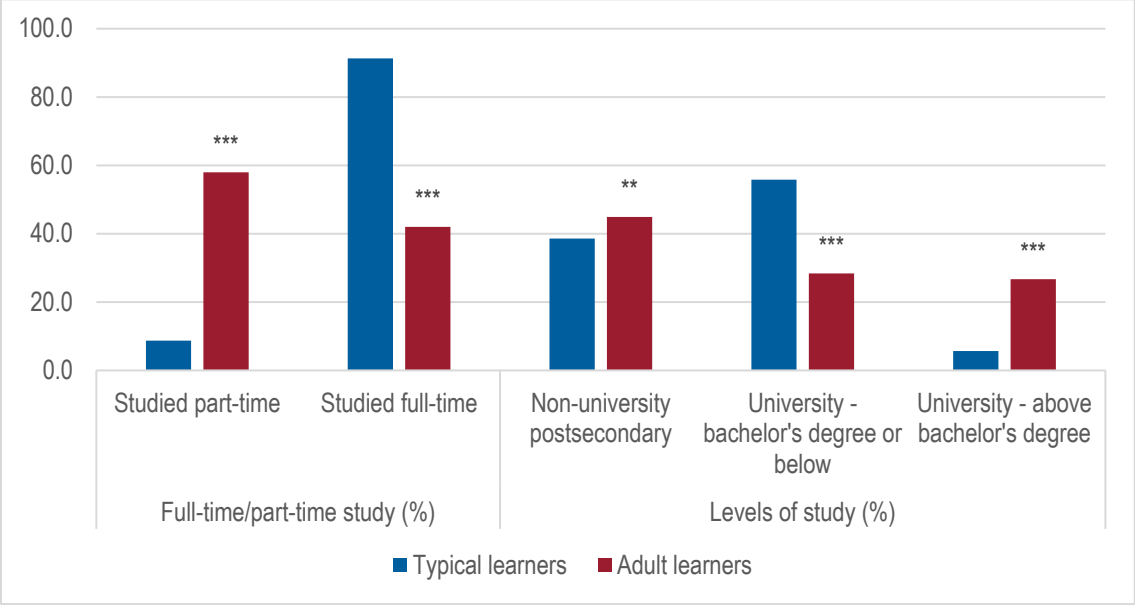
Figure 1 PIAAC essential skills of adult and typical learners



Notes: Longitudinal data from LISA Waves 1 and 2 are used for the analysis. The classification for scores follows on the OECD technical report (2013, Ch18). Survey weights are applied to calculate statistics. Statistical significance of differences is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

SRDC moved on to compare the characteristics of postsecondary education between typical PSE learners and adult learners. Figure 2 displays the full-time versus part-time status of school attendance and levels of postsecondary education for the two groups of learners. Unlike typical learners who studied full-time in most cases, the majority of adult learners studied part-time. Still, 42 per cent of adult learners were students in a full-time PSE program. Adult learners were less likely (by 27.4 percentage points) to study in a university program granting a diploma or bachelor's degree compared to typical learners. Instead, adult learners were more likely to study in a non-university postsecondary program (by 6.3 percentage points) and/or for an advanced degree in a university (by 21.1 percentage points). This pattern may be related to the finding that the majority of adult learners had already completed a university program at baseline.

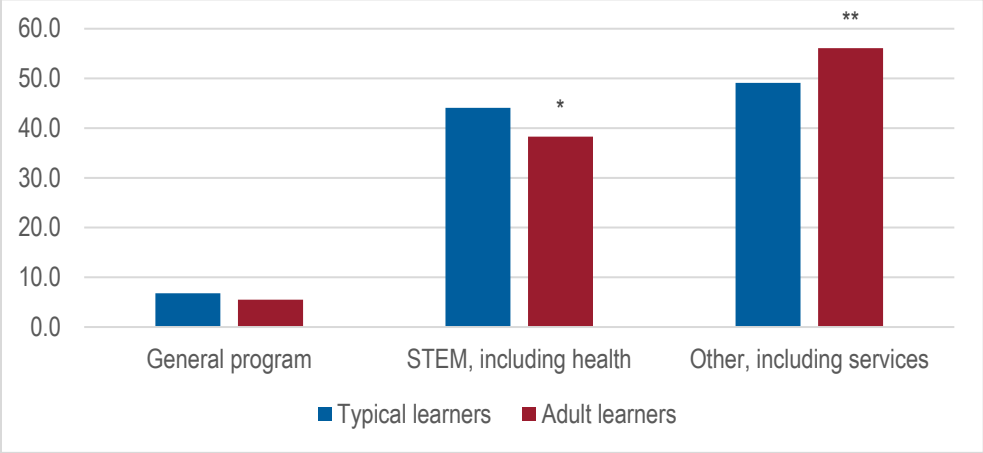
Figure 2 Postsecondary educational characteristics of adult and typical learners



Notes: Longitudinal data from LISA Waves and 2 are used for the analysis. Survey weights are applied to calculate statistics. Statistical significance of differences is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Figure 3 compares distributions of learners across three broad fields of study. Fields of study are available only for those enrolled in a PSE program at the time of the survey and for those who completed a PSE program within the previous two years. Adult learners were less likely to study in STEM fields or the field of health. More specifically, according to Table 2, they were less likely to study science, mathematics, and computing (by 4.0 percentage points), and engineering, manufacturing, construction, agriculture, and veterinary (by 3.8 percentage points). Instead, they were more likely to study in the field of teacher training and education science (by 8.6 percentage points) and services (by 4.8 percentage points) but less likely to study humanities, languages and arts (by 6.0 percentage points).

Figure 3 Field of study of adult and typical learners



Notes: Longitudinal data from LISA Waves 1 and 2 are used for the analysis. Survey weights are applied to calculate statistics. Statistical significance of differences is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

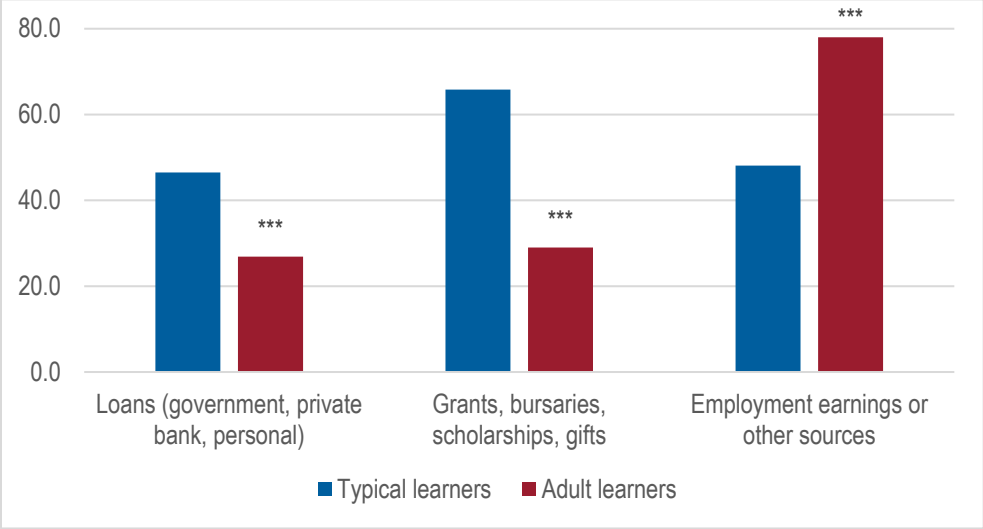
Table 2 Field of study of adult and typical learners

Characteristics	Typical learners	Adult learners	Difference	(S.E.)
Field of study (%)				
General program	6.8	5.5	-1.3	(1.4)
Teacher training and education science	5.1	13.7	8.6***	(2.0)
Humanities, languages, and arts	14.3	8.3	-6.0***	(2.0)
Social sciences, business, and law	24.3	24.0	-0.4	(2.7)
Science, mathematics, and computing	15.5	11.5	-4.0*	(2.0)
Engineering, manufacturing, construction, agriculture, and veterinary	14.8	10.9	-3.8*	(2.0)
Health and welfare	13.8	15.9	2.1	(2.0)
Services	5.3	10.1	4.8***	(1.7)
Observations	1,255	738		

Notes: Longitudinal data from LISA Waves 1 and 2 are used for the analysis. Survey weights are applied to calculate statistics. Standard errors are in parentheses. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Figure 4 shows how SFA and other postsecondary education financing differed for typical and adult learners. Adult learners were much less likely to use loans than typical learners (by 19.6 percentage points) and to receive grants, bursaries, scholarships, or gifts (by 36.9 percentage points), compared to typical PSE learners. Instead, adult learners were much more likely to fund postsecondary education with employment earnings or other sources (by 29.9 percentage points). Eight out of ten adult learners used employment earnings or other sources to pursue postsecondary education.

Figure 4 Postsecondary funding for adult and typical learners



Notes: Longitudinal data from LISA Waves 1 and 2 are used for the analysis. Survey weights are applied to calculate statistics. Statistical significance of differences is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Table 3 details sources of postsecondary education funding by learner type. For repayable sources, adult learners were less likely to use government loans (by 13.8 percentage points) and personal loans from family (by 12.3 percentage points) but slightly more likely to use private bank loans or lines of credit (by 2.9 percentage points). Among adult learners, 17 per cent used a student loan program from the federal or provincial government, and 9 per cent used private bank loans.

For non-repayable sources, the fraction of learners who received grants, bursaries, or scholarships from governments were similar between the two groups. However, adult learners were slightly less likely to receive them from non-government sources. Also, they were much less likely to use gifts or inheritance from parents or other relatives. Two out of five typical learners used gifts from their families for their postsecondary education, whereas only one in ten adult learners did so. Also, whereas 19.2 per cent of typical learners used Registered Education Savings Plans (RESPs), 1.5 per cent of adult learners did so. Lastly, although employment earnings were the most commonly used source of funding for both typical learners and adult learners, a significantly higher fraction of adult learners used employment earnings (by 17.8 percentage points).

Table 3 Postsecondary funding for adult and typical learners

Characteristics	Typical learners	Adult learners	Difference	(S.E.)
Government student loans				
Yes	31.0	17.1	-13.8***	(2.5)
No	69.0	82.9	13.8***	(2.5)
Private bank loans				
Yes	6.2	9.1	2.9*	(1.6)
No	93.8	90.9	-2.9*	(1.6)
Federal/provincial governments grants				
Yes	13.4	11.6	-1.8	(2.1)
No	86.6	88.4	1.8	(2.1)
Grants, bursaries, or scholarships				
Yes	18.6	13.2	-5.4**	(2.3)
No	81.4	86.8	5.4**	(2.3)
Funding – RESP				
Yes	19.2	1.5	-17.7***	(1.5)
No	80.8	98.5	17.7***	(1.5)
Personal loans				
Yes	17.1	4.9	-12.3***	(1.5)
No	82.9	95.1	12.3***	(1.5)
Funding – Gifts or inheritances				
Yes	39.8	9.2	-30.6***	(2.4)
No	60.2	90.8	30.6***	(2.4)
Employment earnings				
Yes	45.5	63.3	17.8***	(2.9)
No	54.5	36.7	-17.8***	(2.9)
Other sources				
Yes	3.6	18.2	14.6***	(1.8)
No	96.4	81.8	-14.6***	(1.8)
Observations	1,365	842		

Notes: Longitudinal data from LISA Waves 1 and 2 are used for the analysis. Standard errors are in parentheses. Survey weights are applied to calculate statistics. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Table 4 shows the average amounts of debt accrued to pay for postsecondary education. Including those who did not use loans as zeros, the average amount of debt accrued from January 2012 until the survey date was smaller for adult learners. It reflects the finding from Table 3 that adult learners were less likely to use loans to fund postsecondary education. When considering only those who used loans, the amount of accrued debts since January 2012 was

$11,400 for the two groups. Meanwhile, adult learners had a slightly higher balance of total debt for postsecondary education (excluding amounts already paid back and amounts that do not need to be repaid). It is probably due to study loans for previous postsecondary education.

Table 4 Average postsecondary education debt for adult and typical learners

Characteristics	Typical learners	Adult learners	Difference	(S.E.)
Average amount of debt including zero				
Accrued since January 2012	4,327	3,478	-833*	(495)
Total amount of debt	5,783	5,630	-119	(722)
Average amount of debt excluding zero				
Accrued since January 2012	11,439	11,445	6	(1,220)
Total amount of debt	14,554	15,663	1,109	(1,595)

Notes: Longitudinal data from LISA Waves 1 and 2 are used for the analysis. There were 1,337 and 826 valid observations for typical learners and adult learners. Survey weights are applied to calculate statistics. Standard errors are in parentheses. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

LIFE EVENTS TRIGGERING FURTHER EDUCATION

This section considers whether there is a life event triggering adult learning. The analysis uses survey information about whether and in which year a respondent experienced various life events since January 2012 for LISA Wave 2 and January 2014 for LISA Wave 3. Life event data were not collected in Wave 1.

The descriptive analysis compares transition rates into formal education between 2012 and 2016 for those who experienced a life event versus those who did not.

For this analysis, longitudinal data from LISA Waves 1, 2 and 3 are used. The sample is limited to those who were aged 25 to 60 with current or previous labour market attachment in Wave 1 (in 2012) and those who had valid information for the occurrence of life events in Waves 2 and 3 (in 2014 and 2016).

In this analysis using retrospective data collected in Waves every two years, pinpointing the date of transition into education relative to the date of the event cannot be done precisely. But getting

the sequencing right is important. Education is unlikely to be triggered by a life event if it commences months before the event.[5]

- For those who did not experience a life event, attending a PSE program any time between January 2012 and the 2016 survey date is considered as a transition into formal education.

- For those who experienced a life event, the year recorded for school attendance and for the life event must be compared to determine whether the transition into formal education is likely related to the event. School attendance in the year an event occurred or commencing in a year after the event is considered as a transition into formal education associated with the event. School attendance in the years preceding the event year is not interpreted as a transition associated with the event.

The life events presented in Table 5 include:[6]

- Loss of a job,
- Major worsening in financial situation,
- Victim of a non-violent crime,
- Victim of physical violence,
- Serious personal injury/ illness to close relative/friend,
- Serious personal injury or illness to self,
- Death of a close relative or friend, and
- Death of a parent.

Table 5 presents observed differences in the transition to education between those who experienced a life event and those who did not. The table shows that the transition rate for those who lost a job was significantly higher than for those who did not lose a job (by 4.8 percentage points). Similarly, those who experienced a major worsening in their financial situation were more likely to attend school for formal education than those who did not (by 4.1 percentage

[5] Of course, for many life events – like losing a job or death of a loved one – the actual event may be anticipated for some time before the actual date of the event. Some of the impact of the event on subsequent behaviour may result from actions during this period of anticipation. Ideally the survey would capture dates sufficiently precisely for researchers to determine whether education spells began after events in the same year. This is not possible in LISA as the survey asks only for years of occurrence. If education spells that start in the year of an event are ignored in analysis, the result is a sample of education transitions too small for analysis. Such practice would ignore education (which often commences in the fall) that was triggered by an earlier event in the same year. Readers should bear in mind in reviewing this analysis that the 'trigger' event could also have occurred in the same year but after the commencement of education.

[6] The death of a spouse or a child (direct survey questions) and changes in family status, such as marriage and divorce derived from marital history, were also tabulated. However, as these events were rarely observed in the sample of interest, the results are not presented due to low statistical reliability.

points). For most events there was no obvious association between experiencing the event and transitioning to education.

Table 5 Association between life events and enrolling in education

Life event	Transitioned to education	Did not transition	Difference	(S.E.)
Lost a job	15.6	10.8	4.8***	(1.8)
Major worsening in financial situation	15.2	11.1	4.1**	(1.9)
Victim of a non-violent crime	7.1	11.5	-4.4***	(1.7)
Victim of physical violence	16.4	11.3	5.1	(5.5)
Serious personal injury/ illness to close relative/friend	10.4	11.6	-1.2	(1.3)
Serious personal injury or illness to self	9.9	11.6	-1.7	(1.6)
Death of a close relative or friend	10.8	11.0	-0.2	(1.2)
Death of a parent	9.5	11.9	-2.4	(1.7)

Notes: Longitudinal data from LISA Waves 1, 2 and 3 are used for analysis. Life event s and education enrollments are recorded between 2012 and 2016. There are 7,390 valid observations for estimation. Longitudinal survey weights are applied. Standard errors are in parentheses. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

CHARACTERISTICS ASSOCIATED WITH BECOMING AN ADULT LEARNER

Commonly examined factors

As discussed in the earlier literature review, studies often investigate the relationship between participation in adult education and the following factors:

Socio-demographic characteristics

- Age
- Gender

- Marital status and financial responsibility for children
- Parents' educational level
- Marginalized status

Personal characteristics

- Previous levels of education

Job characteristics

- Job tenure
- Perceived job quality
- Occupation

Multivariate analysis: Logit regression I

SRDC examined which characteristics were strongly associated with becoming an adult learner in a multivariate logit regression model using longitudinal data from LISA Waves 1, 2 and 3. The sample is limited to those aged 25–60 with current or previous labour market attachment in Wave 1 and having valid information for all variables included in the regression analysis. Note that this sample did not exclude those who were currently enrolled in a PSE program in Wave 1. There are 6,957 observations for estimation.

The outcome variable is an indicator of a transition into formal education between 2012 and 2016. For those who did not experience a life event, attending a PSE program any time between January 2012 and the 2016 survey date is considered as a transition into formal education. For those who experienced a life event, the years of school attendance and life event occurrence are compared to measure a transition into formal education. School attendance in the year an event occurred or in a later year is considered as a transition into formal education.

The regression models include a set of characteristics at baseline (surveyed at Wave 1) and an indicator for experiencing a job loss as control variables. In particular, Model 1 controls for demographic and socio-economic characteristics and an indicator for experiencing a job loss. In the previous section, a job loss and a worsening in financial situation were both correlated with adult learning. As these two events are closely related, this study includes only an indicator for having experienced a job loss in a multivariate analysis. Model 2 additionally controls for job characteristics to examine how these characteristics are associated with a transition into formal

education. By adding these characteristics to Model 1 and comparing results between two models, Model 2 sheds light on the interaction between job characteristics and demographic and socio-economic characteristics.

Table 6 displays the results of the two logit regression models. Predictive margins (Average Adjusted Predictions, AAPs) and marginal effects (Average Marginal Effects, AMEs) are reported for each model.

The first finding from Table 6 is that all else equal, those who lost a job were slightly more likely to become an adult learner, but the difference in the likelihood of becoming an adult learner between those who lost a job and those who did not was not statistically significant. However, rather than concluding a job loss is unrelated to adult learning, this finding could be due to the small sample of respondents who lost a job and subsequently attended school.

Consistent with the literature, older adults were less likely to become an adult learner, and females were more likely to become an adult learner. Specifically, adults aged 25-34 were more likely to become an adult learner than older adults. Compared to the younger adults, those aged 35-44 and 45-64 were less likely to become a learner by three percentage points and by almost ten percentage points, respectively.

When differences in all other characteristics were taken into account, immigrants were more likely to become a learner compared to those born in Canada (by 2.5 percentage points). Aboriginal persons were less likely to become an adult learner by 4.8 percentage points, but this difference was not statistically significant.

Family characteristics such as parents' educational attainment and marital status were not strongly associated with further education. On the other hand, those living with their children were less likely to become an adult learner. Having dependent children reduced the likelihood of becoming an adult learner by 3.7 percentage points.

There were no statistically significant differences in the predicted probability of becoming an adult learner across provinces. Nor did the probability of being an adult learner differ significantly between rural areas and large urban areas. However, for those living in areas falling between these two extremes, those living in a larger population centres were more likely to become an adult learner.

No statistically significant differences in take-up of adult learning were found across educational levels or between those who were employed versus not employed at baseline

PSE enrollment status at baseline was the characteristic most strongly associated with further education. This strong association could be due to continued PSE study or due to newly starting a PSE program.

When differences in job-related characteristics were considered in Model 2, less experienced workers were more likely to make a transition into formal PSE education. All else equal, one additional year of full-time work experience decreased the probability of becoming an adult learner by 0.2 percentage points. Similarly, one additional year of tenure in a job lowered the likelihood of becoming an adult learner by 0.3 percentage points.

Finally, whereas most results remained the same in Models 1 and 2, findings differed for age groups and gender. When job-related characteristics were added, adults aged 25-34 and those aged 35-44 were almost equally likely to become an adult learner, and the gender difference in decreased and was no longer statistically significant. These changes suggest that the higher probability of adult learning among younger adults (aged 25-34) relative to older adults, and females relative to males, were related mainly to differences in their work experience.

Table 6 Modeling transitions to formal education: Set I

Outcome: transition to formal education	Model 1		Model 2	
	Predictive Margins	Marginal Effect	Predictive Margins	Marginal Effect
Characteristics	(1)	(2)	(3)	(4)
Experienced a job loss between 2012 and 2016				
No (reference group)	0.111		0.112	
Yes	0.135	0.024	0.133	0.022
Age group				
25-34 (reference group)	0.159		0.134	
35-44	0.129	-0.030*	0.132	-0.002
45-64	0.063	-0.096***	0.077	-0.057***
Gender				
Male (reference group)	0.102		0.109	
Female	0.129	0.027***	0.121	0.012
Born in Canada				
No (reference group)	0.134		0.134	
Yes	0.109	-0.025*	0.108	-0.026*
Aboriginal status				
Yes (reference group)	0.114		0.114	
No	0.162	0.048	0.155	0.041
Father's educational attainment				
Less than high school (reference group)	0.125		0.125	
High school	0.116	-0.01	0.115	-0.01
Non-university postsecondary	0.114	-0.011	0.116	-0.009
University	0.105	-0.02	0.104	-0.021

Outcome: transition to formal education	Model 1		Model 2	
	Predictive Margins	Marginal Effect	Predictive Margins	Marginal Effect
Characteristics	(1)	(2)	(3)	(4)
Mother's educational attainment				
Less than high school (reference group)	0.115		0.116	
High school	0.120	0.006	0.122	0.005
Non-university postsecondary	0.113	-0.002	0.112	-0.005
University	0.109	-0.006	0.108	-0.009
Marital status				
Single, widowed, divorced, or separated (reference group)	0.129		0.126	
Married or Common-law	0.108	-0.021	0.110	-0.017
Presence of own children				
No (reference group)	0.134		0.132	
Yes	0.097	-0.037***	0.099	-0.033***
Province of residence				
Newfoundland and Labrador (reference group)	0.102		0.099	
Prince Edward Island	0.082	-0.020	0.083	-0.016
Nova Scotia	0.115	0.012	0.119	0.019
New Brunswick	0.108	0.005	0.110	0.01
Quebec	0.130	0.027	0.131	0.032
Ontario	0.109	0.007	0.108	0.009
Manitoba	0.120	0.018	0.121	0.022
Saskatchewan	0.120	0.018	0.118	0.019
Alberta	0.091	-0.012	0.092	-0.008
British Columbia	0.131	0.029	0.131	0.032
Rural/Population centre size (%)				
Rural area	0.089		0.091	
Small (pop. 1,000 to 29,999)	0.122	0.033**	0.125	0.034**
Medium (pop. 30,000 to 99,999)	0.131	0.042**	0.130	0.039**
Large urban (pop.100,000 to 499,999)	0.144	0.055***	0.142	0.051***
Large urban (pop.500,000 or greater)	0.109	0.020	0.109	0.019
Receipt of EI benefits in 2011				
No (reference group)	0.118		0.119	
Yes	0.100	-0.018	0.097	-0.022*
Receipt of social assistance payment in 2011				
No (reference group)	0.115		0.115	
Yes	0.106	-0.009	0.098	-0.018
Employment				
Not employed (reference group)	0.146		0.142	
Employed	0.113	-0.033	0.113	-0.029

Outcome: transition to formal education	Model 1		Model 2	
	Predictive Margins	Marginal Effect	Predictive Margins	Marginal Effect
Characteristics	(1)	(2)	(3)	(4)
Educational attainment				
Less than high school (reference group)	0.095		0.099	
High school	0.094	-0.001	0.098	-0.001
Non-university postsecondary	0.109	0.014	0.117	0.018
University	0.128	0.033	0.121	0.021
Currently enrolled in school at baseline				
No (reference group)	0.072		0.073	
Yes	0.465	0.392***	0.443	0.370***
Occupation at the current or last job				
Management (reference group)			0.116	
Business, finance, and administration			0.114	-0.002
Natural and applied sciences			0.109	-0.007
Health occupations			0.087	-0.029
Education, law and social, community			0.127	0.011
Art, culture, recreation, and sport			0.111	-0.005
Sales and service			0.140	0.024
Trades, transport, and equipment operators			0.084	-0.032
Natural resources, agriculture, manufacturing, and utilities			0.102	-0.014
Government job				
No (reference group)			0.107	
Yes			0.140	0.033***
Class of worker / Contract type				
Paid job with a non-permanent contract (reference group)			0.125	
Paid job with a permanent contract			0.111	-0.013
Self-employed/unpaid family worker			0.116	-0.009
General work experience				
Number of years with full-time work experience				-0.002**
Number of years with full-time work experience, squared				
Tenure				
Number of years at the job				-0.003**
Number of years at the job, squared				
Observations	6,957	6,957	6,957	6,957

Notes: Longitudinal data from LISA Waves 1, 2 and 3 are used for estimation. Longitudinal survey weights are applied. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

CHARACTERISTICS OF WOULD-BE ADULT LEARNERS

This section describes the characteristics of would-be adult learners, i.e., those who have unmet learning needs.

The first step in the analysis was to decide how best to measure would-be adult learners using LISA. The first option – ultimately the only one used – was a direct measure based on questions about the unmet learning need asked only of the PIAAC subsample in LISA Wave 1. The question was phrased: "In the last 12 months, were there any learning activities you wanted to participate in but did not?" These questions are the same ones asked in the 2008 Access and Support to Education and Training Survey and used by Knighton, Hujaleh, Iacampo, and Werkneh (2009) to discuss unmet learning needs among Canadian adults. Unmet learning needs based on this survey question cover informal learning activities as well as PSE. This information is available only for the PIAAC subsample of LISA Wave 1.

Three alternative proxies were explored to see whether would-be adult learners could be identified for more of the sample and in later waves of LISA. The first proxy was an indicator for those whose job required educational attainment higher than the current educational attainment, created with the information on job education requirement and current educational attainment for employed respondents. The second proxy was an indicator that an employed respondent did not have computer skills required for their job. The third proxy identified unemployed respondents who stated that skills training or more formal education would help them to get a job.

The direct measure was chosen for analysis over the three proxies due to data issues. The second and third proxies had to be excluded because the small number of observations was hampering cross-group comparisons. The best candidate among the three proxies was the indicator that a job required a higher level of education than the respondent's current educational level. However, this proxy was ultimately excluded due to interpretation and representation issues.

- The proxy was derived from the survey question: "If applying today, what would be the usual educational qualification required, if any, to qualify for your position?" If respondents have educational attainment lower than what is required to get their job as of today, it is far from assured they would in fact want to improve their education level to match today's demands of their job.

- SRDC compared the indicator at Wave 1 to the direct measure of unmet need in that wave. Only about a third of proxy defined would-be learners had no unmet learning needs according to the direct measures. For this reason, the proxy likely only poorly represents the characteristics of those with unmet learning needs, especially for PSE.

Therefore, the analysis focuses on the Wave 1 direct measure of unmet learning needs to define would-be adult learners. Cross-sectional data from LISA Wave 1 are used to describe the characteristics of would-be learners. The sample is restricted to those aged 25 to 64 in the PIAAC subsample with current or previous labour market attachment within the last five years.

Two indicators were created:

- Indicator of a learner, which equals one for those who were enrolled in a PSE program within three months of the survey date or who completed a PSE program within one year from the household roster creation date; zero, otherwise.
- Indicator of a would-be learner (with unmet learning needs), which equals one if the respondent mentioned any learning activities they wanted to participate in but did not; zero, otherwise.

Taking into account the interaction between the two indicators, SRDC compared various characteristics across the following four subgroups:

- Type 1: non-learners without unmet learning needs,
- Type 2: non-learners **with unmet learning needs (would-be adult learners)**,
- Type 3: learners without unmet learning needs, and
- Type 4: learners **with unmet learning needs (would-be adult learners)**.

Table 7 and Figure 5 present the demographic and socioeconomic characteristics of the four subgroups. Overall, learners (Types 3 and 4) were more concentrated the mid-30s and younger groups than non-learners (Types 1 and 2). For non-learners, those with unmet learning needs were younger (more likely to be aged 25-44) than those with no learning needs. For learners, would-be learners were slightly older: more likely to be aged 35-44 and less likely to be aged 25-34 than those having no unmet learning needs. Generally, would-be learners were more likely to be female (by about seven percentage points both for non-learners and learners). Among non-learners, would-be learners were more likely to be born outside Canada. Among learners, would-be learners were more likely to have university-educated parents. At the same time, they were also more likely to have a father with no high school diploma, likely related to their concentration among older age groups compared than those without unmet learning needs.

The distribution of would be learners varied by geographic factors. Would-be adult learners were less likely to live in Quebec and more likely to live in Ontario and British Columbia. Among non-learners, would-be learners were less likely to live in the Atlantic region. Would-be learners in this group were also less likely to live in a rural area (by 3.1 percentage points) or to live in a

small population centre (by 3.7 percentage points). In general, would-be learners were more likely to live in a large urban area (by 4.5 percentage points for non-learners and 8.2 percentage points for learners).

Overall, those having unmet learning needs had a more stable economic status than those without unmet learning needs. They were less likely to have received EI benefits in the previous year and more likely to be employed, and their average earnings were higher.

Figure 5 displays educational attainment distribution across the four subgroups. These data show that those with unmet learning needs had higher levels of education than those without unmet learning needs both for non-learners and learners. Whereas similar shares of those with and without unmet learning needs had non-university postsecondary certificates or diploma, would-be learners were less likely to be high school graduates and more likely to be graduates of a university program.

Figure 6 compares literacy, numeracy, and problem-solving skills across the four subgroups. Would-be learners had higher levels of skills in all three domains of literacy, numeracy, and problem-solving in technology-rich environments both for learners and non-learners.

Lastly, job-related characteristics are compared across the four combinations of learner and would-be learner indicators.[7] Learners were less experienced than non-learners in terms of both full-time work experience and tenure--consistent with the finding that learners are on average younger. For non-learners, would-be learners were less experienced in the labour market and at their job compared to those with no unmet learning needs. However, for learners, would-be learners were slightly more experienced.

Table 7 Demographic and socio-economic characteristics of would-be adult learners

Characteristics	Type 1 Non-learners without unmet learning needs	Type 2 Non-learners with unmet learning needs	Type 3 Learners without unmet learning needs	Type 4 Learners with unmet learning needs
Average age	45.6	42.3***	34.5***	36.0***
Age group (%)				
Age 25-34	21.5	29.0***	60.4***	51.2***
Age 35-44	23.2	29.2***	24.0	32.8**
Age 45-64	55.4	41.8***	15.5***	16.0***

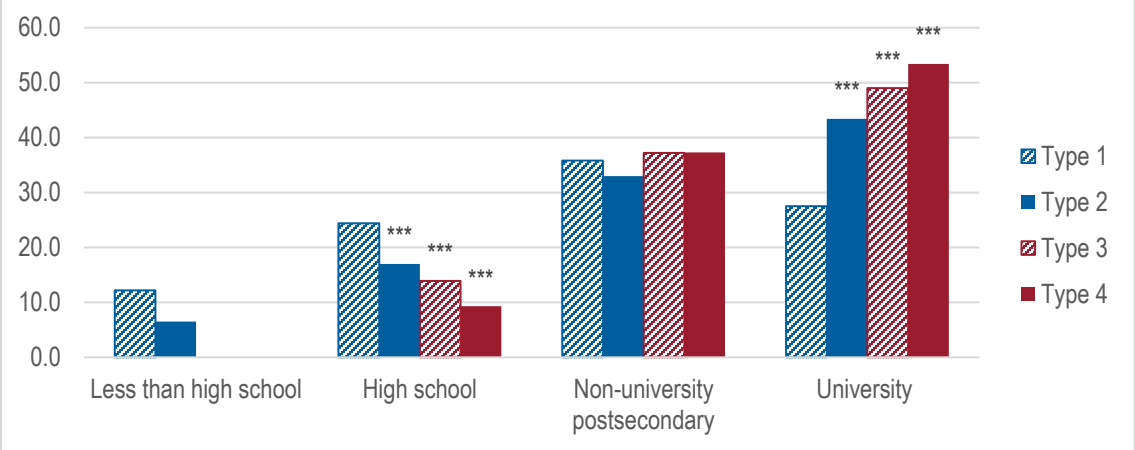
[7] These characteristics describe the current job for the employed, and the last job for those who were not employed but worked within the previous five years.

Characteristics	Type 1 Non-learners without unmet learning needs	Type 2 Non-learners with unmet learning needs	Type 3 Learners without unmet learning needs	Type 4 Learners with unmet learning needs
Gender (%)				
Male	54.3	47.2***	50.4	43.7**
Female	45.7	52.8***	49.6	56.3**
Born in Canada (%)				
No	22.7	26.2**	31.8**	32.0**
Yes	77.3	73.8**	68.2**	68.0**
Aboriginal status (%)				
Yes	2.4	3.1	1.1*	1.9
No	97.6	96.9	98.9*	98.1
Father's educational attainment (%)				
Less than high school	44.5	34.0***	19.6***	25.8***
High school	22.0	20.8	21.6	16.4*
Non-university postsecondary	18.4	24.0***	25.8**	22.6
University	15.1	21.2***	33.1***	35.2***
Mother's educational attainment (%)				
Less than high school	43.2	32.8***	20.2***	20.1***
High school	29.6	30.7	27.0	24.8
Non-university postsecondary	17.9	22.7***	30.1***	27.8**
University	9.3	13.9***	22.8***	27.4***
Marital status (%)				
Single, widowed, divorced, or separated	29.6	30.8	39.8***	40.6**
Married or Common-law	70.4	69.2	60.2***	59.4**
Presence of own children				
No	61.9	55.8***	70.2***	66.4
Yes	38.1	44.2***	29.8***	33.6
Region of residence (%)				
Atlantic	7.2	5.8***	6.3	5.5
Quebec	25.4	17.6***	24.0	19.7*
Ontario	37.9	41.3*	36.9	39.7
Prairie	6.6	6.9	5.3	5.1
Alberta	11.5	13.0	12.7	11.3
British Columbia	11.4	15.4***	14.8	18.7**
Rural/Population centre size (%)				
Rural area	18.9	15.8**	9.7***	9.5***
Small (pop. 1,000 to 29,999)	13.1	12.2	8.5**	4.8***
Medium (pop. 30,000 to 99,999)	9.9	8.0*	9.5	9.4
Large urban (pop.100,000 to 499,999)	13.2	14.6	19.5*	15.1
Large urban (pop.500,000 or greater)	44.9	49.4**	52.9**	61.1***

Characteristics	Type 1 Non-learners without unmet learning needs	Type 2 Non-learners with unmet learning needs	Type 3 Learners without unmet learning needs	Type 4 Learners with unmet learning needs
Receipt of EI benefits in 2011 (%)				
No	86.4	88.2	84.9	89.5
Yes	13.6	11.8	15.1	10.5
Employment (%)				
Not employed	12.9	11.2	17.5	13.1
Employed	87.1	88.8	82.5	86.9
Income in 2011 (current dollars)				
Paid-employment income	44,420	48,845**	35,293***	42,237
Total income before tax	53,936	56,643	40,548***	48,541
Household total income before tax	98,663	101,237	88,063**	96,379
Observations	3,879	1,689	303	211

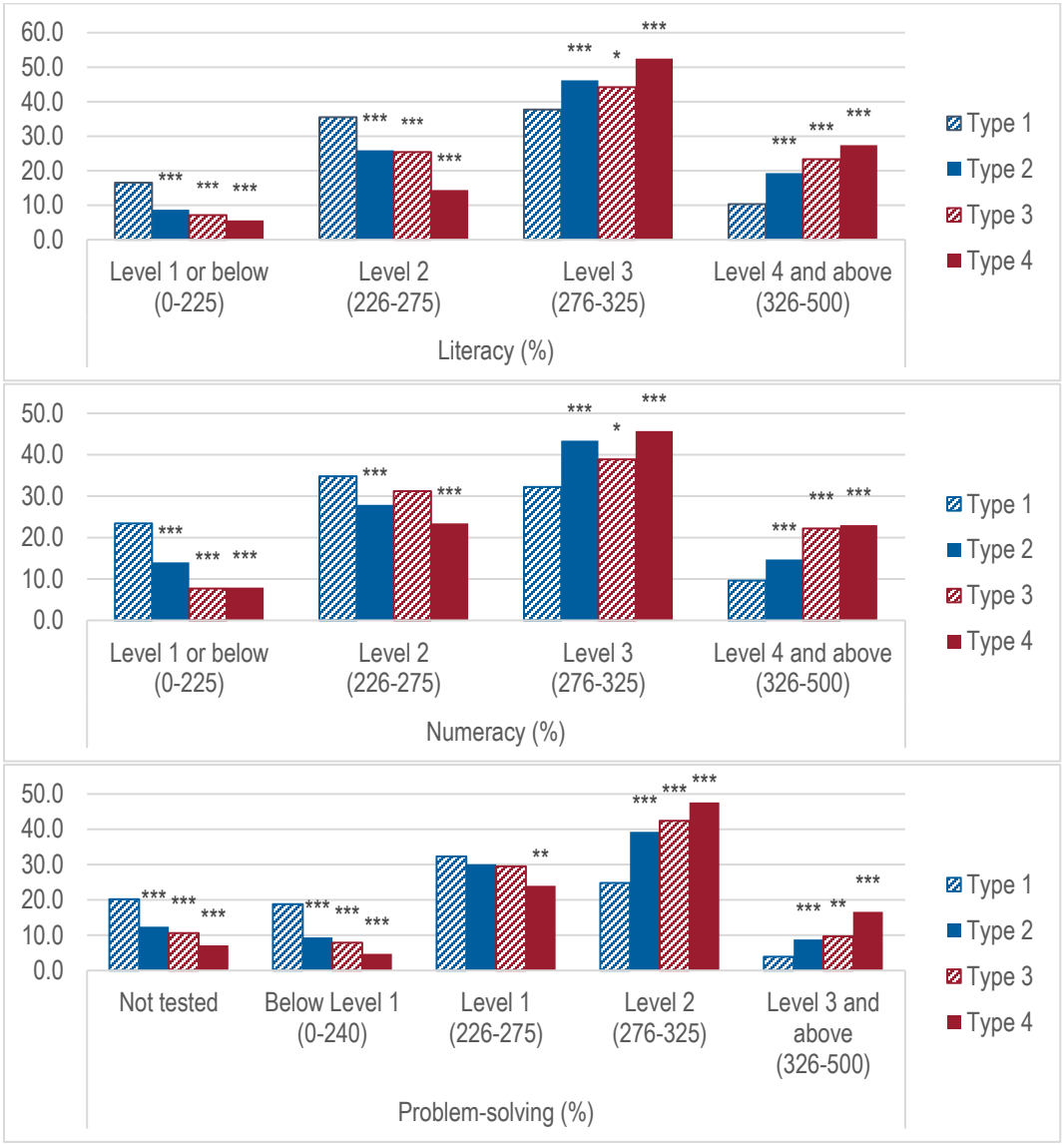
Notes: Data from LISA Wave 1 is used for analysis. The analysis is limited to the PIAAC sample. Survey weights are applied. Standard errors are in parentheses. Statistical significance for differences relative to Type 1 is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Figure 5 Educational attainment of would-be adult learners (%)



Notes: Data from LISA Wave 1 is used for analysis. The analysis is limited to the PIAAC sample. Survey weights are applied. Type 1 – non-learners without unmet learning needs; Type 2 – non-learners with unmet learning needs (would-be adult learners); Type 3 – learners without unmet learning needs; and Type 4 – learners with unmet learning needs (would-be adult learners). Statistical significance for differences relative to Type 1 is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Figure 6 PIAAC essential skills of would-be adult learners (%)



Notes: Data from LISA Wave 1 is used for analysis. The analysis is limited to the PIAAC sample. Survey weights are applied. Type 1 – non-learners without unmet learning needs; Type 2 – non-learners with unmet learning needs (would-be adult learners); Type 3 – learners without unmet learning needs; and Type 4 – learners with unmet learning needs (would-be adult learners). Statistical significance for differences relative to Type 1 is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

With respect to occupation, would-be adult learners were more likely to have white-collar occupations and less likely to have blue- or pink-collar occupations (Table 8). In general, would-be learners were less likely to work in sales and service occupations; and trades, transport and operation occupations. Among non-learners, would-be learners were more likely to work in health occupations; education, law and social, community occupations; and art, culture,

recreation, and sport occupations. If they were learners, they were more likely to work in management; business, finance, and administration occupations; and health occupations. Also, would-be adult learners were more likely to work for governments (Figure 7).

Learners, who were younger and less experienced than non-learners, were more likely to have unstable jobs (Figure 7). In particular, they were more likely to be paid employees with non-permanent contracts and less likely to have a permanent contract. Among the learners, those with unmet learning needs were less likely to be paid employees and more likely to be self-employed or unpaid family workers.

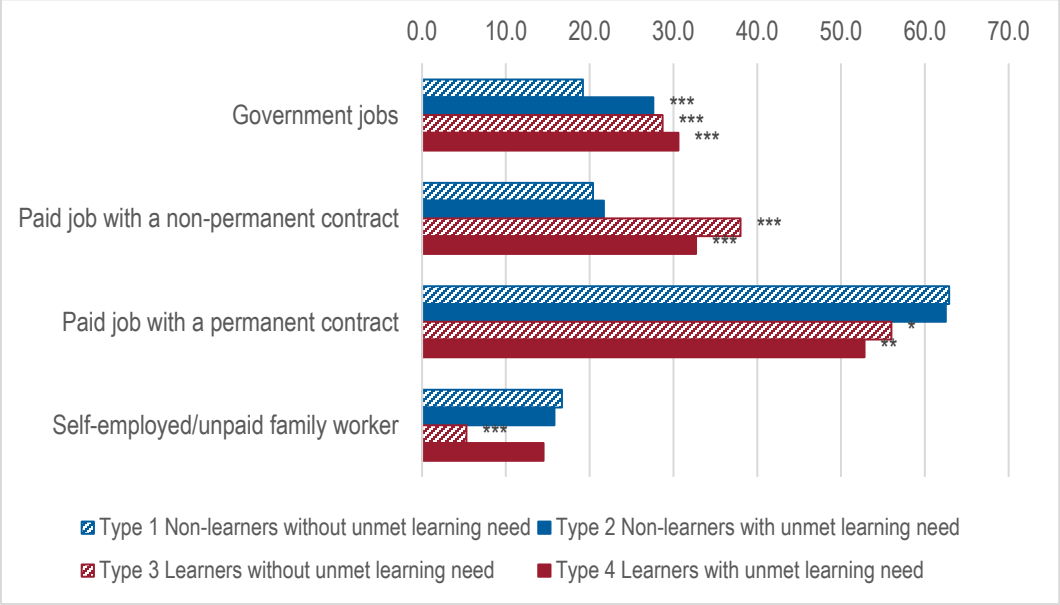
Finally, Figure 8 depicts job satisfaction among those employed at the time of the survey. No statistically significant differences in job satisfaction were found across the four groups.

Table 8 Job characteristics of would-be adult learners

Characteristics	Type 1 Non-learners without unmet learning needs	Type 2 Non-learners with unmet learning needs	Type 3 Learners without unmet learning needs	Type 4 Learners with unmet learning needs
Work experience				
Full-time work experience (years)	21.5	18.0***	11.0***	12.0***
Tenure at the job (years)	10.8	8.4***	4.7***	5.1***
Occupation at the current or last job (%)				
Management	14.0	13.4	5.0***	11.0
Business, finance, and administration	15.9	16.9	16.7	24.6**
Natural and applied sciences	7.6	9.4	7.3	8.2
Health occupations	4.7	9.0***	5.0	8.0
Education, law and social, community	11.4	15.3***	24.4***	17.6**
Art, culture, recreation, and sport	2.8	4.4**	5.8	4.6
Sales and service	20.5	15.3***	23.0	17.1
Trades, transport, and equipment operators	14.9	11.0***	8.3***	3.6***
Natural resources, agriculture, manufacturing, and utilities	8.2	5.3***	4.5**	5.3
Observations	3,879	1,689	303	211

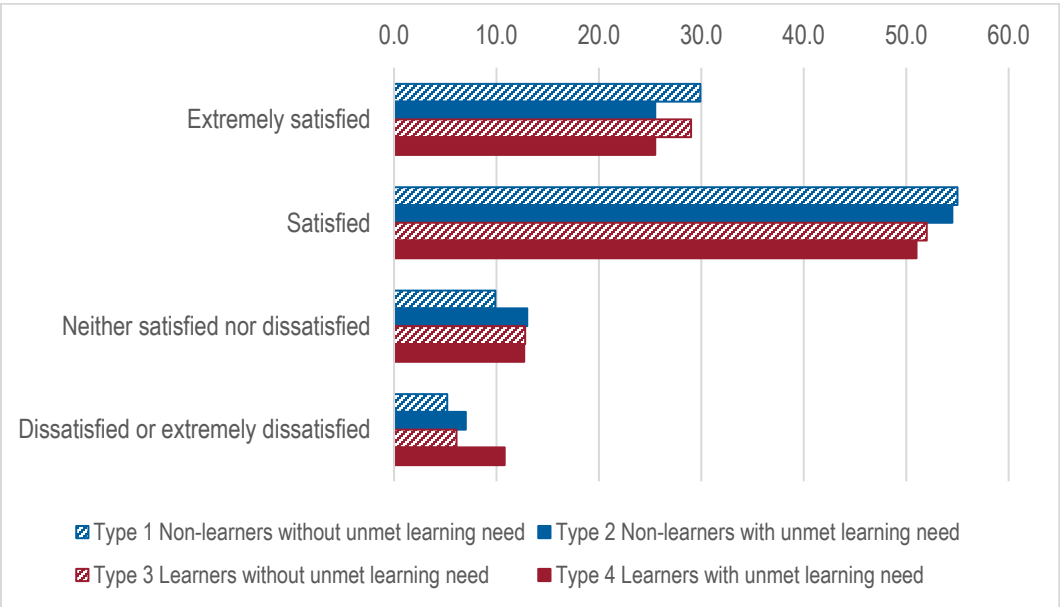
Notes: Data from LISA Wave 1 is used for analysis. The analysis is limited to the PIAAC sample. Statistical significance for differences relative to Type 1 is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Figure 7 Class of worker by would-be learner status



Notes: Data from LISA Wave 1 is used for analysis. The analysis is limited to the PIAAC sample. Survey weights are applied. Statistical significance for differences relative to Type 1 is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Figure 8 Job satisfaction by would-be learner status



Notes: Data from LISA Wave 1 is used for analysis. The analysis is limited to the PIAAC sample. Survey weights are applied. Statistical significance for differences relative to Type 1 is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

CHARACTERISTICS ASSOCIATED WITH BECOMING AN ADULT LEARNER: LOGIT REGRESSION II

SRDC developed logit regressions to estimate which characteristics were associated with enrollment in formal learning between 2012 and 2016 (post Wave 1 and up to Wave 3). The key question is whether an indicator of having unmet learning needs at baseline predicts actual school enrolment in the future. As in the previous section, the interaction between unmet learning needs and already being a learner at baseline is also considered.

The sample is restricted to those aged 25 to 64 in the PIAAC subsample with current or previous labour market attachment within the last five years. Additionally, the sample is limited to those observed in all three Waves of LISA. There are 3,588 valid observations for estimation.

The outcome variable is a binary indicator for a transition into formal education between 2012 and 2016. For those who were not enrolled in a PSE program at baseline (Wave 1 in 2012), attending a PSE program any time between January 2012 to the 2016 survey date is considered as a transition into formal education. For those enrolled in a PSE program at baseline, only those who had *another* transition to school attendance after the baseline are counted as becoming an adult learner. Note that a new transition could be starting a new PSE program or continuing the same PSE program after a break (at least one month not in school). These two cases could not be distinguished.

Table 9 reports the results of two models. Model 1 controls for demographic, socio-economic, and job-related characteristics at baseline. As the sample is limited to the PIAAC sample, Model 1 is first estimated to check whether this subsample generates results comparable to the full LISA. Model 2 adds an indicator of having unmet learning needs at baseline, an indicator of being a learner at baseline, and the interaction of the two. Model 2 sheds light on the relationship between having unmet learning needs and further education, as well as the interaction between having unmet learning needs and being a learner at baseline.

Predictive margins (AAPs) and marginal effects (AMEs) are reported for each model. Results from Model 1 show that older adults were less likely to enrol in formal education than younger adults and that those living in a medium population centre were more likely to become adult learners than those living in a rural area. Also, those enrolled in a PSE program at baseline were much more likely to enrol in further education.

When indicators of having unmet needs and being a learner at baseline were added in Model 2, marginal effects were similar to those in Model 1. One exception is the marginal effect of being enrolled in school at baseline, which becomes smaller and statistically insignificant. This indicator is highly correlated with recently completing a PSE education. Results from Model 2

show that learners who were currently enrolled in Wave 1 or recently completed a PSE program were more likely to register for formal education in the future (by 11.8 percentage points).

A key finding from Model 2 is that having unmet learning needs indeed predicts future enrolment for formal education. The likelihood of returning to formal education was 15.2 per cent for those having unmet learning needs versus 10.4 per cent for other adults, all else equal. Those with unmet learning needs were more likely to become adult learners by 4.7 percentage points.

An important finding, and contribution to understanding of adult learner behaviour, is that having unmet learning needs is positively associated with future education enrolment among those who were *not* a learner at baseline, but not among learners at baseline. The last four rows of Table 9 present the average predicted probabilities for the four subgroups combining learners' and would-be learners' indicators. Among those who were enrolled in a PSE program at baseline or completed a PSE program within a year, the likelihood of future enrolment for formal education was somewhat lower for those who had unmet learning needs than those who did not (21.4 per cent vs. 22.2 per cent). However, among adults were not already learners, all else equal, those who had unmet learnings needs were 6.0 percentage points more likely to become an adult learner than those who did not have unmet learning needs (7.9 per cent vs. 13.9 per cent).

Table 9 Modeling transitions to formal education: Set II

Outcome: transition to formal education	Model 1		Model 2	
	Predictive Margins	Marginal Effect	Predictive Margins	Marginal Effect
Characteristics	(1)	(2)	(3)	(4)
Age group				
25-34 (reference group)	0.170		0.167	
35-44	0.123	-0.047*	0.122	-0.045*
45-64	0.070	-0.100***	0.072	-0.096***
Gender				
Male (reference group)	0.108		0.108	
Female	0.133	0.026	0.133	0.025
Born in Canada				
No (reference group)	0.138		0.139	
Yes	0.116	-0.022	0.116	-0.023
Aboriginal status				
Yes (reference group)	0.134		0.130	
No	0.121	-0.013	0.121	-0.010

Outcome: transition to formal education	Model 1		Model 2	
Characteristics	Predictive Margins (1)	Marginal Effect (2)	Predictive Margins (3)	Marginal Effect (4)
Father's educational attainment				
Less than high school (reference group)	0.129		0.130	
High school	0.112	-0.017	0.115	-0.015
Non-university postsecondary	0.133	0.004	0.130	0.000
University	0.107	-0.022	0.108	-0.023
Mother's educational attainment				
Less than high school (reference group)	0.107		0.107	
High school	0.114	0.007	0.116	0.009
Non-university postsecondary	0.135	0.028	0.133	0.026
University	0.134	0.027	0.137	0.031
Marital status				
Single, widowed, divorced, or separated (reference group)	0.134		0.133	
Married or Common-law	0.114	-0.020	0.115	-0.017
Presence of own children living with the respondent				
No (reference group)	0.124		0.126	
Yes	0.117	-0.007	0.114	-0.012
Province of residence				
Newfoundland and Labrador (reference group)	0.107		0.115	
Prince Edward Island	0.090	-0.017	0.089	-0.026
Nova Scotia	0.121	0.015	0.124	0.009
New Brunswick	0.134	0.027	0.137	0.022
Quebec	0.137	0.03	0.139	0.024
Ontario	0.117	0.01	0.117	0.002
Manitoba	0.127	0.02	0.128	0.013
Saskatchewan	0.116	0.009	0.115	0.000
Alberta	0.102	-0.004	0.102	-0.012
British Columbia	0.125	0.019	0.121	0.007
Rural/Population centre size (%)				
Rural area	0.096		0.095	
Small (pop. 1,000 to 29,999)	0.114	0.018	0.116	0.021
Medium (pop. 30,000 to 99,999)	0.155	0.060**	0.154	0.059**
Large urban (pop.100,000 to 499,999)	0.134	0.038	0.131	0.036
Large urban (pop.500,000 or greater)	0.119	0.023	0.120	0.025
Receipt of EI benefits in 2011				
No (reference group)	0.126		0.125	
Yes	0.098	-0.028	0.099	-0.026

Outcome: transition to formal education	Model 1		Model 2	
Characteristics	Predictive Margins (1)	Marginal Effect (2)	Predictive Margins (3)	Marginal Effect (4)
Receipt of social assistance payment in 2011				
No (reference group)	0.119		0.119	
Yes	0.194	0.075	0.201	0.082
Employment				
Not employed (reference group)	0.141		0.138	
Employed	0.119	-0.022	0.119	-0.019
Educational attainment				
Less than high school (reference group)	0.100		0.110	
High school	0.117	0.017	0.122	0.012
Non-university postsecondary	0.113	0.013	0.114	0.003
University	0.132	0.032	0.128	0.017
Currently enrolled in school at baseline				
No (reference group)	0.099		0.113	
Yes	0.264	0.165***	0.153	0.040
Occupation at the current or last job				
Management (reference group)	0.109		0.110	
Business, finance, and administration	0.122	0.013	0.122	0.012
Natural and applied sciences	0.108	-0.001	0.104	-0.006
Health occupations	0.102	-0.006	0.096	-0.015
Education, law and social, community	0.138	0.029	0.139	0.029
Art, culture, recreation, and sport	0.104	-0.005	0.100	-0.010
Sales and service	0.145	0.037	0.150	0.040
Trades, transport, and equipment operators	0.074	-0.035	0.074	-0.036
Natural resources, agriculture, manufacturing, and utilities	0.147	0.038	0.148	0.037
Government job				
No (reference group)	0.117		0.117	
Yes	0.134	0.017	0.133	0.015
Class of worker / Contract type				
Paid job with a non-permanent contract (reference group)	0.114		0.114	
Paid job with a permanent contract	0.122	0.007	0.121	0.007
Self-employed/unpaid family worker	0.133	0.018	0.134	0.020
General work experience				
Full-time work experience (years)		-0.002		-0.001
Full-time work experience (years), squared				
Tenure				
Tenure at the job (years)		-0.003		-0.003
Tenure at the job (years), squared				

Outcome: transition to formal education	Model 1		Model 2	
Characteristics	Predictive Margins (1)	Marginal Effect (2)	Predictive Margins (3)	Marginal Effect (4)
Learner				
No (reference group)			0.101	
Yes			0.219	0.118*
Have unmet learning needs				
No (reference group)			0.104	
Yes			0.152	0.047***
Non-learner & Not have unmet learning needs (Type 1)			0.079	
Not a learner & Have unmet learning needs (Type 2)			0.139	
Learner & Not have unmet learning needs (Type 3)			0.222	
Learner & Have unmet learning needs (Type 4)			0.214	

Notes: Longitudinal data from LISA Waves 1, 2 and 3 are used for estimation. The sample is limited to the PIAAC sample. Longitudinal survey weights are applied. There were 3,588 observations for estimation. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

BARRIERS TO TAKING UP PSE FOR WOULD-BE LEARNERS

This section was intended to provide an exploratory analysis of the barriers faced by would-be adult learners, i.e., those who have unmet learning needs, to taking up PSE, but due to data limitations the analysis has been expanded to consider barriers to more broadly defined education and training.

The LISA does not probe barriers to PSE directly. There is a follow-up question asked of the PIAAC subsample of Wave 1 respondents who had unmet learning need about the most important reasons preventing education and training – not specifically PSE – but the respondent is not asked to specify which of education or training is prevented. The initial hope for this analysis was to identify adults who were persistently in need of further education for two Waves consecutively, in order to identify would-be learners [people whose proxy measure of education need had not shifted between Waves]. Unfortunately, when SRDC worked with the LISA dataset we found it lacked information to identify these adults, due to small sample sizes and interpretation issues. Therefore, the quantitative analysis proposed to tease out the barriers to entry into PSE for would-be learners could not yield usable results.

Instead the SRDC research team decided to conduct an exploratory analysis of the reasons preventing education and training among would-be learners and of the correlation of these with

the transition to formal education in Waves 2 and 3, without controlling for the stated need for further education. In other words, we extended the analysis from the last section's Logit model to include not only whether a respondent had an unmet learning need but also the major reason preventing education or training early on. This exploratory analysis could reveal the critical difference in initial barriers between those who took up PSE subsequently to those who did not. Such results could indicate that interventions and supports addressing these unmet learning needs would provide an effective avenue to improve access to postsecondary education among adult learners.

Reasons preventing would-be learners from participating in education and training

Table 10 shows the most important factors identified by would-be learners preventing them from participating in education and training in the 12 months prior to Wave 1. Time constraints seemed to be most frequently cited, underlying three of the most important reasons given — including being too busy at work and lacking employer support, having no time because of childcare or family responsibilities, and the course or program being offered at an inconvenient time or place. In combination, these reasons were given by 65.0 per cent of would-be learners. The price of education or training was also most important for 18.9 per cent.

The rightmost columns of Table 10 provide the percentages giving each major reason separately for learners and non-learners as identified in the first wave of LISA. Being too busy at work or lacking employer support was still the top reason for learners, though for proportionately fewer compared to non-learners (32.6 per cent vs 39.4 per cent). In contrast, 16.2 per cent of Type 4 learners had an unmet need because of childcare or family responsibilities, compared to 13.2 per cent of Type 2 non-learners. The results suggest that "too busy at work or lack of employer support" is possibly the most critical factor determining access to adult learning for Canadians.

Table 10 Most important reason prevented education and training, by learner type

	With Unmet learning needs	Type 2 Non-learners with unmet learning needs	Type 4 Learners with unmet learning needs
Too expensive	18.9	18.7	20.3
Too busy at work/Lack employer support	38.5	39.4	32.6
Inconvenient time or place	12.9	12.9	13.1
Childcare/family responsibilities	13.6	13.2	16.2
Misc. reasons	16.1	15.9	17.8

Notes: Data from LISA Wave 1 is used for analysis. The analysis is limited to the PIAAC sample. Survey weights are applied.

The main reasons preventing participation in education and training are not evenly distributed among would-be adult learners. Table 11 shows that those who reported being too busy at work or lacking employer support as the main reason were generally older than those with childcare/family responsibilities or those who felt education and training was too expensive. The variation in these reasons by age may reflect differences in workers' stage of life: older workers with more experience might have more work responsibilities while younger workers might have a lower household income (because of lower earnings and fewer people in the household) to afford education and training, while younger workers have more young children at home. Since work responsibilities could change and childcare/family responsibilities vary by stage of life, it is to be expected that those reporting these particular reasons were more likely to participate in education subsequently. The next subsection examines how these reported barriers in Wave 1 were related to subsequent PSE using a logistic regression model, similar to the one in Table 9.

Table 11 Demographic and socio-economic characteristics of would-be adult learners by main reason preventing participation in education and training

Characteristics of those giving each reason	No unmet needs	Too expensive	Too busy at work / Lack employer support	Inconvenient time or place	Child care / family responsi-bilities	Misc. reasons
Average age	44.6	39.7***	41.9***	43.2	39.6***	42.8**
Age group (%)						
Age 25-34	24.8	42.5***	29.8**	27.0	34.0**	26.3
Age 35-44	23.2	28.6*	26.8	25.2	38.3***	33.9***
Age 45-64	52.0	28.9***	43.4***	47.7	27.7***	39.8***
Gender (%)						
Male	54.0	41.6***	56.2	44.3**	30.0***	46.2**
Female	46.0	58.4***	43.8	55.7**	70.0***	53.8**
Born in Canada (%)						
No	23.5	33.0***	23.4	19.5	37.0***	26.0
Yes	76.5	67.0***	76.6	80.5	63.0***	74.0
Father's educational attainment (%)						
Less than high school	42.4	30.1***	33.0***	34.8*	29.6***	37.8
High school	21.9	18.8	20.9	15.8**	21.6	22.4
Non-university postsecondary	19.0	28.0***	24.3**	20.7	22.4	21.7
University	16.7	23.2**	21.8**	28.7***	26.4***	18.2
Mother's educational attainment (%)						
Less than high school	41.2	30.4***	29.7***	30.9***	33.9**	33.3**
High school	29.4	29.0	31.0	31.8	28.0	28.4
Non-university postsecondary	18.9	25.0*	22.9*	24.4	20.7	23.9
University	10.5	15.6*	16.3***	12.9	17.4**	14.5

Characteristics of those giving each reason	No unmet needs	Too expensive	Too busy at work / Lack employer support	Inconvenient time or place	Child care / family responsi-bilities	Misc. reasons
Marital status (%)						
Single, widowed, divorced, or separated	30.5	40.1***	33.1	30.9	17.6***	33.4
Married or Common-law	69.5	59.9***	66.9	69.1	82.4***	66.6
Presence of own children						
No	62.6	55.2**	62.3	70.8**	17.5***	69.9**
Yes	37.4	44.8**	37.7	29.2**	82.5***	30.1**
Region of residence (%)						
Atlantic	7.1	5.7	6.4	5.5	3.5***	6.2
Quebec	25.3	13.4***	13.8***	21.7	24.9	23.9
Ontario	37.8	47.4**	42.2	33.9	40.2	37.6
Prairie	6.5	5.4	7.8	5.9	4.7*	7.8
Alberta	11.6	10.0	14.9**	18.0**	10.7	8.2*
British Columbia	11.7	18.1**	14.8*	15.1	16.0*	16.3*
Rural/Population centre size (%)						
Rural area	18.2	17.5	14.5**	14.6	9.8***	18.0
Small (pop. 1,000 to 29,999)	12.7	11.5	9.6**	16.1	10.5	11.4
Medium (pop. 30,000 to 99,999)	9.8	6.5*	7.6	9.8	9.8	9.0
Large urban (pop.100,000 to 499,999)	13.7	13.3	18.1**	10.7	13.4	12.7
Large urban (pop.500,000 or greater)	45.6	51.2	50.3*	48.8	56.5***	48.9
Receipt of EI benefits in 2011 (%)						
No	86.3	82.0	92.8***	90.3*	87.5	84.2
Yes	13.7	18.0	7.2***	9.7*	12.5	15.8
Employment (%)						
Not employed	13.3	18.0*	3.9***	7.0***	17.3	20.4**
Employed	86.7	82.0*	96.1***	93.0***	82.7	79.6**
Income in 2011 (current dollars)						
Paid-employment income	43,641	28,994***	64,299***	52,726**	36,186**	37,487
Total income before tax	52,793	35,703***	71,159***	61,196**	45,892**	45,462*
Household total income before tax	97,758	70,044***	118,010***	107,668*	99,763	89,967
Observations	4,182	331	728	249	288	304

Notes: Data from LISA Wave 1 is used for analysis. The analysis is limited to the PIAAC sample. Survey weights are applied. Standard errors are in parentheses. Statistical significance for differences relative to Type 1 is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Results of the logistic regression model including reasons preventing would-be learners participating in education and training

As shown in Table 9, many characteristics affect adults' transition to formal education and some personal characteristics are also associated with the major reasons preventing education and training. Table 9 shows that any would-be learners with unmet needs in Wave 1 are more likely to transition to formal education in Waves 2 and 3. It is possible to examine which unmet needs correlate with the transition to formal education by using categorical indicators of unmet needs instead of a single binary indicator and its interaction with Wave 1 learner characteristics in the logistic regression of Model 2 in Table 9.

0 presents the results of the logistic regression model, including reasons cited by would be learners as preventing them from participating in education and training. It should be noted that even after controlling for various characteristics, those reporting in Wave 1 being too busy at work or lacking employer's support were more likely to transit to formal education in Waves 2 and 3 (at 16.5 per cent), compared to those with no unmet needs (at 10.4 per cent). Similarly, those reporting childcare or family responsibilities as the main reason preventing participation in education and training were also substantially more likely to transition to formal education (at 17.8 per cent). Since these two barriers could be resolved subsequently or lifted simply because circumstances change over time, the positive association with the subsequent transition to formal education identified by the analysis suggests that any intervention mitigating these two major barriers could potentially generate a similar substantial increase in transitions to formal education. By contrast, there is only a small statistically insignificant increase in transition to PSE associated with those reporting education and training being too expensive (at 14.7 per cent compared to 10.4 per cent). This might indicate that financial constraints are not likely to be mitigated for many within a couple years and so adults facing these barriers may benefit from financial aid to support their education.

Table 12 Modeling transitions to formal education: Set III

Outcome: transition to formal education	Model 3	
Characteristics	Predictive Margins (1)	Marginal Effect (2)
Age group		
25-34 (reference group)	0.166	
35-44	0.122	-0.0446*
45-64	0.0726	-0.0939***
Gender		
Male (reference group)	0.108	
Female	0.133	0.0254
Born in Canada		
No (reference group)	0.139	
Yes	0.116	-0.0228
Aboriginal status		
Yes (reference group)	0.133	
No	0.121	-0.0121
Father's educational attainment		
Less than high school (reference group)	0.128	
High school	0.115	-0.0128
Non-university postsecondary	0.132	0.00377
University	0.107	-0.0207
Mother's educational attainment		
Less than high school (reference group)	0.108	
High school	0.115	0.00730
Non-university postsecondary	0.133	0.0258
University	0.137	0.0295
Marital status		
Single, widowed, divorced, or separated (reference group)	0.132	
Married or Common-law	0.116	-0.0161
Presence of own children living with the respondent		
No (reference group)	0.128	
Yes	0.112	-0.0158

Outcome: transition to formal education	Model 3	
Characteristics	Predictive Margins (1)	Marginal Effect (2)
Province of residence		
Newfoundland and Labrador (reference group)	0.112	
Prince Edward Island	0.0910	-0.0213
Nova Scotia	0.122	0.0100
New Brunswick	0.136	0.0240
Quebec	0.140	0.0279
Ontario	0.116	0.00405
Manitoba	0.128	0.0158
Saskatchewan	0.116	0.00361
Alberta	0.102	-0.0105
British Columbia	0.121	0.00823
Rural/Population centre size (%)		
Rural area	0.0954	
Small (pop. 1,000 to 29,999)	0.118	0.0228
Medium (pop. 30,000 to 99,999)	0.151	0.0555*
Large urban (pop.100,000 to 499,999)	0.132	0.0361
Large urban (pop.500,000 or greater)	0.120	0.0244
Receipt of EI benefits in 2011		
No (reference group)	0.125	
Yes	0.101	-0.0241
Receipt of social assistance payment in 2011		
No (reference group)	0.119	
Yes	0.204	0.0854
Employment		
Not employed (reference group)	0.140	
Employed	0.119	-0.0214
Educational attainment		
Less than high school (reference group)	0.106	
High school	0.125	0.0184
Non-university postsecondary	0.114	0.00767
University	0.127	0.0210
Currently enrolled in school at baseline		
No (reference group)	0.114	
Yes	0.150	0.0357

Outcome: transition to formal education	Model 3	
Characteristics	Predictive Margins (1)	Marginal Effect (2)
Occupation at the current or last job		
Management (reference group)	0.109	
Business, finance, and administration	0.122	0.0128
Natural and applied sciences	0.106	-0.00388
Health occupations	0.0923	-0.0171
Education, law and social, community	0.138	0.0288
Art, culture, recreation, and sport	0.102	-0.00782
Sales and service	0.149	0.0393
Trades, transport, and equipment operators	0.0766	-0.0328
Natural resources, agriculture, manufacturing, and utilities	0.148	0.0386
Government job		
No (reference group)	0.116	
Yes	0.136	0.0192
Class of worker / Contract type		
Paid job with a non-permanent contract (reference group)	0.115	
Paid job with a permanent contract	0.121	0.00627
Self-employed/unpaid family worker	0.134	0.0195
General work experience		
Full-time work experience (years)		-0.00129
Full-time work experience (years), squared		
Tenure		-0.00268
Tenure at the job (years)		
Tenure at the job (years), squared		
Learner in Wave 1		
No (reference group)	0.101	
Yes	0.219	0.119*
Unmet learning needs in Wave 1		
No unmet needs	0.104	
Too expensive	0.147	0.0435
Too busy at work/Lack employer support	0.165	0.0615**
Inconvenient time or place	0.120	0.0166
Child care/family responsibilities	0.178	0.0739**
Misc. reasons	0.114	0.00991

Notes: Longitudinal data from LISA Waves 1, 2 and 3 are used for estimation. The sample is limited to the PIAAC sample. Longitudinal survey weights are applied. There were 3,588 observations for estimation. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

RECOMMENDATIONS FOR POLICY

The analysis in this report tells us, at best, the characteristics and learning behaviours of adult learners in the 2012-2016 period in Canada. It cannot tell us how changes in policy from 2020 onwards could support adult learning, but the analysis has suggested groups that may most need targeting by learning policy initiatives and the types of gaps in supports they may be facing. It can also suggest lines of inquiry for further investigation, which are documented in the following section.

There appears to be a weak relationship between job loss and negative change in finances and new learning among adults. While these relationships are evident in bivariate analysis, they weaken to statistically insignificant once all the other influences on adult learning are taken into account.

Working from the assumption that adults who report unmet learning needs in surveys should be supported by policy to pursue further education, there are some implications from key results arising from the analysis. One key finding is that being too busy at work or lacking employer support is possibly the most critical factor determining access to adult learning for Canadians. Another is that having unmet learning needs is positively associated with future education enrolment among those who were *not* learners. But among people who were already learners at baseline, probabilities of seeking out more education were relatively high regardless of the presence of unmet learning need. In other words, this study shows that recent PSE is associated with increased probability of further PSE. The proliferation of short-term and part-time PSE options—like graduate certificates and executive MBAs—provide ample opportunities for those at the higher end of the educational spectrum to pursue credentials that are less time-intensive than traditional degree programs. Thus, policy attention should focus on learning needs of the less educated, who may be less likely to pinpoint accurately their skill deficit and this need support in selecting appropriate programs. Importantly, the vast majority of those who identify unmet learning needs do not go on to pursue PSE. And there is only a small statistically insignificant increase over time in the transition to PSE associated with those who report the main barrier to education and training being its expense. This result implies that that financial constraints are not likely to be mitigated for many without access to new financial aid to support their education. Consequently, this group may need more policies, like the Canada Training Benefit, combining time out of work and financial support to enable their learning.

Valuable insights also emerge from the measurement of skills in the LISA PIAAC subsample. Would-be learners have significantly higher levels of essential skills than those with no reported unmet educational needs. This implies an informational- or behaviour-related market failure since research (Myers & Sweetman, 2014) shows positive returns for skill gains across the entire

skills distribution. For youth, career education workshops, financial incentives and behavioural nudges show a great deal of promise (Oreopoulos & Ford, 2018; Hui & Ford, 2018) and yielded rigorous estimates of impact increasing human capital investment. Trials of similar approaches but adapted for adult learners might be worthwhile. The intent in designing such programs will be finding appropriate venues to target and appeal to less-skilled adults.

RECOMMENDATIONS FOR FURTHER RESEARCH

BETTER SOURCES FOR ANALYSIS OF EVENT HISTORIES

While, on average, learning delivers positive advantages for the human capital of adult learners, some learning episodes are triggered by negative life course events like job loss or financial difficulties. The patterns of such triggered education activities and their comparative outcomes represents a policy topic of some importance. Plausibly adult learners will vary in the extent to which they need different types of supports.

SRDC was not able to complete its planned research to explore the sequence of events precipitating adult learning. It attempted a hazard analysis to examine which adult characteristics were associated with the time that elapsed between job loss and a transition to further postsecondary education. However, the number of observations of job loss and later school attendance was not large enough for a hazard analysis with a month-by-month frequency.

One way to avoid this small sample size issue would be to attempt the same analysis using administrative data. Data from the linkage of Postsecondary Student Information System (PSIS), T1 Family Files (T1FF), T4, and Record of Employment (ROE) could be used to answer a similar question. Because the Postsecondary Student Information System (PSIS) covers all postsecondary students enrolled in a provincially funded postsecondary institution, a large number of adult PSE learners could be identified. In addition, T4-ROE data could provide the date a paid worker stopped a job if the person received an ROE. The job end date from the ROE and the enrolment date from PSIS could be used for a hazard analysis with a much larger sample. Family characteristics could be derived from T1FF, and job characteristics would be available from the T4. However, while using administrative data produces larger sample sizes, it has drawbacks. It does not provide a rich set of characteristics like those found in LISA. Although data from such linkage are available for use at Statistics Canada, they may not be available within RDCs. Linking the EI Employment Insurance Status Vector to PSIS would provide a similar potential candidate for this analysis.

USE OF ALTERNATIVE EDUCATION FUNDING SOURCES

Adult learners rely on self-financing and non-government loans to a much greater extent than traditional PSE learners. LISA does not cover all such sources in detail. Specifically, no information is included on the use of the Lifelong Learning Plan in RRSPs. However, admin data sources could be exploited. It might be possible to determine the extent to which RRSPs provide

adults with education financing. If RRSPs are only used by a small proportion of adult learners (in relation to RRSP savings), is there an informational or behavioural issue amenable to policy intervention?

TRENDS IN LIFE-LONG LEARNING

There is an inverse relationship between age and adult learning reported in the literature and borne out in LISA. But additional research is needed to examine whether education participation has increased equivalently for all ages over the past decade. Given many people are extending their working careers, analysis of trends within age groups over time may be worthwhile, possibly using the Census. Lengthening one's working life increases the pay-back period for investments in education throughout the life cycle.

NEW APPROACHES FOR OUTREACH

More research on the social media habits and behavioural preferences of adults with low levels of education and/or who are more distant from the labour market could prove valuable to gain insights into techniques and messaging to engage potential future participants in adult education. Despite rapid evolution in the literature, there is still a need for better evidence with respect to the influences on older adults in the context of workforce development.

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APPENDIX A: ADDITIONAL TABLES

Table A1 PIAAC essential skills

Characteristics	Typical learners	Adult learners	Difference	(S.E.)
PIAAC Essential Skills: Literacy				
Level 1 or below (0-225)	6.4	6.3	-0.2	(2.5)
Level 2 (226-275)	32.3	20.6	-11.6***	(3.8)
Level 3 (276-325)	50.1	45.2	-4.9	(4.5)
Level 4 and above (326-500)	11.2	27.9	16.7***	(3.5)
PIAAC Essential Skills: Numeracy				
Level 1 or below (0-225)	11.4	8.9	-2.5	(3.0)
Level 2 (226-275)	32.7	23.1	-9.6**	(4.0)
Level 3 (276-325)	46.4	42.6	-3.8	(4.5)
Level 4 and above (326-500)	9.5	25.3	15.9***	(3.3)
PIAAC Essential Skills: Problem Solving				
Not tested	4.7	10.1	5.5**	(2.6)
Below Level 1 (0-240)	4.9	7.8	2.9	(2.5)
Level 1 (226-275)	32.8	20.8	-12.1***	(3.9)
Level 2 (276-325)	50.3	47.8	-2.5	(4.5)
Level 3 and above (326-500)	7.3	13.6	6.3**	(2.7)
Observations	390	381		

Notes: Standard errors are in parentheses. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Table A2 Postsecondary educational characteristics

Characteristics	Typical learners	Adult learners	Difference	(S.E.)
Full-time/part-time study (%)				
Studied part-time	8.7	58.0	49.3***	(2.5)
Studied full-time	91.3	42.0	-49.3***	(2.5)
Levels of study (%)				
Non-university postsecondary	38.6	44.9	6.3**	(2.9)
University – bachelor's degree or below	55.8	28.4	-27.4***	(2.7)
University – above bachelor's degree	5.7	26.7	21.1***	(2.3)
Number of observations	1,365	842		

Notes: Standard errors are in parentheses. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Table A3 Field of study

Characteristics	Typical learners	Adult learners	Difference	(S.E.)
Field of study (%)				
General program	6.8	5.5	-1.3	(1.4)
STEM, including health	44.1	38.3	-5.7*	(3.0)
Other, including services	49.1	56.1	7.1**	(3.1)
Field of study (%)				
General program	6.8	5.5	-1.3	(1.4)
Teacher training and education science	5.1	13.7	8.6***	(2.0)
Humanities, languages, and arts	14.3	8.3	-6.0***	(2.0)
Social sciences, business, and law	24.3	24.0	-0.4	(2.7)
Science, mathematics, and computing	15.5	11.5	-4.0*	(2.0)
Engineering, manufacturing, construction, agriculture, and veterinary	14.8	10.9	-3.8*	(2.0)
Health and welfare	13.8	15.9	2.1	(2.0)
Services	5.3	10.1	4.8***	(1.7)
Observations	1,255	738		

Notes: Standard errors are in parentheses. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Table A4 Postsecondary funding

Characteristics	Typical learners	Adult learners	Difference	(S.E.)
Loans (govt, private bank, personal)				
Yes	46.5	26.9	-19.6***	(2.8)
No	53.5	73.1	19.6***	(2.8)
Grants, bursaries, scholarships, gifts				
Yes	65.8	29.0	-36.9***	(2.8)
No	34.2	71.0	36.9***	(2.8)
Employment earnings or other sources				
Yes	48.1	78.0	29.9***	(2.8)
No	51.9	22.0	-29.9***	(2.8)
Observations	1,365	842		

Notes: Standard errors are in parentheses. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Table A5 Characteristics of would-be learners

Characteristics	Type 1 Non-learners without unmet learning needs	Type 2 Non-learners with unmet learning needs	Type 3 Learners without unmet learning needs	Type 4 Learners with unmet learning needs	Differences (reference group = Type 1)		
					Type 2	Type 3	Type 4
Average age	45.6	42.3	34.5	36.0	-3.3***	-11.1***	-9.6***
Age group (%)							
Age 25-34	21.5	29.0	60.4	51.2	7.5***	39.0***	29.7***
Age 35-44	23.2	29.2	24.0	32.8	6.0***	0.8	9.6**
Age 45-64	55.4	41.8	15.5	16.0	-13.5***	-39.8***	-39.4***
Gender (%)							
Male	54.3	47.2	50.4	43.7	-7.1***	-3.8	-10.6**
Female	45.7	52.8	49.6	56.3	7.1***	3.8	10.6**
Born in Canada (%)							
No	22.7	26.2	31.8	32.0	3.5**	9.1**	9.2**
Yes	77.3	73.8	68.2	68.0	-3.5**	-9.1**	-9.2**
Aboriginal status (%)							
Yes	2.4	3.1	1.1	1.9	0.8	-1.3*	-0.5
No	97.6	96.9	98.9	98.1	-0.8	1.3*	0.5
Father's educational attainment (%)							
Less than high school	44.5	34.0	19.6	25.8	-10.5***	-25.0***	-18.8***
High school	22.0	20.8	21.6	16.4	-1.2	-0.3	-5.5*
Non-university postsecondary	18.4	24.0	25.8	22.6	5.7***	7.4**	4.3
University	15.1	21.2	33.1	35.2	6.0***	17.9***	20.0***
Mother's educational attainment (%)							
Less than high school	43.2	32.8	20.2	20.1	-10.4***	-23.0***	-23.1***
High school	29.6	30.7	27.0	24.8	1.1	-2.6	-4.8
Non-university postsecondary	17.9	22.7	30.1	27.8	4.8***	12.1***	9.8**
University	9.3	13.9	22.8	27.4	4.6***	13.5***	18.1***

Characteristics	Type 1 Non-learners without unmet learning needs	Type 2 Non-learners with unmet learning needs	Type 3 Learners without unmet learning needs	Type 4 Learners with unmet learning needs	Differences (reference group = Type 1)		
					Type 2	Type 3	Type 4
Marital status (%)							
Single, widowed, divorced, or separated	29.6	30.8	39.8	40.6	1.2	10.1***	11.0**
Married or Common-law	70.4	69.2	60.2	59.4	-1.2	-10.1***	-11.0**
Presence of own children							
No	61.9	55.8	70.2	66.4	-6.1***	8.2***	4.4
Yes	38.1	44.2	29.8	33.6	6.1***	-8.2***	-4.4
Region of residence (%)							
Atlantic	7.2	5.8	6.3	5.5	-1.4***	-0.9	-1.7
Quebec	25.4	17.6	24.0	19.7	-7.7***	-1.4	-5.7*
Ontario	37.9	41.3	36.9	39.7	3.4*	-1.0	1.7
Prairie	6.6	6.9	5.3	5.1	0.3	-1.3	-1.5
Alberta	11.5	13.0	12.7	11.3	1.5	1.2	-0.2
British Columbia	11.4	15.4	14.8	18.7	4.0***	3.4	7.3**
Rural/Population centre size (%)							
Rural area	18.9	15.8	9.7	9.5	-3.1**	-9.3***	-9.4***
Small (pop. 1,000 to 29,999)	13.1	12.2	8.5	4.8	-0.9	-4.6**	-8.2***
Medium (pop. 30,000 to 99,999)	9.9	8.0	9.5	9.4	-1.8*	-0.3	-0.5
Large urban (pop.100,000 to 499,999)	13.2	14.6	19.5	15.1	1.5	6.3*	1.9
Large urban (pop.500,000 or greater)	44.9	49.4	52.9	61.1	4.4**	7.9**	16.2***
Receipt of EI benefits in 2011 (%)							
No	86.4	88.2	84.9	89.5	1.7	-1.5	3.1
Yes	13.6	11.8	15.1	10.5	-1.7	1.5	-3.1
Employment (%)							
Not employed	12.9	11.2	17.5	13.1	-1.8	4.6	0.2
Employed	87.1	88.8	82.5	86.9	1.8	-4.6	-0.2

Characteristics	Type 1 Non-learners without unmet learning needs	Type 2 Non-learners with unmet learning needs	Type 3 Learners without unmet learning needs	Type 4 Learners with unmet learning needs	Differences (reference group = Type 1)		
					Type 2	Type 3	Type 4
Educational attainment (%)							
Less than high school	12.2	6.5					
High school	24.4	17.0	13.9	9.3	-7.4***	-10.6***	-15.1***
Non-university postsecondary	35.8	33.0	37.2	37.3	-2.7	1.4	1.5
University	27.5	43.4	49.0	53.4	15.9***	21.5***	25.9***
PIAAC Essential Skills: Literacy (%)							
Level 1 or below (0-225)	16.5	8.7	7.1	5.6	-7.9***	-9.4***	-10.9***
Level 2 (226-275)	35.5	25.9	25.4	14.4	-9.5***	-10.0***	-21.0***
Level 3 (276-325)	37.7	46.2	44.2	52.5	8.4***	6.5*	14.8***
Level 4 and above (326-500)	10.3	19.3	23.3	27.4	9.0***	13.0***	17.2***
PIAAC Essential Skills: Numeracy (%)							
Level 1 or below (0-225)	23.4	14.0	7.7	7.9	-9.5***	-15.7***	-15.5***
Level 2 (226-275)	34.8	27.9	31.2	23.4	-6.8***	-3.6	-11.4***
Level 3 (276-325)	32.2	43.4	38.9	45.7	11.3***	6.8*	13.6***
Level 4 and above (326-500)	9.6	14.7	22.2	23.0	5.0***	12.5***	13.4***
PIAAC Essential Skills: Problem Solving (%)							
Not tested	18.8	9.4	7.9	4.7	-9.4***	-10.9***	-14.0***
Below Level 1 (0-240)	32.3	30.1	29.5	24.0	-2.1	-2.8	-8.2**
Level 1 (226-275)	24.8	39.3	42.4	47.6	14.4***	17.5***	22.7***
Level 2 (276-325)	3.9	8.8	9.7	16.6	4.9***	5.8**	12.7***
Level 3 and above (326-500)	20.2	12.4	10.6	7.1	-7.8***	-9.6***	-13.2***
Income in 2011 (current dollars)							
Paid-employment income	44,420	48,845	35,293	42,237	4498**	-9054***	-2110
Total income before tax	53,936	56,643	40,548	48,541	2747	-13348***	-5355
Household total income before tax	98,663	101,237	88,063	96,379	2677	-10497**	-2181
Work experience							
Full-time work experience (years)	21.5	18.0	11.0	12.0	-3.5***	-10.5***	-9.4***
Tenure at the job (years)	10.8	8.4	4.7	5.1	-2.4***	-6.0***	-5.7***

Characteristics	Type 1 Non-learners without unmet learning needs	Type 2 Non-learners with unmet learning needs	Type 3 Learners without unmet learning needs	Type 4 Learners with unmet learning needs	Differences (reference group = Type 1)		
					Type 2	Type 3	Type 4
Occupation at the current or last job (%)							
Management	14.0	13.4	5.0	11.0	-0.6	-9.0***	-3.0
Business, finance, and administration	15.9	16.9	16.7	24.6	1.0	0.8	8.7**
Natural and applied sciences	7.6	9.4	7.3	8.2	1.8	-0.3	0.6
Health occupations	4.7	9.0	5.0	8.0	4.3***	0.3	3.3
Education, law and social, community	11.4	15.3	24.4	17.6	4.0***	13.1***	6.3**
Art, culture, recreation, and sport	2.8	4.4	5.8	4.6	1.6**	3.0	1.8
Sales and service	20.5	15.3	23.0	17.1	-5.3***	2.4	-3.5
Trades, transport, and equipment operators	14.9	11.0	8.3	3.6	-4.0***	-6.6***	-11.3***
Natural resources, agriculture, manufacturing, and utilities	8.2	5.3	4.5	5.3	-2.9***	-3.7**	-2.9
Government job (%)							
No	80.8	72.4	71.3	69.4	-8.5***	-9.5***	-11.5***
Yes	19.2	27.6	28.7	30.6	8.5***	9.5***	11.5***
Class of worker / Contract type (%)							
Paid job with a non-permanent contract	20.4	21.7	38.7	32.7	1.4	18.3***	12.3***
Paid job with a permanent contract	62.9	62.5	56.0	52.8	-0.4	-6.9*	-10.0**
Self-employed/unpaid family worker	16.7	15.8	5.3	14.5	-1.0	-11.5***	-2.3
Observations	3,879	1,689	303	211			
Job satisfaction (currently employed only)							
Extremely satisfied	29.9	25.5	29.0	25.5	-4.4***	-0.9	-4.4
Satisfied	55.0	54.5	52.0	51.0	-0.5	-3.0	-4.0
Neither satisfied nor dissatisfied	9.9	13.0	12.8	12.7	3.1**	3.0	2.8
Dissatisfied or extremely dissatisfied	5.2	7.0	6.1	10.8	1.8*	0.9	5.6*
Observations	3,331	1,500	252	183			

Notes: Data from LISA Wave 1 is used for analysis. The analysis is limited to the PIAAC sample. Standard errors are in parentheses. Statistical significance for differences relative to Type 1 is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Table A6 Logit regression I

Outcome: transition to formal education	Model 1				Model 2			
	Predictive Margins		Marginal Effect		Predictive Margins		Marginal Effect	
Characteristics	(1)	(S.E.)	(2)	(S.E.)	(3)	(S.E.)	(4)	(S.E.)
Experienced a job loss between 2012 and 2016								
No (reference group)	0.111	(0.005)			0.112	(0.005)		
Yes	0.135	(0.013)	0.024	(0.015)	0.133	(0.013)	0.022	(0.015)
Age group								
25-34 (reference group)	0.159	(0.012)			0.134	(0.012)		
35-44	0.129	(0.010)	-0.030*	(0.016)	0.132	(0.010)	-0.002	(0.017)
45-64	0.063	(0.006)	-0.096***	(0.014)	0.077	(0.008)	-0.057***	(0.018)
Gender								
Male (reference group)	0.102	(0.007)			0.109	(0.007)		
Female	0.129	(0.007)	0.027***	(0.010)	0.121	(0.007)	0.012	(0.011)
Born in Canada								
No (reference group)	0.134	(0.012)			0.134	(0.012)		
Yes	0.109	(0.006)	-0.025*	(0.014)	0.108	(0.006)	-0.026*	(0.014)
Aboriginal status								
Yes (reference group)	0.114	(0.005)			0.114	(0.005)		
No	0.162	(0.041)	0.048	(0.041)	0.155	(0.036)	0.041	(0.036)
Father's educational attainment								
Less than high school (reference group)	0.125	(0.011)			0.125	(0.011)		
High school	0.116	(0.010)	-0.010	(0.015)	0.115	(0.010)	-0.010	(0.015)
Non-university postsecondary	0.114	(0.010)	-0.011	(0.015)	0.116	(0.010)	-0.009	(0.015)
University	0.105	(0.010)	-0.020	(0.016)	0.104	(0.010)	-0.021	(0.016)
Mother's educational attainment								
Less than high school (reference group)	0.115	(0.010)			0.116	(0.010)		
High school	0.120	(0.010)	0.006	(0.014)	0.122	(0.009)	0.005	(0.014)
Non-university postsecondary	0.113	(0.009)	-0.002	(0.014)	0.112	(0.009)	-0.005	(0.014)
University	0.109	(0.013)	-0.006	(0.017)	0.108	(0.012)	-0.009	(0.017)

Outcome: transition to formal education	Model 1				Model 2			
Characteristics	Predictive Margins (1)	(S.E.)	Marginal Effect (2)	(S.E.)	Predictive Margins (3)	(S.E.)	Marginal Effect (4)	(S.E.)
Marital status								
Single, widowed, divorced, or separated (reference group)	0.129	(0.011)			0.126	(0.011)		
Married or Common-law	0.108	(0.005)	-0.021	(0.013)	0.110	(0.005)	-0.017	(0.012)
Presence of own children								
No (reference group)	0.134	(0.008)			0.132	(0.008)		
Yes	0.097	(0.006)	-0.037***	(0.011)	0.099	(0.006)	-0.033***	(0.011)
Province of residence								
Newfoundland and Labrador (reference group)	0.102	(0.020)			0.099	(0.019)		
Prince Edward Island	0.082	(0.023)	-0.020	(0.030)	0.083	(0.022)	-0.016	(0.029)
Nova Scotia	0.115	(0.016)	0.012	(0.024)	0.119	(0.016)	0.019	(0.024)
New Brunswick	0.108	(0.018)	0.005	(0.026)	0.110	(0.018)	0.010	(0.025)
Quebec	0.130	(0.010)	0.027	(0.022)	0.131	(0.010)	0.032	(0.022)
Ontario	0.109	(0.009)	0.007	(0.021)	0.108	(0.009)	0.009	(0.021)
Manitoba	0.120	(0.016)	0.018	(0.026)	0.121	(0.016)	0.022	(0.025)
Saskatchewan	0.120	(0.018)	0.018	(0.025)	0.118	(0.017)	0.019	(0.025)
Alberta	0.091	(0.011)	-0.012	(0.023)	0.092	(0.011)	-0.008	(0.023)
British Columbia	0.131	(0.014)	0.029	(0.024)	0.131	(0.014)	0.032	(0.024)
Rural/Population centre size (%)								
Rural area	0.089	(0.010)			0.091	(0.010)		
Small (pop. 1,000 to 29,999)	0.122	(0.013)	0.033**	(0.015)	0.125	(0.013)	0.034**	(0.015)
Medium (pop. 30,000 to 99,999)	0.131	(0.017)	0.042**	(0.019)	0.130	(0.015)	0.039**	(0.018)
Large urban (pop.100,000 to 499,999)	0.144	(0.016)	0.055***	(0.017)	0.142	(0.015)	0.051***	(0.017)
Large urban (pop.500,000 or greater)	0.109	(0.007)	0.020	(0.013)	0.109	(0.007)	0.019	(0.013)
Receipt of EI benefits in 2011								
No (reference group)	0.118	(0.005)			0.119	(0.005)		
Yes	0.100	(0.012)	-0.018	(0.014)	0.097	(0.012)	-0.022*	(0.013)

Outcome: transition to formal education	Model 1				Model 2			
Characteristics	Predictive Margins (1)	(S.E.)	Marginal Effect (2)	(S.E.)	Predictive Margins (3)	(S.E.)	Marginal Effect (4)	(S.E.)
Receipt of social assistance payment in 2011								
No (reference group)	0.115	(0.005)			0.115	(0.005)		
Yes	0.106	(0.037)	-0.009	(0.038)	0.098	(0.029)	-0.018	(0.030)
Employment								
Not employed (reference group)	0.146	(0.023)			0.142	(0.023)		
Employed	0.113	(0.005)	-0.033	(0.024)	0.113	(0.005)	-0.029	(0.023)
Educational attainment								
Less than high school (reference group)	0.095	(0.024)			0.099	(0.025)		
High school	0.094	(0.012)	-0.001	(0.026)	0.098	(0.013)	-0.001	(0.027)
Non-university postsecondary	0.109	(0.009)	0.014	(0.025)	0.117	(0.009)	0.018	(0.025)
University	0.128	(0.008)	0.033	(0.026)	0.121	(0.007)	0.021	(0.027)
Currently enrolled in school at baseline								
No (reference group)	0.072	(0.005)			0.073	(0.005)		
Yes	0.465	(0.028)	0.392***	(0.029)	0.443	(0.028)	0.370***	(0.029)
Occupation at the current or last job								
Management (reference group)					0.116	(0.016)		
Business, finance, and administration					0.114	(0.012)	-0.002	(0.020)
Natural and applied sciences					0.109	(0.015)	-0.007	(0.021)
Health occupations					0.087	(0.013)	-0.029	(0.020)
Education, law and social, community					0.127	(0.014)	0.011	(0.021)
Art, culture, recreation, and sport					0.111	(0.023)	-0.005	(0.028)
Sales and service					0.140	(0.013)	0.024	(0.022)
Trades, transport, and equipment operators					0.084	(0.014)	-0.032	(0.022)
Natural resources, agriculture, manufacturing, and utilities					0.102	(0.020)	-0.014	(0.026)
Government job								
No (reference group)					0.107	(0.006)		
Yes					0.140	(0.012)	0.033***	(0.014)

Outcome: transition to formal education	Model 1				Model 2			
Characteristics	Predictive Margins (1)	(S.E.)	Marginal Effect (2)	(S.E.)	Predictive Margins (3)	(S.E.)	Marginal Effect (4)	(S.E.)
Class of worker / Contract type								
Paid job with a non-permanent contract (reference group)					0.125	(0.011)		
Paid job with a permanent contract					0.111	(0.006)	-0.013	(0.012)
Self-employed/unpaid family worker					0.116	(0.014)	-0.009	(0.018)
General work experience								
Number of years with full-time work experience							-0.002**	(0.001)
Number of years with full-time work experience, squared								
Tenure								
Number of years at the job							-0.003**	(0.001)
Number of years at the job, squared								
Observations	6,957		6,957		6,957		6,957	

Notes: Longitudinal data from LISA Waves 1, 2 and 3 are used. Longitudinal survey weights are applied. Standard errors are in parentheses. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

Table A7 Logit regression II

Outcome: transition to formal education	Model 1				Model 2			
	Predictive Margins		Marginal Effect		Predictive Margins		Marginal Effect	
Characteristics	(1)	(S.E.)	(2)	(S.E.)	(3)	(S.E.)	(4)	(S.E.)
Age group								
25-34 (reference group)	0.170	(0.022)			0.167	(0.022)		
35-44	0.123	(0.015)	-0.047*	(0.027)	0.122	(0.015)	-0.045*	(0.026)
45-64	0.070	(0.012)	-0.100***	(0.029)	0.072	(0.012)	-0.096***	(0.029)
Gender								
Male (reference group)	0.108	(0.011)			0.108	(0.011)		
Female	0.133	(0.012)	0.026	(0.017)	0.133	(0.012)	0.025	(0.017)
Born in Canada								
No (reference group)	0.138	(0.019)			0.139	(0.019)		
Yes	0.116	(0.008)	-0.022	(0.021)	0.116	(0.008)	-0.023	(0.021)
Aboriginal status								
Yes (reference group)	0.134	(0.049)			0.130	(0.047)		
No	0.121	(0.007)	-0.013	(0.050)	0.121	(0.007)	-0.010	(0.048)
Father's educational attainment								
Less than high school (reference group)	0.129	(0.017)			0.130	(0.017)		
High school	0.112	(0.015)	-0.017	(0.022)	0.115	(0.015)	-0.015	(0.022)
Non-university postsecondary	0.133	(0.017)	0.004	(0.025)	0.130	(0.016)	0.000	(0.025)
University	0.107	(0.015)	-0.022	(0.025)	0.108	(0.015)	-0.023	(0.025)
Mother's educational attainment								
Less than high school (reference group)	0.107	(0.015)			0.107	(0.015)		
High school	0.114	(0.014)	0.007	(0.020)	0.116	(0.014)	0.009	(0.020)
Non-university postsecondary	0.135	(0.016)	0.028	(0.023)	0.133	(0.015)	0.026	(0.023)
University	0.134	(0.024)	0.027	(0.031)	0.137	(0.024)	0.031	(0.032)
Marital status								
Single, widowed, divorced, or separated (reference group)	0.134	(0.015)			0.133	(0.015)		
Married or Common-law	0.114	(0.009)	-0.020	(0.019)	0.115	(0.009)	-0.017	(0.018)

Outcome: transition to formal education	Model 1				Model 2			
	Predictive Margins		Marginal Effect		Predictive Margins		Marginal Effect	
Characteristics	(1)	(S.E.)	(2)	(S.E.)	(3)	(S.E.)	(4)	(S.E.)
Presence of own children living with the respondent								
No (reference group)	0.124	(0.011)			0.126	(0.011)		
Yes	0.117	(0.011)	-0.007	(0.016)	0.114	(0.011)	-0.012	(0.016)
Province of residence								
Newfoundland and Labrador (reference group)	0.107	(0.036)			0.115	(0.040)		
Prince Edward Island	0.090	(0.037)	-0.017	(0.051)	0.089	(0.037)	-0.026	(0.054)
Nova Scotia	0.121	(0.026)	0.015	(0.042)	0.124	(0.025)	0.009	(0.045)
New Brunswick	0.134	(0.034)	0.027	(0.049)	0.137	(0.037)	0.022	(0.053)
Quebec	0.137	(0.015)	0.030	(0.040)	0.139	(0.016)	0.024	(0.043)
Ontario	0.117	(0.014)	0.010	(0.038)	0.117	(0.014)	0.002	(0.042)
Manitoba	0.127	(0.026)	0.020	(0.045)	0.128	(0.027)	0.013	(0.049)
Saskatchewan	0.116	(0.026)	0.009	(0.043)	0.115	(0.026)	0.000	(0.046)
Alberta	0.102	(0.020)	-0.004	(0.042)	0.102	(0.021)	-0.012	(0.046)
British Columbia	0.125	(0.019)	0.019	(0.041)	0.121	(0.018)	0.007	(0.044)
Rural/Population centre size (%)								
Rural area	0.096	(0.016)			0.095	(0.015)		
Small (pop. 1,000 to 29,999)	0.114	(0.020)	0.018	(0.023)	0.116	(0.020)	0.021	(0.024)
Medium (pop. 30,000 to 99,999)	0.155	(0.026)	0.060**	(0.030)	0.154	(0.026)	0.059**	(0.030)
Large urban (pop.100,000 to 499,999)	0.134	(0.021)	0.038	(0.025)	0.131	(0.020)	0.036	(0.024)
Large urban (pop.500,000 or greater)	0.119	(0.012)	0.023	(0.021)	0.120	(0.012)	0.025	(0.020)
Receipt of EI benefits in 2011								
No (reference group)	0.126	(0.008)			0.125	(0.008)		
Yes	0.098	(0.018)	-0.028	(0.021)	0.099	(0.019)	-0.026	(0.021)
Receipt of social assistance payment in 2011								
No (reference group)	0.119	(0.007)			0.119	(0.007)		
Yes	0.194	(0.061)	0.075	(0.062)	0.201	(0.065)	0.082	(0.066)

Outcome: transition to formal education	Model 1				Model 2			
	Predictive Margins		Marginal Effect		Predictive Margins		Marginal Effect	
Characteristics	(1)	(S.E.)	(2)	(S.E.)	(3)	(S.E.)	(4)	(S.E.)
Employment								
Not employed (reference group)	0.141	(0.025)			0.138	(0.023)		
Employed	0.119	(0.008)	-0.022	(0.026)	0.119	(0.008)	-0.019	(0.025)
Educational attainment								
Less than high school (reference group)	0.100	(0.032)			0.110	(0.033)		
High school	0.117	(0.017)	0.017	(0.035)	0.122	(0.018)	0.012	(0.035)
Non-university postsecondary	0.113	(0.014)	0.013	(0.033)	0.114	(0.014)	0.003	(0.034)
University	0.132	(0.013)	0.032	(0.036)	0.128	(0.012)	0.017	(0.036)
Currently enrolled in school at baseline								
No (reference group)	0.099	(0.008)			0.113	(0.011)		
Yes	0.264	(0.033)	0.165***	(0.034)	0.153	(0.042)	0.040	(0.050)
Occupation at the current or last job								
Management (reference group)	0.109	(0.023)			0.110	(0.023)		
Business, finance, and administration	0.122	(0.018)	0.013	(0.029)	0.122	(0.018)	0.012	(0.029)
Natural and applied sciences	0.108	(0.021)	-0.001	(0.030)	0.104	(0.020)	-0.006	(0.030)
Health occupations	0.102	(0.024)	-0.006	(0.033)	0.096	(0.022)	-0.015	(0.032)
Education, law and social, community	0.138	(0.020)	0.029	(0.031)	0.139	(0.021)	0.029	(0.032)
Art, culture, recreation, and sport	0.104	(0.032)	-0.005	(0.039)	0.100	(0.030)	-0.010	(0.037)
Sales and service	0.145	(0.021)	0.037	(0.032)	0.150	(0.021)	0.040	(0.033)
Trades, transport, and equipment operators	0.074	(0.022)	-0.035	(0.031)	0.074	(0.022)	-0.036	(0.032)
Natural resources, agriculture, manufacturing and utilities	0.147	(0.034)	0.038	(0.040)	0.148	(0.033)	0.037	(0.040)
Government job								
No (reference group)	0.117	(0.009)			0.117	(0.009)		
Yes	0.134	(0.017)	0.017	(0.021)	0.133	(0.017)	0.015	(0.021)
Class of worker / Contract type								
Paid job with a non-permanent contract (reference group)	0.114	(0.015)			0.114	(0.015)		
Paid job with a permanent contract	0.122	(0.010)	0.007	(0.018)	0.121	(0.010)	0.007	(0.018)
Self-employed/unpaid family worker	0.133	(0.020)	0.018	(0.025)	0.134	(0.020)	0.020	(0.025)

Outcome: transition to formal education	Model 1				Model 2			
	Predictive Margins		Marginal Effect		Predictive Margins		Marginal Effect	
Characteristics	(1)	(S.E.)	(2)	(S.E.)	(3)	(S.E.)	(4)	(S.E.)
General work experience								
Full-time work experience (years)			-0.002	(0.001)			-0.001	(0.001)
Full-time work experience (years), squared								
Tenure								
Tenure at the job (years)			-0.003	(0.002)			-0.003	(0.002)
Tenure at the job (years), squared								
Learner								
No (reference group)					0.101	(0.010)		
Yes					0.219	(0.057)	0.118*	(0.064)
Have unmet learning need								
No (reference group)					0.104	(0.009)		
Yes					0.152	(0.014)	0.047***	(0.016)
Not a learner & Not have unmet learning need					0.079	(0.011)		
Not a learner & Have unmet learning need					0.139	(0.017)		
Learner & Not have unmet learning need					0.222	(0.062)		
Learner & Have unmet learning need					0.214	(0.063)		
Observations	3,588		3,588		3,588		3,588	

Notes: Longitudinal data from LISA Waves 1, 2 and 3 are used. The sample is limited to the PIAAC sample. Longitudinal survey weights are applied. Standard errors are in parentheses. Statistical significance is denoted by asterisks: *** p<0.01, ** p<0.05, * p<0.1.

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