



An Economic Overview of Children's Literacy in Canada

November 2020

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Contents

NOTE TO READER	I
EXECUTIVE SUMMARY	III
WHY DOES CHILDREN'S LITERACY MATTER?	III
DO CANADIAN CHILDREN HAVE THE LITERACY SKILLS THEY NEED TO SUCCEED?	III
WHAT FACTORS SUPPORT LITERACY DEVELOPMENT?	IV
WHAT CAN WE DO TO SUPPORT CHILDREN'S LITERACY DEVELOPMENT?	V
INTRODUCTION	1
DEFINING LITERACY	2
LEVELS OF LITERACY	2
THE CASE FOR CHANGE – THE BENEFITS OF CHILDREN'S LITERACY	4
INDIVIDUAL WELL-BEING	4
SOCIETAL BENEFITS	7
THE STATE OF LITERACY IN CANADA	10
CHILD LITERACY PERFORMANCE	10
OVERVIEW OF CHILD LITERACY PERFORMANCE BY DEMOGRAPHIC CHARACTERISTICS	15
ADULT LITERACY PERFORMANCE	18
DRIVERS OF LITERACY PERFORMANCE	20
CONCLUSIONS AND RECOMMENDATIONS	24
WHAT HAVE WE LEARNED?	24
WHAT CAN WE DO TO IMPROVE CHILDREN'S LITERACY?	24
REFERENCES	1
APPENDIX 1: DATA SOURCES OVERVIEW	1
EARLY DEVELOPMENT INSTRUMENT	1
PISA	1
CALCULATION OF VULNERABLE POPULATION	1
APPENDIX 2: SURVEY OVERVIEW	3
SURVEY METHODOLOGY	3
TARGET POPULATION	3
SUMMARY OF RESPONSES	4
APPENDIX 3: ADDITIONAL RESEARCH ON ADULT LITERACY PERFORMANCE IN CANADA	15

Note to Reader



Faced with the greatest economic contraction in modern history, children's literacy is a key dimension to recovery not talked about enough. The COVID-19 pandemic has created a massive shock to Canadian labour markets – with unemployment skyrocketing and expected to remain elevated over the next couple of years. For unemployed workers, returning to employment will require reskilling or upskilling. Success on this front will be dependent upon their literacy, numeracy and critical thinking skills to help navigate the hurdles of returning to gainful employment.

In addition, the pandemic has also raised awareness about the importance of childcare. Caregivers of young children can only participate in the labour markets with ease if they have access to safe, affordable and quality childcare. As governments think about greater funding for childcare, they should think about the opportunity to invest in early childhood education. Investments in early learning will

not only increase the ability of parents to work, but will also help children to become the resilient workers of the future.

It is essential to also highlight the role that caregivers play in developing child literacy and school preparedness. During the lockdown in March and April that closed schools and forced many parents to work from home, home schooling became more important than ever, and yet many parents did not have the materials, capabilities or time they needed to foster stronger literacy skills in their kids. This was particularly true of lower income households. Moving ahead, online learning options may continue to be common place – thus this challenge can be expected to persist.

Importantly, the economic and social fallout of the pandemic was not felt evenly across society – and shed light on longstanding inequalities in Canada. Lower income workers have experienced the greatest increase in unemployment, reflecting the employment composition of the industries that have been the hardest hit. For example, there are many minimum wage, or close to minimum wage, workers in hospitality and food services, tourism, and retail that were particularly vulnerable to unemployment as a result of the crisis. At the same time, Canadians employed in workplaces equipped with the ability to work-from home easily were able to adapt easily.

That means that children of lower income households are indirectly more affected, and these parents have less resources to do at-home schooling and less access to quality childcare. This is aggravating the inequality dimension to early learning that has been present for decades. Parents from wealthy households can afford high quality early learning, allowing their children to be better prepared for primary school and future success. Low income parents are at a disadvantage and their children pay the price of poorer pre-school skills development – including literacy skills.

The simple fact is that too many children in Canada are not developing the literacy skills they need to succeed in life. The scientific evidence is clear that brain development starts in the womb and the building blocks of future skills occur before age six. A review of early development indicators suggests that roughly 25 percent of children are developmentally vulnerable and many of them would benefit from stronger literacy skills. Moreover, there is evidence that close to a quarter of children in early primary school are falling short of reading goals, with the share declining to a still considerable 15 percent by age 15. This means that close to 1 million children in Canada need stronger literacy skills, and a significant portion of the at-risk children and youths are from disadvantaged households.

Literacy is often viewed as a binary outcome – you are either literate or you are not. However, literacy is like any skill set and an individual's capabilities should be viewed as a continuum. There are people with poor, weak, adequate, strong and exceptional literacy skills. So, one may be able to read and write, but still not have the proficiency necessary to be competitive in a modern knowledge-based economy.

There is also a strong economic imperative to investing in children's literacy. Children are the future of our workforce. Given the technological revolution underway, post-pandemic Canada will need workers with sophisticated skills to be successful in the labour market.

Further, as we contemplate Canada's economic recovery, enhancing children's literacy can lead to quantifiable economic gains. In fact, our estimates of the long-run economic benefit of improving literacy suggests that every 1% increase in the literacy skills of adults creates an economic benefit of \$67 billion gross domestic product as measured

at 2018 prices. This adult literacy payoff can come from increasing child literacy that lifts adult literacy as the individuals age.

One of the key findings in this report is that the majority of Canadians acknowledge the importance of children's literacy. Over 80 percent of respondents to a Deloitte survey reported that strong literacy skills help educational achievement. More than half of respondents believe that early literacy has a significant impact on future employment. More than a third of survey respondents expressed that a sizeable portion of children lack necessary literacy skills. These findings are important for policymakers because it implies that there would likely be public support for increased investment in children's literacy.

So what can be done to improve Canada's performance?

First, when calculating the size of the at-risk population of children, we found that data is limited and hard to compare. If Canada tracked child development and educational performance better, policymakers could target their investments better in this space to have greater impact and reduce the number of children who fail to develop the requisite skills.

Second, public awareness could be raised on the most effective ways for caregivers to help their children develop early literacy skills in the critical years between 0 and 5. We also need to equip caregivers for success. They need access to practical resources to support children's skills development. It is critical that we support caregivers in implementing good literacy development practices as early as possible. This would be most important for disadvantaged households.

Third, given the rapid pace of brain development in the pre-school years, the foundations of literacy need to be put in place long before school begins. This calls for expanded access to affordable, high-quality, curriculum based early childhood education programs.

Relative to other countries, Canada may be doing well, but in absolute terms too many children are not developing the literacy skills they need. Since the population of at-risk children is concentrated in those from disadvantaged backgrounds, enhancing children's literacy can play a role in reducing inequality. In fact, investments in children's literacy can be a key plank in helping to foster a more inclusive economic recovery and a higher standard of living in the long term. The bottom line is that strong children's literacy is good for kids, parents, the economy, and society.



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Executive Summary

Literacy is the great enabler. It is the foundation upon which all other skills are built. In fact, children with strong literacy skills can have an enormous advantage in all facets of life, and later, in the workforce. Notably, literacy is more than the ability to read and write; it encompasses a continuum of skills, knowledge, and comprehension that helps an individual contribute to society and the economy in a meaningful way.

Given its complexities and its importance to individual and societal well-being, the Canadian Children's Literacy Foundation engaged Deloitte to develop this report to better understand children's literacy in Canada, which includes understanding the drivers of literacy outcomes.

To develop this report, we drew on publicly available data, secondary literature, and stakeholder consultations. Additionally, we surveyed 1,000 Canadians to gain insights into their perceptions of the state of literacy in Canada and its importance to our economy and society.

WHY DOES CHILDREN'S LITERACY MATTER?

The benefits of literacy are far-reaching and long lasting, starting at the individual level as expressed in economic gains and improvements to improvements in overall well-being. Over time, society benefits from the development of a highly-skilled, healthy, and productive workforce.

Early literacy is linked to better educational attainment levels, employment opportunities, and earning potential. Furthermore, strong early literacy skills are associated with improved physical and mental health outcomes insofar as these skills affect literacy outcomes later on. Seen this way, helping young children develop a strong foundation for literacy skills will be beneficial to the health and well-being of Canadians.

For the economy, children's literacy is an important piece of the competitiveness puzzle. Children with strong early literacy skills have a larger vocabulary, better reasoning skills, greater emotional intelligence, and are better prepared for entering school. With a strong foundation, children are more likely to develop into productive, healthy, and successful members of society.

In some instances, observers argue that children who are behind in literacy development can catch up later in life. While it is possible to improve the literacy skills of older children and adults, there is often a higher cost to achieve this. It is easier and less costly for interventions to happen earlier in life. Viewed this way, if we equip young children with strong early literacy skills, we are investing in the future of our economy.

DO CANADIAN CHILDREN HAVE THE LITERACY SKILLS THEY NEED TO SUCCEED?

Although Canadian children outperform international peers in literacy, many still have inadequate literacy skills. Reviewing several assessments of children's literacy, we estimate that as many as 540,000 (lower bound) to 1,060,000 (upper bound) Canadian children from 0 to 15 years old have weak literacy skills (or for those who are very young, do not have a strong foundation on which to build literacy skills).¹ This means that they lack crucial skills that can help them to be successful in school and fully participate in modern society. A potential cause for concern is the fact that the percentage of 15-year-olds with low literacy skills has increased from a decade ago, while the demand for higher skilled workers has been rising.

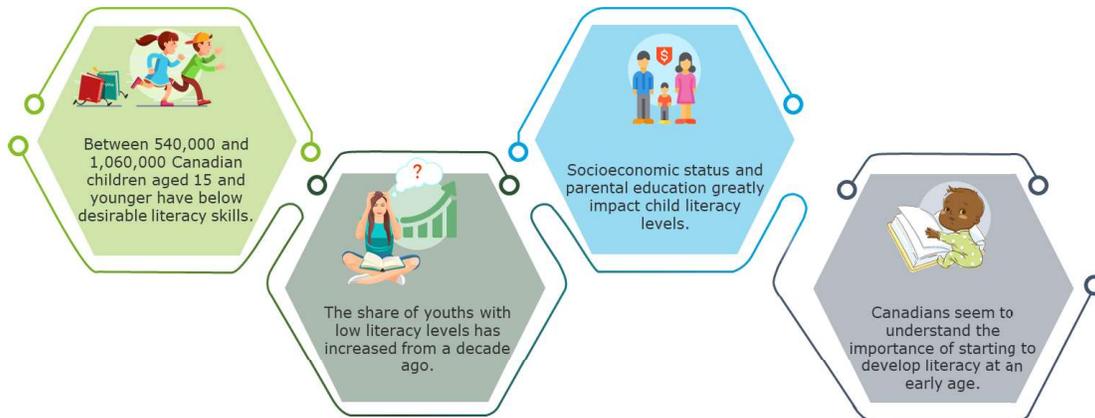
Importantly, children with certain characteristics are more likely to test lower on early literacy assessments, including children from lower socioeconomic status neighbourhoods or materially deprived households, as well as Indigenous



¹ See Appendix A, CALCULATION OF VULNERABLE POPULATION, for the methodology used to derive this range.

children. It is often these children who are more likely to exhibit lower rates of employment, poor health, and other negative outcomes, making literacy an important point of departure in the reduction of inequality in Canada.

Furthermore, nearly half of all adults have below desired literacy skills for a modern, knowledge-based economy. This has important implications for children's literacy, as adults with weak literacy skills may be less able or likely to support their children's literacy development and may be less likely to understand the importance of literacy skills. Additionally, adults with below desired literacy skills are more likely to have lower incomes, which creates additional challenges for their children's literacy development, as they have access to fewer resources and may face other compounding challenges. One estimate of the long-run impact of literacy on economy suggests that every 1% increase in adult literacy could lead to a \$67 billion boost to gross domestic product ("GDP") or total income as measured by 2018 prices.



WHAT FACTORS SUPPORT LITERACY DEVELOPMENT?

Children must have their basic needs met before they can develop literacy skills. Food, shelter, and safety are non-negotiable. Beyond these factors, early literacy development is largely determined by environmental factors, including family characteristics, early childhood education, and community context. Although there are several complex and interrelated factors that drive early literacy development, this report identifies the home learning environment and socioeconomic status as dominant drivers of children's literacy.

Home Learning Environment

The home learning environment ("HLE") is particularly important, as it represents the first point of language development exposure for children. Activities such as regularly reading, conversing, singing, and playing with children all contribute to their brain development and help them form the necessary skills required to develop literacy ability. As children's brains are highly malleable in the early stages of their lives, engaging in these activities can significantly affect learning outcomes later in life. In fact, the HLE is found to be a particularly important predictor for reading and mathematics achievement for children aged five.

Socioeconomic Status

Importantly, children from lower socioeconomic status families are likely to be at a learning disadvantage compared to children from higher socioeconomic status families. This is in part due to the relationship between socioeconomic status and access to learning resources and the investments parents are able to make in education, whether a child's basic health and safety needs are met, and whether a parent has a sufficient level of education to encourage learning. This link is persistent and can perpetuate a cycle where children from lower socioeconomic backgrounds may be at a learning disadvantage throughout the course of their lives, and this disadvantage can potentially affect their future children's lives. In this way, addressing weak children's literacy could help break the inter-generational cycle of inequality.

One clarification to note is that socioeconomic status may also impact a family's ability to address learning differences because of disparate access to supportive resources. While important, research related to learning differences is out of scope for this study.

The greater challenge faced by children of low income families should not be interpreted as a recommendation to focus exclusively on this segment of child literacy. Indeed, one of the lessons from early childhood education programs is that classrooms of children from all backgrounds deliver superior skills development for all the kids participating.

WHAT CAN WE DO TO SUPPORT CHILDREN'S LITERACY DEVELOPMENT?

There are many initiatives that could help improve children's literacy in Canada. It is clear that we all have a role to play. The following recommendations represent a starting point for action:

1. **Start with better data:** To improve society and decision makers' understanding of the extent of the problem, and address problems early on, we need better data on child and youth literacy. Ideally, governments would collect data that tracks children over time and into adulthood to see how their literacy skills evolve.
2. **Enhance public awareness:** While the Canadians surveyed as part of this research are generally aware of the importance of literacy, we can improve caregivers' awareness of how and when to encourage literacy development.
3. **Provide effective, targeted resources for parents:** Parents need to feel empowered to help their children learn. Support can include information provided by healthcare workers, classes on how to support literacy development, or even public awareness campaigns highlighting what tactics parents can use to help create a supportive home learning environment to set children up for success.
4. **Invest in universal early childhood education:** Research suggests that the early years of a child's life are crucial for language development. If we are serious about improving literacy in Canada, we need to improve access to quality early childhood education on a universal basis.
5. **Improve outcomes for socioeconomically challenged households:** Improving outcomes for such households can not only address poverty and other social issues, but it can also indirectly improve child literacy by creating a better learning environment.

Introduction

An economy's strength ultimately resides in its people. When we talk about economic performance, we often focus on labour market outcomes as a key driver of economic growth and centre on the performance of adult workers in the workforce. However, a key dimension of this competitiveness starts much earlier – with the extent to which children develop literacy. As children grow up and explore the world, they consciously and subconsciously learn the skills they'll later draw upon to succeed as adults. Chief amongst these skills is the ability to read, write and communicate.

While we often talk about skills development in the workforce, the linkage between children's literacy and Canada's economic competitiveness is often overlooked or unappreciated. As a national charitable organization aimed at supporting early literacy development, the Canadian Children's Literacy Foundation ("CCLF") champions and develops initiatives to help ensure that young children are equipped with the necessary skills to achieve their full potential. To that end, CCLF engaged Deloitte to develop a report that overviews the current state of children's literacy in Canada. Our report has three main objectives:

1. Better understand children's literacy levels in Canada, including differences across provinces, gender, and socioeconomic factors;
2. Analyze the key drivers of early literacy outcomes; and,
3. Evaluate the benefits of strong early literacy to individuals, the economy, and society as a whole.

Notably, literacy is more than the ability to read and write; it encompasses a continuum of skills, knowledge, and comprehension that helps an individual contribute to society and the economy in a meaningful way. The breadth of literacy evolves with changes in the world, from technological innovation to the changing economic landscape. Literacy is not static, and therefore must be analyzed against the backdrop of today while considering what may be different tomorrow.

This report largely focuses on communicating the state of children's literacy in Canada and showcasing the importance of children's literacy to adult social and economic outcomes. As a country, our people are our greatest asset, and it is paramount to our economic competitiveness that we prioritize investing in and nurturing their skills. This is particularly salient given the fact that we are living in a period where ideas, innovation, and the ability to harness the two, are increasingly important.

In the development of this report, we drew on publicly available data, secondary literature, and stakeholder consultations. Additionally, we surveyed 1,000 Canadians to gain insights into their perceptions of the state of literacy in Canada and its importance to our economy and society. This survey will be referred to several times in this report.

Defining Literacy	This section defines what we mean by literacy. We emphasize that there are various levels literacy, from very weak literacy to advanced literacy.	
Benefits of Literacy	This section outlines the importance of children's literacy to the individual and to society, by exploring its impacts on several socioeconomic dimensions, including health outcomes and economic prosperity.	
State of Literacy in Canada	This section analyzes the state of literacy in Canada, with respect to child, youth, and adult literacy outcomes. We emphasize that too many Canadian children and adults have weak literacy skills.	
Early Literacy Development	This section explores the key drivers of early literacy, articulating the link between literacy and several important environmental factors that impact literacy development.	
Recommendations	This section summarizes our key recommendations to improve children's literacy in Canada and support individual, economic, and societal well-being in the process.	

Defining Literacy

Literacy is traditionally defined as the ability to read and write. It is often, inappropriately, interpreted by the public in a binary manner – one is often viewed as either 'literate' or 'illiterate'. However, defining literacy in this manner overlooks the fact that literacy is a continuum of proficiency. An individual can have no capability, basic, advanced, or expert literacy skills. This spectrum of literacy deeply influences learning outcomes and capabilities that can shape the extent to which an individual develops the knowledge, skills, and personal growth necessary to positively contribute to society and the economy.

In this paper, we define literacy as "the ability to understand, evaluate, use, and engage with written texts to participate in society, achieve one's goals, and develop one's knowledge and potential" (OECD, 2013). In this way, literacy encompasses more than just the ability to read and write and includes other important dimensions such as numeracy, comprehension, and the interpretation and evaluation of texts.

Literacy is "the ability to understand, evaluate, use, and engage with written texts to participate in society, achieve one's goals, and develop one's knowledge and potential." (OECD, 2013)

Numeracy is an important aspect of literacy, as it directly influences the development of one's knowledge and potential, especially in the context of a rapidly changing and technology-rich society. In the early years, numeracy is often learned through reading (e.g., shared reading where the parent asks the child to count the cows in the field) and therefore the two dimensions can be seen as mutually reinforcing. This report will focus on reading skills, but will also include results on numeracy, where applicable.

Critically, defining literacy can be done in many ways and literacy skills vary depending on the age of the individual. Very young children, in particular, develop pre-literacy skills which are defined as "everything a child knows about reading and writing before a child can read or write."² This would include things like whether or not a child is familiar with

books, can turn a book's pages, understands that print conveys meaning, reading occurs from left to right (for English and French), and many other indicators.

Importantly, an individual's literacy is not static and evolves over time. The desired set of skills for succeeding today is different from the set required two decades ago. This is important to consider as we are concerned with literacy skills inasmuch as they allow individuals, economies, and societies to succeed – not just today, but also tomorrow.

LEVELS OF LITERACY

This report refers to several tools or sources used to measure literacy proficiency. Each enables us to observe whether Canadians have 'desirable' literacy skills. While the definition of 'desirable' varies depending on the measurement tool, we generally treat a desirable level of literacy to be one in which an individual has the literacy skills necessary to maximize their potential within their current environment. These needs will vary as a child grows up. For young children and teenagers, this means succeeding in school. For adults, this means having the skills to obtain employment, stay employed, perform well in their role and remain competitive in their field by continuously learning new skills – amongst other individual health and wellness benefits. Importantly, the linkage between school-aged performance and one's ability to contribute to the economy is well established.³ Thus, while discussing literacy broadly, we focus on children's literacy as vital and foundational to the individual and economic well-being of adults and society.



² Winnipeg Public Library. Early Literacy Skills. Last updated March, 13 2020.

³ Shuey, E. A., & Kankaraš, M. (2018). The Power and Promise of Early Learning.

It should also be stressed that this report is focused on literacy in one of Canada's two official languages – English and French. This reflects that they are the languages used dominantly in the workplace, and so have the greatest impact on economic outcomes. An individual could be assessed as having below desired literacy in English or French, but may have mastery over another language. It is important to acknowledge that reading, speaking, and singing to babies in any language is beneficial in developing their literacy skills.



The Case for Change – the Benefits of Children's Literacy

Given that Canada is a modern, advanced economy, the need to study children's literacy may not always be clear. Why should we care about the state of children's literacy in Canada? In particular, why does early literacy matter? In short, early literacy skills are linked to better outcomes in personal and economic well-being throughout a child's life and into their adulthood.

One way to examine the benefits of early literacy is through the lens of the rate of return to public investment in education. Figure 1 to the right shows that investing in pre-school education has a much higher rate of return compared to later years of schooling or post-school training. Seen this way, if you only have \$100 to invest in education, you'll get more value for your money if you invest in a child's education at age four, compared to age 12, for example. This outcome exemplifies how precious and important early years are in the development of literacy. The earlier you invest in a child's education, the larger the rate return you have on their human capital, and the better the chance they will be able to succeed in school and later on in adulthood.

Overall, it is found that investments in early learning can lead to economic and social returns between 2 percent and 13 percent for every dollar invested,⁴ illustrating that there are sizeable and meaningful gains to be achieved.⁵

The effective allocation of public funds is only the tip of the iceberg when thinking of the imperative to understand and prioritize children's literacy. Children's literacy powers adult literacy. Adult literacy levels can shape economic activity. A recent estimate of the effect of literacy on long-run GDP per capita suggests that a 1% increase in adult literacy skills translates into a 3 percent increase in GDP per capita.⁶ To further demonstrate the economic value of children's literacy, we applied this estimation to recent available GDP figures. In 2018, Canada's nominal GDP was roughly \$2.2 trillion. Using the aforementioned 3% estimation, this could mean that if Canada could improve adult literacy, which we know is partially driven by childhood literacy, by 1%, this could boost GDP by roughly \$67 billion.⁷ Adult literacy is used to study the economic impact because children and youth do not participate in labour markets.

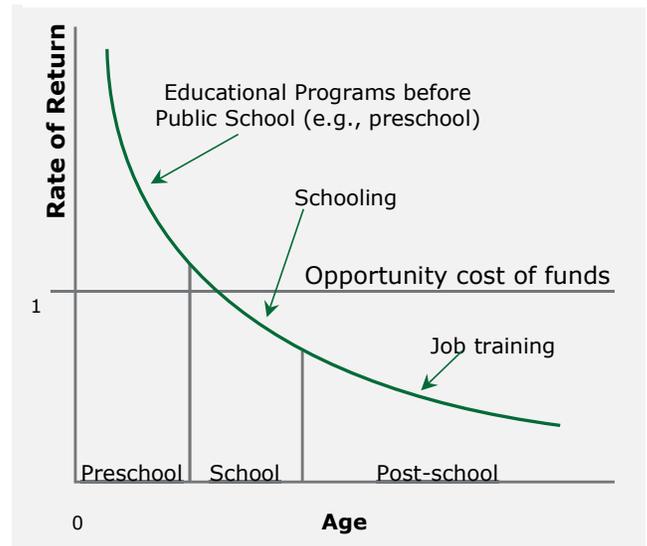
This section outlines the importance of children's literacy to the individual and to society, by exploring its impacts to several socioeconomic dimensions, including health outcomes, economic prosperity, and social mobility.

INDIVIDUAL WELL-BEING

EARLY LITERACY IS LINKED TO EDUCATIONAL ATTAINMENT, EMPLOYMENT, AND EARNING POTENTIAL

Firstly, children at any age who struggle to read can miss out on some of childhood's most important experiences. In school, they can experience discomfort in the classroom if they are unable to keep up with their friends or peers. As reading is a foundational skill, poor levels of literacy can also hinder the development of other skills and experiences

Figure 1. Rate of Return to Human Capital Investment



⁴ Results are compiled from a literature review where the variable of interest is different across studies. Returns are commonly measured for health care, taxes, crime, and mother's labour income (e.g., improving literacy may increase taxes collected). See Shuey & Kankaraš (2018) for literature reviewed.

⁵ Shuey, E. A., & Kankaraš, M. (2018). The Power and Promise of Early Learning.

⁶ Schwerdt, G., Wiederhold, S., & Murray, T. S. (2018). Literacy and Growth: New Evidence from PIAAC.

⁷ Bases on nominal 2018 GDP, latest available year. Statistics Canada Table: 36-10-0222-01.

that may require some form of reading. Some of a child's simplest pleasures depend on reading, like reading stories with family members and learning how to play games.

From an economic perspective, children with strong literacy performance are likely to have higher educational attainment later in life and higher rates of employment – a considerable, life-long advantage compared to children with lower levels of literacy. For example, there is evidence that children with poor literacy skills at age eight are four times less likely to graduate from high school on time compared to proficient readers.⁸ Furthermore, strong early literacy skills at age five are associated with the likelihood of completing a post-secondary degree by age 30.⁹

In addition, children with strong early literacy are more likely to be employed as adults, and experience fewer periods of joblessness by age 34.¹⁰ These results illustrate that the promotion of strong literacy skills can be pivotal to improving the resilience of individuals when entering the job market, especially in the context of a rapidly changing and technology rich society. Strong early literacy performance can be seen as an enabler that allows individuals to adapt and grow after professional or personal setbacks based on the skills they acquired within the first few years of their lives.

Higher levels of education can lead to higher incomes. Studies show that every additional year of education is estimated to raise annual earnings by around 8.3 percent.^{11,12} More specifically, early literacy skills at the age of seven has been linked to higher socioeconomic status at age 42, defined in terms of income, home ownership, and occupation.¹³ This indicates that benefits from early literacy skills last throughout life and have a strong influence on one's earning potential as well as occupational opportunities.

Relatedly, early learning skills and confidence can have an impact on an individual's ability to acquire a powerful basket of interpersonal and communication capabilities such as presentation skills, leadership ability, and social skills.¹⁴ These capabilities are vital to succeed in the workforce and are imperative to mobility within the workforce. Specifically, these skills are often sought after for high-paying leadership and executive positions, and they are becoming increasingly important for all types of service-oriented roles. Seen this way, if children are equipped with adequate literacy skills when they are young, they are more likely to learn and expand these capabilities which can help to build confidence in both the personal and professional realms.

STRONG EARLY LITERACY SKILLS ARE ASSOCIATED WITH IMPROVED PHYSICAL AND MENTAL HEALTH OUTCOMES

The benefits of early literacy are not just economic, and also include recognized improvements in an individual's quality of life. For example, there are several linkages between physical health and mental health and literacy levels including:

- At a direct level – when individuals can read health information they are more likely to have better health outcomes (e.g., they can better adhere to prescription instructions, etc.) and there is evidence that higher literacy correlates with better life choices (less likely to smoke, drink, etc.¹⁵); and
- At an indirect level – higher literacy abilities are linked to better economic outcomes (i.e., income) which are linked to better health outcomes. For example, individuals with higher incomes are better able to pay for preventative health treatments and pay for any out-of-pocket costs associated with their own care.

A number of factors associated with early learning have been linked to physical health outcomes. For example, higher levels of literacy can support an individual's use and knowledge of health resources, adherence to medical instructions, general health status, and measures of disease markers, among others.¹⁶ Studies have indirectly linked adult health outcomes with early literacy through its effect on adult literacy. To illustrate, a systematic review of the

8 Hernandez, D. J. (2011). Double jeopardy: How third-grade reading skills and poverty influence high school graduation. Annie E. Casey Foundation.

9 Schoon, I. et al. (2015), The Impact of Early Life Skills on Later Outcomes, OECD Directorate for Education and Skills, Education Policy Committee.

10 Parsons, S., Schoon, I., Rush, R., & Law, J. (2011). Long-term outcomes for children with early language problems: Beating the odds. *Children & Society*, 25(3), 202-214.

11 Green, D. A., & Riddell, W. C. (2001). Literacy, numeracy and labour market outcomes in Canada (pp. 89-552). Ottawa: Statistics Canada.

12 A more recent study suggests global private return to an extra year of education is roughly 9 percent and that the estimate may be even higher for Canada (World Bank, Policy Research Working Paper 8402). We use the more conservative estimate.

13 Ritchie, S. J., & Bates, T. C. (2013). Enduring links from childhood mathematics and reading achievement to adult socioeconomic status. *Psychological science*, 24(7), 1301-1308.

14 Shuey, E. A., & Kankaraš, M. (2018). The Power and Promise of Early Learning.

15 TD Economics. (2012). Early Childhood Education has Widespread and Long Lasting Benefits.

16 DeWalt, D. A., Berkman, N. D., Sheridan, S., Lohr, K. N., & Pignone, M. P. (2004). Literacy and health outcomes. *Journal of general internal medicine*, 19(12), 1228-1239.

literature on literacy and health outcomes found that individuals with low literacy were approximately 1.5 to 3 times more likely to experience adverse health outcomes.¹⁷

Similar benefits are seen when examining mental health. Young children begin to develop key social, cognitive, and self-regulation skills in the ages of 0-5. These skills have material effects on a child's school readiness and learning outcomes later on, as well as their ability to deal with adverse situations. At a young age, reading difficulties can frustrate children, and can result in both the externalization of behaviors, such as bullying and aggression, and the internalization of behaviors such as depression and anxiety.

Studies have shown that childhood intellectual performance and emotional health at age 5 were linked to levels life satisfaction at age 34.¹⁸ This could be in part due to the relationship between early literacy skills and mental health outcomes later in life. Children's verbal skills at age 5 are associated with better mental health outcomes or reduced mental stress in adults in their mid-thirties and forties.¹⁹ When considering an older cohort, the same results hold, where cognitive ability measured at age 8 was linked to lower levels of depression and anxiety in women at age 53.²⁰

CANADIANS UNDERSTAND THE IMPORTANCE OF LITERACY TO ACADEMIC AND ADULT OUTCOMES, BUT ARE LESS LIKELY TO INDICATE THAT LITERACY IMPACTS HEALTH, RISK-TAKING CHOICES, OR OTHER INDIVIDUAL OUTCOMES

There is a broad understanding of the importance of literacy with respect to academic outcomes in Canada.²¹ Roughly 70 percent of survey respondents indicated that having strong children's literacy skills significantly helps children graduate high-school and get into their chosen university or college.²² An additional 20 percent of respondents indicated that literacy somewhat helps children achieve these outcomes.

Furthermore, respondents recognized the importance of literacy on several important adult outcomes, including an adult's ability to understand technical documents, the likelihood of an adult participating in risky behaviors, and the likelihood of obtaining full-time employment.

- For example, nearly all participants (96 percent) stated that literacy skills have some or a significant impact on an adult's ability to understand complex documents.
- In addition, 84 percent of individuals believed that strong early literacy skills have some or a significant impact on reducing a person's likelihood of being involved in crime and delinquency in adulthood.
- Over two-thirds of respondents indicated that early literacy has a significant impact on the likelihood of being employed as an adult, with an additional 30 percent indicating that literacy has some impact on employment in adulthood.

On the other hand, there seems to be less agreement when it comes to the link between literacy and health outcomes, a child's risk-taking choices, or other individual outcomes.

- Less than 40 percent of respondents think that children's literacy has a significant impact on mental health outcomes. Similarly, less than 30 percent of respondents think that children's literacy has a significant impact on physical health outcomes.
- Further, respondents did not find a significant link between children's literacy and a child's likelihood of smoking or doing drugs (24 percent indicated a significant link), their ability to form friendships (only 25 percent indicated a significant link), or their ability to listen to adults (only 39 percent indicated a significant link).

These results vary by province. Generally, Quebec and Manitoba perceive a less significant link between children's literacy skills and health outcomes, the ability to form friendships, and risk-taking, compared to western provinces such as Saskatchewan, Alberta, and British Columbia.

- For example, 40 percent of respondents from Quebec indicated that a child's literacy skills had a moderate to significant impact on their decision to smoke cigarettes, compared to 75 percent of respondents from Saskatchewan.
- Furthermore, 62 percent of respondents from Prairie Provinces believe there is a significant impact of strong early literacy skills on a person's likelihood of being involved in crime and delinquency in adulthood.
- On the other end of the spectrum, only 32 percent of respondents from Quebec believe that strong early literacy skills has a significant impact on a person's likelihood of being involved in criminal activity.

¹⁷ Ibid.

¹⁸ Schoon, I. et al. (2015), The Impact of Early Life Skills on Later Outcomes, OECD Directorate for Education and Skills, Education Policy Committee.

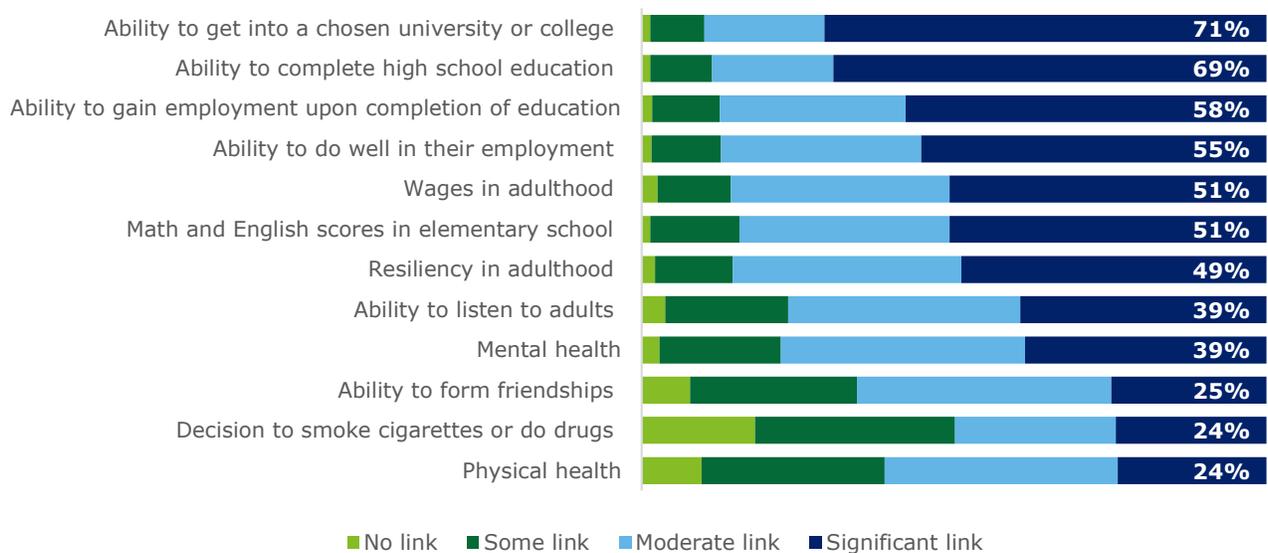
¹⁹ Schoon, I. et al. (2015), The Impact of Early Life Skills on Later Outcomes, OECD Directorate for Education and Skills, Education Policy Committee.

²⁰ Hatch, S. et al. (2007), "Childhood cognitive ability and adult mental health in the British 1946 birth cohort", Social Science and Medicine.

²¹ The findings in this section are based on the results of a survey recently developed and deployed by Deloitte.

²² It should be noted that the survey population has a modestly higher average household income compared to the general Canadian population. Moreover, the survey responses were collected only for those with sufficient literacy skills to read, understand, navigate, and respond to the online survey.

Figure 2: Survey results: to what extent are a child's literacy skills linked to that child's...



Source: Deloitte. (2020). Children's Literacy in Canada Survey.

SOCIETAL BENEFITS

When people start out stronger in childhood, they will likely be stronger as adults. On an aggregate level, society will also be stronger. Our review shows that children's literacy levels matter to us all. Children are the future. When they do better, so does the economy and society generally. Children with stronger literacy skills become more capable adults who are more productive and healthier, ultimately generating greater tax dollars and costing the healthcare system less, both of which benefit society as a whole. Below are examples of how the benefits of literacy extend beyond the individual.

LITERACY LAYS THE FOUNDATION FOR A STRONG, EDUCATED, AND PRODUCTIVE LABOUR FORCE

Literacy skills can shape one's learning outcomes from as early as pre-kindergarten and they can continue to frame all future student experiences. Once youth graduate and enter the workforce, literacy continues to power skills and talent development relevant to the field one chooses to work in. Over time, one's ability to make good choices, lead teams, and be efficient are examples of the requirements to be successful. These abilities are all shaped by the extent to which one is able to interpret complex scenarios, communicate direction, and synthesize information – all capabilities driven by one's literacy skills.

Seen this way, building human capital through early education can help improve labour productivity and standards of living, representing a key engine of economic growth and long-term prosperity.²³ Importantly, human capital is a key source of global competitive advantage for Canada²⁴ and it is essential that we continue to nurture an environment that maintains our globally competitive labour force. This starts with children. Promoting strong pre-literacy is the first step towards fostering an educated, productive, and innovative workforce.

²³ Pelinescu, E. (2015). The impact of human capital on economic growth. *Procedia Economics and Finance*, 22(1), 184-190.

²⁴ Deloitte. (2019). "Canada's Competitiveness Scorecard."

LITERACY SUPPORTS BUSINESSES AND CONTRIBUTES TO ECONOMIC GROWTH

The workplace is a setting in society with specific economic importance. For employers, a more literate workforce may reduce workplace errors, reduce the time it takes employees to complete tasks, improve the overall quality of workplace communication, reduce lost work days due to health and safety problems, and contribute to a host of other benefits that can improve the profitability of a company. On an economy-wide scale, these factors can increase labour productivity in Canada and contribute to an increase in living standards.

To illustrate, the Conference Board of Canada surveyed employers across Canada that offered a workplace literacy program to ascertain the effects of literacy improvement on their business. Almost a third of businesses surveyed reported that increases in literacy enhanced the ability of individuals to handle on the job training. Other benefits reported from Canadian businesses include improved health and safety conditions, better team performance, and higher quality of work.²⁵ Just as individuals benefit from improved health outcomes associated with improved literacy, so do employers. Employees who are provided essential skills training (e.g., in reading and numeracy) are approximately 25 percent more likely to report a reduction in their work-related stress levels thereby allowing them to be more productive overall.²⁶



These results support the finding that literacy improves labour productivity, which is particularly important for Canada given its poor labour productivity growth track record since the 2000s. Indeed, an increase in adult literacy performance by 1 percent is estimated to increase labour productivity by 2.5 percent, and GDP per capita by 1.5 percent.²⁷ More recent studies suggest that the impact of literacy on GDP per capita could be as high as 3 percent in 2018, equivalent to approximately \$1,800 extra in the pockets of Canadians each year.^{28,29}

Overall, it is clear that investments in literacy can produce significant returns to Canadian businesses and the economy as a whole. If individuals acquire adequate literacy skills as children, then they have longer to reap the benefits of these skills and employers would directly benefit.

INVESTING IN EARLY LITERACY CAN REDUCE GOVERNMENT SPENDING ON SOCIAL SERVICES

The society-wide impacts of early literacy extend beyond economic gains – improved literacy can also benefit society through reduced spending on social services. Strong early literacy skills are related to lower smoking rates, substance abuse, criminal activities, and high school drop out rates, benefits that translate into lower social and healthcare costs to society. The Canadian Council on Learning estimates that the annual cost of a child who does not graduate from high school is \$7,515 over their lifetime.³⁰ This cost includes lost earnings, and costs associated with social services and criminal justice programs. By helping young children develop essential literacy skills, they are more likely to have the skills necessary to navigate the complexities of life. From being able to administer medicine correctly, to understanding contracts, and managing their finances, these skills will translate into opportunities to grow, prosper, and achieve a higher quality of life, ultimately benefitting society as a whole.

CANADIANS GENERALLY UNDERSTAND THAT LITERACY BENEFITS SOCIETY

Although the literature shows a clear link between literacy and several societal benefits, we wanted to evaluate how Canadians view this link. Particularly, our survey asked respondents about the link between adult literacy rates and workforce productivity. We found that Canadians generally understand that literacy benefits society in this way, as

²⁵ Bloom, M., Burrows, M., Lafleur, B., & Squires, R. (1997). The Economic Benefits of Improving Literacy Skills in the Workplace. Publications Information Center, Conference Board of Canada, 255 Smyth Road, Ottawa, Ontario K1H 1M7, Canada.

²⁶ The Social Research and Demonstration Corporation. 2016. UPSKILL Health – Technical Report on worker and business outcomes.

²⁷ Serge Coulombe and Jean-François Tremblay, Literacy, Human Capital, and Growth, Department of Economics, University of Ottawa. September 2004.

²⁸ Schwerdt, G., Wiederhold, S., & Murray, T. S. (2018). Literacy and Growth: New Evidence from PIAAC.

²⁹ Statistics Canada Table 36-10-00222-01. GDP per capita in 2018 was roughly \$59,999, in nominal terms.

³⁰ Hankivsky, O. (2008). "Cost estimates of dropping out of high school in Canada". Canadian Council on Learning.

over 50 percent of survey participants stated that literacy has a significant, positive impact on workforce productivity. Additionally, over 40 percent of respondents stated that literacy has some positive impact on productivity.

A higher share of respondents from Atlantic Provinces believe there is a significant link between strong literacy skills and workforce productivity compared to other regions. Over 64 percent of respondents from Atlantic Provinces thought adult literacy has a significant impact on workforce productivity. On the other hand, only 46 percent of respondents from Quebec indicated that literacy significantly impacts workforce productivity. Similarly, only 45 percent of respondents from BC believe that adult literacy has a significant effect on workforce productivity.

The State of Literacy in Canada

CHILD LITERACY PERFORMANCE

We rely on two nationally comparative data sets to understand the state of literacy in young and teenage children in Canada. The first dataset is the Early Development Instrument (“EDI”), which measures children’s language development near age 5. The EDI is a kindergarten teacher-completed checklist that is designed to assess children’s ability to meet developmental expectations outlined by the Offord Centre for Child Studies at McMaster University. The second source is the Program for International Student Assessment (“PISA”), which is a 65-country-wide survey led by the Organization for Economic Cooperation and Development (“OECD”) that measures the literacy levels of 15-year-old children.



The EDI and PISA both assess children in one of Canada’s official languages, English or French, and do not assess children’s literacy or cognitive performance in other languages, which may underestimate the skills of children whose first language is neither English nor French. Importantly, both assessments use a different approach to measuring language development, therefore they not comparable to each other.

Notably, there are no consistent testing methodologies that track Canadians throughout their lifetime, limiting our ability to understand how literacy skills evolve from childhood to adulthood (see *Missing Metrics* note). Nonetheless, the two data sets allow us to form an impression of children’s literacy in Canada. We will discuss each in turn.

A REVIEW OF THE EDI: MORE THAN A QUARTER OF CANADIAN CHILDREN ARE VULNERABLE IN AREAS OF DEVELOPMENT

Figure 3: The five developmental domains assessed by the Early Development Instrument



The EDI measures five areas of young children’s development, including physical health and well-being, emotional maturity, social competence, language and cognitive development, and communication skills and general knowledge.³¹ It is completed on children between ages 3.5 and 6.5 (roughly 5-years-old) to holistically evaluate the developmental skills and behaviour of children entering school.

Since 2004, the EDI has been collected for over 1.4 million children across Canada and has been implemented in every province and territory with the exception of Nunavut.³² Unfortunately, the EDI is inconsistently administered, with some provinces using the instrument more frequently and broadly than others (see *Missing Metrics* note).

In Canada, roughly 27 percent of children are developmentally vulnerable in one or more of the five developmental areas before entering Grade 1.^{33,34} While international comparisons are limited, in Australia, roughly

³¹ See Appendix 1 for the definition of each subcomponent.

³² Offord Centre for Child Studies. 2019. History of the EDI. <https://edi.offordcentre.com/about/history-of-the-edi/>

³³ This number is based on the most recent data collected by the provinces/territories, which, as aforementioned, varies significantly. For example, the most recent data collected in Prince Edward Island is for 2007-2008.

³⁴ Canadian Institute for Health Information. 2019. Children Vulnerable in Areas of Early Development.

<https://yourhealthsystem.cihi.ca/hsp/inbrief?lang=en#!/indicators/013/children-vulnerable-in-areas-of-early-development;/mapC1;mapLevel2/>

21.7 percent of children were vulnerable in one or more domains in 2018.³⁵

While all five elements are important for successful academic performance, including the attainment of grade level literacy skills, the language and cognitive development component is most aligned to the literacy skills we seek to assess. This component assesses a child's ability and interest in reading, writing, recognizing shapes, and basic math. Approximately 8 percent of Canadian children around 5-years-old are vulnerable in the language and cognitive development domain.³⁶

These results may not immediately seem worrying. However, in absolute numbers we are talking about the equivalent of approximately 186,000 children age five and below that are at risk in 2020.³⁷

Moreover, if we assume that a similar percentage of children between age 6 and age 14 (i.e., the ages before the PISA literacy test) also display weak literacy skills, an additional 297,000 children in Canada are behind.³⁸ Furthermore, an assessment of Ontario students in grade 3 suggests that as many as 26% of students are not reading at the provincial standard while the share is 19% in grade 6. This suggests that many children are entering school with weak literacy skills, a point that is discussed in detail further in this section. Importantly, children with certain characteristics are more likely to have low scores on early literacy assessments, including boys, children from lower socioeconomic status neighbourhoods or social and materially deprived households, as well as Indigenous children.³⁹

At least **186,000** Canadians aged 5 and younger have weak early literacy skills.



A REVIEW OF PISA: WHILE CANADIAN YOUTH OUTPERFORM INTERNATIONAL PEERS IN LITERACY, MANY YOUTH STILL HAVE INADEQUATE LITERACY SKILLS

While understanding the state of early literacy in very young children (i.e., those 0-5 years old) is important, to obtain a fuller picture of the potential impacts of literacy on well-being and economic outcomes, we must look at older children or youths and at adults. Data limitations restrict our ability to observe the same children over time; however, data on the literacy performance of 15-year-olds is robust and allows us to glean additional insights on the state of children's literacy in Canada. Completed every three years, PISA assessments test 15-year-olds on their competencies in reading, mathematics, and science. In 2018, over 22,000 students in 914 schools across Canada were tested.⁴⁰

PISA reading levels are reported according to a proficiency scale ranging from Level 1 to Level 6. Level 6 represents the highest reading attainment, and those who achieve Level 6 proficiency exhibit advanced reading, writing, and inference skills. Level 1 proficiency is on the other end of the spectrum, and students in this level will have difficulty reading, writing, and making connections within texts. Within Level 1, however, there are sub-levels that reflect differences in PISA scores. Level 1C is the lowest attainable score, and Level 1A is the highest within Level 1. Below Level 1 captures individuals who are unable to perform the most basic reading tasks.

³⁵ AEDC. 2018. Australian Early Development Census National Report 2018.

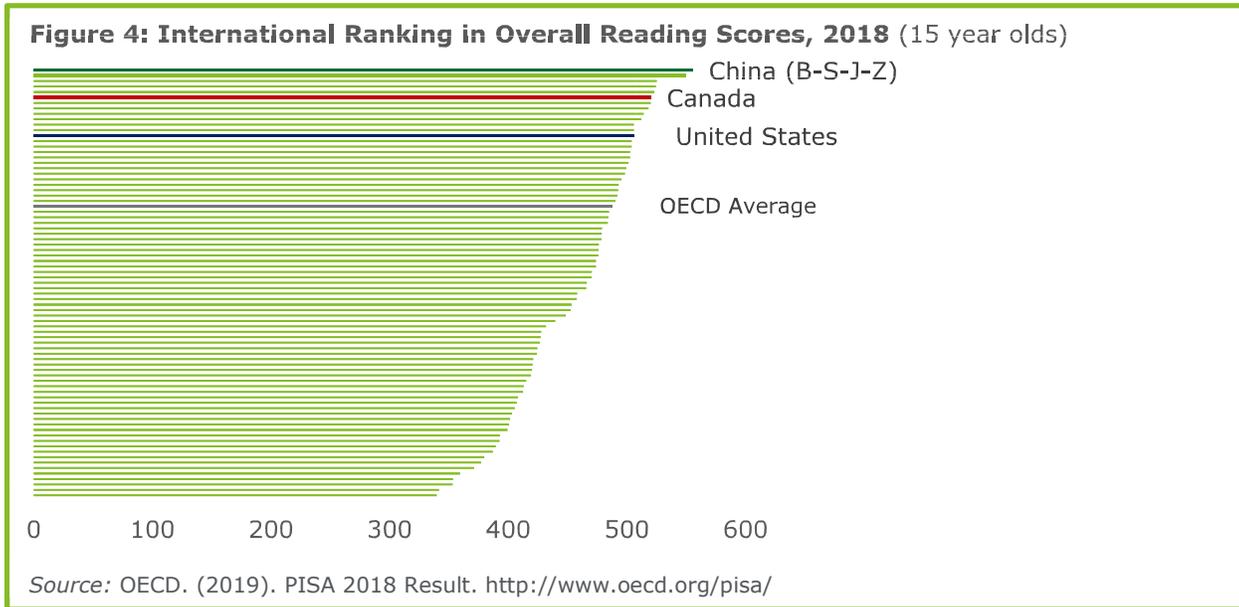
³⁶ Pan-Canadian Health Inequalities Data Tool. 2017 Edition. A joint initiative of the Public Health Agency of Canada, the Pan-Canadian Public Health Network, Statistics Canada and the Canadian Institute of Health Information.

³⁷ Statistics Canada. Table 17-10-0005-01.

³⁸ Alternatively, one might argue that the share of children between 6 and 14 who are vulnerable to low levels of literacy is closer to the PISA results of 14 percent. Viewed this way, 290 thousand children is a conservative estimate. As we do not have data for children in this age range, these figures should be viewed as directional only.

³⁹ These findings are derived from the EDI data.

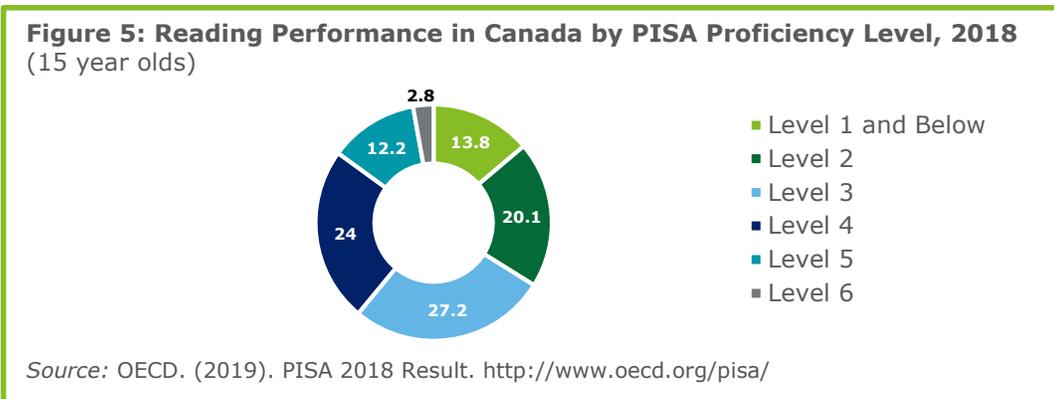
⁴⁰ This represents roughly 6 percent of 15-year-olds in 2018.



At 15 years of age, Canadian children outperform international peers in both reading and math, ranking 6th (Figure 4) and 12th among 78 international jurisdictions, respectively.⁴¹ Canada's average reading score in 2018 was 520, which translates to a level 3 on the PISA scale of literacy. Only China (Beijing, Shanghai, Jiangsu, and Zhejiang), Singapore, Macao (China), Hong Kong, and Estonia performed better in reading. Canada performs slightly worse in mathematics, scoring 512 points on average, but this remains higher than the OECD average of 489.

DESPITE THESE SUCCESSES, TROUBLES REMAIN, NEARLY 56,000 CANADIAN 15-YEAR-OLDS HAVE INADEQUATE LITERACY SKILLS

In 2018, nearly 14 percent of 15-year-olds in Canada scored below Level 2 (Figure 5) in reading proficiency. At Level 2, students can identify the main idea of a text of moderate length, find information based on explicit criteria, and reflect on the purpose of texts when asked.⁴² Students at this level are considered to have baseline reading abilities required to participate in modern society. Below Level 2, students are unable to fully participate in modern society. Almost 399,000 15-year-olds lived in Canada in 2020.⁴³ Therefore, nearly 56,000 15-year-olds have inadequate literacy (i.e., below Level 2). In addition, over 80,000 15-year-olds have Level 2 proficiency (20.1%). Combining these figures, over 135,000 thousand students have baseline proficiency or below desirable reading levels that may make it difficult for them to learn other subjects and ultimately succeed as adults (i.e., Level 2 and below). Canada is doing well in relative terms internationally, but in absolute domestic terms, too many children are not having a desirable outcome.



⁴¹ In 2018, 78 international jurisdictions recorded PISA scores in mathematics and 77 jurisdictions recording PISA scores in reading. Some countries, such as China, have multiple jurisdictions due to the high variance in literacy across their nation. Therefore, 78 international jurisdictions are ranked across 65 countries.

⁴² OECD. (2019). PISA 2018 Insights and Interpretations. [https://www.oecd.org/pisa/PISA percent202018 percent20Insights percent20and percent20Interpretations percent20FINAL percent20PDF.pdf](https://www.oecd.org/pisa/PISA%20percent202018%20percent20Insights%20and%20percent20Interpretations%20FINAL%20PDF.pdf)

⁴³ Statistics Canada. Table 17-10-0005-01.

SPOTLIGHT: ADDITIONAL EVIDENCE SUGGESTS THAT A SIGNIFICANT SHARE OF CHILDREN IN GRADES 3 AND 6 STRUGGLE WITH LITERACY

The Ontario Education Quality and Accountability Office (EQAO) tests reading skills of Ontario children in grades 3 and 6. Results from the 2018/19 school year suggest that roughly 26% of children in grade 3 and 19% of children in grade 6 do not meet the provincial reading standards.⁴⁴ While the EQAO assessments were only completed in Ontario, the PISA results show that Ontario children perform close to the Canadian average in literacy. As such, the EQAO results may be a reasonable estimate of Canadian children's reading performance on average. Combined, the EDI, PISA, and EQAO results suggest that between 540,000 to 1,060,000 children aged 15 and under could benefit from stronger literacy skills (Table 1, Table 2).

Below we present two sets of estimations of the number of children and youth with below desirable literacy skills. Two bounds are used to account for differences in methodologies by each of the sources reviewed. The lower bound may be viewed as a conservative estimate of the challenge.

Table 1: Number of Children and Youth with Below Desirable Literacy Skills - Lower Bound

	2020 Population ¹	% with Low Literacy Skills	Population with Below Desirable Literacy	Source of %
0-5-year-olds	2,325,082	8%	186,007	EDI
6-9-year-olds	1,641,465	8%	131,317	EDI
10-14-year-olds	2,072,100	8%	165,768	EDI
15-year-olds	398,489	14%	55,788	PISA
TOTAL			538,880	

Table 2: Number of Children and Youth with Below Desirable Literacy Skills - Upper Bound

	2020 Population ¹	% with Low Literacy Skills	Population with Below Desirable Literacy	Source of %
0-5-year-olds	2,325,082	8%	186,007	EDI
6-9-year-olds	1,641,465	26%	426,781	EQAO Assessment
10-14-year-olds	2,072,100	19%	393,699	EQAO Assessment
15-year-olds	398,489	14%	55,788	PISA
TOTAL			1,062,275	

1. Statistics Canada Table: 17-10-0005-01 (formerly CANSIM 051-0001). Retrieved October 2020.

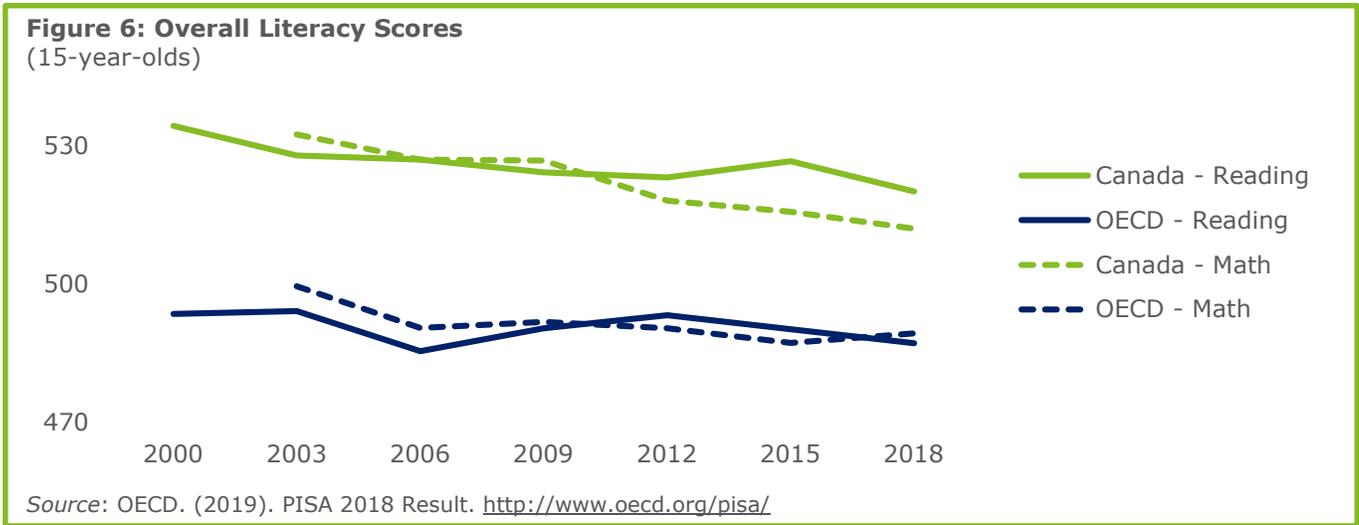
THE SHARE OF YOUTHS WITH LOW LITERACY LEVELS HAS INCREASED IN THE LAST TEN YEARS

Average reading performance in Canada and the OECD declined between 2000 and 2018, implying that Canada is heading in the wrong direction when skills are becoming more critical in the workplace.

- Students in British Columbia, the Prairie Provinces, and Quebec declined in average literacy performance between 2000 and 2009.
- Importantly, while average reading scores did not change between 2009 and 2018, the share of low performing students in Canada increased.

As discussed, it is this population of low performers that are more likely to exhibit lower rates of employment, poor health, and other negative outcomes. These results are troubling given that declining performance is observed at a time where demand for higher skilled workers is rising.

⁴⁴ Education Quality and Accountability Office. 2019. Ontario Student Achievement 2018-2019. <https://www.eqao.com/en/assessments/results/assessment-docs-elementary/provincial-report-elementary-2019.pdf>

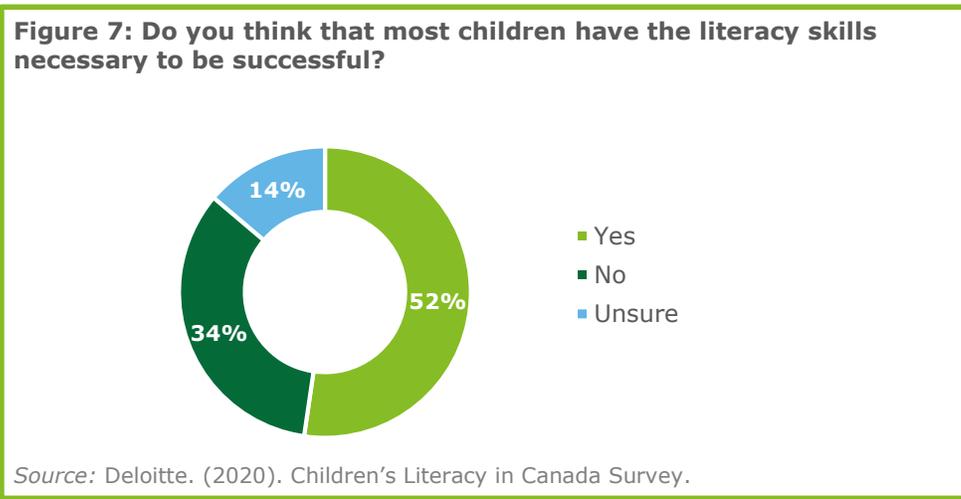


CANADIANS ARE SOMEWHAT PESSIMISTIC ABOUT THE LITERACY SKILLS OF CANADIAN CHILDREN

When we asked Canadians how they think Canadian children are performing, their responses indicated that they are somewhat pessimistic about the state of children’s literacy in Canada, compared to the available data on actual performance. This indicates that Canadians recognize that we have a literacy problem, and that more work can be done in order to support our children.

- While over half of survey respondents said they believe that Canadian children have the necessary literacy skills to be successful, more than a third of respondents (Figure 7) do not think children have the necessary literacy skills. Further, the EDI suggests that 8 percent of children have weak early literacy skills, but 97 percent of respondents think that greater than 8 percent of five-year-olds in Canada have weak early literacy.
- When considering the literacy skills of 15-year-olds, 70 percent of respondents do not think that Canadian 15-year-olds rank in the top 10 countries internationally for reading performance.
- Nearly half of participants think that at least 20 percent of 15-year-old Canadians lack basic reading skills needed to fully participate in modern society.

Many respondents do think that Canada has at least some child literacy problem.



In general, respondents from rural communities are more pessimistic about the state of child’s literacy in Canada compared to their urban counterparts. Almost half of respondents from rural communities do not believe that children have the literacy skills they need to be successful (compared to less than a third of urban respondents).

- Additionally, only 47 percent of rural respondents believe that the majority of five-year-old children in Canada have the necessary literacy skills to set them up for success in school, compared to 58 percent of urban respondents.

Missing Metrics

Data on 0-5-Year-Old Children: One of the challenges in studying the literacy performance of children 0-5-years-of-age is a lack of consistently collected data across the country. As noted, the Early Development Instrument ("EDI") is the one of the best available metrics tracking literacy at this age, but the EDI is inconsistently tracked across provinces (i.e., it is completed for different time periods and with different frequency). For example, Saskatchewan and Alberta have not completed a full EDI since 2011 and 2016, respectively.¹

To collect robust, Canada-wide data at consistent intervals would require a coordinated effort both within and across provinces. This is an important consideration insofar as early intervention for vulnerable children can lead to compounded benefits over time.

Consistent Metrics across Age Groups: The EDI, PISA, and PIAAC (an international benchmark study on adult literacy) each use different criteria to score children, youth, and adult literacy proficiency. There are no consistent methodologies to track literacy performance throughout an individual's lifetime. Moreover, there are no consistent longitudinal studies tracking literacy performance, where the same individuals are tracked over time. This limits our ability to determine at what point in an individual's life their ability falls behind or at what point they are able to catch up.

Data on Indigenous Peoples: Finally, while out of scope for this report, data relating to the literacy of various segments of the Canadian population are also missing. Literacy data on Indigenous students is lacking; for example, the EDI is not administered in Nunavut and PISA does not include Indigenous students from band-operated schools nor data from any of the Territories. This is a significant problem as we are concerned with the economic outcomes and well-being of Indigenous Peoples.

1. EDI Implementations in Canada. Offord Centre. <https://edi.offordcentre.com/partners/canada/>

OVERVIEW OF CHILD LITERACY PERFORMANCE BY DEMOGRAPHIC CHARACTERISTICS

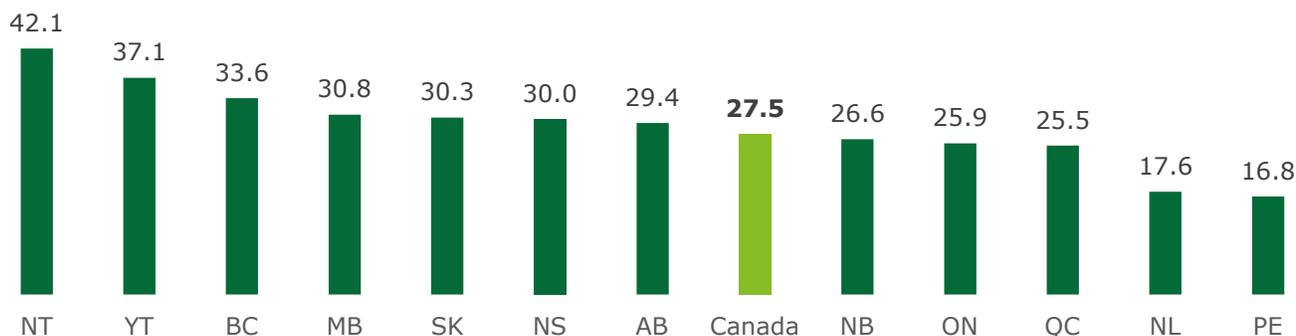
As shown, overall literacy and development levels in Canada are adequate for many children and youth but a significant number of Canadian children have below desirable literacy skills. Certain segments of the Canadian population tend to underperform relative to others. Key examples include:

- Eastern Canada outperforms Western Canada in early developmental outcomes;
- Boys often underperform compared to girls;
- Children and youth in lower socioeconomic households underperform compared to comparatively advantaged children;
- Indigenous Peoples tend to have weaker literacy skills compared to non-Indigenous Peoples, but remember that this assessment is on the proficiency in English or French
- Francophone Canadians tend to have weaker literacy skills compared to Anglophone Canadians.

EDI: EASTERN CANADA OUTPERFORMS WESTERN CANADA IN EARLY DEVELOPMENTAL OUTCOMES

Figure 7 illustrates the share of children vulnerable in at least one developmental area across Canada's provinces and territories (excluding Nunavut), based on EDI data. The figure shows that Prince Edward Island and Newfoundland and Labrador have the lowest percentages of children that are vulnerable in one or more developmental domains compared to the national average, with Prince Edward Island having the lowest percentage at 16.8 percent. In contrast, the territories have the highest percentages of children vulnerable in areas of early development, with 42.1 percent of children in the Northwest Territories and 37.1 percent in the Yukon. It is worth noting that EDI data for Nunavut is not collected.

Figure 8: Share of Children Vulnerable in One or More Developmental Area (percent)



Source: Early Development Instrument. Offord Centre for Child Studies, McMaster University.

GIRLS OUTPERFORM BOYS IN EARLY DEVELOPMENTAL OUTCOMES

A notable finding from a review of EDI data suggests that a higher percentage of boys compared to girls are vulnerable in one or more developmental areas. At the national level, 35 percent of boys are vulnerable in at least one area of development, compared to 20 percent of girls. Likewise, girls performed better in the language and cognitive development dimension compared to boys, where only 5.8 percent of girls were vulnerable in this domain versus 9.9 percent of boys.

Figure 9: Share of Children Vulnerable in One or More Developmental Area by Gender



Source: Early Development Instrument. Offord Centre for Child Studies, McMaster University.

NEIGHBOURHOOD INCOME, MATERIAL AND SOCIAL DEPRIVATION, AND INDIGENOUS IDENTITY CAN AFFECT EARLY DEVELOPMENTAL OUTCOMES

Early development outcomes have been linked to neighbourhood income, where the share of children living in the lowest-income neighbourhoods who are vulnerable in one or more developmental area is 1.8 times that of children living in the highest-income neighbourhoods.⁴⁵ In other words, there are 15.7% more developmentally vulnerable kindergarten children among those living in the lowest-income neighbourhoods compared to the highest-income neighborhoods. The *Key Health Inequalities* in Canada report finds that inequalities in EDI outcomes are most pronounced when considering neighbourhood level for income,⁴⁶ children living in the most socially and materially deprived areas of Canada, and children with Indigenous identity.⁴⁷

PISA: FOUR CANADIAN PROVINCES POSTED BELOW AVERAGE SCORES IN YOUTH READING

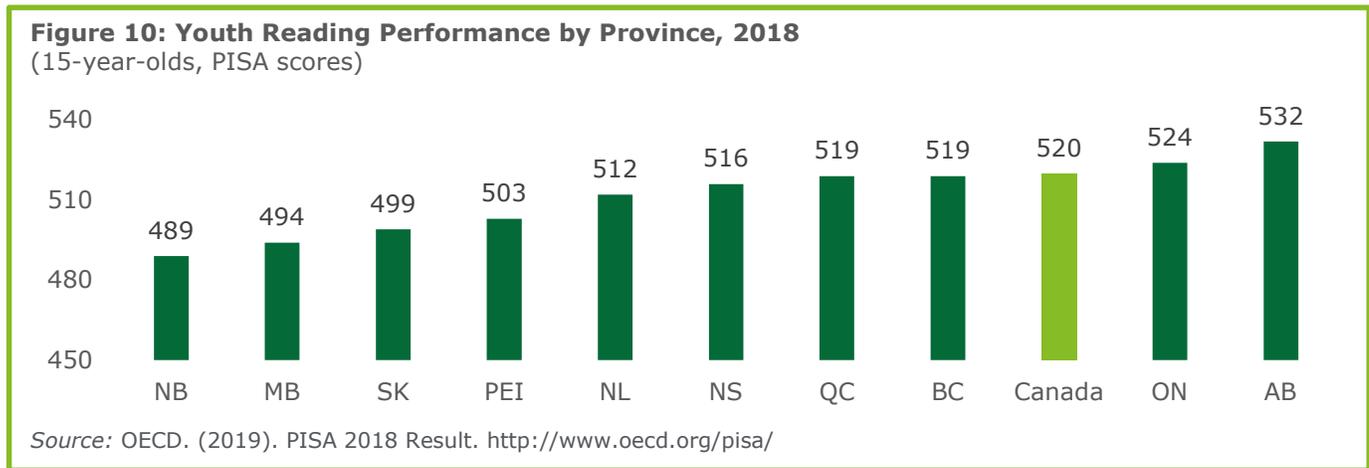
Alberta leads Canada in youth reading performance. Students in Ontario, British Columbia, Quebec, Newfoundland and Labrador, and Nova Scotia posted scores near the Canadian average. Meanwhile, students in Prince Edward Island, New Brunswick, Manitoba, and Saskatchewan scored below the Canadian average score in reading. To note, Prince Edward Island ranks below average when considering PISA scores, and above average when looking at EDI scores.

⁴⁵ Pan-Canadian Public Health Network. (2018). Key health inequalities in Canada: a national portrait: executive summary. Public Health Agency of Canada.

⁴⁶ Neighbourhood income per person is based on the average income in a dissemination area based on the 2006 Census. A dissemination has a population between 400 and 700 people. Neighbourhood income was used to control for the potential effect of differences in housing costs.

⁴⁷ Pan-Canadian Public Health Network. (2018). Key health inequalities in Canada: a national portrait: executive summary. Public Health Agency of Canada.

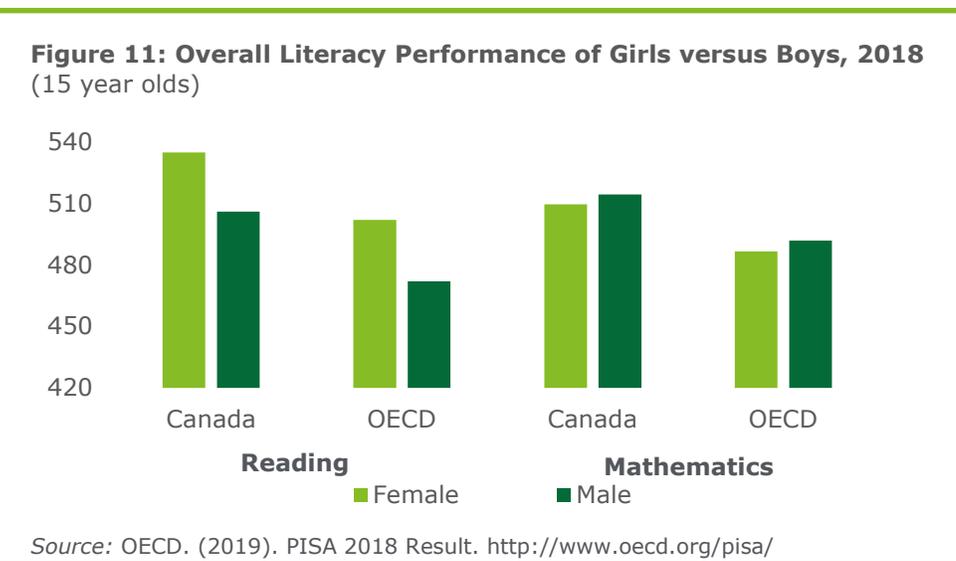
This could be due to several factors; however, it is difficult to ascertain what is driving this result due to the data limitations associated with comparing performance across different metrics.



When looking at the provincial differences across Canada, it is important to note that PISA is not currently administered in the Yukon, Northwest Territories, and Nunavut. As a result, there are significant gaps in the data which limits our ability to have a comprehensive national view with respect to literacy achievement.

TEENAGE GIRLS OUTPERFORM BOYS IN READING, BUT GENDER DIFFERENCES IN MATHEMATICS ARE SMALL

Teenage girls outperform boys in reading in every country that participated in PISA 2018. On average, Canadian girls scored 29 points above boys in reading ability, which is a similar gap compared to OECD countries on average (Figure 11). This trend has been stable over time, with teenage girls significantly outperforming boys in reading. Conversely, boys outperform girls in mathematics but by an insignificant margin of roughly 5 points in both Canada and the OECD.



YOUTH LITERACY SKILLS IMPROVE WITH SOCIOECONOMIC STATUS

The PISA results show that children from disadvantaged socioeconomic families fare generally worse in reading and math than their advantaged peers. The OECD defines socioeconomic status using a combination of measures including parental education, occupational status, and a measure of household wealth.⁴⁸ The OECD defines disadvantaged children as those who live in households where parental education is low, occupational status is low in that parents may work in low-skilled, low-paying occupations, and there are few household possessions.

⁴⁸ For a complete methodology on how socioeconomic status is determined using the PISA Index Of Economic, Social And Cultural Status (ESCS) refer to <https://www.oecd-ilibrary.org/sites/0a428b07-en/index.html?itemId=/content/component/0a428b07-en>

In 2018, advantaged teenagers scored 68 points higher than disadvantaged students in reading. While this is smaller than the gap between advantaged and disadvantaged youth in the OECD average, the gap in Canada has not improved since 2009. There is some evidence to suggest that socioeconomic status does not destine students for lower reading proficiency – roughly 14 percent of disadvantaged students in Canada were able to score in the top quarter of reading performance within Canada. Despite this fact, the gap in scores between advantaged and disadvantaged students is not surprising given the relationship between socioeconomic status and other factors driving literacy development, including possession of books, whether a child's basic health and safety needs are met, and the investment parents are able to make in education. In the chapter on the drivers of literacy performance, we explore these potential factors in more depth.

IMMIGRANT CANADIAN YOUTH AND THOSE BORN IN CANADA PERFORMED SIMILARLY IN BOTH READING AND MATH

When looking at PISA scores, there is no statistically significant difference in reading performance between immigrant and Canadian-born students. The same holds true after accounting for students' and schools' socioeconomic profile. This may be because these children have come to Canada before they were 15 years old, so they may have had time to learn English or French at an age when learning is the easiest. These children may have also learned French or English before coming to Canada or they may have had strong foundational literacy skills in another language that could have helped them learn French or English. While we do not know why there is no statistically significant gap, this is a positive outcome that immigrant children are performing just as well as Canadian-born children.

Literacy for Tomorrow

We emphasize that literacy is foundational. Not only is literacy the basis for understanding print text and information today, but it is also critical for understanding digital information and information of tomorrow. The skills required to read, understand, and apply information are essential to learning new skills in any domain, including developing numeracy skills, learning how to use new technologies, and interpreting digital information. Literacy skills enable children and then adults to be critical thinkers capable of change.

Literacy assessments look at how well-equipped children are for understanding and using information in today's society. Increasingly, assessments include testing critical thinking and digital literacy. As the world is becoming increasingly complex, with more and more information available on a variety of mediums and for an ever-expanding array of topics, it is only becoming more important that children have adequate literacy skills. These skills will enable individuals to adapt to change. If an individual's role is disrupted by technology, they can adapt. The need to adapt will continue to intensify as the rate of technological change picks up and it is very difficult to have an adaptive adult workforce if they lack foundational skills built in childhood.

ADULT LITERACY PERFORMANCE

Our surveys exemplifies that Canadians have perspectives on children's literacy when asked. A more frequent point of discussion in society however, is the performance and competitiveness of our economy, and the extent to which communities are thriving. Here, discussions of adult skills gaps, and workforce performance often take center stage. It is important to remember that one's childhood literacy development can set the stage for adult literacy proficiency, which is a key driver to obtaining jobs, succeeding at work, participating in society (e.g., through voting, volunteering, and other means of social engagement), successfully managing adult responsibilities, and generally supporting individual health and well-being. Moreover, research has linked childhood literacy performance directly to adult literacy performance and social and economic outcomes. In evaluating adult literacy in Canada, there is still a significant share of individuals with below desirable literacy skills. This is relevant to this research in three ways.

Firstly, poor adult outcomes can be reflective of poor children's literacy skills. Keeping in mind that literacy skills may weaken somewhat over time, adults with poor literacy skills likely struggled with literacy as a child and this may be exacerbated as many jobs in today's economy require even greater literacy skills.

Secondly, adults with weak literacy skills are less able or likely to support their children's literacy development as caregivers and may be less likely to understand the importance of literacy skills to well-being and economic success.

Lastly, from an economic perspective, adults with poor literacy skills are more likely to have lower income, which creates additional challenges for their children's literacy development, as they have access to fewer resources and may face other compounding challenges.

As with childhood literacy, Canada performs relatively well compared to peers on a number of different education metrics. The Programme for the International Assessment of Adult Competencies ("PIAAC") provides an international comparison of literacy skills for individuals aged 16 to 65. PIAAC is an international assessment of literacy, numeracy, and problem-solving in technology-rich environments ("PS-TRE") and is administered in more than 40 countries.

Literacy, numeracy, and PS-TRE are measured along a continuum of different levels of proficiency that describe key characteristics of tasks performed. For numeracy and literacy, these levels of proficiency are ranked from one to five, with 'below one' representing the lowest proficiency, and five the highest. For PS-TRE, three levels characterize problem-solving tasks.

When examining PIAAC scores in Canada, the following outcomes are observed:⁴⁹

- Canada ranks at the OECD average in literacy, below the OECD average in numeracy, and above the OECD average for PS-TRE.
- Canada has a larger share of its population at the highest and lowest levels in literacy – for example, 17 percent of Canadians score at Level 1 or below (above the OECD average of 15 percent), and 14 percent of Canadians score at Levels 4 or 5 (above the OECD average of 12 percent).
- Nearly half of Canadian adults have below desired literacy skills for a modern knowledge-based economy.
- Men and women performed similarly in literacy and problem solving competencies; however, men demonstrated measurably greater numeracy skills compared to women, especially in older age cohorts.
- Nationally, Indigenous Peoples score lower in literacy and numeracy than the non-Indigenous populations; and,
- Immigrant Canadians score lower in literacy and numeracy compare to Canadian-born populations.

⁴⁹ For additional research regarding adult literacy performance in Canada, please see Appendix 3.

Drivers of Literacy Performance

When we think of children's literacy, we often conjure up images of students in a class room learning the alphabet and the building blocks to reading. However, medical studies show brain development happens very early in life, even before birth. Indeed, children begin to develop literacy skills or the elements that lead to literacy skills almost starting at birth. As they listen to caregivers speak, start to form sounds, or listen to music, children participate in the first stages of forming literacy skills – often referred to as pre-literacy. These experiences progress to first words, simple sentences, and eventually reading, writing, counting, and ideally fully formed adult literacy skills needed to participate in society. Seen this way, this phase is a precious, vital time in a child's life and a phase where caregivers can have unique abilities to shape the capabilities of their children for years to come.



Early literacy skill development is largely determined by environmental factors, including family characteristics, early childhood education, and community context. In fact, it is estimated that environmental factors account for 80 percent of a person's abilities, compared to genetics.⁵⁰ Moreover, environmental factors have a strong impact on the development of children as the early years of life are the most crucial for cognitive development. Children's brains exhibit higher rates of plasticity (i.e., ability to change or learn new skills when exposed to new things) compared to adults and research shows that brains reach 90 percent of their adult volume by age six.⁵¹ As such, understanding the environmental factors that drive early literacy performance is paramount to ensuring young children are supported and set up for future economic and social success. It should be noted that some children have learning differences that are present irrespective of environmental factors. The study of learning differences is outside the scope of this report.

Below we present the key drivers of early literacy performance identified by researchers, recognizing that it is difficult to isolate the relative impact of each factor as they are all interrelated. The key non-genetic drivers of children's development and literacy uncovered in the research are:



Socioeconomic status or income



The home learning environment



Parental education

CHILDREN FROM LOW INCOME FAMILIES ARE LIKELY TO BE AT A LEARNING DISADVANTAGE COMPARED TO CHILDREN FROM WEALTHIER FAMILIES

A large body of research has identified socioeconomic status as a key determinant of early learning outcomes. Studies show that children from higher-income households have higher social and emotional skills, educational attainment, and literacy achievement. This effect is particularly pronounced in a child's early life. Five-year-old children living in

⁵⁰ Mitchell, A. (2009). Part 4: Newborn brains are similar, so nurture makes the difference. *The Star*, November, 3.

⁵¹ Stiles, J., & Jernigan, T. L. (2010). The basics of brain development. *Neuropsychology review*, 20(4), 327-348.

persistent or transient poverty⁵² are found to have more cognitive and behavioral deficits than children from wealthier families.⁵³ These deficits capture eight different indices of cognitive and socioemotional development, including short-term memory and behavioral problems, as well as vocabulary, math, and reading skills. Similarly, research shows that a US\$1,000 increase in income is associated with an increase in child's reading and numerical scores by 6 percent of a standard deviation in the short term, and that this effect is more pronounced for disadvantaged children.⁵⁴

When considering the impact of socioeconomic status it is important to keep in mind that it is inevitably interwoven with other factors that may be influencing children's learning outcomes, such as investments of time and money in children's education, household structure, and the home learning environment. This makes it difficult to isolate the effects of each factor uniquely, as they are all likely contributing to outcomes.

For example, the effect of household income on learning outcomes, including but not limited to literacy, is in part driven by a household's ability to invest in children's learning activities, such as learning materials, recreational activities, tuition, and childcare. Studies in the US suggest that the amount of educational expenditures by households strengthens educational outcomes, and that the gap between the investments in children from affluent and less affluent households has widened significantly over time.⁵⁵ The effect of educational expenditures, however, varies significantly across different countries.

IMPROVING INCOMES DOESN'T ALWAYS LEAD TO IMPROVED OUTCOMES

While developmental and reading performance among children is linked to socioeconomic status, increasing incomes alone will not necessarily improve outcomes. The quality of and approach to support and education also matters. For one international example, 10 percent of the most disadvantaged students in the Beijing, Shanghai, Jiangsu, and Zhejiang regions of China outperformed the average student in developed economies and performed on par with 10 percent of the most advantaged students in developed economies. Income levels in these regions of China are significantly below average incomes in developed countries.⁵⁶ The success of these students may be related to how much time they spend on quality education activities.⁵⁷ So, income statistically helps on literacy, but low income does not imply a lack of capability to develop literacy skills.

WHAT PARENTS DO AT HOME WITH CHILDREN IS JUST AS IMPORTANT AS THEIR SOCIOECONOMIC STATUS

The home learning environment ("HLE") and family characteristics are among the strongest predictors of children's early development.⁵⁸ The HLE encompasses learning activities and stimuli such as going to the library, playing with numbers, drawing and painting, listening to music and singing, and being exposed to reading. As children's brains are highly malleable in the early stages of their lives, engaging in these activities significantly affects learning outcomes later on in life. The HLE is found to be a particularly important predictor for reading and mathematics achievement for children aged five; however, the effect of the HLE is reduced for older children.⁵⁹ This is likely because older children are exposed to additional determinants of achievement, such as formal education.⁶⁰ It is also because the early literacy skills of children at age 5 affect their literacy ability at age 15. In other words, what happens before 5 years of age is very important.



⁵² Persistent poverty is measured by the average 13-year income-to-needs ratio of the family in which a child was born into and in which they live. Transient poverty is measured by the single-year income-to-needs ratio of the child's family at the time of developmental assessment.

⁵³ Korenman, S., Miller, J. E., & Sjaastad, J. E. (1995). Long-term poverty and child development in the United States: Results from the NLSY. *Children and Youth Services Review*, 17(1-2), 127-155.

⁵⁴ Dahl, G. B., & Lochner, L. (2012). The impact of family income on child achievement: Evidence from the earned income tax credit. *American Economic Review*, 102(5), 1927-56.

⁵⁵ Duncan, G. J., & Murnane, R. J. (2011). Introduction: The American dream, then and now.

⁵⁶ OECD. 2019. PISA 2018 Insights and Interpretations. https://www.oecd.org/pisa/PISA_percent202018_percent20Insights_percent20and_percent20Interpretations_percent20FINAL_percent20PDF.pdf

⁵⁷ Ibid.

⁵⁸ Melhuish, E. C., Phan, M. B., Sylva, K., Sammons, P., Siraj-Blatchford, I., & Taggart, B. (2008). Effects of the home learning environment and preschool center experience upon literacy and numeracy development in early primary school. *Journal of Social Issues*, 64(1), 95-114.

⁵⁹ Melhuish, E. C., Phan, M. B., Sylva, K., Sammons, P., Siraj-Blatchford, I., & Taggart, B. (2008). Effects of the home learning environment and preschool center experience upon literacy and numeracy development in early primary school. *Journal of Social Issues*, 64(1), 95-114.

⁶⁰ Although a significant share of children aged 0-5 attend daycare, this represents a smaller time commitment and less exposure to formalized lessons compared to grade school.

Although the HLE is an independent influence on educational outcomes, it is still correlated with several other factors, such as income and parental mental health. Family socioeconomic status, caregiver behaviours, and caregivers' education levels all contribute to both the HLE and to children's early outcomes. For example, research shows that more educated parents are more likely to engage in conversations that involve back and forth interaction with children. This is important because a recent study found that these back and forth conversations play a large role in children's language development.⁶¹ Apart from socioeconomic indicators, research also shows that parental mental health problems can affect the quality of the HLE by leading to lower child engagement and language exposure in the home.⁶²

MATERNAL EDUCATION IS A POWERFUL PREDICTOR OF LEARNING ACHIEVEMENTS OF CHILDREN

The education level of a child's mother has been positively associated with child developmental outcomes from infancy to adolescence, even when controlling for other factors.⁶³ Research shows that mother's educational attainment affects the quality of the HLE, where low maternal education is related to fewer language-rich interactions and a lower provision of toys, learning materials, and teaching activities in the home.⁶⁴ On average, highly-educated mothers spend more time with their children than mothers with less education. Mothers are often studied because they are more likely to be at home with children. However, this can also be said about parental education in general, where highly-educated parents potentially offer more opportunities for intellectually-stimulating activities to their children.⁶⁵ Furthermore, maternal education is positively associated with household income, a factor that, as aforementioned, can significantly affect a child's access to resources, early childhood education programs, and a supportive cognitive learning environment.⁶⁶

CHILDREN'S EXPOSURE TO HIGH QUALITY PRE-SCHOOL CAN HELP REDUCE INEQUALITIES IN LEARNING OUTCOMES THAT STEM FROM SOCIOECONOMIC STATUS

Studies suggest that pre-school is an important contributor to early literacy for children, where early childhood education programs can help children build fundamental skills as well as identify learning delays early on and receive corresponding support. Pre-schools can also play a role in improving the HLE by promoting parent-child engagement and activities at home, a factor that is integral to early literacy performance.

Research suggests that pre-school is associated with benefits for young children in general, but can also specifically help disadvantaged children enter school with more academic skills and cognitive abilities than may be accessible through their HLE. From a policy perspective, this has the potential to mitigate the inequality of early children's learning outcomes derived from socioeconomic status, as there is evidence that suggests that high-quality pre-school can significantly improve the cognitive abilities and reading achievement of disadvantaged children.⁶⁷

CANADIANS UNDERSTAND THE DRIVERS OF LITERACY: NEARLY ALL SURVEY PARTICIPANTS INDICATED THAT THE HOME LEARNING ENVIRONMENT SOMEWHAT OR SIGNIFICANTLY IMPACTS CHILD LITERACY DEVELOPMENT

The survey results suggest that respondents are aware of the importance of children's literacy development and the role of the home learning environment in shaping this development. It should be noted that the survey population has a modestly higher average household income compared to the general Canadian population. Moreover, the survey may be biased as responses were collected only for those with sufficient literacy skills to read, understand, navigate, and respond to the online survey.

- In fact, almost 90 percent of respondents indicated that literacy at age 5 has a significant or moderate impact on literacy performance at age 15.
- With regards to the drivers of child's literacy, 90 percent of respondents feel that the home environment is either partially or predominantly responsible for a child's literacy development.

⁶¹ Romeo, R. R., Leonard, J. A., Robinson, S. T., West, M. R., Mackey, A. P., Rowe, M. L., & Gabrieli, J. D. (2018). Beyond the 30-million-word gap: Children's conversational exposure is associated with language-related brain function. *Psychological science*, 29(5), 700-710.

⁶² Shuey, E. A., & Kankaraš, M. (2018). The Power and Promise of Early Learning.

⁶³ Sammons, Pam, et al. "The impact of pre-school on young children's cognitive attainments at entry to reception." *British educational research journal* 30.5 (2004): 691-712.

⁶⁴ Green, C. M., Berkule, S. B., Dreyer, B. P., Fierman, A. H., Huberman, H. S., Klass, P. E., ... & Mendelsohn, A. L. (2009). Maternal literacy and associations between education and the cognitive home environment in low-income families. *Archives of pediatrics & adolescent medicine*, 163(9), 832-837.

⁶⁵ DeGarmo, D. S., Forgatch, M. S., & Martinez, Jr, C. R. (1999). Parenting of divorced mothers as a link between social status and boys' academic outcomes: Unpacking the effects of socioeconomic status. *Child development*, 70(5), 1231-1245.

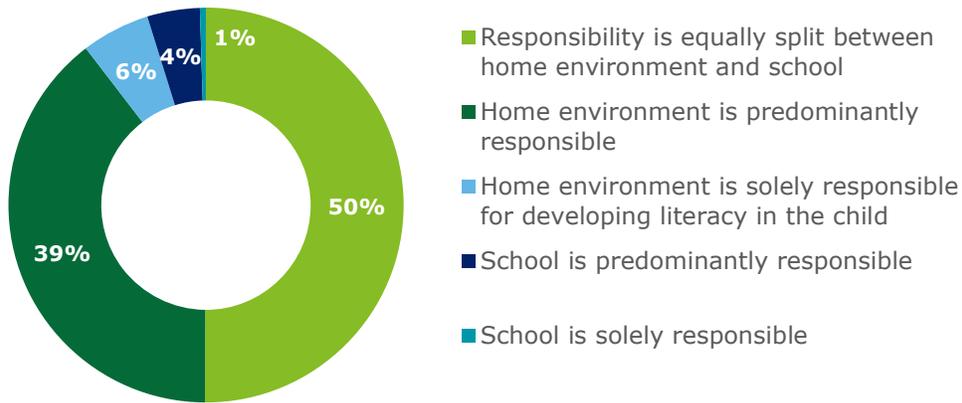
⁶⁶ Shuey, E. A., & Kankaraš, M. (2018). The Power and Promise of Early Learning.

⁶⁷ Barnett, W. S. (2001). Preschool education for economically disadvantaged children: Effects on reading achievement and related outcomes. *Handbook of early literacy research*, 1, 421-443.

When it comes to activities undertaken at home, roughly 80 percent of caregivers indicated that they read to their child in French or English, over 90 percent of parents play with their children, and almost 70 percent of parents do number and letter activities with their children. There is correspondingly a general consensus that these activities are important to children's literacy development. To illustrate, nearly 95 percent of respondents indicated that reading aloud to children or reading with children has a moderate to significant impact on a child's literacy development. Likewise, nearly all parents feel that encouraging children to write and doing number and letter activities with them are moderately or significantly important for literacy development.

Despite this consensus, survey results indicate that women place a higher relative significance on activities such as reading, singing, and doing number and letter activities with your child compared to men. For example, 55 percent of women believe singing to your child is significantly important, compared to 39 percent of men. In addition, around 80 percent of women indicated that doing number and letter activities with your child is significantly important compared to 67 percent of men. As well, women place greater importance on these activities in the first few months of a child's life compared to men, where almost 90 percent of women believe that it is very important to read, speak, and sing to your child in the first few months of life to start laying a foundation for literacy, compared to 76 percent of men.

Figure 12: Between the home and school environment, which is more responsible for a child's literacy development?



Source: Deloitte. (2020). Children's Literacy in Canada Survey.

Conclusions and Recommendations

WHAT HAVE WE LEARNED?

The best available, and widely documented estimates of children's literacy in Canada suggest that in absolute terms, too many children are either vulnerable to low literacy levels or have below adequate literacy skills required to succeed in today's knowledge-based economy. A conservative estimate suggests that over 537,000 children in Canada have inadequate literacy to fully succeed.

Research shows that brain development starts in the womb and that developing early literacy skills when children are between zero and five years old is critical to their overall success. Moreover, starting early saves resources when trying to help children later catch up in terms of their literacy skills.

We believe that there are social and economic benefits to improving literacy skills across all individuals in Canada – from the very young to adults. Amongst the options for improving literacy – investing in early education (i.e., education for children from 0-5 years old) is a key recommendation. Below we share our high-level recommendations for tackling the challenge of low children's literacy in Canada.

WHAT CAN WE DO TO IMPROVE CHILDREN'S LITERACY?

As the skills needed in a knowledge-based economy become increasingly important, having strong literacy skills will become increasingly important for overall success in life. The effects of the COVID-19 pandemic only exacerbate this need. Unemployment increased amidst the pandemic and the ability for workers to re-skill and up-skill is increasingly apparent. Success on this front will be dependent on the literacy, numeracy and critical thinking skills as the foundation to more sophisticated skills development enabling workers to return to employment. The following recommendations represent a starting point for action:

- 1. Start with better data:** Data on children's literacy is limited, especially for very young children. To improve our understanding of the extent of the problem, and address problems early on, we need better data. Therefore, we need to improve data availability of pre-literacy skills for the very young and improve the consistency of measurement over lifetimes.
 - Consider tracking students:** Apart from isolated studies, longitudinal data on student literacy performance is unavailable. It may be worthwhile to consider tracking students from when they enter the school system until they enter the workforce (or beyond) to further understand when children fall significantly behind and how difficult it is for them to catch-up.
- 2. Enhance public awareness:** While the Canadians surveyed as part of this research are generally aware of the importance of literacy, we can improve parent awareness of how and when to encourage literacy development. Enhancing public awareness will help inform individuals about the research around the importance of early literacy skills. With more knowledge and awareness, more people will take action because they may better understand the significance of the situation and the different tools they can leverage to support early literacy development in their own households and communities.
- 3. Provide effective, targeted resources for parents:** Parents need to feel empowered to help their children learn. Support can include information provided by healthcare workers, it may include classes on how to support literacy development, or it may even include public awareness campaigns similar to that of the Canadian food guide. Importantly, parents should not be made to feel like they are incompetent or ill-equipped to parent as this runs the risk of parents withdrawing and ignoring the advice.
- 4. Invest in universal early childhood education:** Canada does not have universal care and education for children under six. Research suggests that the early years of a child's life are crucial for language development. If we are serious about improving literacy in Canada, we need to improve access to quality early childhood education on a universal basis. The universality of this education is important because children from lower socioeconomic families benefit from learning alongside children from higher socioeconomic families. The benefits of early childhood education extend beyond literacy and include the potential to increase female labour force participation.

- **Focus on quality education:** Currently, teachers of young children are not required to have specialized education in teaching the very young. As a result, the quality of teachers can vary. To ensure early childhood education is of sufficiently high quality, educators should be required to undergo specialized training for teaching young children.
5. **Improve outcomes for socioeconomic challenged households:** Many of the drivers of early literacy performance are highly interwoven with family socioeconomic status. As a result, improving outcomes for households can not only address poverty and other social issues, but it can also indirectly improve child literacy by creating a better learning environment. Before early literacy skills can be prioritized and developed, a child's basic needs must be met. For example, children who are hungry won't be able to concentrate and develop their skills.

There are many initiatives that could help improve children's literacy in Canada. It is clear that we all have a role to play. Whether we are educators, caregivers, future caregivers, or parents, children's literacy affects us all and we can all help children develop strong literacy skills.

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Appendix 1: Data Sources Overview

EARLY DEVELOPMENT INSTRUMENT

The EDI is a questionnaire that measures the ability of children to meet age-appropriate developmental expectations. It is completed by kindergarten teachers, and holistically assesses children according to the following five major areas of child development:

Physical health and well-being

- This component assesses a child's motor skills, physical independence, and physical readiness for school. Examples of related assessments in this domain include: the ability of a child to hold a pencil, sustain adequate energy levels throughout the school day, climb stairs, look after their own daily needs, and more.

Social competence

- This domain assesses a child's level of responsibility and respect, readiness to explore new things, approaches to learning, and overall social competence. It includes the ability of a child to get along with peers, display self-confidence and self-control, and show appropriate respect for adult authority.

Emotional maturity

- Included in the emotional maturity domain are assessments related to a child's ability to think before acting, deal with feelings, and have empathetic responses to other people's feelings. In addition, it assesses a child's behavior in terms of aggression, inattention, and anxiousness.

Language and cognitive development

- The language and cognitive development domain includes basic and advanced literacy, interest in literacy/numeracy, and basic numeracy assessments (e.g., attaching sounds to letters, identifying letters in the alphabet, reading and writing simple words and sentences). It also measures a child's ability to understand patterns and recite pieces of information from memory.

Communication skills and general knowledge

- This domain includes skills that relate to a child's ability to communicate their needs and wants, participate in story-telling, and use language effectively. It also assesses a child's possession of age-appropriate knowledge about the world.

PISA

Some 600,000 students completed the assessment in 2018, representing about 32 million 15-year-olds in the schools of the 79 participating countries and economies. In Canada, 22,653 students, in 914 schools, completed the assessment, representing 335,197 15-year-old students. All 10 Canadian provinces participate in the PISA assessment. Currently, Yukon, Northwest Territories, and Nunavut do not participate in PISA.

CALCULATION OF VULNERABLE POPULATION

Number of Children and Youth with Below Desirable Literacy Skills - Lower Bound

	2020 Population ¹	% with Low Literacy Skills	Population with Below Desirable Literacy	Source of %
0-5-year-olds	2,325,082	8%	186,007	EDI
6-9-year-olds	1,641,465	8%	131,317	EDI
10-14-year-olds	2,072,100	8%	165,768	EDI
15-year-olds	398,489	14%	55,788	PISA
		TOTAL	538,880	

Number of Children and Youth with Below Desirable Literacy Skills - Upper Bound

	2020 Population¹	% with Low Literacy Skills	Population with Below Desirable Literacy	Source of %
0-5-year-olds	2,325,082	8%	186,007	EDI
6-9-year-olds	1,641,465	26%	426,781	EQAO Assessment
10-14-year-olds	2,072,100	19%	393,699	EQAO Assessment
15-year-olds	398,489	14%	55,788	PISA
		TOTAL	1,062,275	

1. Statistics Canada Table: 17-10-0005-01 (formerly CANSIM 051-0001). Retrieved October 2020.

Appendix 2: Survey Overview

SURVEY METHODOLOGY

The online survey was developed with a target audience of 1000 Canadians (across the country and inclusive of urban and rural settings). The survey was designed to gather Canadian's perspectives on the state and importance of children's literacy in the country.

The survey was deployed by Asking Canadians between February 25th and March 3d, 2020, for a total duration of one week. This resulted in 1000 respondents completing the survey.

TARGET POPULATION

The survey was distributed to a representative sample of the Canadian public. It also specifically targeted caregivers in order to better understand their role in children's literacy development, as well as their understanding of child's literacy in Canada. A caregiver is defined as an individual who is currently the parent of, or is primarily responsible for the care and upbringing of, at least one child under the age of 18.

Of the 1000 respondents, approximately 28 percent of them identified as caregivers, 27 percent as likely caregivers, and 45 percent as non-caregivers. Approximately 52 percent of respondents identified as female, 48 percent as male, and less than 1 percent as gender diverse. The largest share of respondents (38 percent) indicated they were from Ontario, as illustrated below.

It should be noted that the survey population has a modestly higher average household income compared to the general Canadian population. Moreover, the survey may be biased as responses were collected only for those with sufficient literacy skills to read, understand, navigate, and respond to the online survey.

Province/Territory	Percentage of Respondents
Newfoundland and Labrador	2 percent
Nova Scotia	3 percent
Prince Edward Island	0 percent
New Brunswick	2 percent
Quebec	24 percent
Ontario	38 percent
Manitoba	4 percent
Saskatchewan	3 percent
Alberta	11 percent
British Columbia	13 percent
Northwest Territories	0.2 percent

SUMMARY OF RESPONSES

Figure 1: Survey Participant's Age

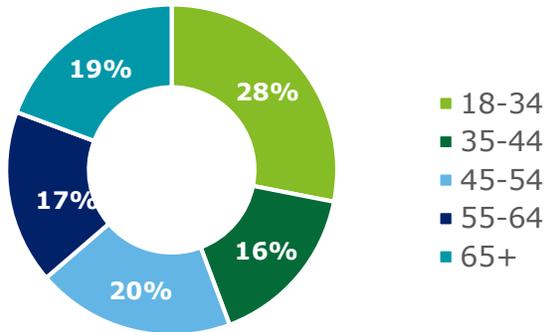
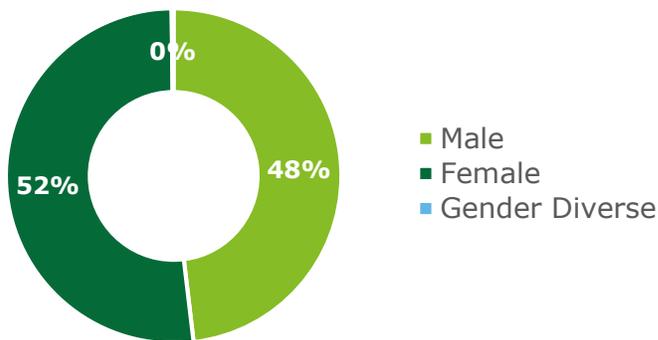
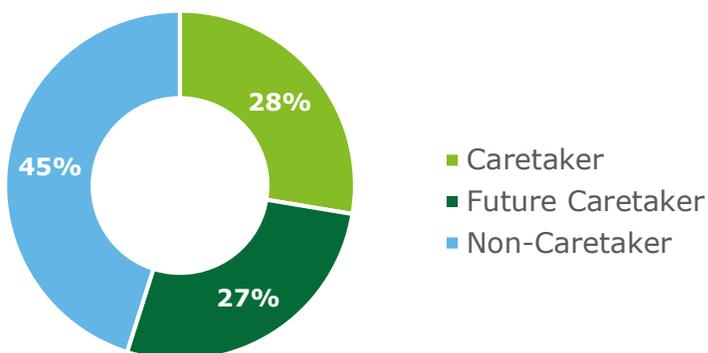


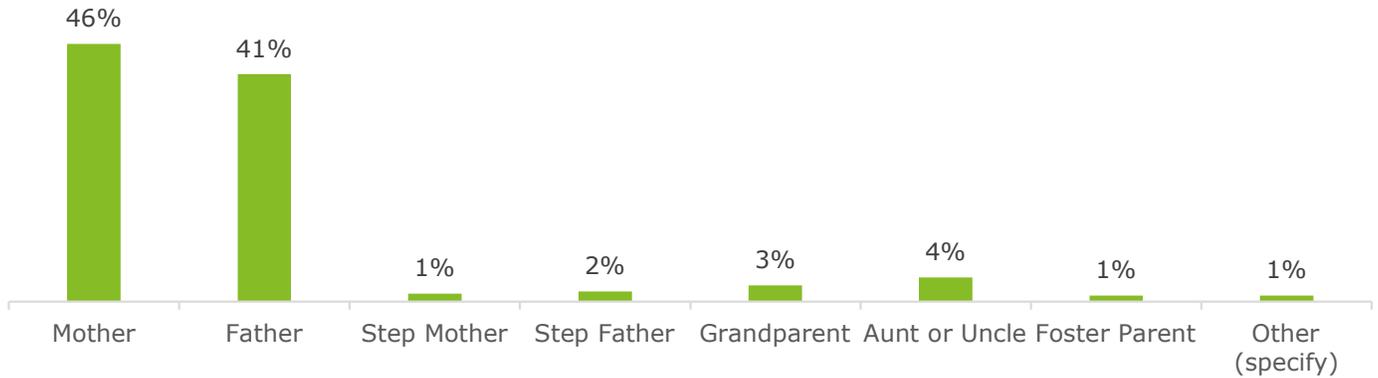
Figure 2: Participant's Gender



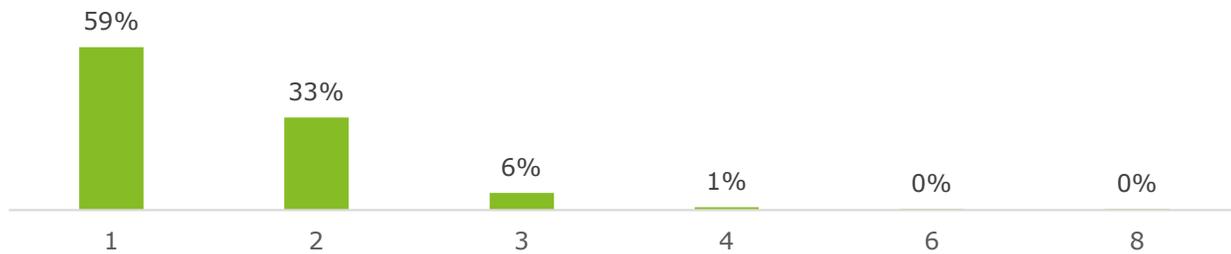
Participant's Caregiver Status



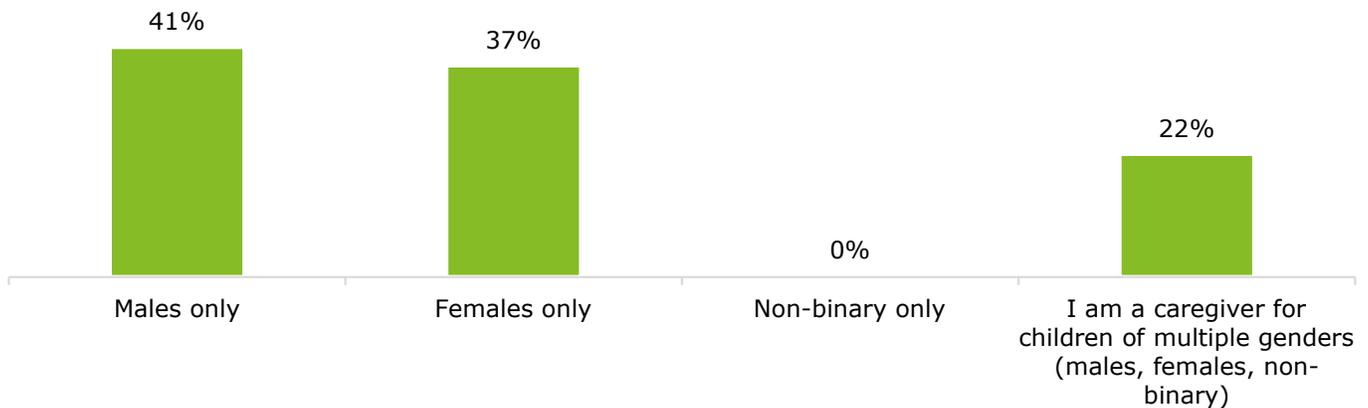
B1. What specific relationship do you have with the child for whom you are a primary caregiver?



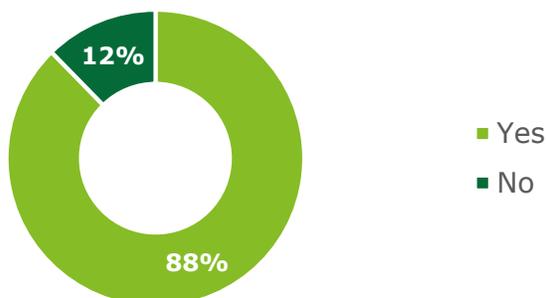
B3. How old are the child(ren) for whom you are a primary caregiver?



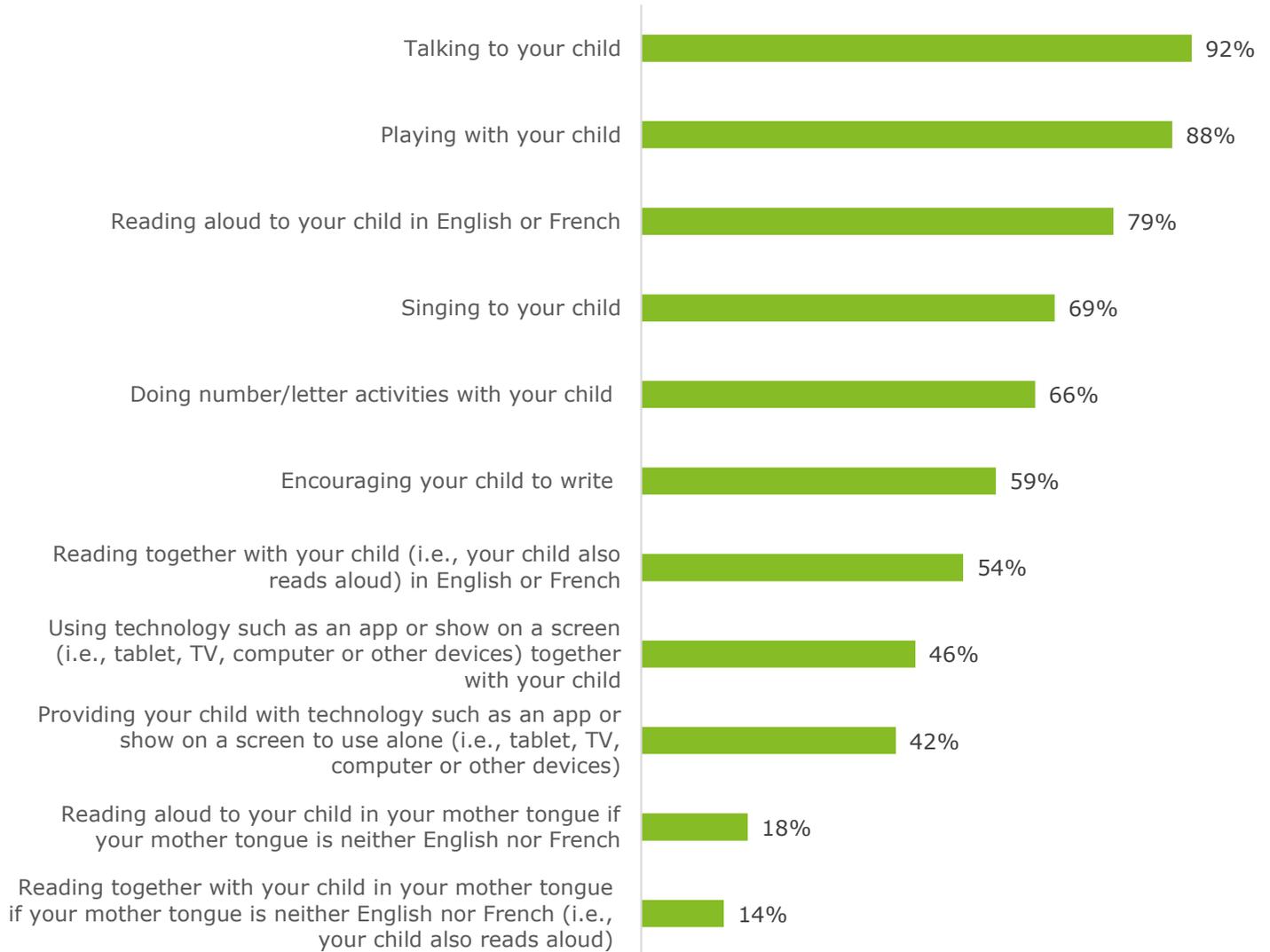
B4. What gender(s) are the child(ren) for whom you are a primary caregiver?



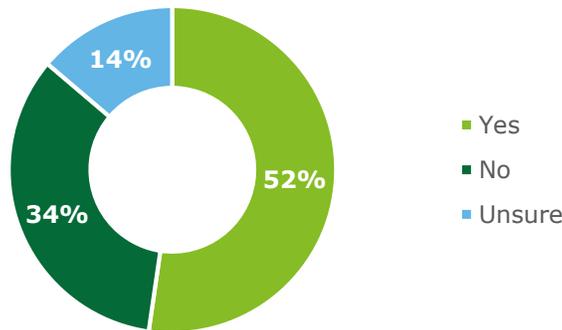
B5. Do you have a co-parent (e.g., spouse, spousal equivalent, former spouse, etc.) who is also responsible for the care and upbringing of the child(ren)?



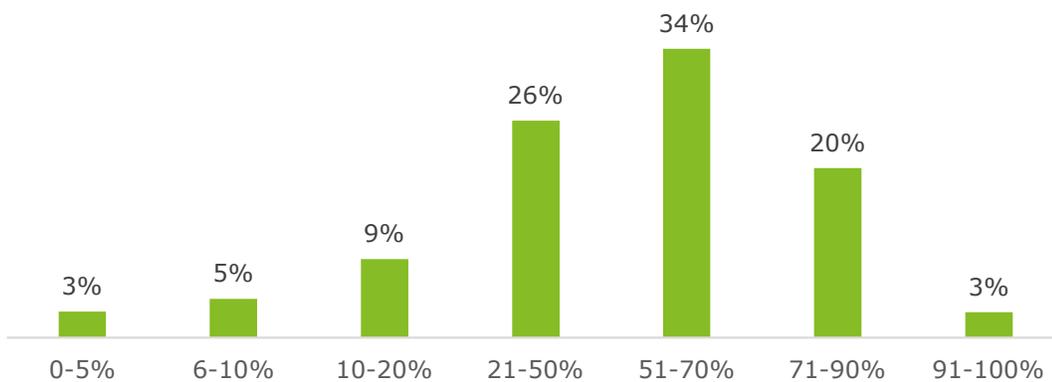
B6. When your child(ren) was (were) under age 5, what (if any) of the following activities did you regularly (i.e., at least once a day) do with them?



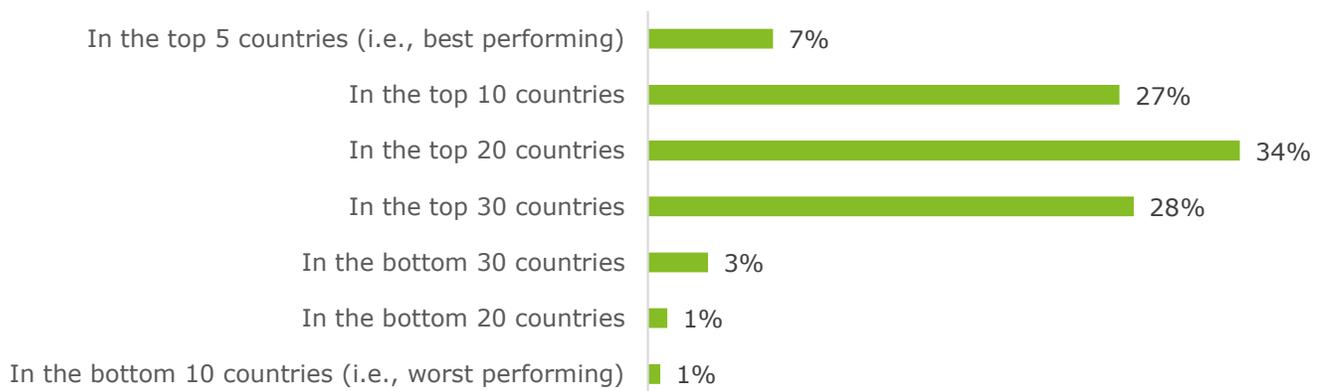
C1. Do you think that most Canadian children (i.e., under 18 years of age) have the literacy skills they need to be successful?



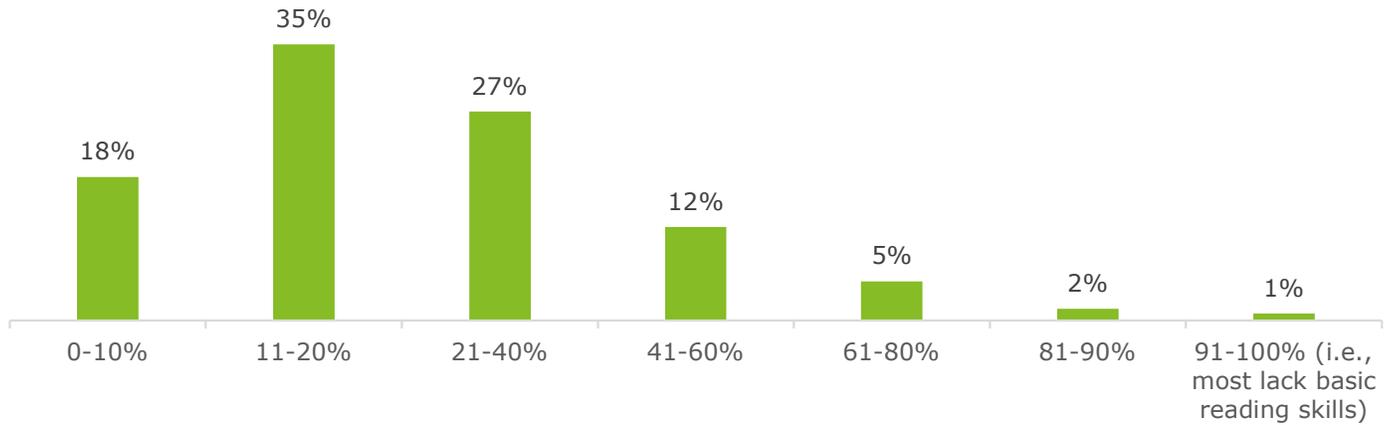
C2. What percentage of 5-year-old children (i.e., around the age at which they enter school) in Canada do you think have the necessary literacy skills to set them up for success in school?



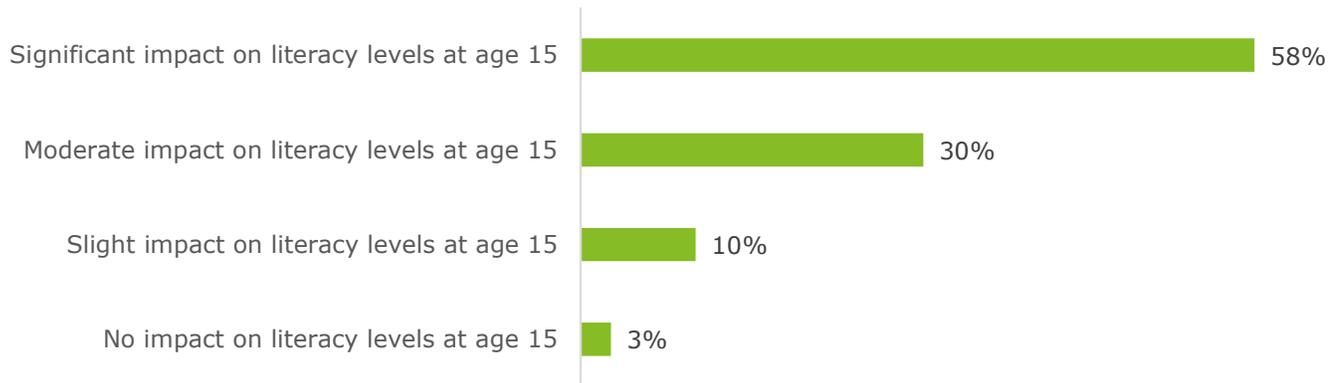
C3. In your opinion, where do you think Canadian 15-year-olds rank compared to other countries in the world in reading performance?



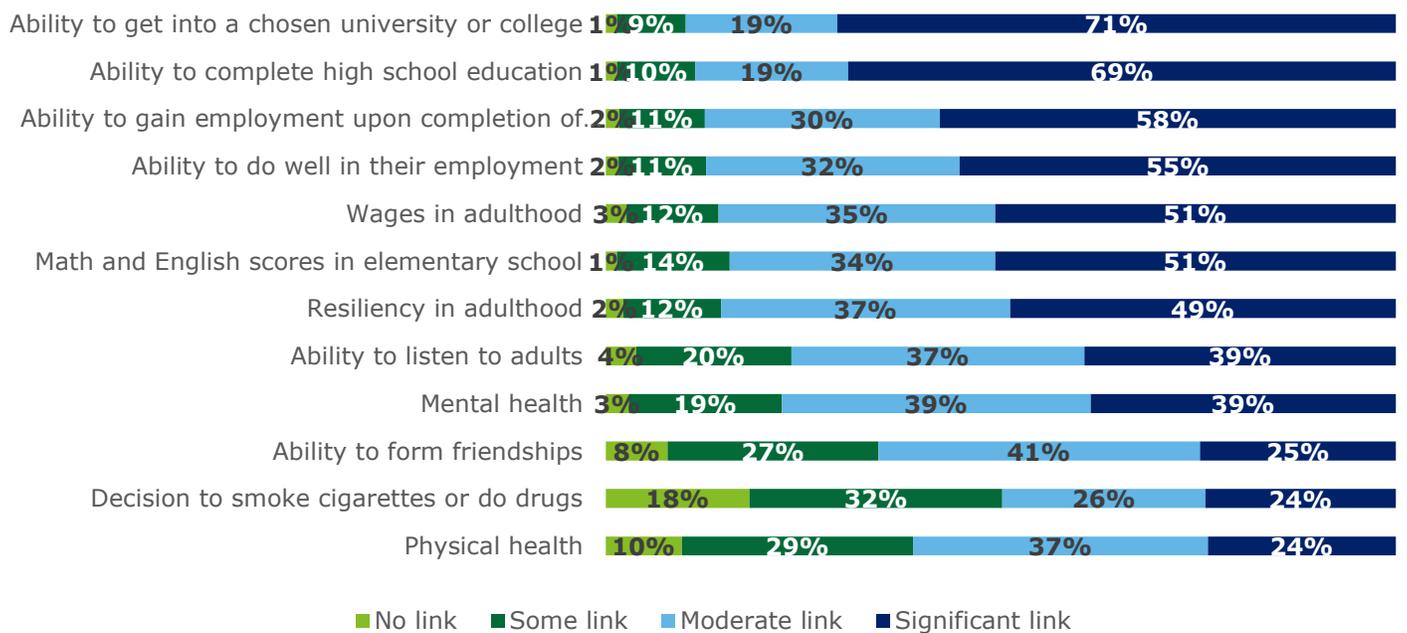
C4. What percentage of 15-year-olds in Canada do you think lack basic reading skills needed to fully participate in modern society?



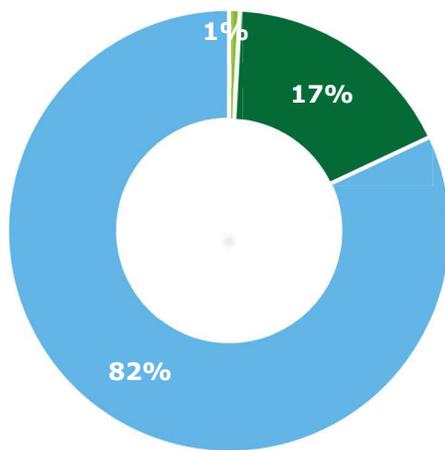
C5. To what extent do you believe literacy skills at age 5 affect literacy performance at age 15?



C6. To what extent do you believe a child's literacy skills are linked to that child's:

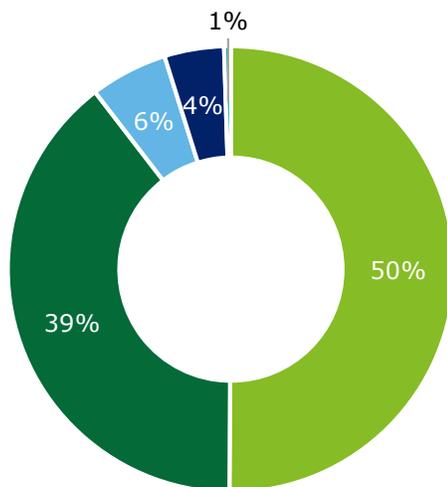


D1. How important is it to read, speak, and sing to your child in their first few months of life to start laying a foundation for literacy?



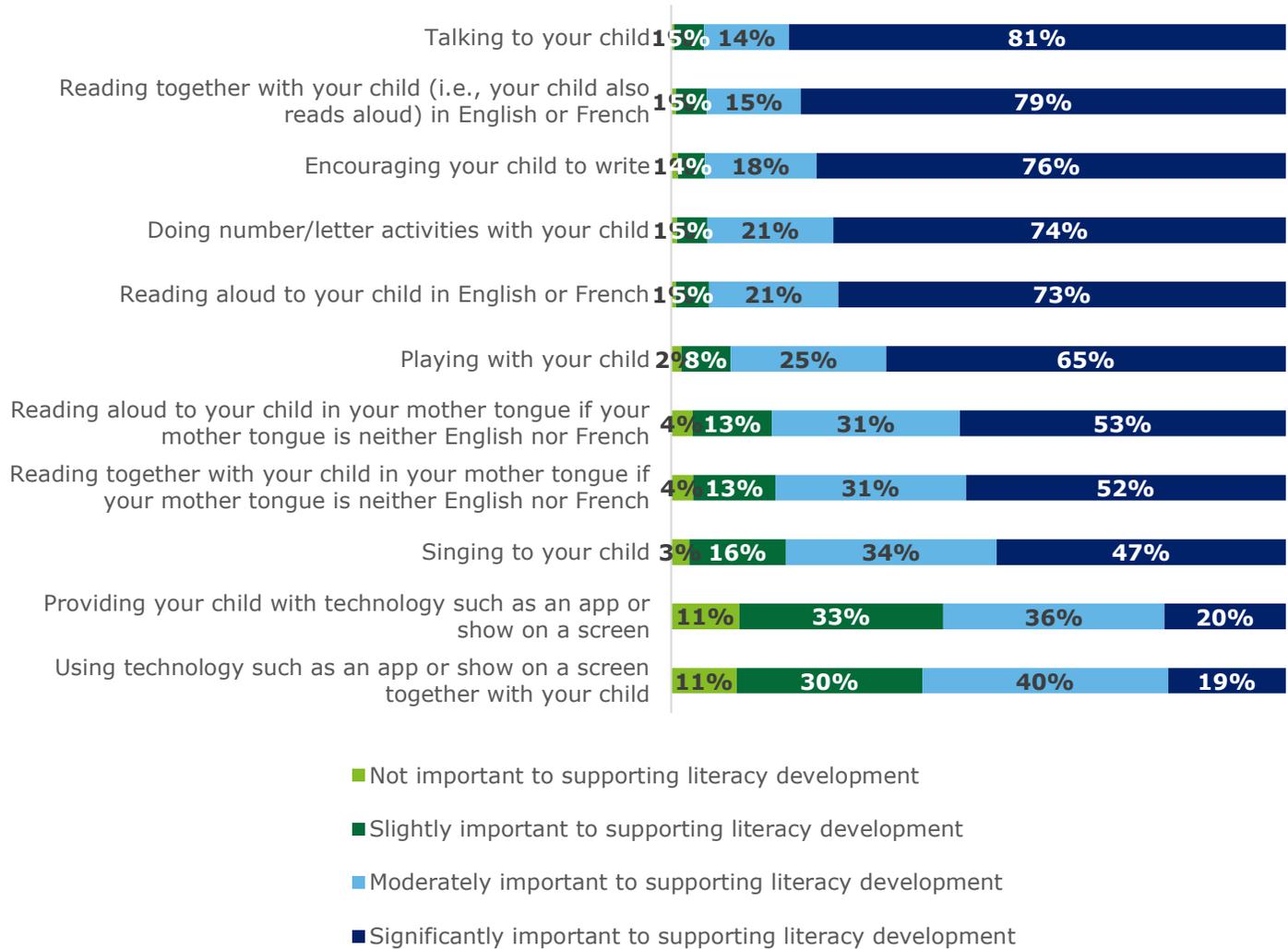
- It is not important to read, sing, and speak to your child in the first few months of life
- It is somewhat important to read, sing, and speak to your child in the first few months of life
- It is very important to read, sing, and speak to your child in the first few months of life

D2. Between the home and school environment, which is more responsible for a child's literacy development (i.e., building the skills required to read and write)?

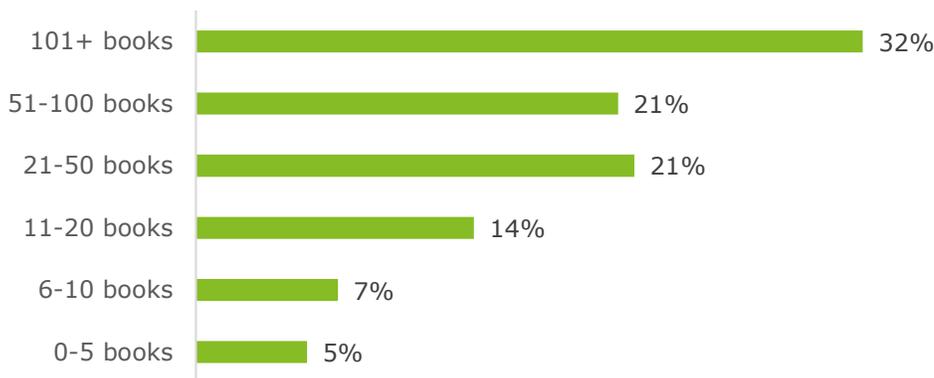


- Responsibility is equally split between home environment and school
- Home environment is predominantly responsible
- Home environment is solely responsible for developing literacy in the child
- School is predominantly responsible
- School is solely responsible

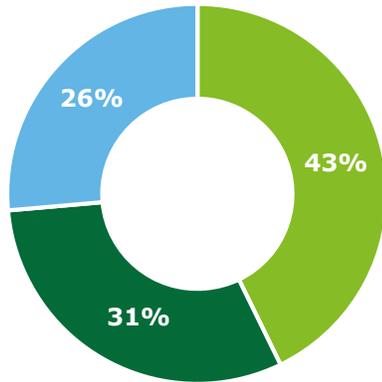
D3. Of these tactics used in the home environment, how important do you think each one is to developing a child's literacy skills?



D4. Approximately how many physical books (for any age or reading level) do you currently have in your home?

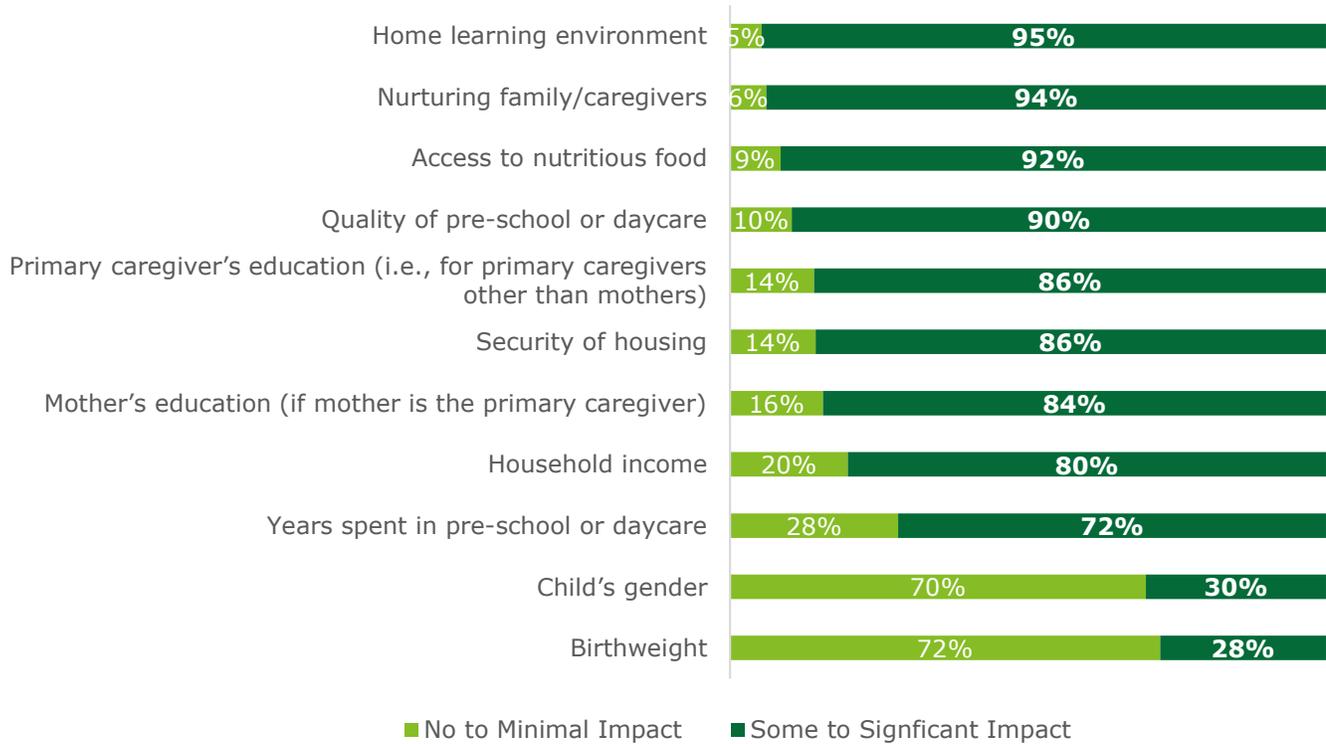


D5. Do you have access to digital books (e.g., on an e-reader, online resources, etc.) in your home?

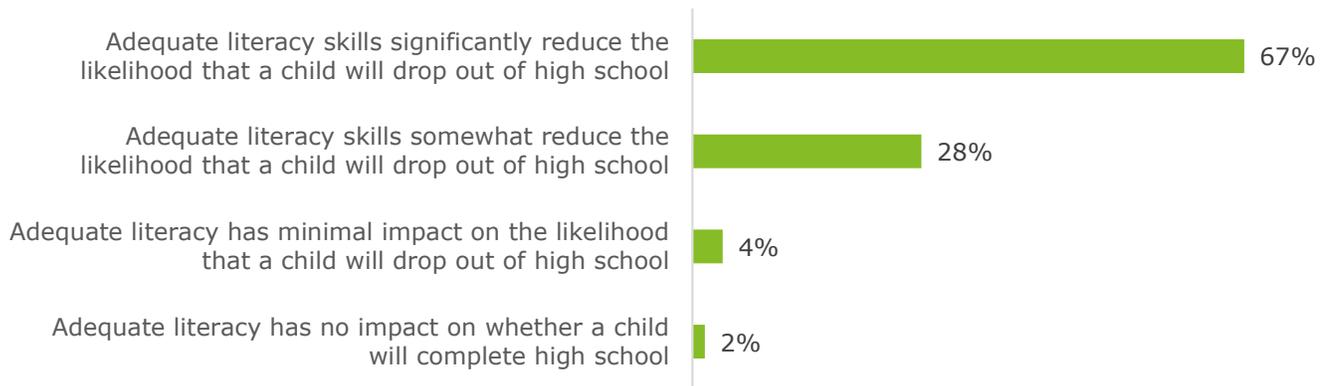


- Yes we have access to digital books and we use them
- Yes we have access to digital books but we do not use digital books
- No we do not have access to digital books

D6. What impact do you believe that each of the following has on a 0-5-year-old child's literacy development? Please select below.



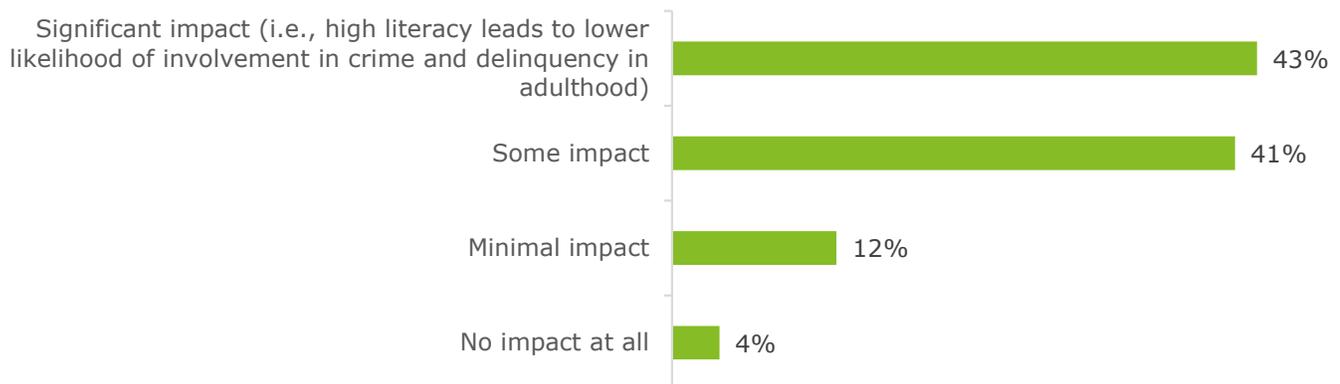
E1. How big of an impact do you believe child literacy rates have on high school dropout rates?



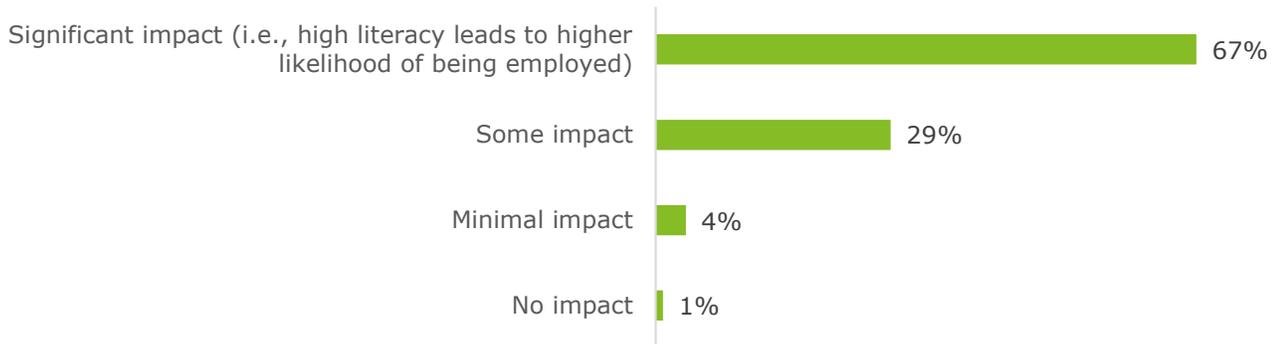
E2. How big of an impact do you believe literacy skills have on a child's likelihood of participating in risky behavior?



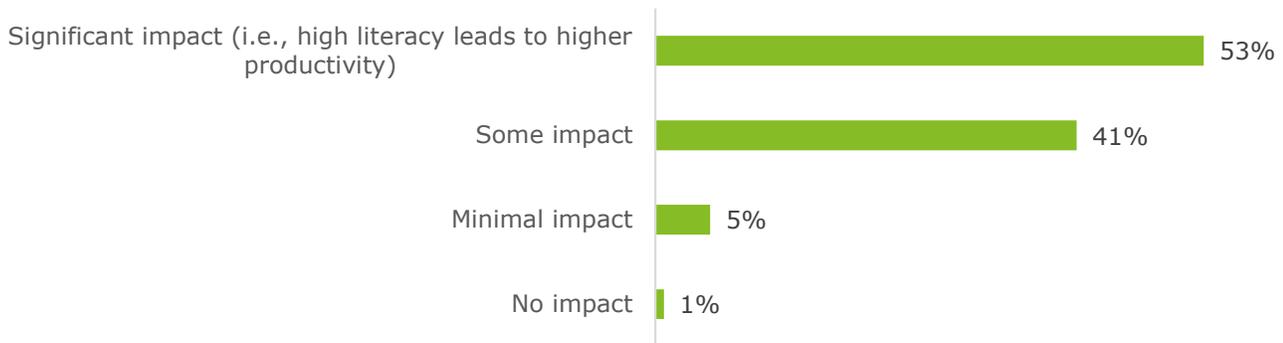
F1. How much of an impact do you believe strong early literacy skills have on a person's likelihood of being involved in crime and delinquency in adulthood?



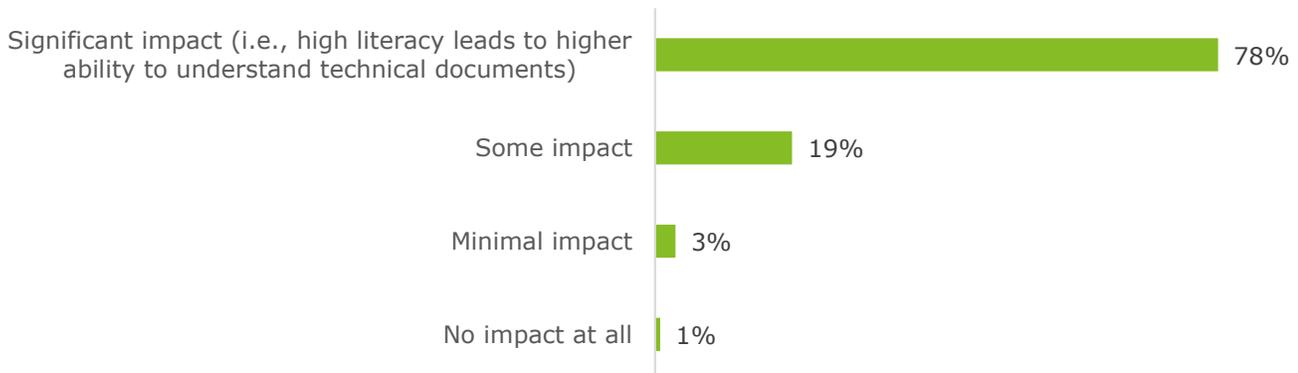
F2. How important do you think a child's literacy skills are to their likelihood of being employed, full-time once they become an adult?



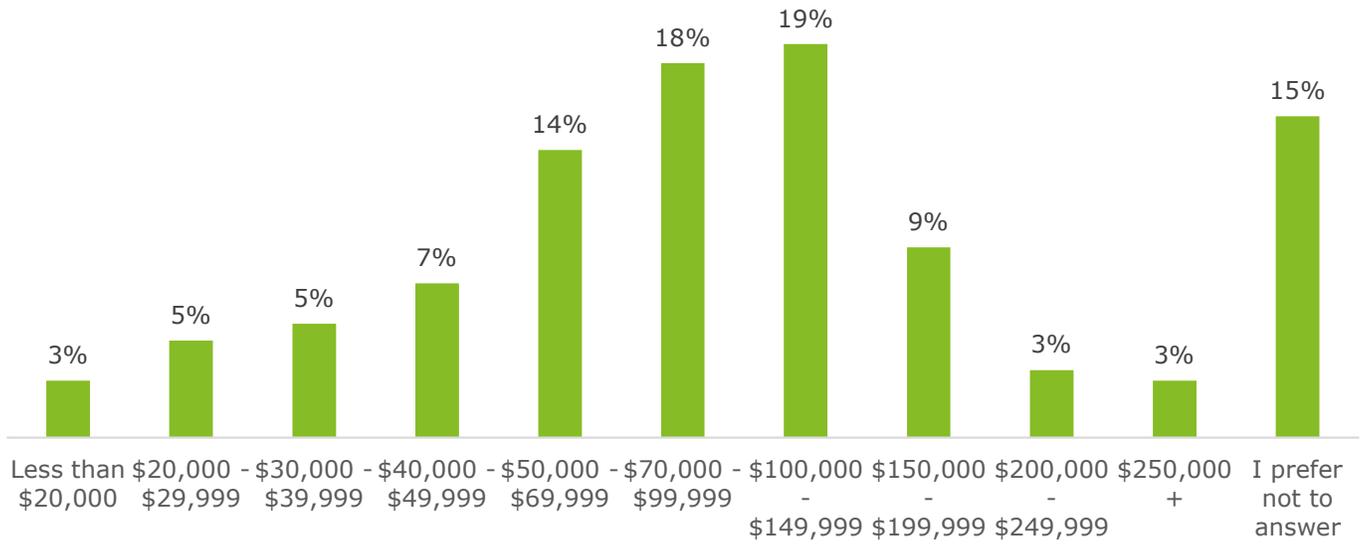
F3. How big of an impact do you believe adult literacy rates have on workforce productivity in Canada?



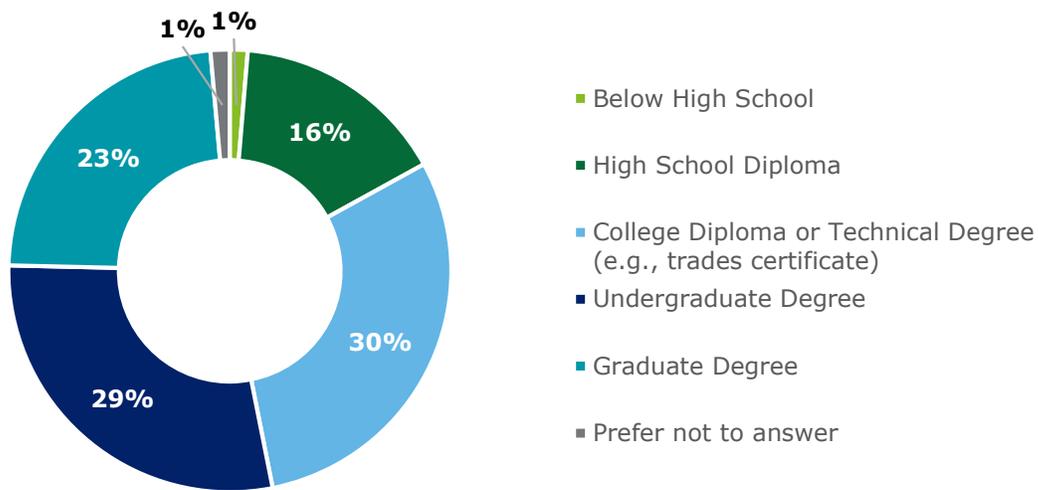
F4. How big of an impact do you believe literacy skills have on an individual's ability to understand technical, complex documents (e.g., legal documents, business contracts) in Canada?



H1. What is your current household income level? Please select the most appropriate answer below.



H2. What is the highest level of education you have completed?

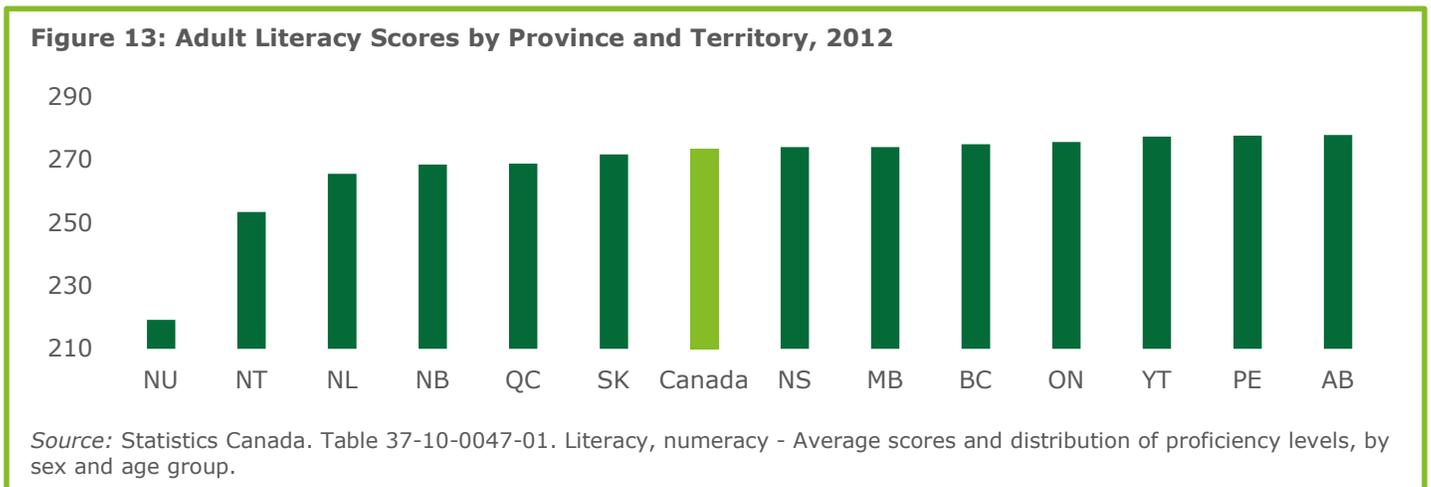


Appendix 3: Additional Research on Adult Literacy Performance in Canada

CANADA RANKS NEAR AVERAGE IN ADULT LITERACY COMPARED TO OTHER DEVELOPED NATIONS

Canada ranks at the OECD average in literacy, below the OECD average in numeracy, and above the OECD average for PS-TRE. In terms of literacy, Canada scores 273; countries that scored at the same level as Canada include the Czech Republic (284), South Korea (273) and the United Kingdom (272). The countries with the highest scores in literacy are Japan (296), Finland (288), the Netherlands (284) and Australia (280). Thus, adult literacy skills are comparatively weaker than the relative literacy skills of Canadian teenagers, who rank significantly above the OECD average in literacy.⁶⁸ Moreover, it should be stressed that in today's hyper competitive global economy, which is increasingly dependent on the services sector, one does not want to be only average on a foundational skill set such as literacy.

Within Canada, Alberta and Ontario rank above the OECD average with scores of 278 and 276, respectively. Quebec (269), New Brunswick (268), Newfoundland and Labrador (265), Northwest Territories (253), and Nunavut (219) all score below the OECD average. The remaining provinces and territories score at the OECD average. New Brunswick and Newfoundland and Labrador also posted below average youth reading scores (Figure 10) suggesting that the challenges faced by youth in these provinces persist into adulthood.



NEARLY HALF OF CANADIAN ADULTS HAVE BELOW DESIRED LITERACY SKILLS FOR A MODERN KNOWLEDGE-BASED ECONOMY

Canada has a larger share of its population at the highest and lowest levels in literacy – for example, 17 percent of Canadians score at Level 1 or below (above the OECD average of 15 percent), and 14 percent of Canadians score at Levels 4 or 5 (above the OECD average of 12 percent). Around 13 percent of adults score at Level 1, meaning that these individuals are able to execute tasks of very limited complexity, such as locating single pieces of information in short, familiar texts. The remaining 4 percent score below Level 1 and possess only basic vocabulary skills. This indicates that a significant share of adults have inadequate literacy skills. Roughly 32 percent of adults have Level 2 literacy in Canada, which represents competence but it falls short of the desired level for success in a modern knowledge based economy. This means that nearly half of all Canadians lack the literacy skills required to maximize their success. Again, low adult literacy skills may reflect weak childhood literacy skills as children with weak literacy

⁶⁸ The lower performance in adult literacy likely reflects the impact of increased immigration, which accounts for a rising share of overall Canadian population growth, and the fact that more immigrants are arriving from countries where English and French is no a first language.

continue to fall behind and their skills further weaken into adulthood. Furthermore, children born to parents with weak literacy skills may be at a greater disadvantage and more likely to have below desired literacy themselves.

NO GENDER DIFFERENCES ARE OBSERVED IN THE DOMAINS OF LITERACY AND PROBLEM SOLVING COMPETENCIES

Men and women performed similarly in literacy and PS-TRE; however, men demonstrated measurably greater numeracy skills compared to women, especially in older age cohorts. For example, the numeracy scores gap between men and women in the 55 to 65 cohort is a 19-point difference (261 for men, 242 for women), compared to the 16 to 24 cohort, where there is a 9-point difference (273 for men, 264 for women).

NATIONALLY, INDIGENOUS AND NEW CANADIAN POPULATIONS SCORE LOWER IN LITERACY AND NUMERACY THAN THE NON-INDIGENOUS AND CANADIAN-BORN POPULATIONS

There are differences in PIAAC scores across different Canadian populations. The Indigenous population in Canada had lower literacy, numeracy, and PS-TRE scores compared to non-Indigenous population. For literacy, the Indigenous population had an average score of 260, compared to the non-Indigenous population's average score of 274. Unfortunately, these results likely reflect weaker literacy skills among Indigenous youth that are then carried into adulthood. As literacy is a key driver of individual and societal success – further understanding the drivers of this outcome is a key dimension to addressing challenges faced by the Indigenous community. Certainly this is an important issue in Canada and deserves further research.

A similar trend was captured when comparing immigrant population scores in literacy and numeracy with the Canadian-born population. This likely reflects that English and French are often not the first language for these individuals. That being said, the latest PISA scores suggest that today's immigrant children are performing on par with Canadian-born children, while more research is needed on this specific population, this may suggest an improvement in the ability of immigrant children to adapt to Canadian society, an improvement in educational systems, or an improvement in supports for immigrants.

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