Research on Aging rapp Policies and Practice

How deep is the digital divide? ICT literacy and the role of assistive technology in helping older workers

Making a meaningful difference in the lives of older adults and their families by bridging research, policies and practice

Summary

As the Canadian economy becomes increasingly knowledge-based and technology-driven, older workers who struggle with computers and other technologies may find themselves less employable. By understanding the Information and Communication Technology (ICT) literacy skills of older workers, we can develop strategies to help older workers retain their current jobs, gain new jobs, or use assistive technologies more effectively to balance the "double burden" of paid work and family care. Using Canadian data drawn from the OECD's Program for the International Assessment of Adult Competencies (PIACC) administered between 2011 and 2012, we describe older workers' ICT literacy and the factors that put them at risk of poor ICT literacy skills.

We found:

- Older workers (age 50-65) represent a substantial segment of the Canadian labour force: 5.3 million, or 30% of all workers.

- The stereotype about older workers and technology is largely a myth. Three-quarters of older workers have at least simple ICT literacy and many use computers in daily life.

- Many older workers are as well-versed in the use of ICT as younger workers, with nearly 30% scoring at moderate or proficient levels.

- Differences in ICT literacy are less about age and more about other socio-demographic disparities like education, first generation immigration, income, occupation, and opportunities for daily computer use.

- Marginalizing characteristics among older workers put them at greater risk of inadequate digital literacy which, in turn, leads to exclusion from the labour force. These older workers cannot afford technologies that may help them improve their own ICT literacy skills. They also may not be able to access web-based government programs or technologies that could help them balance the "double burden" of paid work and care work.

- In its March 2017 budget, the Canadian government announced its intention to fund programs and initiatives to better support older workers' continued participation in the workforce, including expanding digital learning opportunities.

The Canadian labour force will become substantially older over the next few decades with skilled workforce shortages predicted[1]. Enhancing labour force participation of older workers is increasingly important to sustaining economic growth and enabling older workers to continue contributing their experience and knowledge. Canadian governments are responding by providing job training programs to equip unemployed older workers with skills to help them return work[2]. Yet older workers still face difficulties, such as lack of skills upgrading opportunities and the "double burden" of family care.

Information and communication technologies (ICTs) are proliferating in workplaces, so being able to comprehend and use digital information effectively has become an essential labour force skill. It also is becoming an essential skill for meeting simultaneously paid work and family care responsibilities (e.g., with remote monitoring, networking, and information and referral technologies). Yet one Canadian study showed that older adults aged 55+ are less connected to ICT compared with younger adults, both in terms of access to the internet and in level of online activity and social media use[3]. Older workers (aged 50-65) may therefore face difficulties meeting changing workplace needs. As our economy becomes more knowledge-based and technology-driven, older workers who struggle with workplace technologies may find themselves less employable. Better ICT literacy skills can help older workers retain current jobs, secure new jobs, or use technologies to balance paid work and care responsibilities more effectively.

Research Objectives

To describe older workers' ICT literacy and understand the factors that put them at risk of poor ICT literacy skills.

5.3M employed older workers comprise 30% of the workforce

According to the 2011-2012 PIACC survey, and consistent with the 2012 Labour Force Survey, 17.7 million (76%) Canadians aged 16-65 were employed, a little over a million (4%) were unemployed, and 4.6 million (20%) were not in the labour force. Older workers (age 50 to 65) represent a substantial segment of the Canadian labour force: 5.3 million, or 30% of all workers. Significantly more men (53%) than women (47%) were older workers.

In fact, adults aged 55+ are now experiencing a more rapid increase in labour force participation than all other age groups[5]. More older adults are planning to work longer, delaying retirement, or returning to work, perhaps following family caregiving or loss of savings/investments. About 182,000, or 17% of all unemployed Canadians, are older workers who are actively looking for work. More older men (60%) than older women (40%) are unemployed.

1 in 4 older workers lack simple computer skills

One in four (1.3 million) employed older workers report no prior computer experience and are unable to demonstrate basic ICT skills (clicking, typing and highlighting), or are unwilling to take a computer-based test[6]. These older workers are typically men (57%), with high school education or less (54%), working in skilled (30%) or semi-skilled blue-collar (30%) occupations, who do not use a computer in their daily lives (55%).

Age does matter

There is a significant age gap in ICT literacy (see Figure 1). One in four (27%) older workers have simple ICT literacy skills compared to 14% of middle-aged (30-49) and 9% of younger (16-29) workers. The most common level of ICT literacy among older workers (43%) is basic, whereas it is moderate among younger (48%) and middle-aged (43%) workers.

But most employed older workers have at least some simple ICT literacy

While older workers are less ICT literate than their younger counterparts on average, three-quarters (4 million) employed older workers in Canada have at least some simple ICT literacy and use computers in their everyday lives. Further, the average ICT literacy score of older workers is basic, the same as the average for all workers. Perhaps more importantly, many older workers are as well-versed in the use of ICT as younger workers, with nearly 30% scoring at moderate or proficient levels.

Socio-demographic factors predict differences in ICT literacy

Multivariate analyses let us identify older workers who are most at risk of low (simple) ICT literacy. There are no significant gender differences; older employed men and women were equally likely to have simple ICT literacy skills after controlling for other socio-demographic factors. In fact, this gender parity is observed across all age groups.

Figure 2 shows the personal characteristics associated with limited ICT literacy. Older workers with high school education or less, annual personal incomes less than $50,000 , working in unskilled jobs, and who are first generation immigrants, and/or do not use computers in daily life are more likely to have simple ICT literacy scores.

Education. Higher levels of education are associated with more ICT proficiency. Employed older workers with high school education or less are more likely to have simple ICT literacy scores compared to those with bachelor degrees or higher. More than one-third (38%; 430,000) of employed older workers with high school education or less have only simple ICT literacy, whereas only 14% (170,000) of

Figure 1. ICT literacy across employed workers by age cohort

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3-02 Hecol Bldg., Department of Human Ecology, University of Alberta, Edmonton, AB, Canada T6G 2N1
tel: 780.492.2865   fax: 780.492.4821   email: rapp@ualberta.ca   web: www.rapp.ualberta.ca
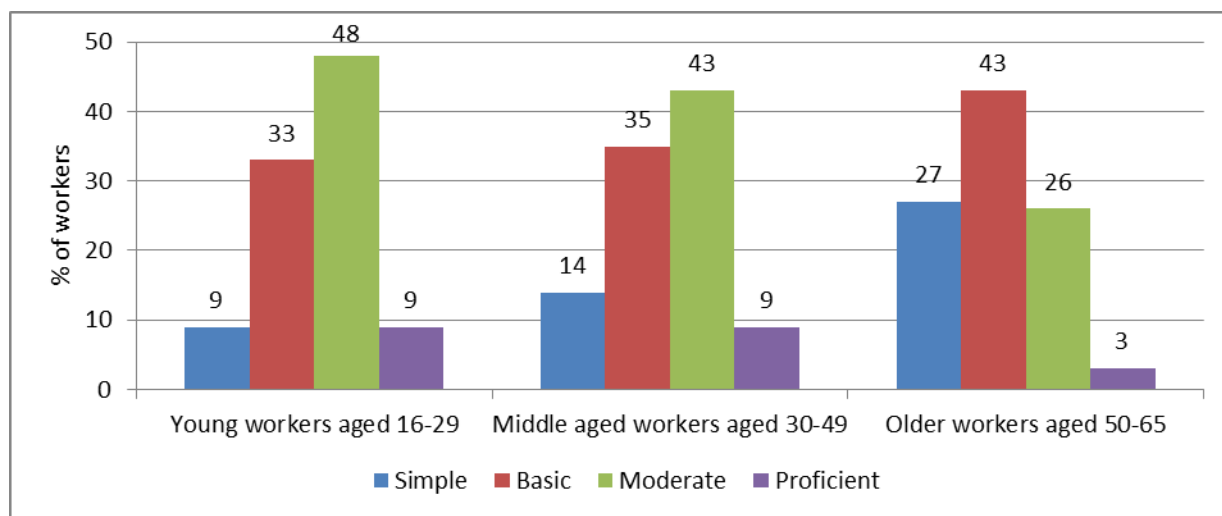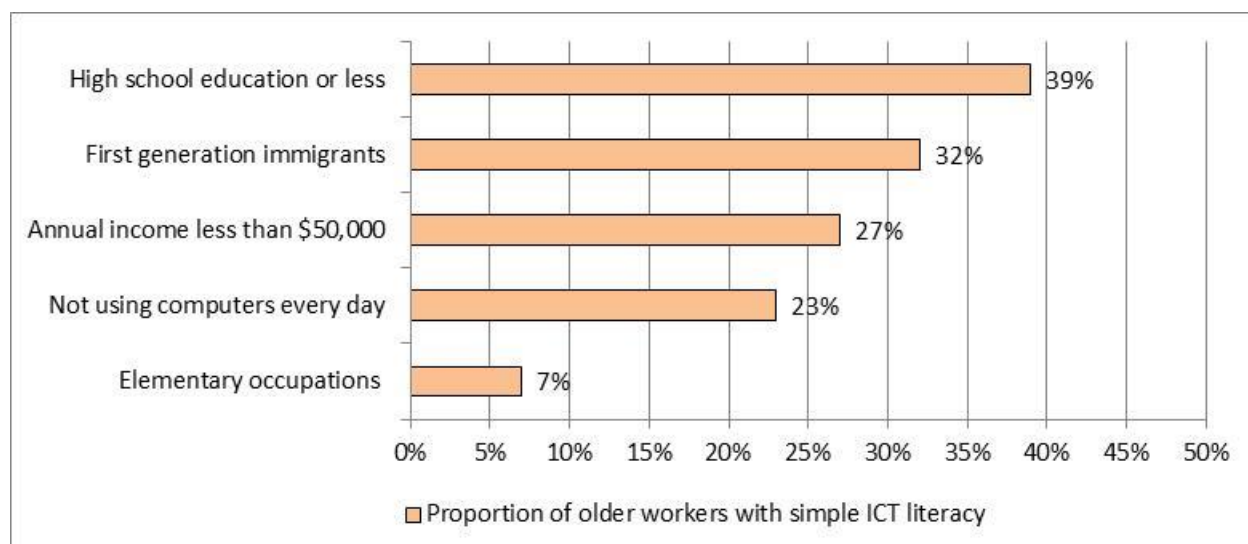
Figure 2. Characteristics of older workers with simple ICT literacy

those with at least a bachelor degree fall into this category. Further, 47% of employed older workers with a bachelor degree or higher have at least moderate ICT skills compared to only 17% of those with high school education or less.

Immigration. Immigration status also is a significant predictor of ICT literacy. Nearly one-third (32%; 350,000) of older workers with simple ICT literacy skills are first-generation immigrants. In comparison, 47% of second-generation immigrants have moderate or proficient ICT literacy.

Income. Annual personal income is similarly a significant predictor of ICT literacy. Employed older workers with

annual personal incomes under $50,000 have lower ICT literacy than those earning more. Slightly more than one-third (38%) of employed older workers with incomes less than $50,000 had simple ICT literacy scores, while a significantly smaller proportion (24%) of those earning $50,000+ had simple ICT literacy scores.

Occupation. Proficiency in ICT literacy tends to be higher among those in more highly skilled occupations. One-third of older workers with simple ICT literacy scores are in elementary (7%) or semi-skilled blue collar (26%) occupations. Elementary skilled occupations involve simple and routine physical or manual tasks such as office cleaning, freight

handling or kitchen assistance[7]. Semi-skilled blue collar occupations include bus drivers, electricians, mechanics, butchers, hairdressers or sales assistants and involve tasks such as operating, maintaining or repairing machinery and electronic equipment or driving vehicles[7]. But it is worth noting that a significant proportion of older workers (36%) with simple ICT literacy scores are in skilled occupations, such as sales and marketing managers, musicians, computer systems analysts, secondary school teachers, operating theatre nurses, and medical practitioners[7].

Computer use. Employed older workers who use computers in their daily lives demonstrate higher levels of ICT

literacy skills compared with those who do not. One in four older workers with simple ICT literacy skills (23%) do not use computers every day. While many older workers (77%) use computers in their everyday lives, mere access to a computer or the internet does not necessarily translate into higher ICT proficiency.

Implications

A substantial minority of older workers defy common age-related stereotypes by being as proficient with ICT as younger workers. Yet the digital age divide in ICT literacy persists in the Canadian labour force. Other significant risk factors for low ICT literacy include those that reflect social inequalities in society, particularly among older workers. Consequently, older workers with poor ICT literacy skills are more likely to struggle in the labour market, particularly when new technologies are introduced into workplaces. They may also struggle to use technologies to manage their paid work and family caregiving or access web-based government and community programs. Knowing the characteristics of older workers who lack adequate ICT literacy may inform interventions such as job

retraining programs to focus on improving ICT literacy thus bridging the digital divide.

In its March 2017 budget, the Canadian government announced that they will fund programs and initiatives intended to make ours the "most skilled, talented, creative and diverse workforce in the world" by, among other things, "[tapping] into the experience and potential of older workers, and better [supporting] their continued participation in the

workforce".[8] Specific measures include those that better support and encourage lifelong learning, invest in skills innovation and expand digital learning opportunities and assistive technologies, for seniors among other vulnerable groups, so that they can more fully participate in the digital economy. Enhancing older workers' ICT literacy seems like a good place to start.

Research Methods

Data source: In preparing this FACT sheet, we used the Canadian public use microdata file, drawn from the OECD's Program for the International Assessment of Adult Competencies (PIACC) administered between 2011 and 2012. The PIACC survey tests individuals' ability to use "digital technology, communication tools, and networks to acquire and evaluate information, communicate with others, and perform practical tasks." [4] (ICT literacy). In order to represent ICT literacy as a continuum of proficiency, the ICT literacy skills scores are split into four levels[4] that we labelled as follows. At the lowest level, **Simple,** persons can perform simple ICT skills involving the use of a single function, such as email only. At **Basic**, persons can perform tasks such as categorizing emails into pre-existing folders, and at **Moderate**, they can organize information into a spreadsheet and report it in an email while handling unexpected outcomes. At the highest level, **Proficient**, persons can manage multiple tasks involving the use of multiple applications against various possible constraints.

Analyses: We used frequencies and means to describe levels of digital literacy by selected personal characteristics and multivariate analyses to identify risk factors for low levels of digital literacy.

References

1. Komarnicki, E. (2012). *Labour and skills shortages in Canada: Addressing current and future challenges.* Parliament of Canada. http://www.parl.gc.ca/content/hoc/Committee/411/HUMA/Reports/RP5937523/humarp09/humarp09-e.pdf

2. OECD (2015). Back to work: Canada:Improving the re-employment prospects of displaced workers, OECD Publishing. OECD Publishing. http://dx.doi.org/10.1787/9789264233454-en

3. Haight, M., Quan-Haase, A., & Corbett, B. A. (2003). Revisiting the digital divide in Canada: The impact of demographic factors on access to the internet, level of online activity, and social networking site usage. *Information, Communication & Society, 17*(4), 503-519. http://dx.doi.org/10.1080/1369118X.2014.891633.

4. OECD (2013). *OECD skills outlook 2013: First results from the survey of adult skills.* OECD Publishing. http://dx.doi.org/10.1787/9789264204256-en

5. The Daily (2016). *Labour force survey, October 2016.* Catalogue no. 11-001-X. Ottawa ON: Statistics Canada. http://www.statcan.gc.ca/daily-quotidien/161104/dq161104a-eng.pdf

6. OECD (2013). *Technical Report of the Survey of Adult Skills* (PIAAC). OECD Publishing. https://www.oecd.org/skills/piaac/_Technical%20Report_17OCT13.pdf

7. International Labour Office (2012). *International standard classification of occupations (ISCO☐08): Structure, group definitions and correspondence tables.* Geneva Switzerland: ILO. http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_172572.pdf

8. Government of Canada (2017). *Budget 2017 Building a strong middle class, chapter 1—Skills, Innovation and Middle Class Jobs.* http://www.budget.gc.ca/2017/docs/plan/chap-01-en.html#Toc477707306