

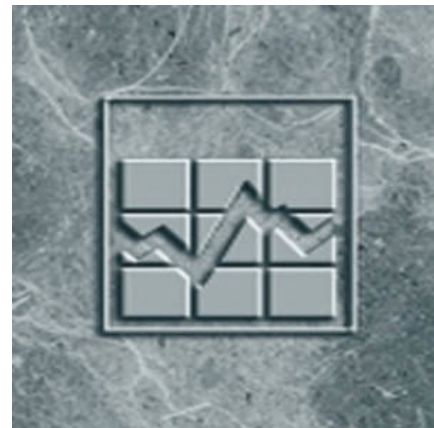
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# An exploration of work, learning, and work-integrated learning in Canada using the Longitudinal and International Study of Adults

by Steve Martin and Brandon Rouleau  
Centre for Income and Socioeconomic Well-Being Statistics

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## Table of contents

1. Introduction .....	4
Abstract .....	4
2. Data .....	5
3. Results.....	6
4. Limitations .....	11
5. Conclusion .....	11
6. Future Research .....	11
Appendix A: Glossary.....	12
References .....	17

# An exploration of work, learning, and work-integrated learning in Canada using the Longitudinal and International Study of Adults

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## Abstract

This study examines the relationship between work, learning, and work-integrated learning for the 2012 Canadian population that graduated between 2012 and 2016 using new data from the Longitudinal and International Study of Adults.

**Keywords:** Work-integrated learning, post-secondary education, human capital, Longitudinal and International Study of Adults.

## 1. Introduction

Work-Integrated Learning (WIL) combines traditional post-secondary education (PSE) with exposure to real-world work experience, often with the goal of better preparing graduates<sup>1</sup> for entry into the workforce and smoothing the transition from student to employee (or becoming self-employed). WIL encompasses a broad range of activities which integrate a student's academic studies within a workplace setting – this includes co-operative (co-op) programs, work placements, internships, and field work (Co-operative Education and Work-Integrated Learning Canada, 2019).

Particularly in the science, technology, engineering, and mathematics (STEM) fields, WIL is seen as an integral component for matching students with prospective employers in their field, and reaping the full economic benefit from these individuals' acquired human capital (Edwards et al., 2015). The topic of WIL is important in Canada at the moment as Employment and Social Development Canada launched its *Student Work Placement Program* (formerly the *Student Work Integrated Learning Program*) in 2017 that focuses on promoting WIL for students in STEM and business programs.

WIL can improve labour-market outcomes post-graduation by giving students skills and experience relevant to their field of study, complementing what is learned as part of their post-secondary education (hard skills), as well as broader experience in the work force (soft skills). These latter skills and experience are often sought after by employers when hiring recent graduates (Edwards et al., 2015; Jackson, 2015). Having a job<sup>2</sup> at all during a student's schooling—even if it is unrelated to their field of study—may then positively influence their labour-market outcomes post-graduation, as this gives them an opportunity to gain real-world experience in a work place and develop soft skills that are useful for finding their first career job.

There is a large education literature on WIL, often using case studies to draw prescriptive conclusions about WIL as an educational tool (e.g., Choy and Delahaye, 2011; Jackson, 2015). In general, there is much less empirical research on WIL and its outcomes, especially in Canada.

Canadian studies mostly examine WIL as participation in co-op programs, with data coming from the National Graduates Survey (NGS). The study by Rodriguez et al. (2016) analyzes co-op participation rates over time, finding a large increase in the participation in co-op programs since the 1980's. The studies by Darch (1995) and Walters and Zarifa (2008) examine the labour-market outcomes for those graduating from a co-op program, finding an income premium associated with co-op education. Similarly, Frenette (2000) finds that those who graduate from a co-op program are less likely to be overqualified (with respect to education) for their job. Wang (2017) finds that co-op graduates have better labour-market outcomes than those without co-op, in terms of higher employment

1. Graduates refers to all graduates from a post-secondary institution, excluding those who completed an apprenticeship. Consult Appendix A for a definition of the term.

2. Unless specified, job refers to any type of employment during one's post-secondary education, including employment during the months between semesters. Consult Appendix A for a definition of the term.

rates, better match between work after graduation and field of study, and higher income. For the purposes of this study, work placements that are part of one's academic program (e.g., co-op programs, internships, and practicums) are considered formal WIL.

This study examines WIL in Canada using new data from the Longitudinal and International Study of Adults (LISA). Rather than focusing exclusively on traditional WIL (e.g., co-operative education and work placements), which is covered extensively in current literature, the LISA considers the broader interaction between work and learning, asking a variety of questions about graduates' work acquired both through their academic program and independent from it. This research contributes to the Canadian literature on WIL by exploiting a new data source and examining the broader nexus between work, learning, and WIL in Canada that extends beyond traditional streams of work-integrated learning.

## 2. Data

The data for this study come from waves two and three (2014 and 2016) of the LISA. The LISA is a biennial Canadian household survey that follows the same individuals over time, asking a variety of socio-economic questions. It targets individuals living in the ten provinces as of 2012, and is administered to all members of the household that are 15 years of age and older. The full description of the target population for the LISA can be found in Statistics Canada (2015).

The LISA is well suited to analyze WIL and offers a new source of data that captures whether one's job during their post-secondary education (PSE) was useful for obtaining their first career job, regardless of whether the job they had while in school was part of their academic program. This is particularly important for students who had a job considered to be informal WIL<sup>3</sup> – a stream not covered extensively in current literature.

The third wave of the LISA collects information on individuals' current and historical employment during their post-secondary education, its relationship with their studies, and its relevance to the job market. In conjunction with the second wave, which captures information on graduates from post-secondary institutions in 2012, 2013 and 2014, the third wave allowed for the assessment of those who graduated in 2015 and 2016, as well as containing employment information from the graduates from 2012-2014 (second wave) and those in 2015-2016 (third wave). In other words, as the LISA is a panel dataset, information from the third wave is matched with graduation data and employment information from the second wave to create a novel picture of WIL in Canada from 2012 to 2016.

For the purpose of this study, individuals that graduated from a post-secondary institution between 2012 and 2016, irrespective of the country where they obtained their education,<sup>4</sup> are considered for analysis. LISA also captures this information for those who completed any type of post-secondary accreditation, including trade or vocational certificates. Graduates omitted from analysis include those who completed an apprenticeship due to the strong, positive association between this accreditation and employment during one's studies in their field.<sup>5</sup>

Students participating in programs where there is an engaged partnership between an academic institution and host organization are defined in this paper as participants of formal WIL, provided that their job is related to their field of study.<sup>6</sup> There can also be what is defined in this study as non-official/informal forms of WIL, whereby students independently find work in their field of study without it being part of their academic program.

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3. Full definitions of how formal and informal WIL are defined in this paper can be found in Appendix A.

4. Sample size of graduates who completed their education outside of Canada prevented further disaggregation but are included in analysis.

5. Apprenticeship programs often entail a mandatory work experience component that would be related to their field – including them in analysis would skew the data (among students who completed apprenticeships and were employed during their studies, 86.2% were employed in their field during their studies).

6. In LISA, the question of whether the respondent participated in a co-op program or practicum during their post-secondary education (PSE) is asked only if the job they held during their PSE was related to their field of study. Therefore, respondents who participated in a co-op program or practicum that was unrelated to their field of study are not considered participants in formal WIL.

As the LISA is a longitudinal survey, the panel must be balanced in order to use the sample weights, and so individuals that did not respond at any point between these years are omitted in order to keep the sample representative of the 2012 Canadian population. The result is a sample of 877 individuals that graduated from post-secondary education between 2012 and 2016, and is representative of the 2012 population that graduated between these years. Note that the estimates should not be interpreted as representing all Canadian graduates from post-secondary institutions between 2012 and 2016 but rather the longitudinal population in LISA that has been tracked since 2012. For additional information on the terms used in this paper, refer to Appendix A.

### 3. Results

Approximately 80.7% of graduates between 2012 and 2016 had a job at some point during their post-secondary education (table 1). Of those graduates that had a job, 56.7% had a job related to their field of study, so that overall close to half (45.7%) of graduates had a job related to their field of study at some point during their PSE.

**Table 1**  
**2012-2016 PSE graduates, by employment status during PSE and relation of job during PSE to field of study (for those not employed, desire for job during PSE to be related to field of study)**

Employment status during PSE	Proportion	
	Subgroup proportion	
	percent	
<b>Employed during PSE</b>		
Related to field of study	45.7	56.7
Unrelated to field of study	35.0	43.3
<b>Unemployed during PSE</b>		
Wanted a job related to field of study	9.1	47.2
Did not want a job related to field of study	10.2	52.8
<b>Totals</b>	<b>100.0</b>	<b>...</b>

... not applicable

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

Of the 19.3% of graduates that did not have a job during their PSE, 47.2% wanted a job related to their field of study, with the remaining 52.8% not wanting a job related to their field of study. Only 9.1% of graduates did not have a job at any point during their PSE and would have liked a job in their field.

The share of graduates that had a job during their post-secondary education is roughly equal across the sexes—84.0% of males and 78.1% of females had a job at some point during their PSE (table 2). Similarly, 49.3% of males and 42.9% of females had a job related to their field at some point during their PSE. (Neither of these differences are statistically significant at the 5% level.)

**Table 2**  
**2012-2016 PSE graduates, sex, by employment status during PSE and relation of job during PSE to field of study**

Employment status during PSE	Sex			
	Male		Female	
	Proportion	Subgroup proportion	Proportion	Subgroup proportion
	percent			
<b>Employed during PSE</b>				
Job during PSE related to field of study	21.4	49.3	24.3	42.9
Job during PSE unrelated to field of study	15.0	34.7	20.0	35.2
<b>Not employed during PSE</b>	<b>6.9</b>	<b>16.0</b>	<b>12.4</b>	<b>21.9</b>
<b>Totals</b>	<b>43.3</b>	<b>100.0</b>	<b>56.7</b>	<b>100.0</b>

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

Examining rates of employment during post-secondary education by visible minority status,<sup>7</sup> 71.6% and 83.7% of visible and non-visible minorities were employed during their PSE, respectively (table 3). A similar difference was seen for employment in one's field of study – 37.0% of visible minorities worked in a job related to their field, compared to 48.1% of non-visible minorities. Both differences were statistically significant at the 5% level, indicating that when compared to visible minorities, non-visible minorities were more likely to be both employed during their PSE and have said employment be related to their field.

**Table 3**  
**2012-2016 PSE graduates, visible minority status, by employment status during PSE and relation of job during PSE to field of study**

Employment status during PSE	Visible minority status <sup>1</sup>			
	Visible minority		Non-visible minority	
	Proportion	Subgroup proportion	Proportion	Subgroup proportion
	percent			
<b>Employed during PSE</b>				
Job during PSE related to field of study	9.1	37.0	36.3	48.1
Job during PSE unrelated to field of study	8.5 <sup>M</sup>	34.6	26.9	35.6
<b>Not employed during PSE</b>	<b>6.9</b>	<b>28.4</b>	<b>12.3</b>	<b>16.3</b>
<b>Totals</b>	<b>24.5</b>	<b>100.0</b>	<b>75.5</b>	<b>100.0</b>

M estimate of marginal quality due to small sample size

1. The Employment Equity Act defines visible minorities as 'persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour. The visible minority population consists mainly of the following groups: South Asian, Chinese, Black, Filipino, Latin American, Arab, Southeast Asian, West Asian, Korean and Japanese.

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

Of those that completed a degree<sup>8</sup> at the bachelor's level or above,<sup>9</sup> 89.6% had a job at some point during their post-secondary education, with 56.2% having a job related to their field of study (table 4). By contrast, 72.4% of graduates with a degree below the bachelor's level<sup>9</sup> had a job at some point during their PSE, with 36.0% having a job related to their field of study. (Both of these differences are significant at the 1% level.) This suggests that the propensity to work during PSE is larger for university graduates, as well as the likelihood of having a job related to a graduate's field of study.

**Table 4**  
**2012-2016 PSE graduates, education level, by employment status during PSE and relation of job during PSE to field of study**

Employment status during PSE	Education level completed <sup>1</sup>			
	Below bachelor's		Bachelor's or above	
	Proportion	Subgroup proportion	Proportion	Subgroup proportion
	percent			
<b>Employed during PSE</b>				
Job during PSE related to field of study	18.6	36.0	27.1	56.2
Job during PSE unrelated to field of study	18.9	36.4	16.1	33.4
<b>Not employed during PSE</b>	<b>14.3</b>	<b>27.6</b>	<b>5.0<sup>M</sup></b>	<b>10.4<sup>M</sup></b>
<b>Totals</b>	<b>51.8</b>	<b>100.0</b>	<b>48.2</b>	<b>100.0</b>

M estimate of marginal quality due to small sample size

1. Consult Appendix A for a list of the levels of education included in each grouping.

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

Separating graduates by field of study,<sup>10</sup> there are roughly equal proportions of graduates in a field related to business, health, STEM, and social sciences, with these four areas accounting for 83.9% of all graduates (table 5). However, graduates employed during their PSE with a job related to their field are slightly less likely to be in the social sciences and health, and more likely to be in business and STEM relative to the distribution of all graduates.

7. The *Employment Equity Act* defines visible minorities as 'persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour. The visible minority population consists mainly of the following groups: South Asian, Chinese, Black, Filipino, Latin American, Arab, Southeast Asian, West Asian, Korean and Japanese.

8. Unless specified, degree refers to any type of accreditation from a post-secondary institution, excluding apprenticeships.

9. Consult Appendix A for a list of the levels of education included in this grouping.

10. Consult Appendix A for a list of the fields of study included in each grouping.

**Table 5**  
**2012-2016 PSE graduates, field of study during PSE, by employment status during PSE and relation of job during PSE to field of study**

Employment status during PSE	Field of Study <sup>1</sup>									
	Business		Health		Social Science		STEM		Education plus Other	
	Proportion	Subgroup proportion	Proportion	Subgroup proportion	Proportion	Subgroup proportion	Proportion	Subgroup proportion	Proportion	Subgroup proportion
	percent									
<b>Employed during PSE</b>										
Job during PSE related to field of study	11.1	48.3	7.4	40.2	8.4 <sup>M</sup>	40.6	11.3	51.6	7.5 <sup>M</sup>	46.6
Job during PSE unrelated to field of study	7.5 <sup>M</sup>	32.7	7.1 <sup>M</sup>	38.8	9.2	44.6	6.0 <sup>M</sup>	27.4	5.1 <sup>M</sup>	31.7
<b>Not employed during PSE</b>	<b>4.4<sup>M</sup></b>	<b>19.0<sup>M</sup></b>	<b>3.9<sup>M</sup></b>	<b>21.0<sup>M</sup></b>	<b>3.0<sup>M</sup></b>	<b>14.8<sup>M</sup></b>	<b>4.6<sup>M</sup></b>	<b>21.0<sup>M</sup></b>	<b>3.5<sup>M</sup></b>	<b>21.7<sup>M</sup></b>
<b>Totals</b>	<b>23.0</b>	<b>100.0</b>	<b>18.4</b>	<b>100.0</b>	<b>20.6</b>	<b>100.0</b>	<b>21.9</b>	<b>100.0</b>	<b>16.1</b>	<b>100.0</b>

M estimate of marginal quality due to small sample size

1. Consult Appendix A for a list of the levels of education included in each grouping.

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

Considering formal WIL that features as part of a graduate's program of study, of the 45.7% of graduates that had a job related to their field of study during their post-secondary education, this job was a part of the program (e.g., co-op, internship, practicum) for 34.3% of graduates (table 6a). Among them, 52.6% received both academic credit and payment. The remaining proportion obtained one form of compensation, with 16.8% receiving academic credit exclusively and 30.6% receiving payment exclusively.

**Table 6a**  
**2012-2016 PSE graduates employed during PSE with a job related to their field of study, by compensation received and type of WIL**

Employment status during PSE	Formal WIL		Informal WIL <sup>1</sup>	
	Proportion	Subgroup proportion	Proportion	Subgroup proportion
	percent			
Academic credit exclusively	5.8 <sup>M</sup>	16.8 <sup>M</sup>	...	...
Payment exclusively	10.5 <sup>M</sup>	30.6	65.7	100.0
Both academic credit and payment	18.0	52.6	...	...
<b>Totals</b>	<b>34.3</b>	<b>100.0</b>	<b>65.7</b>	<b>100.0</b>

... not applicable

M estimate of marginal quality due to small sample size

1. The Employment Equity Act defines visible minorities as 'persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour. The visible minority population consists mainly of the following groups: South Asian, Chinese, Black, Filipino, Latin American, Arab, Southeast Asian, West Asian, Korean and Japanese.

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

In the LISA sample, co-op participation in one's field of study is not common among graduates who were employed during their PSE -- only 19.5% of graduates with a job at some point during their PSE had a job that was both part of their academic program and related to their field of study (table 6b).

**Table 6b**  
**2012-2016 PSE graduates: employed during PSE, by relation of job to field of study and type of WIL**

Relation of job to field of study	Proportion
	percent
<b>Job during PSE related to field of study</b>	
Formal WIL	19.5
Informal WIL	37.2
<b>Job during PSE not related to field of study</b>	43.3
<b>Totals</b>	<b>100.0</b>

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).



One of the primary purposes of WIL is to better prepare graduates for the job market. For students that graduated between 2012 and 2016 and had a job during their post-secondary education, 50.2% found this job useful<sup>11</sup> for obtaining their first career job (table 7a). This association is driven primarily by those that had a job related to their field of studies (WIL participants) — 79.4% of graduates that found their job during PSE useful for obtaining their first career job had a job during their PSE that was related to their field of study.

**Table 7a**  
**2012-2016 PSE graduates employed during PSE, by relation of job during PSE to field of study and usefulness<sup>1</sup> of job during PSE for post-graduation employment**

Relation of job during PSE to field of study	Useful for post-graduation employment		Not useful for post-graduation employment	
	Proportion	Subgroup proportion	Proportion	Subgroup proportion
	percent			
Related to field of study	39.9	79.4	16.1	32.3
Not related to field of study	10.3	20.6	33.7	67.7
<b>Totals</b>	<b>50.2</b>	<b>100.0</b>	<b>49.8</b>	<b>100.0</b>

1. In LISA, the usefulness of a job for post-graduation employment is based off the respondent's subjective interpretation of whether it provided both the knowledge and experience necessary for obtaining their first career job.

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

Similarly, of the 49.8% of graduates employed during their PSE that did not find their job useful for obtaining their first career job, 67.7% had a job that was not related to their field of study. Put differently, 71.3% of graduates that had a job related to their field of study during their post-secondary education found this job useful for obtaining their first career job (table 7b). Referring back to table 6a, only 34.3% of graduates with a job related to their field of study had a job that was formally part of their program. In this sample, 65.7% of graduates with a job in their field during PSE did not acquire it through their academic institution, suggesting that informal forms of WIL can also help serve the purpose of preparing graduates for the job market.

**Table 7b**  
**2012-2016 PSE graduates: employed during PSE with a job related to field of study, by usefulness for career**

Usefulness of job during PSE for obtaining first career job	Proportion
	percent
Useful	71.3
Not useful	28.7
<b>Totals</b>	<b>100.0</b>

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

Comparing those that had a job during their PSE<sup>12</sup> to those that did not, graduates that were employed during their PSE were 21.2 percentage points more likely to find full-time<sup>13</sup> employment post-graduation<sup>14</sup> (chart 1a), with this difference significant at the 1% level. Those with a job related to their field of study (WIL participants) were 14.1 percentage points more likely to find full-time work post-graduation<sup>15</sup> compared to those with a job unrelated to their studies (chart 1b).<sup>16</sup> This is especially important for recent graduates as entry-level jobs can often require work experience in addition to educational credentials (Rodriguez et al., 2016).

11. The usefulness of a job for post-graduation employment is based off the respondent's subjective interpretation of whether it provided both the knowledge and experience necessary for obtaining their first career job.

12. Limited to graduates who did not return to school after graduation.

13. Full-time employment refers to working equal to or greater than 30 hours per week.

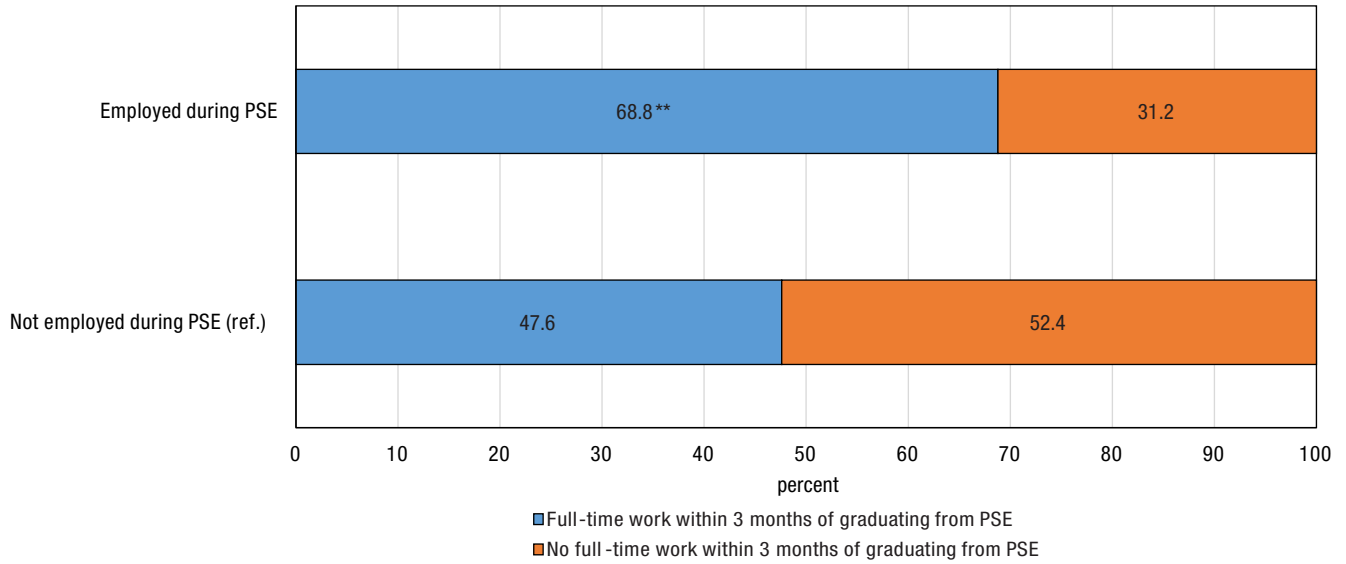
14. Refers to full-time employment attained within the first three months after graduation.

15. Not exclusive to full-time employment in one's field of study.

16. Difference significant at the 5% level.

**Chart 1a**  
**2012-2016 PSE Graduates' full-time employment status after graduating, by employment status during PSE**

Employment status during PSE

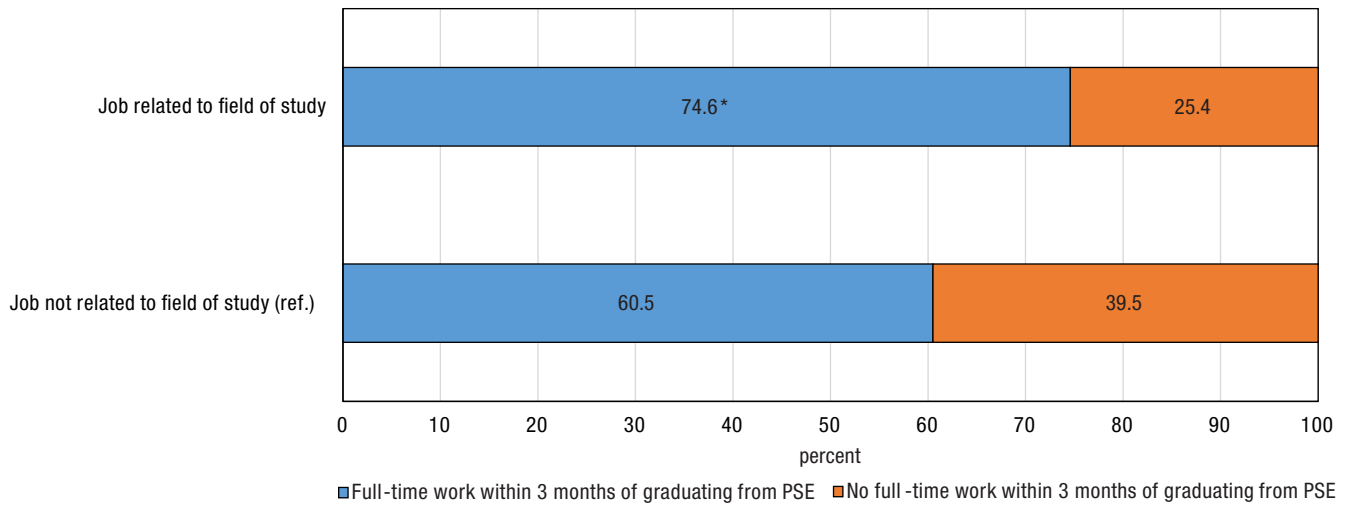


\*\* significant at the 1% level. Excludes graduates that returned to school between 2012 and 2016

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

**Chart 1b**  
**2012-2016 PSE graduates' with a job during PSE, full-time employment status after graduating, by relation of job during PSE to field of study**

Employment status during PSE



\* significant at the 5% level. Excludes graduates that returned to school between 2012 and 2016

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

## 4. Limitations

LISA uses self-reported survey data, meaning that it is at the respondent's discretion to interpret both the extent the job they were employed in during their PSE related to their field of study and its usefulness for obtaining their first career job. The lack of consistent definitions for both measures therefore presents a limitation of the findings.

Terms are defined according to LISA documentation and should not be generalized to findings from the other data sources where work-integrated learning is defined differently. Full definitions of terms such as 'formal WIL', 'non-official/informal WIL', 'job', 'graduates' and 'degree' can be found in Appendix A.

With the exception of LISA 2012 (Wave 1), the ongoing LISA data collection is not representative of the cross-sectional Canadian population at a point in time; rather, it is representative of the 2012 Canadian population living in the ten provinces *over time*. LISA data is therefore limited when comparing estimates to studies using cross-sectional data, such as the National Graduates Survey.

## 5. Conclusion

This study examines the relationship between work, learning, and WIL for the 2012 Canadian population that graduated between 2012 and 2016, using new data from the LISA. While most graduates from a post-secondary institution had a job at some point during their post-secondary education—about half of all graduates had a job related to their field of study—most of these jobs were informal WIL. That is, they did not form part of a graduate's program of study. Nonetheless, the majority of graduates with a job related to their field of study reported that this job was useful for obtaining their first career job. Those graduates that had a job related to their field of study were also 14 percentage points more likely to find full-time work within three months of graduating, compared to those that had a job that was unrelated to their field of study, suggesting positive labour-market outcomes associated with integrating work and schooling.

## 6. Future Research

Future research could focus on examining employment rates during one's studies for populations not covered in this paper, such as the Aboriginal population or students with activity limitations. Cross-sectional surveys with greater sample sizes can produce estimates of better quality and are more suitable for assessing employment rates among these groups.

Outside of the scope of this paper, due to limited sample size, are examinations of WIL participation by each individual field of study and level of education. Sample size limitations resulted in the aggregation of categories for both variables, preventing a more exhaustive assessment.

Other research topics to be explored include participation in WIL by province or territory and the impact of participation in WIL on the length of time required to complete the accreditation, particularly for participants in formal WIL who do not receive any academic credit for their employment. With LISA having a small sample size of participants in what is considered formal WIL in this paper, data sources such as the NGS will be better positioned to explore the relationship between formal WIL and post-graduation employment outcomes, as well as rates of participation in formal WIL by sex, visible minority status, field of study and level of education. As PSE students who participated in a co-op program that was unrelated to their field of study are not captured in the LISA, this is also an area that should be explored.

However, given the low level of co-op participation rates in this sample and the strong relationship between having a job in one's field during PSE and the likelihood of employment post-graduation, future research should examine best practices for matching one's studies with employment during PSE beyond the traditional methods.

## Appendix A: Glossary

In this paper, the following terms are defined as such:

Term	Definition
Graduates:	Graduated from any post-secondary institution (e.g., not exclusive to one level of education).
Job:	Any job during one's post-secondary education, including employment during the months between semesters, part-time employment and full-time employment.
Non-official/Informal Work-integrated Learning:	employed in their field of study while completing their education – job acquired independently (e.g., external to academic program or post-secondary institution).
Degree:	all types of post-secondary accreditations, excluding apprenticeships.
Official/Formal Work-Integrated Learning:	employed in their field of study while completing their education – job acquired due to being part of academic program (e.g., co-op placement; practicum).

**Source:** Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

To enhance data quality and improve sample size, field of study and level of education were grouped into five and two categories, respectively. Below are the two categories created to assess level of education:

Level of education: two categories	
Group:	Parameters
Below a bachelor's degree	<ul style="list-style-type: none"> <li>•Trade/vocational certificate (includes an attestation of vocational specialization offered in Quebec)</li> <li>•CEGEP diploma or certificate</li> <li>•Non-University certificate or diploma from a college, school of nursing or technical institute</li> <li>•University transfer program</li> <li>•University certificate or diploma below the bachelor's degree</li> </ul>
	<ul style="list-style-type: none"> <li>•Bachelor's degree</li> <li>•University certificate above the bachelor's degree</li> </ul>
	<ul style="list-style-type: none"> <li>•First professional degrees:                             <ul style="list-style-type: none"> <li>•Law (L.L.B)</li> <li>•Medicine (M.D.)</li> <li>•Dentistry (D.D.S., D.M.D.)</li> <li>•Veterinary medicine (D.V.M.)</li> <li>•Optometry (O.D.)</li> <li>•Divinity</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>•Master's Degree</li> </ul>
	<ul style="list-style-type: none"> <li>•Ph.D.</li> </ul>

**Source:** Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

The five categories related to field of study, along with the parameters required to be included in the grouping, are as follows:

Field of study: five categories	
Field of study (category);	Parameters
Business	•Business, management, or public administration
Health	•Health and health related fields
Education plus other	•Personal improvement and leisure •Education •Visual and performing arts, and communication technologies •Personal, protective and transportation services •Other
Social sciences	•Humanities •Social and behavioural sciences and law
STEM (Science, Technology, Engineering, and Mathematics)	•Physical and life sciences and technology •Mathematics, computer and information sciences •Architecture, engineering and related technologies •Agriculture, natural resources and conservation

Source: Statistics Canada.

**Table B1**  
**Key elements for analysis, tables 1 through 4**

Table number	Table 1	Table 2	Table 3	Table 4
Table title	Employment status	Sex	Visible minority status	Level of education
<b>LISA Wave</b>				
LISA 2014 (Wave 2)	X	X	X	X
LISA 2016 (Wave 3)	X	X	X	X
<b>Variable</b>	<b>Description</b>	<b>Categories</b>		
PERSONID	Longitudinal person ID	N/A	X	X
SEX	Demographic: Sex	1 Male 2 Female	X	
DGPGVISM	Demographic: Visible Minority flag	1 Yes 2 No		X
EDDCD05A	Diploma: Highest degree completed during the reference period	2 Trade/vocational certificate (includes an attestation of vocational training, diploma of vocational studies, or attestation of vocational specialization offered in Quebec) 4 CEGEP diploma or certificate 5 Non-university certificate or diploma from a college, school of nursing, technical institute 6 University transfer program 7 University certificate below the bachelor's degree 8 Bachelor's degree 9 University certificate above the bachelor's 10 First professional degree (degree in law (L.L.B), medicine (M.D.), dentistry (D.D.S., D.M.D), veterinary medicine (D.V.M), optometry (O.D.), divinity) 11 Master's 12 Ph.D.		X

**Table B1**  
**Key elements for analysis, tables 1 through 4**

Table number			Table 1	Table 2	Table 3	Table 4
Table title			Employment status	Sex	Visible minority status	Level of education
EDDCD05A	Diploma: Other degree completed during the reference period	2 Trade/vocational certificate (includes an attestation of vocational training, diploma of vocational studies, or attestation of vocational specialization offered in Quebec) 4 CEGEP diploma or certificate 5 Non-university certificate or diploma from a college, school of nursing, technical institute 6 University transfer program 7 University certificate below the bachelor's degree 8 Bachelor's degree 9 University certificate above the bachelor's 10 First professional degree (degree in law (L.L.B), medicine (M.D.), dentistry (D.D.S., D.M.D), veterinary medicine (D.V.M), optometry (O.D.), divinity) 11 Master's 12 Ph.D.				X
EDWL_Q05	Work integrated learning: Job	1 Yes 2 No	X	X	X	X
EHWL_Q05	Work integrated learning, history: Job	1 Yes 2 No	X	X	X	X
EDWL_Q10	Work integrated learning: Job, related to studies	1 Yes 2 No	X	X	X	X
EHWL_Q10	Work integrated learning, history: Job, related to studies	1 Yes 2 No	X	X	X	X
EDWL_Q15	Work integrated learning: Job, Wanted a job related to studies	1 Yes 2 No	X			
EHWL_Q15	Work integrated learning, history: Job, wanted a job related to studies	1 Yes 2 No	X			
AWRPW	All Waves Responding person weight	N/A	X	X	X	X

Source: Statistics Canada, Longitudinal and International Study of Adults (2014, 2016).

**Table B2**  
**Key elements for analysis, tables 5 through 7, chart 1**

Table number			Table 5	Table 6 (a + b)	Table 7 (a + b)	Chart 1 (a + b)
Table title			Field of study	Type of WIL	Usefulness of job during PSE	Employment post- graduation
<b>LISA Wave</b>						
LISA 2014 (Wave 2)			X	X	X	X
LISA 2016 (Wave 3)			X	X	X	X
Variable	Description	Categories				
PERSONID	Longitudinal person ID	N/A	X	X	X	X
EDD1_G40	Diploma: Highest, Field of study, groups	00 Personal Improvement and leisure 01 Education 02 Visual and performing arts, and communications technologies 03 Humanities 04 Social and behavioural sciences and law 05 Business, management and public administration 06 Physical and life sciences and technologies 07 Mathematics, computer and information sciences 08 Architecture, engineering and related technologies 09 Agriculture, natural resources and conservation 10 Health and related fields 11 Personal, protective and transportation services 12 Other	X			
EDD2_G40	Diploma: Other, Field of study, groups	00 Personal Improvement and leisure 01 Education 02 Visual and performing arts, and communications technologies 03 Humanities 04 Social and behavioural sciences and law 05 Business, management and public administration 06 Physical and life sciences and technologies 07 Mathematics, computer and information sciences 08 Architecture, engineering and related technologies 09 Agriculture, natural resources and conservation 10 Health and related fields 11 Personal, protective and transportation services 12 Other		X		
EDWL_Q10	Work integrated learning: Job, related to studies	1 Yes 2 No	X	X	X	
EHWL_Q10	Work integrated learning, history: Job, related to studies	1 Yes 2 No	X	X	X	
EDWL_Q35	Work integrated learning: Job, Related to studies – Co-op	1 Yes 2 No		X		
EHWL_Q35	Work integrated learning, History: Job, Related to studies – Co-op	1 Yes 2 No		X		
EDWL_Q50	Work integrated learning: Academic credit	1 Yes 2 No		X		
EHWL_Q50	Work integrated learning, History: Academic Credit	1 Yes 2 No		X		
EDWL_Q55	Work integrated learning: Job, paid or unpaid	1 Yes 2 No		X		
EHWL_Q55	Work integrated learning, History: Job, paid or unpaid			X		
EDWL_Q70	Work integrated learning: Job, knowledge and experience	1 Yes 2 No			X	
EHWL_Q70	Work integrated learning, History: Job, knowledge and experience	1 Yes 2 No			X	

**Table B2**  
**Key elements for analysis, tables 5 through 7, chart 1**

Table number			Table 5	Table 6	Table 7	Chart 1
Table title			Field of study	Type of WIL	Usefulness of job during PSE	Employment post-graduation
LV_TYPV	Labour: Derived variable, Labour force status – Monthly Vector	F Employed full-time P Employed part-time E Employed, status unknown S Searching for work N Not in the labour force A Absent from work U Not working - labour force - status unknown 6 Month when the vector ends				X
EDD1_Q25	Diploma: Highest, year completed postsecondary certificate, diploma or degree	2012 2013 2014 2015 2016				X
EDD2_Q25	Diploma: Other, year completed postsecondary certificate, diploma or degree	2012 2013 2014 2015 2016				X
EDD1_N26	Diploma: Highest, month completed the postsecondary certificate, diploma or degree	01 January 02 February 03 March 04 April 05 May 06 June 07 July 08 August 09 September 10 October 11 November 12 December				X
EDD2_N26	Diploma: Other, month completed the postsecondary certificate, diploma or degree	01 January 02 February 03 March 04 April 05 May 06 June 07 July 08 August 09 September 10 October 11 November 12 December				X
ESDA_V10	School attendance: Monthly Vector	1 attended 2 did not attend				X
AWRPW	All Waves Responding person weight	N/A	X	X	X	X

Source : Statistique Canada, Étude longitudinale et internationale des adultes (2014, 2016).



## References

Boothby, D., and Drewes, T. (2010). Returns to apprenticeship in Canada. *Canadian Labour Market and Skills Researcher Network Working Paper Series (Working Paper No. 70)*.

[Co-operative Education and Work-Integrated Learning Canada](https://www.cewilcanada.ca/_Library/2019/WIL-Def-ENGLISH_-_Updated_2019.pdf). (2019). What is WIL? Work-Integrated Learning (WIL) Definitions. [https://www.cewilcanada.ca/\\_Library/2019/WIL-Def-ENGLISH\\_-\\_Updated\\_2019.pdf](https://www.cewilcanada.ca/_Library/2019/WIL-Def-ENGLISH_-_Updated_2019.pdf)

Choy, S., and Delahaye, B. (2011). Partnerships between universities and workplaces: some challenges for work-integrated learning. *Studies in Continuing Education*, 33(2): 157-172.

Darch, J. (1995). Labour market outcomes for university co-op graduates. *Perspectives*. Statistics Canada.

Edwards, D., Perkins, K., Pearce, J., and Hong, J. (2015). *Work integrated learning in STEM in Australian universities*. Australian Council for Education Research.

Frenette, M. (2000). Overqualified? Recent graduates and the needs of their employers. *Education Quarterly Review*, 7(1): 6-20.

Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice. *Studies in Higher Education*, 40(2): 350-367.

Rodriguez, C., Zhao, J., and Ferguson, S. J. (2016). Co-op participation of college and bachelor's graduates. *Insights on Canadian Society*. Statistics Canada.

Statistics Canada. (2015, December 7). [Longitudinal and International Study of Adults \(LISA\)](http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5144#a4). Retrieved from <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5144#a4>.

Walters, D., and Zarifa, D. (2008). Earnings and employment outcomes for male and female postsecondary graduates of coop and non-coop programmes. *Journal of Vocational Education & Training*, 60(4): 377-399.

Wang, S. (2017). Labour market outcome differences between co-op and non-co-op graduates. *Economic Policy Directorate Working Paper*. Employment and Social Development Canada.