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by Tomasz Handler and René Morissette

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# ***Fine tuning or re-skilling? Educational strategies of prime-aged displaced workers***

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## **Abstract**

While a significant literature has documented the substantial and persistent earnings losses often experienced by displaced workers, relatively little is known about the educational strategies that prime-aged displaced workers use to cope with job loss. Specifically, the extent to which laid off Canadian workers undergo re-skilling—entering new fields of study after losing their jobs rather than simply upgrading their skills and remaining within their initial fields of study—is currently unknown. This study fills that information gap. It shows that, among all prime-aged postsecondary-educated workers who lost their jobs from 2009 to 2013, close to 10% entered postsecondary education (PSE) in the three years following job loss. Of those who entered PSE after job loss, almost 60% changed fields of study. This study also shows that displaced men and women who went back to school after job loss and who had similar initial fields of study tended to choose different fields of study after displacement. In particular, displaced men were less likely to move into health-related fields of study than displaced women.

Keywords: training; job displacement; lifelong learning; postsecondary education

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## Introduction

The COVID-19 pandemic has brought the issue of job loss in Canada and in many industrialized countries to the forefront. Previous research (Couch & Placzek, 2010; Hijzen et al., 2010; Jacobson et al., 1993; Kletzer & Fairlie, 2003; Morissette et al., 2013; Morissette & Qiu, 2020; Stevens, 1997;) shows that displaced workers often experience substantial and persistent earnings losses and that some of them enter or re-enter postsecondary education (PSE) to cope with job loss (Ci et al., 2016; Foote & Grosz, 2020; Frenette et al., 2011; Morissette & Qiu, 2021). However, relatively little is known about the fields of study displaced workers choose after job loss.<sup>1</sup> Specifically, the degree to which displaced workers choose fields that lead them to upgrade their skills (fine tuning) or imply a major career reorientation (re-skilling) remains unknown.

This distinction is important for a variety of reasons. Discussions of lifelong learning generally assume that workers often reorient their careers, but present no rigorous evidence on the frequency of such major career moves. Determining the relative importance of post-displacement educational transitions across different fields of study, compared with those that simply reflect a progression within similar fields of study, sheds light on this issue. Furthermore, it is unclear whether the first type of educational transitions are associated with greater earnings growth than the latter. Providing information on this question helps inform discussions about optimal assistance and training policies, if any, for displaced workers.

Using data from the Postsecondary Student Information System (PSIS) in conjunction with Statistics Canada's Longitudinal Worker File (LWF) and the 2006 Census of Population, this study quantifies the frequency of post-displacement educational transitions that are made across different fields of study relative to those that reflect a progression within fairly similar fields of study. It also assesses whether the first type of educational transitions are associated with greater earnings growth than the latter.

This study answers the following questions:

- 1) To what extent, if any, are prime-aged displaced workers more likely than other workers to enroll in PSE or to change fields of study?
- 2) Which displaced workers have a relatively high likelihood of enrolling in PSE or changing fields of study after job loss?
- 3) Which fields of study are predominantly selected after job loss?
- 4) Among displaced men and women of similar ages, education and initial fields of study who enter PSE after displacement, are there gender differences in the field of study selected after job loss?
- 5) How does the earnings growth experienced by various groups of displaced workers (those who do not enroll in PSE, change fields of study, or stay in the same field of study) compare in the medium term? Which groups experience the fastest earnings growth from the year prior to job loss to the fifth year following job loss?

This paper is structured as follows: The next section briefly reviews past research on educational transitions after job loss. Subsequent sections describe the datasets used in the study and quantify the degree to which displaced workers enter PSE after job loss, and whether they choose different fields of study or continue studying in their initial field. The focus is on postsecondary-educated workers displaced from 2009 to 2013, who were aged 30 to 54 at the time of displacement.<sup>2</sup> To provide context, estimates of enrollment in PSE are also produced for a comparison group of postsecondary-educated non-displaced workers. A fifth section features a matrix comparing pre- and post-job displacement fields of

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1. The U.S. study by Foote and Grosz (2020) is one exception. No Canadian evidence is currently available on this issue.

2. Since the data used in this paper end in 2018 and earnings of displaced workers are measured five years after job loss, the most recent cohort that can be analyzed is the one displaced in 2013.

study. It compares the field of study chosen after job loss with the initial field of study (i.e., the field of study reported previously in the 2006 Census of Population) for displaced workers who entered PSE after job loss. It also assesses whether there are gender differences in the field of study selected after displacement. A sixth section compares the earnings growth experienced after job loss for the following three groups of displaced workers: a) those who did not enter PSE after job loss, b) those who entered PSE and chose a different field of study and c) those who entered PSE and kept studying in their initial field. Concluding remarks follow.

## Previous research

Although several studies have documented the negative impact of job loss on workers' earnings (Couch & Placzek, 2010; Hijzen et al., 2010; Jacobson et al., 1993; Kletzer & Fairlie, 2003; Morissette et al., 2013; Morissette & Qiu, 2020; Stevens, 1997), the link between job loss and PSE has been analyzed to a lesser extent.

Frenette et al. (2011) use Canadian administrative data and find that job displacement from firm closures and mass layoffs is associated with a one percentage point increase in postsecondary attendance (from a baseline rate of 10%). Since job losses from firm closures or mass layoffs account for less than half of all permanent layoffs in Canada (Morissette & Qiu, 2020), their analysis is restricted to a subset of job losses. Ci et al. (2016) consider all permanent layoffs experienced by workers aged 35 to 44 who were displaced from 2004 to 2011. They found that laid-off male and female Canadian workers are 2 to 4 percentage points more likely than other men and women to transition to PSE in the year of the layoff or in the following year (from a baseline rate of about 3%). Morissette and Qiu (2021) reached a similar conclusion, focusing on workers displaced in 2009. Because these studies did not use the PSIS, none assessed the degree to which Canadian displaced workers chose fields of study that led them to upgrade their skills or that implied a major career reorientation.

Foote and Grosz (2020) use U.S. data from the Integrated Postsecondary Education Data System (IPEDS), a dataset that allows results to be disaggregated by field of study. They found that for every 100 workers laid off, enrollment in community colleges increases by 3 students within the following three years. They also showed that for every 100 workers involved in a mass layoff, degree completion increases by 2 students; most of this effect is concentrated among short-term certificates, as opposed to associate's degree programs.

In summary, job loss appears to trigger a modest increase in enrollment in PSE institutions, both in Canada and the United States. The degree to which this increase in PSE enrollment is caused by transitions to different or similar fields of study is currently unknown in Canada and will be investigated in this paper.

## Data and samples

### Data

The study integrates data from three different sources: Statistics Canada's LWF, the 2006 Census of Population and the PSIS.

The LWF is a longitudinal administrative dataset that covers the 1989-to-2018 period and combines information from four different sources: T1 tax files, the T4 statement of paid remuneration, the Record of Employment (ROE) and the Longitudinal Employment Analysis Program (LEAP). T1 tax files provide

individual-level information on variables such as worker age and sex, province of residence, annual wages, salaries and income from self-employment, coverage by registered pension plans or deferred profit-sharing plans, and—starting in 1999—deductions for part-time and full-time enrollment in PSE institutions. The T4 statement of paid remuneration provides job-level information on workers' annual wages and salaries, union status and province of employment.<sup>3</sup> The ROE provides job-level information on the separation of employees from employers because of layoffs, quits, retirement or other reasons, as well as temporary work interruptions (related to parental leave, injury or illness, strike or lockout, etc.) that employees experience while holding a given job. The LEAP is an enterprise-level file that follows firms over time and has information on firm size and industry of employment. It allows a distinction between permanent employee separations (from an employer) and temporary employee separations or work interruptions.<sup>4</sup> In this study, the LWF is used for two distinct purposes: a) to identify displaced workers, i.e., workers who are permanently laid off in a given year, and construct a comparison group of other, non-displaced workers, and b) to measure the earnings trajectories of both groups of workers from year  $t-1$ , the year prior to job loss, to year  $t+5$ , the fifth year after job loss.

The study also takes advantage of the 2006 Census of Population to measure workers' fields of study prior to job loss. The 2006 Census is also used to classify displaced workers and non-displaced workers according to their immigration status, population group (Black, White, Chinese, Arab, etc.), and educational attainment. These variables are not available in the LWF.<sup>5</sup>

Lastly, the PSIS is used to determine the field of study and type of program selected by the subset of displaced workers who enter PSE after job loss.<sup>6</sup> By comparing the field of study selected after job loss—as measured from the PSIS—with the field of study observed in the 2006 Census, it can be determined whether displaced workers choose fields of study that lead to upgrading their skills (fine tuning) or that imply a major career reorientation (re-skilling).

## Samples

This study focuses on workers who had PSE<sup>7</sup> in 2006, were permanently laid off from 2009 to 2013, and were aged 30 to 54 in the year of job loss. Different samples are considered, depending on whether the analysis is about a) educational transitions after job loss or b) the earnings trajectories associated with these transitions.

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3. As long as a person has filed their income tax form once between 1989 and 2018, information on their wages and salaries for year  $t$  will be captured (by the T4 records), even if this person did not file their income tax form for that year.
  4. Separation from an employer is deemed permanent when the employee leaves a firm in year  $t$  and does not go back either that year or the following year. If the employee goes back to their original employer in either year  $t$  or year  $t+1$ , the separation is deemed temporary.
  5. The sampling weights used in this study account for the fact that not all 2006 Census respondents provided consent to have their records linked to administrative data (roughly 80% provided consent) and consent rates varied across observable socioeconomic characteristics.
  6. The PSIS contains data on enrolments and graduation in Canadian publicly funded postsecondary institutions. Coverage has been almost fully comprehensive for enrolments since 2009, and for graduations since 2010. Private career colleges, registered apprenticeships and other potential avenues for fine tuning are excluded.
  7. In this study, postsecondary education includes college diplomas, certificates below a bachelor's degree, or a bachelor's degree or higher education. Morissette and Qiu (2021) show that postsecondary-educated displaced workers are between 2 and 3 percentage points more likely to enroll in postsecondary education after job loss than less educated displaced workers.

To analyze educational transitions after job loss, five cohorts of displaced workers are pooled. Each cohort is identified by the year of displacement ( $t=2009$  to  $t=2013$ ) and satisfies the following conditions:

- 1) Workers earned wages and salaries (as evidenced by the T4 statement of remuneration) and did not attend PSE institutions during the year prior to job loss (year  $t-1$ ) or during the year of job loss (year  $t$ ).
- 2) Workers were not permanently laid off during the year prior to job loss (year  $t-1$ ).
- 3) An income tax form (T1 form) was found for workers from year  $t-1$  to year  $t+4$  and workers were still living by year  $t+4$ .
- 4) Non-permanent residents and institutional residents are excluded.

Comparison groups are created for each cohort of displaced workers. Workers in the comparison groups also had PSE in 2006, were aged 30 to 54 in year  $t$ , and satisfy conditions 1, 3 and 4, but were not permanently laid off at any point from year  $t-1$  to year  $t+4$ .<sup>8</sup>

Transitions into PSE after job loss are measured using the PSIS. Displaced workers and workers in the comparison groups are deemed to have entered PSE if they are observed in the PSIS at some point between year  $t+1$  and year  $t+3$ . To simplify the analysis, a worker's field of study after job loss is based on the spell of PSE that lasted the greatest number of years (where  $n = 1, 2, 3$ ).<sup>9</sup> The resulting field of study is compared with that recorded in the 2006 Census to distinguish re-skilling from fine tuning.

When analyzing the earnings growth associated with educational transitions, condition 3 is replaced by the following conditions:

- 3a) Workers filed an income tax form (T1 form) from year  $t-1$  to year  $t+5$ .
- 3b) Workers earned wages and salaries in year  $t+5$  (as evidenced by the T4 statement of remuneration).
- 3c) Workers did not attend a PSE institution in year  $t+5$ .

Condition 3a) ensures that workers are still living five years after job loss. Condition 3b) allows the earnings growth for workers involved in the labour market to be measured, both prior to job loss and after job loss. Condition 3c) ensures that the annual earnings measured in year  $t+5$  are not reduced by time constraints resulting from PSE attendance, which would introduce noise into the analysis of earnings trajectories of various groups of displaced workers. In addition, the analysis of earnings growth is restricted to workers who earned no more than \$500,000 (in 2018 dollars) in any year during the  $t-1$  to  $t+5$  period.

In sum, workers are tracked from year  $t-1$  to year  $t+4$  when the analysis is about educational transitions, and from year  $t-1$  to year  $t+5$  when the analysis is about the earnings growth associated with these transitions.<sup>10</sup>

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8. Ensuring that workers in the comparison group are not permanently laid off in year  $t+4$  reduces concerns that those who attend postsecondary education from year  $t+1$  to year  $t+3$  do so because they expect to lose their job subsequently. To account for the fact that some individuals may appear in multiple comparison groups, regression analyses use standard errors that are clustered at the person level.

9. If two or more spells last the same number of years, the first spell is used to determine the worker's field of study.

10. To assess the robustness of the results regarding earnings growth, an additional sample that tracks workers from year  $t-3$  to year  $t+5$  is also considered.

## Transitions into postsecondary education after job loss

### Descriptive evidence

Table 1 compares the sample of displaced workers with the comparison group defined above. The numbers indicate that although both groups average roughly the same age, the displaced worker group tends to be less educated than the comparison group. For example, displaced workers have a bachelor's degree less often (28.1%) than workers in the comparison group (33.6%).

Table 1 also shows that displaced workers are more likely than other workers to be recent immigrants, non-White, and work in construction, low-skilled services (e.g., retail trade and accommodation and food services), small firms (firms with fewer than 20 employees) or non-unionized jobs. They are also more likely to have been with the same employer for less than 6 years and to come from the 2009 cohort. By contrast, displaced workers are less likely than other workers to have studied education or health and related fields.

Table 2 quantifies the degree to which displaced workers and other workers a) enrolled in PSE at some point during the three years following the reference year t, b) enrolled in PSE and chose a field of study different from that observed in 2006 and c) enrolled in PSE and chose the same field of study observed in 2006. Workers are deemed as having changed fields of study based on the 12 broad fields of study shown in Table 1.

Overall, 9.5% of the displaced workers selected in this study enrolled in PSE at some point during the three years following job loss. By contrast, 6.1% of workers in the comparison group enrolled in PSE at some point during the three years following the reference year t. These numbers suggest that job loss tends to increase PSE enrollment by 3.4 percentage points, and are in line with those obtained by Frenette et al. (2011), Ci et al. (2016) and Morissette and Qiu (2021).



**Table 1**  
**Descriptive statistics**

	Displaced workers	Comparison group
<b>Average age (years)</b>	42.0	42.7
<b>Women</b>	52.2	54.8
<b>Education in 2006 (Census, HCDD)</b>		
College	50.5	42.7
Certificate below a bachelor's degree	9.2	8.2
Bachelor's degree	28.1	33.6
Above a bachelor's degree	12.2	15.5
<b>Field of study in 2006</b>		
Education	5.9	8.2
Visual and performing arts, and communications technologies	5.9	3.1
Humanities	6.4	5.4
Social and behavioural sciences and law	11.6	12.4
Business, management and public administration	24.1	25.2
Physical and life sciences and technologies	3.8	4.1
Mathematics, computer and information sciences	6.5	6.2
Architecture, engineering, and related technologies	20.8	16.1
Agriculture, natural resources and conservation	2.7	2.4
Health and related fields	8.8	13.9
Personal, protective and transportation services	3.4	3.0
Other	0.0	0.0
<b>Immigration status</b>		
Canadian-born	71.1	77.0
Landed 10 years ago or less (as of year t)	10.3	5.7
Landed more than 10 years ago (as of year t)	18.6	17.3
<b>Population group</b>		
South Asian	5.9	4.4
Chinese	5.6	4.9
Black	2.5	1.8
Filipino	2.8	2.4
Arab	1.3	0.8
Latin American	1.5	0.9
Southeast Asian	0.8	0.6
Other	4.1	3.0
White	75.6	81.2
<b>Industry in year t</b>		
Mining, oil and gas	1.4	1.3
Construction	9.7	2.6
Manufacturing	11.0	9.3
Low-skilled services	32.5	26.2
Highly skilled services	9.7	8.1
Public services	21.4	41.9
Other	13.2	10.2
Unknown	1.2	0.4
<b>Firm size in year t</b>		
Fewer than 20 employees	27.8	15.6
20 to 99 employees	19.5	11.4
100 to 499 employees	13.8	11.6
500 employees or more	38.9	61.5

**Sources:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

**Table 1**  
**Descriptive statistics (continued)**

	Displaced workers	Comparison group
	percent	
<b>Unionized in year t</b>	15.4	36.6
<b>Six or more years of tenure with employer</b>	22.9	66.0
<b>Province of employment in year t</b>		
Newfoundland and Labrador	2.0	1.4
Prince Edward Island	0.6	0.4
Nova Scotia	3.2	2.7
New Brunswick	2.7	2.3
Quebec	23.5	23.7
Ontario	39.4	41.4
Manitoba	2.5	3.1
Saskatchewan	1.8	2.6
Alberta	11.2	10.5
British Columbia	12.8	11.6
<b>Cohort</b>		
2009	24.5	19.9
2010	18.8	20.0
2011	18.6	20.1
2012	18.9	20.1
2013	19.2	20.0
	number	
Sample size	57,939	2,354,637

**Source:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

The 9.5% enrollment rate observed for displaced workers can be partitioned into three segments: 5.5% of displaced workers chose a field of study different from that observed in 2006, and 1.7% chose the same field of study observed in 2006. For the remaining 2.3%, fields of study selected prior to and after job loss cannot be compared.<sup>11</sup> The corresponding percentages for workers in the comparison group are 3.2%, 1.2% and 1.7%, respectively. Taken together, these numbers suggest that job loss increases the likelihood of re-skilling by about 2 percentage points (5.5% minus 3.2%). They also indicate that almost 60% (5.5% divided by 9.5%) of displaced workers who enroll in PSE after job loss do so in a new field of study, i.e., go through re-skilling.

Among displaced workers, the likelihood of re-skilling after job loss appears to be higher for a) women (6.0%) than for men (5.0%); b) workers aged 30 to 44 (6.6%) than for older workers (3.8%); c) workers coming from physical and life sciences and technologies (9.2%) than for those coming from other fields of study, including architecture, engineering, and related technologies (4.0%) and business, management and public administration (4.3%); d) Black people (7.9%) than for White (5.6%), South Asian (3.1%) or Filipino (2.4%) people. Differences in the propensity to change fields of study are also observed across industries—workers displaced from public services change fields of study more often (7.3%) than those displaced from low-skilled services (4.4%)—and provinces, where workers displaced in Newfoundland and Labrador, Prince Edward Island and British Columbia generally changed fields of study more often than their counterparts in other provinces. By contrast, no substantial differences in the likelihood of re-skilling are observed across firm sizes. All of the qualitative patterns described above are also found when fine tuning and re-skilling are based on 41 two-digit fields of study instead of the 12 broad groups shown in Table 2.

11. This occurs for several reasons. First, despite the selection criteria that limit the sample to the longest PSE spell and then the earliest spell to break the ties, there still remain individuals who entered multiple fields of study, putting them into both the re-skilling and fine tuning categories at the same time. Second, some individuals have an “unclassified” field of study for the PSE after job loss that cannot be compared with any field of study prior to job loss.

**Table 2**  
**Rates of entry into postsecondary education, workers displaced from 2009 to 2013 and other workers**

Rates of entry	Displaced workers				Other workers			
	PSE	New field	Same field	Unknown	PSE	New field	Same field	Unknown
	percent							
<b>Overall</b>	<b>9.5</b>	<b>5.5</b>	<b>1.7</b>	<b>2.3</b>	<b>6.1</b>	<b>3.2</b>	<b>1.2</b>	<b>1.7</b>
<b>Gender</b>								
Men	8.8	5.0	1.7	2.1	5.2	2.9	0.9	1.4
Women	10.1	6.0	1.8	2.4	6.8	3.5	1.5	1.8
<b>Age in year t</b>								
30 to 44	11.1	6.6	2.0	2.4	7.4	3.9	1.7	1.9
45 to 54	7.1	3.8	1.2	2.1	4.4	2.3	0.7	1.4
<b>Education in 2006</b>								
College	8.7	5.0	1.5	2.2	5.9	3.1	1.0	1.8
Certificate below a bachelor's degree	9.5	5.7	1.5	2.2	6.7	3.6	1.5	1.6
Bachelor's degree	10.5	6.0	2.0	2.4	6.3	3.3	1.4	1.6
Above a bachelor's degree	10.2	5.9	2.0	2.3	5.9	2.9	1.4	1.6
<b>Field of study in 2006</b>								
Education	10.8	5.8	3.1	1.9	7.7	2.9	3.7	1.1
Visual and performing arts, and communications technologies	10.3	6.7	0.8	2.7	6.3	4.1	0.3	1.9
Humanities	12.3	7.5	2.5	2.3	6.9	3.6	1.6	1.7
Social and behavioural sciences and law	10.5	6.6	1.2	2.7	6.7	4.1	0.7	1.8
Business, management and public administration	8.4	4.3	1.9	2.2	5.3	2.4	1.3	1.6
Physical and life sciences and technologies	12.0	9.2	0.5	2.3	6.4	4.6	0.2	1.7
Mathematics, computer and information sciences	8.6	5.5	0.9	2.2	5.2	3.1	0.5	1.7
Architecture, engineering, and related technologies	8.1	4.0	2.1	2.1	5.1	2.7	0.7	1.7
Agriculture, natural resources and conservation	12.4	8.8	1.2	2.3	7.7	5.2	0.6	1.9
Health and related fields	9.4	5.3	1.9	2.1	6.7	3.3	1.5	1.9
Personal, protective and transportation services	9.5	6.0	0.8	2.7	6.9	3.8	1.3	1.8
Other	24.2	3.0	9.1	12.1	6.0	4.9	0.0	1.2
<b>Immigration status</b>								
Canadian-born	9.8	5.8	1.8	2.2	6.2	3.4	1.3	1.6
Landed 10 years ago or less (as of year t)	10.4	5.6	2.1	2.7	7.0	3.4	1.2	2.4
Landed more than 10 years ago (as of year t)	7.8	4.1	1.2	2.5	5.1	2.4	0.8	1.9
<b>Population group</b>								
South Asian	7.2	3.1	1.6	2.5	5.5	2.4	0.9	2.2
Chinese	8.2	4.8	1.4	1.9	5.0	2.5	0.7	1.9
Black	14.6	7.9	2.6	4.1	9.0	4.1	2.1	2.8
Filipino	6.0	2.4	1.0	2.7	4.4	2.0	0.8	1.7
Arab	9.8	5.6	2.0	2.1	6.5	3.2	1.5	1.9
Latin American	11.9	6.8	2.4	2.8	7.6	3.8	1.4	2.4
Southeast Asian	8.1	5.5	1.1	1.5	4.5	2.1	0.8	1.5
Other	14.1	8.3	1.7	4.1	8.6	4.8	1.5	2.3
White	9.4	5.6	1.7	2.1	6.1	3.2	1.3	1.6
<b>Industry in year t</b>								
Mining, oil and gas	9.7	6.3	1.8	1.7	5.7	3.7	1.1	0.8
Construction	8.8	5.2	1.7	1.9	4.8	2.5	0.7	1.7
Manufacturing	8.5	4.6	1.6	2.2	4.4	2.0	0.7	1.7
Low-skilled services	8.4	4.4	1.5	2.5	4.6	2.2	0.8	1.5
Highly skilled services	9.2	5.6	1.4	2.2	4.4	2.3	0.6	1.5
Public services	11.8	7.3	2.2	2.2	8.1	4.4	1.9	1.8
Other	10.0	6.0	1.8	2.1	5.1	2.6	0.8	1.7
Unknown	8.9	5.9	1.5	1.5	4.9	2.8	0.8	1.3
<b>Firm size in year t</b>								
Fewer than 20 employees	9.5	5.8	1.6	2.1	4.6	2.4	0.7	1.5
20 to 99 employees	9.6	5.3	1.9	2.4	5.6	2.9	0.9	1.7
100 to 499 employees	8.8	5.1	1.4	2.4	6.6	3.3	1.2	2.0
500 employees or more	9.6	5.5	1.8	2.3	6.5	3.4	1.4	1.6

**Note:** PSE refers to postsecondary education.

**Sources:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

**Table 2**  
Rates of entry into postsecondary education for workers displaced from 2009 to 2013 and for other workers  
(continued)

Rates of entry	Displaced workers				Other workers			
	PSE	field	field	Unknown	PSE	field	field	Unknown
	percent							
<b>Overall</b>	<b>9.5</b>	<b>5.5</b>	<b>1.7</b>	<b>2.3</b>	<b>6.1</b>	<b>3.2</b>	<b>1.2</b>	<b>1.7</b>
<b>Unionized in year t</b>								
Yes	10.5	6.6	2.1	1.7	7.5	4.0	1.9	1.6
No	9.3	5.3	1.6	2.4	5.3	2.7	0.9	1.7
<b>Tenure in year t</b>								
Six years or more	8.1	4.5	1.4	2.3	5.5	2.8	1.2	1.5
Less than six years	9.9	5.8	1.8	2.3	7.1	3.9	1.3	2.0
<b>Province of employment</b>								
Newfoundland and Labrador	12.1	10.8	1.1	0.2	9.8	7.8	1.8	0.2
Prince Edward Island	17.9	15.1	2.4	0.5	8.3	6.0	2.2	0.1
Nova Scotia	7.3	5.7	1.1	0.6	6.6	4.8	1.6	0.2
New Brunswick	9.1	7.1	1.8	0.2	5.2	3.9	1.2	0.1
Quebec	8.5	5.4	2.4	0.7	4.8	2.7	1.6	0.5
Ontario	7.9	2.9	1.1	3.9	5.2	1.6	0.8	2.8
Manitoba	11.1	6.2	3.3	1.6	6.5	3.5	2.1	0.9
Saskatchewan	11.4	6.5	2.0	2.9	7.7	3.3	1.4	3.1
Alberta	7.5	5.0	2.1	0.4	4.0	2.7	1.2	0.2
British Columbia	16.4	11.4	2.1	2.9	12.1	8.6	1.5	2.0
<b>Cohort</b>								
2009	10.4	6.1	2.0	2.3	6.6	3.5	1.4	1.7
2010	10.0	5.7	2.0	2.2	6.4	3.3	1.3	1.7
2011	9.0	5.1	1.7	2.3	6.1	3.2	1.2	1.7
2012	8.8	5.2	1.3	2.3	5.8	3.0	1.2	1.7
2013	9.0	5.2	1.5	2.3	5.6	2.9	1.1	1.6
	number							
Sample size	57,939	57,939	57,939	57,939	2,354,637	2,354,637	2,354,637	2,354,637

**Note:** PSE refers to postsecondary education.

**Sources:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

## Regression analyses

Table 3 shows the extent, if any, to which prime-aged displaced workers are more likely than other workers to enroll in PSE or to change fields of study. Probit models of the likelihood of making the following transitions are estimated: 1) entering PSE, 2) changing fields of study at some point during the three years following reference year t. The goal is to quantify the degree to which, among observationally equivalent individuals, displaced workers are more likely than workers in the comparison group to make these transitions. To compare individuals with similar observable characteristics, the following explanatory variables are included in sex-specific probit models: age in year t, education in 2006, broad field of study in 2006, immigration status, population group, province of employment in year t and cohort. The categories used to define these explanatory variables are shown in Table 2. Whenever probit models pool data for men and women, a female indicator is added to the list of indicators.

**Table 3**  
**Likelihood of entering postsecondary education or a new field of study, workers displaced from 2009 to 2013 and other workers**

Likelihood of entering	Postsecondary education	Broad new field of study	Detailed new field of study
average marginal effects			
<b>Fields of study</b>			
<b>Both sexes</b>			
Displaced workers	0.031 ***	0.019 ***	0.022 ***
Other workers	...	...	...
Baseline rate (%)	6.2	3.2	3.5
Sample size (number)	2,412,576	2,412,576	2,412,576
<b>Men</b>			
Displaced workers	0.031 ***	0.018 ***	0.022 ***
Other workers	...	...	...
Baseline rate (%)	5.3	2.9	3.2
Sample size (number)	1,082,796	1,082,796	1,082,796
<b>Women</b>			
Displaced workers	0.030 ***	0.020 ***	0.022 ***
Other workers	...	...	...
Baseline rate (%)	6.9	3.5	3.7
Sample size (number)	1,329,780	1,329,780	1,329,780

... not applicable

\*\*\* significantly different from reference category ( $p < 0.001$ )

**Note:** Results are from probit models with controls for age, education in 2006, broad field of study in 2006, immigration status, population group, province of employment in year  $t$  and cohort indicators.

**Sources:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

All else being equal, displaced men and women are about 3 percentage points more likely than other workers to enroll in PSE. Depending on whether changes in fields of study are defined at the one-digit level or the two-digit level, the likelihood of displaced men changing fields of study is between 1.8 and 2.2 percentage points higher than that of other male workers. For women, the corresponding differences vary between 2.0 and 2.2 percentage points. In all cases, the differences are precisely estimated. Overall, these numbers confirm the findings of previous Canadian studies, i.e., confirm that job loss leads to modest increases in PSE enrollment. They also indicate that jobs loss induces, in absolute terms, modest increases in the likelihood of re-skilling.

Table 4 focuses on displaced workers ( $n=57,939$ ) and examines which ones have a relatively high likelihood of enrolling in PSE or changing fields of study after job loss. Because of the large number of binary indicators that can potentially be used and the relatively small samples that are available when estimating sex-specific models for displaced workers, the set of explanatory variables used in Table 4 is narrower than that used in Table 3 and excludes province and cohort indicators. Nevertheless, the findings reported below generally hold when province and cohort indicators are added to the models.

**Table 4**  
**Likelihood of displaced workers entering postsecondary education or a new field of study after job loss, by personal characteristics**

Likelihood of entering:	Postsecondary education			A new broad field of study			A new detailed field of study		
	Both sexes	Men	Women	Both sexes	Men	Women	Both sexes	Men	Women
average marginal effects									
<b>Gender</b>									
Men	...	...	...	...	...	...	...	...	...
Women	0.0116 ***	...	...	0.0074 **	...	...	0.0068 **	...	...
<b>Age in year t</b>									
30 to 44	...	...	...	...	...	...	...	...	...
45 to 54	-0.0375 ***	-0.0319 ***	-0.0439 ***	-0.0267 ***	-0.0235 ***	-0.0302 ***	-0.0295 ***	-0.0275 ***	-0.0321 ***
<b>Education in 2006</b>									
College	...	...	...	...	...	...	...	...	...
Certificate below a bachelor's degree	0.0109 *	0.0102	0.0102	0.0101 *	0.0056	0.0129 *	0.0115 **	0.0063	0.0154 *
Bachelor's degree	0.0128 ***	0.0104 *	0.0124 *	0.0058 *	0.0038	0.0046	0.0061 *	0.0037	0.0060
Above a bachelor's degree	0.0159 **	0.0166 *	0.0118 †	0.0098 *	0.0105 †	0.0049	0.0109 **	0.0135 *	0.0050
<b>Field of study in 2006</b>									
Education	0.0146 *	0.0197	0.0146 †	0.0098 *	0.0200 †	0.0088	0.0080	0.0190 †	0.0060
Visual and performing arts, and communications technologies	0.0144 *	-0.0013	0.0301 **	0.0205 ***	0.0074	0.0324 ***	0.0198 ***	0.0074	0.0314 ***
Humanities	0.0311 ***	0.0284 **	0.0351 ***	0.0274 ***	0.0183 *	0.0348 ***	0.0413 ***	0.0349 ***	0.0472 ***
Social and behavioural sciences and law	0.0132 **	0.0243 **	0.0089	0.0179 ***	0.0253 ***	0.0160 ***	0.0230 ***	0.0290 ***	0.0214 ***
Business, management and public administration	...	...	...	...	...	...	...	...	...
Physical and life sciences and technologies	0.0316 ***	0.0375 **	0.0274 *	0.0476 ***	0.0488 ***	0.0471 ***	0.0463 ***	0.0475 ***	0.0462 ***
Mathematics, computer and information sciences	0.0045	0.0021	0.0118	0.0145 **	0.0065	0.0273 ***	0.0140 **	0.0061	0.0286 ***
Architecture, engineering, and related technologies	0.0053	0.0065	0.0020	0.0010	-0.0032	0.0162 *	0.0133 ***	0.0111 *	0.0188 *
Agriculture, natural resources and conservation	0.0397 ***	0.0256 *	0.0651 ***	0.0444 ***	0.0290 **	0.0669 ***	0.0459 ***	0.0337 **	0.0654 ***
Health and related fields	0.0069	0.0234 *	0.0027	0.0081 *	0.0237 **	0.0049	0.0082 *	0.0253 **	0.0043
Personal, protective and transportation services	0.0139 †	0.0233 *	0.0018	0.0175 **	0.0147 †	0.0187 †	0.0174 *	0.0171 *	0.0165
Other	0.1348	...	0.2192	-0.0177	...	-0.0082	-0.0197	...	-0.0113
<b>Immigration status</b>									
Canadian-born	...	...	...	...	...	...	...	...	...
Landed 10 years ago or less	0.0044	0.0082	0.0002	-0.0002	0.0054	-0.0072	-0.0008	0.0047	-0.0071
Landed more than 10 years ago	-0.0161 ***	-0.0167 **	-0.0143 *	-0.0131 ***	-0.0126 **	-0.0135 **	-0.0145 ***	-0.0150 **	-0.0136 *
<b>Population group</b>									
South Asian	-0.0226 ***	-0.0129	-0.0319 ***	-0.0235 ***	-0.0186 **	-0.0275 ***	-0.0257 ***	-0.0199 **	-0.0308 ***
Chinese	-0.0082	-0.0049	-0.0110	-0.0020	-0.0042	-0.0004	-0.0020	-0.0024	-0.0018
Black	0.0603 ***	0.0694 ***	0.0497 **	0.0303 ***	0.0296 *	0.0293 *	0.0368 ***	0.0378 **	0.0339 *
Filipino	-0.0252 **	-0.0057	-0.0415 ***	-0.0250 ***	-0.0166 †	-0.0309 ***	-0.0208 **	-0.0087	-0.0304 ***
Arab	0.0074	0.0070	0.0073	0.0047	-0.0067	0.0207	0.0053	-0.0024	0.0156
Latin American	0.0313 *	0.0231	0.0392 †	0.0193 †	0.0116	0.0263	0.0199 †	0.0143	0.0250
Southeast Asian	-0.0027	0.0506 †	-0.0733 ***	0.0084	0.0398	-0.0323 **	0.0049	0.0378	-0.0367 **
Other	0.0510 ***	0.0408 ***	0.0588 ***	0.0323 ***	0.0222 *	0.0407 **	0.0338 ***	0.0252 *	0.0409 ***
White	...	...	...	...	...	...	...	...	...
Baseline rate (%)	9.5	8.8	10.1	5.5	5.0	6.0	6.1	5.7	6.4
Sample size (number)	57,939	27,415	30,524	57,939	27,415	30,524	57,939	27,415	30,524

... not applicable  
\* significantly different from reference category (p < 0.05)  
\*\* significantly different from reference category (p < 0.01)  
\*\*\* significantly different from reference category (p < 0.001)  
† significantly different from reference category (p < 0.10)

**Notes:** Results are from probit models. LWF refers to the Longitudinal Worker File. Census refers to the 2006 Census of Population.

**Sources:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

Table 4 shows that, all else being equal, displaced women are more likely than displaced men to enroll in PSE after job loss or to enter a new field of study. On average, the likelihood of women entering PSE exceeds that of men by about 1.2 percentage points. The likelihood of women entering a new field of study exceeds that of men by 0.7 percentage point, regardless of the way changes in fields of study are defined.

In line with Morissette and Qiu (2021), Table 4 indicates that older male and female displaced workers are less likely than their younger counterparts to enter PSE after job loss. The difference between workers aged 45 to 54 and those aged 30 to 44 in the likelihood of entering postsecondary education averages 3.2 percentage points for men and 4.4 percentage points for women. Since 8.8% of displaced men and 10.1% of displaced women entered PSE after job loss, these differences are important in relative terms. Displaced men and women aged 45 to 54 are also less likely than those aged 30 to 44 to enter new fields of study after job loss. Across age groups, these differences in likelihood amount to about 2.5 percentage points for men and 3.0 percentage points for women.

Table 4 also shows that the amount of re-skilling varies across initial fields of study. In most initial fields of study, displaced women are more likely to undergo re-skilling than displaced women who previously studied in business, management and public administration. For example, displaced women who previously studied in physical and life sciences and technologies are, on average, almost 5 percentage points more likely to enter new fields of study than their counterparts who studied in business, management and public administration. Given that, on average, 6% of displaced women enter new fields of study after job loss, this 5 percentage point difference is worth noting. By contrast, the likelihood of changing fields of study is not statistically different for displaced women who were previously trained in education or health and related fields, compared with those who studied in business, management and public administration. Relative to business, management and public administration, the likelihood of displaced men changing fields of study is also higher in humanities; social and behavioural sciences and law; physical and life sciences and technologies; agriculture, natural resources and conservation; and health and related fields. Displaced men and women who previously studied in business, management and public administration are never more likely to change fields of study than their counterparts who previously studied in other fields. This suggests a certain degree of stability in the type of learning that individuals coming from business, management and public administration experience.

Differences in the amount of re-skilling are also observed across population groups. Compared with their White counterparts, South Asian men and women are between 1.9 and 3.1 percentage points less likely to enter new fields of study after job loss. A similar pattern is observed for Filipino women or women in “Other” population groups. By contrast, Black men and women are between 3 and 4 percentage points more likely than White men and women to change fields of study after job loss.

Taken together, the numbers in Table 4 confirm previous findings—for example, the relatively low likelihood of older displaced workers entering PSE after job loss—while highlighting new patterns not yet documented in Canada. One key finding is that the likelihood of re-skilling varies not only across sex and age group, but also across initial fields of study and population groups. Moreover, the differences uncovered by multivariate analyses are often important in relative terms.

## Which fields of study do displaced workers enter after job loss?

The results shown in the previous section quantify the degree to which displaced workers enter new fields of study after job loss, but provide no details on the specific fields that workers with a given background choose after displacement. Table 5 fills this gap. It provides a pre-job displacement versus post-job displacement field of study matrix comparing the field of study chosen after displacement with the field of study reported previously in the 2006 Census of Population for displaced workers who entered PSE after job loss. The focus is on displaced workers for which the categories “New fields of study” or “Same field of study” shown in Table 2 can be identified. Displaced workers who fall under the “Unknown” category shown in columns 4 and 8 of Table 2 are excluded from Table 5. Separate matrices are produced for men (n=1,835) and women (n=2,394).

**Table 5**  
**Transition matrices, initial field of study compared with field of study after job loss, male and female displaced workers entering postsecondary education after job loss**

MEN (n=1,835)

Field of study selected after job loss

Initial field	1	2	3	4	5	6	7	8	9	10	11	12	Not for credit	Multiple	Overall
	percent														
1	26.7	0.0	18.8	7.5	5.4	0.0	5.0	16.2	0.0	4.1	3.7	4.1	7.5	1.1	3.7
2	10.8	11.4	14.1	6.9	10.5	0.0	5.7	20.7	0.0	1.7	7.2	2.7	6.8	1.5	5.3
3	15.1	2.9	29.6	5.0	15.6	0.0	1.2	10.2	0.6	4.1	3.4	2.4	8.9	1.1	6.4
4	9.3	0.9	25.4	15.4	18.3	0.0	2.4	11.2	3.7	3.9	3.7	1.4	4.5	0.0	9.5
5	5.1	0.9	22.1	2.0	24.2	0.5	3.4	19.9	1.3	2.9	5.0	2.4	8.9	1.4	13.9
6	10.6	1.1	21.9	5.3	14.9	4.1	4.6	22.8	2.8	2.4	3.3	2.5	1.3	2.3	6.0
7	3.7	1.1	16.3	3.3	13.7	0.8	20.0	21.0	0.0	3.3	5.6	2.1	6.0	3.0	8.0
8	2.7	0.9	25.9	2.7	7.8	0.4	3.4	38.2	0.6	1.6	3.4	4.3	7.1	0.8	33.8
9	0.0	0.2	21.0	2.1	4.0	0.0	0.0	26.5	12.6	6.7	9.7	2.3	11.5	3.4	4.2
10	4.3	0.0	18.6	6.8	16.3	6.1	1.8	15.3	1.8	17.5	3.6	0.0	5.3	2.6	4.9
11	4.0	0.0	23.2	1.9	10.6	0.8	1.0	26.9	0.0	1.7	15.5	5.8	2.9	5.8	4.2
12	§	§	§	§	§	§	§	§	§	§	§	§	§	§	0.0
Overall	6.4	1.5	23.0	4.7	12.9	0.8	4.4	25.2	1.6	3.4	4.8	3.0	6.7	1.5	100.0

§ sample size too small

Notes: Fields are as follows.

- 1 Education
- 2 Visual and performing arts, and communications technologies
- 3 Humanities
- 4 Social and behavioural sciences and law
- 5 Business, management and public administration
- 6 Physical and life sciences and technologies
- 7 Mathematics, computer and information sciences
- 8 Architecture, engineering, and related technologies
- 9 Agriculture, natural resources and conservation
- 10 Health and related fields
- 11 Personal, protective and transportation services
- 12 Other

Sources: Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.



**Table 5**  
**Transition matrices, initial field of study compared with field of study after job loss, male and female displaced workers entering postsecondary education after job loss (continued)**

WOMEN (n=2,394)

Field of study selected after job loss

	1	2	3	4	5	6	7	8	9	10	11	12	Not for credit	Multiple	Overall
	percent														
<b>Initial field</b>															
1	<b>37.4</b>	0.2	17.2	12.0	11.6	0.8	1.6	0.0	0.5	6.4	0.0	1.3	9.0	2.1	<b>10.1</b>
2	15.7	<b>10.9</b>	21.3	12.5	13.9	0.0	4.2	3.3	0.6	6.8	0.0	3.4	5.3	1.8	<b>7.0</b>
3	21.6	1.3	<b>22.9</b>	8.7	20.6	0.0	2.8	1.1	0.3	10.2	1.4	2.0	5.0	2.1	<b>10.7</b>
4	12.3	2.4	21.6	<b>14.6</b>	19.8	0.6	0.5	1.3	1.3	11.5	0.7	4.7	7.0	1.7	<b>15.1</b>
5	5.8	0.4	24.4	8.1	<b>32.7</b>	0.5	1.1	2.6	0.3	8.7	3.5	2.7	7.8	1.4	<b>26.2</b>
6	6.6	0.0	17.5	9.7	14.6	<b>5.6</b>	1.7	1.7	6.6	15.6	5.3	5.9	8.9	0.3	<b>4.4</b>
7	9.7	0.9	22.7	11.2	20.0	2.9	<b>4.5</b>	6.6	2.9	8.5	1.7	4.2	4.2	0.0	<b>4.1</b>
8	6.9	0.0	25.1	9.0	27.1	0.0	1.6	<b>8.9</b>	2.3	7.4	0.7	3.1	5.1	2.8	<b>4.3</b>
9	9.6	0.0	22.2	7.8	10.3	1.1	0.0	7.3	<b>11.7</b>	9.9	4.0	0.0	6.5	9.6	<b>3.3</b>
10	7.4	1.3	18.8	9.7	13.8	0.5	1.3	1.6	0.6	<b>29.4</b>	2.5	2.1	9.6	1.4	<b>12.2</b>
11	3.7	0.0	22.3	4.7	22.6	0.0	1.0	3.4	0.0	18.4	<b>5.0</b>	2.6	5.2	11.0	<b>2.4</b>
12	§	§	§	§	§	§	§	§	§	§	§	§	§	§	<b>0.1</b>
Overall	<b>12.9</b>	<b>1.6</b>	<b>21.7</b>	<b>10.2</b>	<b>21.1</b>	<b>0.8</b>	<b>1.6</b>	<b>2.5</b>	<b>1.4</b>	<b>11.9</b>	<b>2.0</b>	<b>3.0</b>	<b>7.2</b>	<b>2.1</b>	<b>100.0</b>

§ sample size too small

Notes: Fields are as follows.

- 1 Education
- 2 Visual and performing arts, and communications technologies
- 3 Humanities
- 4 Social and behavioural sciences and law
- 5 Business, management and public administration
- 6 Physical and life sciences and technologies
- 7 Mathematics, computer and information sciences
- 8 Architecture, engineering, and related technologies
- 9 Agriculture, natural resources and conservation
- 10 Health and related fields
- 11 Personal, protective and transportation services
- 12 Other

Sources: Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

The results confirm that a minority of the displaced men and women considered in Table 5 stay in the same field of study after job loss. This can be seen by looking at the cells on the diagonal of each matrix. For example, depending on the initial field of study, between 4.1% and 38.2% of displaced men entered the same field of study as that observed in 2006 after losing their jobs. For displaced women, the corresponding estimates vary between 4.5% and 37.4%.

The fields of study selected after job loss differ between men and women. The two most popular fields for men are architecture, engineering, and related technologies (25.2%) and humanities (23.0%), and are selected by close to half of displaced men. By contrast, the two most popular fields for women are humanities (21.7%) and business, management and public administration (21.1%), selected by roughly 4 in 10 displaced women.

Admittedly, these dissimilarities partly reflect gender differences in the field of study observed in 2006, prior to job loss. A more meaningful comparison focuses on gender differences within a given initial field of study. When this comparison is done, interesting patterns emerge. For example, regardless of the initial field of study considered, the proportion of displaced workers choosing architecture, engineering, and related technologies (Field 8) is between 9.1 and 29.4 percentage points higher for men than for

women.<sup>12</sup> Conversely, the proportion of displaced workers choosing health and related fields (Field 10) after job loss is, within most fields of study, between 5.1 and 16.6 percentage points lower for men than for women. This suggests that displaced men tend to stay away from health-related occupations after job loss (Miller 2017).

To test whether gender differences in the field selected after job loss remain after conditioning on workers' initial field of study, a series of probit models are estimated. Each model estimates the likelihood of displaced workers selecting a given field of study (e.g., humanities, education) after job loss. Eleven models are estimated, one for each of the fields of study shown in Table 2 (with the exception of "other," where small sample sizes preclude estimation). In each model, data for displaced men and women are pooled together and the following set of explanatory variables is used: an indicator for women, an indicator for workers aged 45 to 54, indicators of educational attainment and indicators for the fields of study observed in 2006, prior to job loss.<sup>13</sup> The following question is asked: Among displaced men and women of similar age, education and initial fields of study, are there gender differences in the field of study selected after job loss?

The results in Table 6 indicate that, all else being equal, women are more likely than men to choose the following fields after job loss: education; social and behavioural sciences and law; business, management and public administration; and health and related fields. For example, the likelihood of entering health and related fields is, on average, 7.5 percentage points higher for women than for men. This is a substantial difference given that 8.2% of displaced men and women, collectively, chose that field after job loss. Likewise, the likelihood of displaced workers entering social and behavioural science and law or business, management and public administration is about 6 percentage points higher, on average, for women than for men.

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12. This can be seen by comparing the Field 8 column for men with that for women.

13. Sample size limitations (n=4,229) preclude meaningful analyses that would add population groups and immigration status to these variables.

**Table 6**  
**Gender differences in the likelihood of entering a given field of study, conditional on the field of study observed in 2006, displaced workers who enrolled in postsecondary education after job loss**

Likelihood of entering field	1	2	3	4	5	6	7	8	9	10	11
	average marginal effects										
<b>Men</b>	...	...	...	...	...	...	...	...	...	...	...
<b>Women</b>	0.0409 ***	-0.0019	-0.0015	0.049 ***	0.0629 ***	-0.0001	-0.0244 ***	-0.1777 ***	-0.0017	0.0751 ***	-0.0299 ***
Baseline rate (%)	10.0	1.5	22.3	7.8	17.5	0.8	2.9	12.5	1.5	8.2	3.3
Sample size (number)	4,229	4,229	4,229	4,229	4,229	4,229	4,229	4,229	4,229	4,229	4,229

... not applicable

\* significantly different from reference category (p < 0.05)

\*\* significantly different from reference category (p < 0.01)

\*\*\* significantly different from reference category (p < 0.001)

† significantly different from reference category (p < 0.10)

**Notes:** The dependent variable equals 1 if worker i enters a given field of study after job loss, and equals 0 otherwise. Explanatory variables include binary indicators for women, workers aged 45 to 54, education levels in 2006, and indicators for the field of study observed in 2006. Standard errors are clustered by person ID.

Fields are as follows.

- 1 Education
- 2 Visual and performing arts, and communications technologies
- 3 Humanities
- 4 Social and behavioural sciences and law
- 5 Business, management and public administration
- 6 Physical and life sciences and technologies
- 7 Mathematics, computer and information sciences
- 8 Architecture, engineering, and related technologies
- 9 Agriculture, natural resources and conservation
- 10 Health and related fields
- 11 Personal, protective and transportation services

**Sources:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

By contrast, women are much less likely than men to choose architecture, engineering, and related technologies after job loss: the gender difference averages roughly 18 percentage points. Women are also slightly less likely than men to enter mathematics, computer and information sciences (-2.4 percentage points) or personal, protective and transportation services (-3.0 percentage points).

In sum, Table 6 highlights significant gender differences in the fields of study that displaced workers choose after job loss. These differences are observed even after controlling for their initial fields of study.

Table 7 provides additional information on the types of educational transitions that displaced workers experience.

The first panel of Table 7 shows that regardless of displaced workers' initial educational attainment, the most frequent option selected after job loss is one-year programs. This finding is consistent with the fact that the sample considered in the study consists of adults, many of whom might face substantial time constraints. For example, between 53.7% and 60.0% of displaced men with identifiable "New fields of study" or "Same field of study" categories selected a one-year program after job loss. For displaced women, the corresponding percentages vary between 47.9% and 58.3%.

The second panel of Table 7 shows that career, technical and professional training programs (level 2 programs) are generally the preferred option of displaced workers after job loss. For example, almost half of displaced women with a college diploma chose this option after losing their jobs, compared with more than 60% of their male counterparts.

Taken together, the numbers in Table 7 suggest that many displaced workers choose short-term applied or career-oriented programs after job loss.

**Table 7**

**Duration and level of postsecondary education program selected by displaced workers entering postsecondary education after job loss, by education level in 2006**

	1 year	2 years	3 years	Overall
	percent			
<b>I. Duration of program selected after job loss</b>				
<b>Men (n=1,835)</b>				
<b>Education in 2006</b>				
College	60.0	26.7	13.3	<b>47.2</b>
Certificate below bachelor	55.1	35.1	9.8	<b>8.5</b>
Bachelor's degree	56.2	29.5	14.4	<b>29.2</b>
Above bachelor's degree	53.7	23.2	23.0	<b>15.1</b>
Overall	<b>57.5</b>	<b>27.7</b>	<b>14.8</b>	<b>100.0</b>
<b>Women (n=2,394)</b>				
<b>Education in 2006</b>				
College	58.3	27.0	14.7	<b>45.0</b>
Certificate below a bachelor's degree	46.8	38.0	15.3	<b>9.9</b>
Bachelor's degree	51.7	29.5	18.8	<b>33.1</b>
Above a bachelor's degree	47.9	31.5	20.5	<b>12.0</b>
Overall	<b>53.7</b>	<b>29.5</b>	<b>16.8</b>	<b>100.0</b>

**Source:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

**Table 7**  
Duration and level of PSE program selected by displaced workers entering postsecondary education after job loss, by education level in 2006 (continued)

	Level					Multiple
	1	2	3	4	5	
percent						
<b>II. Level of postsecondary education programs selected after job loss</b>						
<b>Men (n=1,835)</b>						
<b>Education in 2006 (census, HCDD)</b>						
College	2.2	61.3	9.5	1.7	22.8	2.5
Certificate below a bachelor's degree	0.0	52.7	17.2	6.0	20.1	4.0
Bachelor's degree	1.2	43.8	13.0	17.4	21.4	3.2
Above a bachelor's degree	2.2	36.3	11.8	28.3	15.8	5.6
Overall	<b>1.7</b>	<b>51.7</b>	<b>11.5</b>	<b>10.7</b>	<b>21.1</b>	<b>3.3</b>
<b>Women (n=2,394)</b>						
<b>Education in 2006 (census, HCDD)</b>						
College	4.0	48.9	18.9	2.3	21.4	4.6
Certificate below a bachelor's degree	3.9	35.9	23.2	7.1	25.2	4.6
Bachelor's degree	2.6	33.6	16.2	20.8	22.9	4.0
Above a bachelor's degree	2.4	22.7	16.0	28.1	25.6	5.2
Overall	<b>3.3</b>	<b>39.4</b>	<b>18.1</b>	<b>12.0</b>	<b>22.8</b>	<b>4.4</b>

**Notes:**

Level 1 includes basic education and skills programs and other programs.

Level 2 includes apprenticeship programs; qualifying programs for career, technical or pre-university; career, technical or professional training programs; and post-career, technical or professional training programs.

Level 3 includes pre-university programs, undergraduate qualifying programs, and undergraduate programs.

Level 4 includes post-baccalaureate non-graduate programs, graduate qualifying programs (second cycle), graduate qualifying programs (third cycle), health-related residency programs, graduate programs (second cycle), graduate programs (third cycle), and graduate programs (above the third cycle).

Level 5 includes non-programs (non-credit), non-programs (credit, undergraduate), non-programs (credit, graduate), and non-programs (credit, other postsecondary).

**Sources:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

## Earnings growth following job loss

So far, displaced workers and workers in the comparison group have been tracked from year t-1 to year t+4 to measure their transitions (or lack thereof) into PSE. This section somewhat narrows the sample initially selected to track workers from year t-1 to year t+5 and compare the earnings growth they experienced during that period. As mentioned earlier, all workers considered had positive earnings in year t+5 and did not attend PSE that year. The goal of this section is to answer the following question: How does the earnings growth experienced by various groups of displaced workers (those who do not enroll in PSE, those who change fields of study and those who stay in the same field of study) compare in the medium term?

Table 8 provides descriptive evidence on this issue. On average, displaced workers who did not enter PSE after job loss saw their real annual earnings increase by 0.12 log points (or roughly 12%) over the 6 six-year period ranging from year t-1 to year t+5. Displaced workers who enrolled in PSE after job loss fared better—their real annual earnings increased by 0.19 log points, on average. Stronger earnings growth for this group is observed for both men and women, but appears to be limited to workers aged 30 to 44 and those who had at most a bachelor's degree in 2006.

**Table 8**  
**Average change in log real earnings of displaced workers from the year prior to job loss to the fifth year after job loss**

Displaced workers	Average change in log real earnings				
	Entered PSE after job loss		Entered PSE		
	No	Yes	New field	Same field	Unknown
	logarithmic values				
<b>All</b>	<b>0.12</b>	<b>0.19</b>	<b>0.23</b>	<b>0.17</b>	<b>0.11</b>
<b>Gender</b>					
Men	0.07	0.13	0.18	0.04	0.09
Women	0.18	0.24	0.27	0.29	0.12
<b>Age in year t</b>					
30 to 44	0.21	0.27	0.31	0.20	0.22
45 to 54	-0.01	0.01	0.03	0.09	-0.07
<b>Education in 2006</b>					
College	0.11	0.21	0.24	0.18	0.16
Certificate below a bachelor's degree	0.10	0.23	0.32	0.02	0.17
Bachelor's degree	0.16	0.20	0.27	0.13	0.08
Above a bachelor's degree	0.12	0.07	0.05	0.30	-0.05
<b>PSE program duration after job loss</b>					
One year	...	0.18	0.20	0.23	0.11
Two years	...	0.19	0.27	0.11	-0.01
Three years	...	0.27	0.31	0.12	0.41
<b>Level of PSE program after job loss</b>					
1	...	0.21	0.21	1.36	0.02
2	...	0.19	0.23	0.07	0.17
3	...	0.29	0.25	0.34	0.45
4	...	0.22	0.25	0.18	...
5	...	0.16	0.22	0.50	0.10
Multiple	...	0.15	0.27	-0.69	0.13
			number		
Sample size	42,466	3,957	2,283	714	960

... not applicable

**Notes:** PSE refers to postsecondary education.

Level 1 includes basic education and skills programs and other programs.

Level 2 includes apprenticeship programs; qualifying programs for career, technical or pre-university; career, technical or professional training programs; and post-career, technical or professional training programs.

Level 3 includes pre-university programs, undergraduate qualifying programs, and undergraduate programs.

Level 4 includes post-baccalaureate non-graduate programs, graduate qualifying programs (second cycle), graduate qualifying programs (third cycle), health-related residency programs, graduate programs (second cycle), graduate programs (third cycle), and graduate programs (above the third cycle).

Level 5 includes non-programs (non-credit), non-programs (credit, undergraduate), non-programs (credit, graduate), and non-programs (credit, other postsecondary).

**Sources:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

Among displaced workers who enrolled in PSE, those who changed fields of study saw their earnings increase the most, on average. Earnings growth for this group averaged 0.23 log points, compared with 0.17 log points for their counterparts who stayed in the same field of study, and 0.11 log points for others who enrolled in PSE.

The relatively strong earnings growth of displaced workers who changed fields of study is limited to men, however. Displaced women who changed fields of study did not experience stronger earnings growth (0.27 log points) than displaced women who stayed in their initial fields (0.29 log points).

Part of these differences in earnings growth might reflect compositional effects. Results not shown indicate that displaced workers who changed fields of study after job loss were about two years younger (39.9 years) than those who did not enter PSE after displacement (42.0 years). The former group was also slightly more likely to have had a bachelor's degree or higher education than the latter prior to job loss.<sup>14</sup>

Table 9 controls for these compositional effects. The first panel shows earnings growth differences between displaced workers who entered PSE after job loss and those who did not. Results are shown for both sexes as well as for men and women separately. Changes in log real earnings from year t-1 to year t+5 are regressed on a) a binary indicator identifying displaced workers who entered PSE after job loss and b) controls for a quadratic term in age, education indicators and, when data for men and women are pooled, a binary indicator for women. The first line shows the parameter estimates obtained for the binary indicator identifying displaced workers who entered PSE after job loss when no controls are used; these parameter estimates replicate the log earnings differences observed in Table 9. The second line shows the corresponding parameter estimates obtained after controlling for age, education and sex. The numbers indicate that controlling for age, education and sex reduces the earnings growth differences between displaced workers who entered PSE after job loss and those who did not, from 0.065 to 0.067 log points to roughly 0.030 log points. However, the remaining difference is no longer statistically significant at conventional levels. These estimates suggest that among postsecondary-educated displaced workers of similar ages and education, those who entered PSE after job loss did not experience faster earnings growth, on average, from year t-1 to year t+5 than those who did not enter PSE.

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14. In this sample, almost two-thirds (63.6%) of the displaced workers who enroll in PSE after job loss are involved in programs that last one year. Individuals who change fields of study tend to use one-year programs to a greater extent (60.9%) than those who remain in their initial field of study (49.5%). In addition, almost 9 in 10 (84.7%) displaced workers who enroll in postsecondary education after job loss and who are in neither the "New field of study" nor the "Same field of study" categories enroll in Level 5 programs. Level 5 includes non-programs (non-credit), non-programs (credit, undergraduate), non-programs (credit, graduate) and non-programs (credit, other postsecondary).

**Table 9**  
**Earnings growth differences relative to displaced workers who did not enroll in postsecondary education after job loss**

	Both genders	Women	Men
	logarithmic values		
<b>I. Displaced workers who enrolled in postsecondary education after job loss</b>			
<b>No controls</b>	0.0669 **	0.062 †	0.0654
<b>With controls</b>	0.0326	0.0285	0.0368
<b>II. Various groups of displaced workers who enrolled in postsecondary education after job loss</b>			
<b>Broad field of study after job loss</b>			
<b>No controls</b>			
Changed fields of study	0.1093 ***	0.0965 †	0.1156 ***
Chose initial field of study	0.0446	0.1150 †	-0.0283
Other	-0.0122	-0.0507	0.0252
<b>With controls</b>			
Changed fields of study	0.0686 *	0.0583	0.0808 *
Chose initial field of study	0.0073	0.0752	-0.0611
Other	-0.0298	-0.0692	0.0139
Sample size (number)	46,423	23,907	22,516
<b>Detailed field of study after job loss</b>			
<b>No controls</b>			
Changed fields of study	0.0954 **	0.0914 †	0.0959 **
Chose initial field of study	0.0867	0.1424 †	-0.0215
Other	-0.0133	-0.0509	0.0231
<b>With controls</b>			
Changed fields of study	0.0569 †	0.0533	0.0608 †
Chose initial field of study	0.0401	0.1017	-0.0505
Other	-0.0308	-0.0694	0.0118
Sample size (number)	46,423	23,907	22,516

\* significantly different from reference category ( $p < 0.05$ )

\*\* significantly different from reference category ( $p < 0.01$ )

\*\*\* significantly different from reference category ( $p < 0.001$ )

† significantly different from reference category ( $p < 0.10$ )

**Note:** Changes in log real annual earnings from year t-1 to year t+5 are regressed on indicators identifying displaced workers who entered postsecondary education after job loss as well as a quadratic term in age, education indicators and, when data for men and women are pooled, a binary indicator for women.

**Sources:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

The second panel of Table 9 investigates earnings growth differences between various groups of displaced workers: a) those who did not enter PSE after job loss, b) those who went through re-skilling, i.e., changed fields of study, c) those who stayed in their initial fields of study and d) others who enrolled in PSE. The upper half of the second panel shows log earnings differences—with no controls—between the last three groups and group a), i.e., displaced workers who did not enter PSE after job loss. The lower half shows the corresponding log earnings differences obtained after controlling for age, education and sex. These differences indicate that when re-skilling is defined using broad fields of study, displaced men who went through re-skilling experienced faster earnings growth (about 0.08 log points higher) than men who did not enroll in PSE after job loss. No statistically significant difference is detected between groups c) and d), and group a) for displaced men. When re-skilling is defined using 41 two-digit fields of study, the faster earnings growth of displaced men who went through re-skilling amounts to 0.06 log points, but is imprecisely estimated.



Results for displaced women tell a different story: after controlling for age and education, no statistically significant difference is detected between various groups of displaced workers, regardless of how re-skilling is defined.

Table 10 assesses the robustness of these results using an alternative sample that tracks displaced workers from year t-3 to year t+5. The numbers indicate that the Table 9 findings are not robust: a) displaced men who changed fields of study no longer experience faster earnings growth than men who did not enter PSE and b) displaced women who stayed in the same field of study now experience faster earnings growth than those who did not enter PSE.

**Table 10**  
**Earnings growth differences among displaced workers, year t-3 to year t+5**

	Both genders	Women	Men
	logarithmic values		
<b>I. Displaced workers who enrolled in postsecondary education after job loss</b>			
<b>No controls</b>	0.0678 *	0.0873 †	0.0413
<b>With controls</b>	0.0338	0.0545	0.0056
<b>II. Various groups of displaced workers who enrolled in postsecondary education after job loss</b>			
<b>Broad field of study after job loss</b>			
<b>No controls</b>			
Changed fields of study	0.0922 *	0.0886	0.0925 *
Chose initial field of study	0.0742	0.2484 **	-0.1041
Other	0.0136	-0.0141	0.0405
<b>With controls</b>			
Changed fields of study	0.0528	0.0529	0.0501
Chose initial field of study	0.0320	0.2029 *	-0.1413
Other	-0.0038	-0.0330	0.0207
Sample size (number)	30,004	15,543	14,461
<b>Detailed field of study after job loss</b>			
<b>No controls</b>			
Changed fields of study	0.0799 *	0.0884	0.0712 †
Chose initial field of study	0.1263	0.2813 **	-0.1494
Other	0.0135	-0.0146	0.0411
<b>With controls</b>			
Changed fields of study	0.0418	0.0516	0.0288
Chose initial field of study	0.0764	0.2385 *	-0.1814
Other	-0.0038	-0.0335	0.0210
Sample size (number)	30,004	15,543	14,461

\* significantly different from reference category ( $p < 0.05$ )

\*\* significantly different from reference category ( $p < 0.01$ )

\*\*\* significantly different from reference category ( $p < 0.001$ )

† significantly different from reference category ( $p < 0.10$ )

**Note:** Changes in log real annual earnings from year t-3 to year t+5 are regressed on indicators identifying displaced workers who entered postsecondary education after job loss as well as a quadratic term in age, education indicators and, when data for men and women are pooled, a binary indicator for women.

**Sources:** Statistics Canada, Longitudinal Worker File, 2006 Census of Population, Postsecondary Student Information System.

These results of Tables 9 and 10 must be interpreted with caution because no attempt has been made to deal with the potential selectivity of displaced workers who changed fields of study (or stayed in the same field). For this reason, the results shown in these two tables cannot be given a causal interpretation.

## Concluding remarks

While a significant literature has documented the substantial and persistent earnings losses often experienced by displaced workers, relatively little is known about the educational strategies that prime-aged displaced workers use to cope with job loss. Specifically, the extent to which laid off Canadian workers enter new fields of study after losing their job or simply upgrade their skills and remain within their initial fields of study, is currently unknown.

Using a combination of datasets, this study fills this information gap. The study shows that

- 1) prime-aged displaced workers are slightly more likely than other workers to enroll in PSE or to change fields of study. The likelihood of entering PSE or changing fields of study over a three-year period is between 2 and 3 percentage points higher among displaced workers than among other workers.
- 2) among prime-aged displaced workers, the likelihood of entering PSE or new fields of study after job loss varies across not only sex and age groups, but also initial fields of study and population groups. In many cases, the differences uncovered by multivariate analyses, although modest in absolute terms, are important in relative terms.
- 3) the fields of study selected after job loss differ between men and women. The two most popular fields for men are architecture, engineering, and related technologies (25.2%) and humanities (23.0%), which are selected by close to half of displaced men. By contrast, the two most popular fields for women are humanities (21.7%) and business, management and public administration (21.1%), which are selected by roughly 4 in 10 displaced women.
- 4) all else being equal, women are more likely than men to choose the following fields after job loss: education; social and behavioural sciences and law; business, management and public administration; and health and related fields. By contrast, women are much less likely than men to choose architecture, engineering, and related technologies and slightly less likely than men to enter mathematics, computer and information sciences or personal, protective and transportation services.
- 5) the evidence as to whether displaced workers who change fields of study experience faster earnings growth than those who do not enroll in PSE after job loss is inconclusive.

These findings have a number of interesting implications. First, they provide a fresh perspective on the amount of a specific type of lifelong learning—going through re-skilling while entering PSE—that workers undertake over a given period of time. Specifically, they show that over a three-year period, between 3% and 6% of Canadian prime-aged workers with postsecondary credentials—displaced or not—enter PSE and change fields of study. Second, they uncover important differences in the fields of study that men and women choose after job loss. In particular, they show that all else being equal, displaced men who go back to school are less likely than displaced women to enter health-related fields of study after job loss. In a context where population aging is likely to lead to substantial employment growth in health-related occupations, the relatively low propensity of men to enter health-related fields of study might limit their post-displacement employment opportunities. More generally, the numbers show that gender differences in workers' fields of study exist, not only prior to entering the labour market, but also later in their careers. Finally, the earnings-growth differences observed between displaced men who changed fields of study and those who stayed out of school provide some evidence, although not strong, that

transitions into PSE might boost the earnings of some displaced workers after job loss. A thorough assessment of this question requires exogenous variation in the likelihood of workers making such transitions and is left for further research.

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