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The Education Longitudinal Linkage Platform (ELLP): Linking Data for Insights into Student Pathways and Graduate Outcomes

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Outline

- Motivation for the creation of a postsecondary education linkage platform
- The Education Longitudinal Linkage Platform (ELLP)
- Education linkage vision
- Preliminary results
- Moving forward



Motivation for the creation of a postsecondary education linkage platform

- Strengthen the relevance of programs for our clients
- Meet increasing demand by stakeholders to fill in important data gaps
- Align with Statistics Canada's vision for bringing data together and reducing the burden on Canadians
- Be ready to provide timely data when it is needed

More specifically for both PSE students and apprentices...

■ Pathways

- Persistence rate and graduation/completion rate
- Transition between PSE programs (including college, university, apprenticeship)
- Interprovincial mobility during education/apprenticeship and on completion

■ Outcomes

- Evolution of earnings over time (median)
- Average earnings comparisons could be done among program types, fields of study/trades, cohorts or by demographic characteristics
- Interprovincial mobility of graduates/apprentices on the labour market



Education Longitudinal Linkage Platform (ELLP)

Programs at the core of the Education Longitudinal Linkage Platform

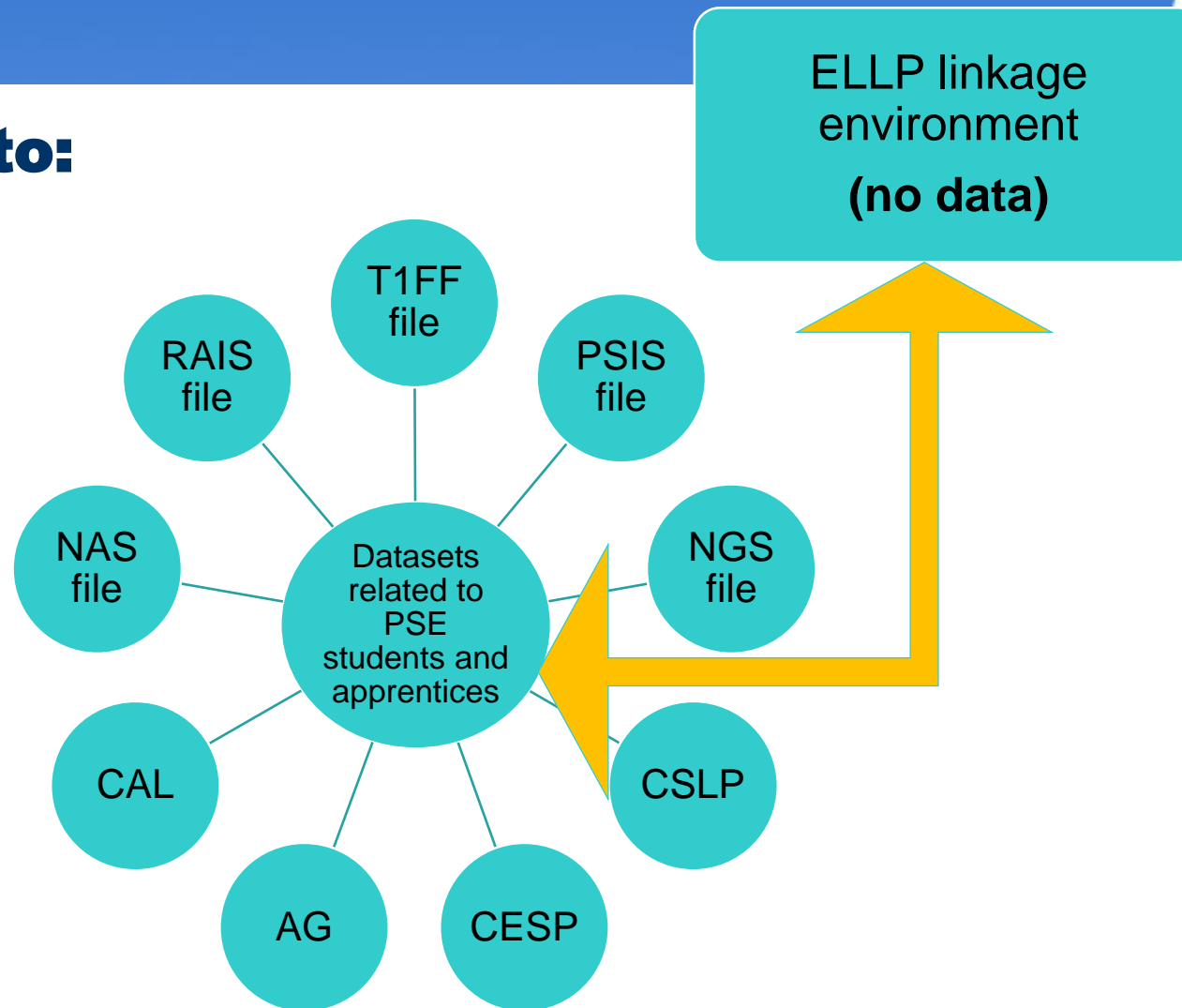
- The **Postsecondary Student Information System (PSIS)** is a administrative data holding of all public college and university enrolments and graduates by program / credential type and field of study for each school year.
- The **Registered Apprenticeship Information System (RAIS)** is an administrative database of pan-Canadian, annual data on registered apprentices and trade qualifiers. It compiles data on registered apprentices receiving training and on persons that obtain certification in trades where apprenticeship training is offered.

Education Longitudinal Linkage Platform (ELLP)

- The ELLP consists of a repository of linkage keys for records in PSIS and RAIS
- The linkage keys can be used to extract selected variables from PSIS and RAIS to create longitudinal linked files for analysis. These administrative linked files can then be linked with other data sources (administrative or survey) to increase analysis potential.
- The ELLP is NOT a linked data file

Creation of datasets to:

- **develop education indicators**
- **answer research questions**
- **help with program evaluation**



RAIS: Registered Apprenticeship Student Information System

T1FF: Tax 1 Family File

PSIS: Postsecondary Information System

NGS: National Graduate Survey

CSLP: Canada Student Loans Program

CESP: Canada Education Savings Program

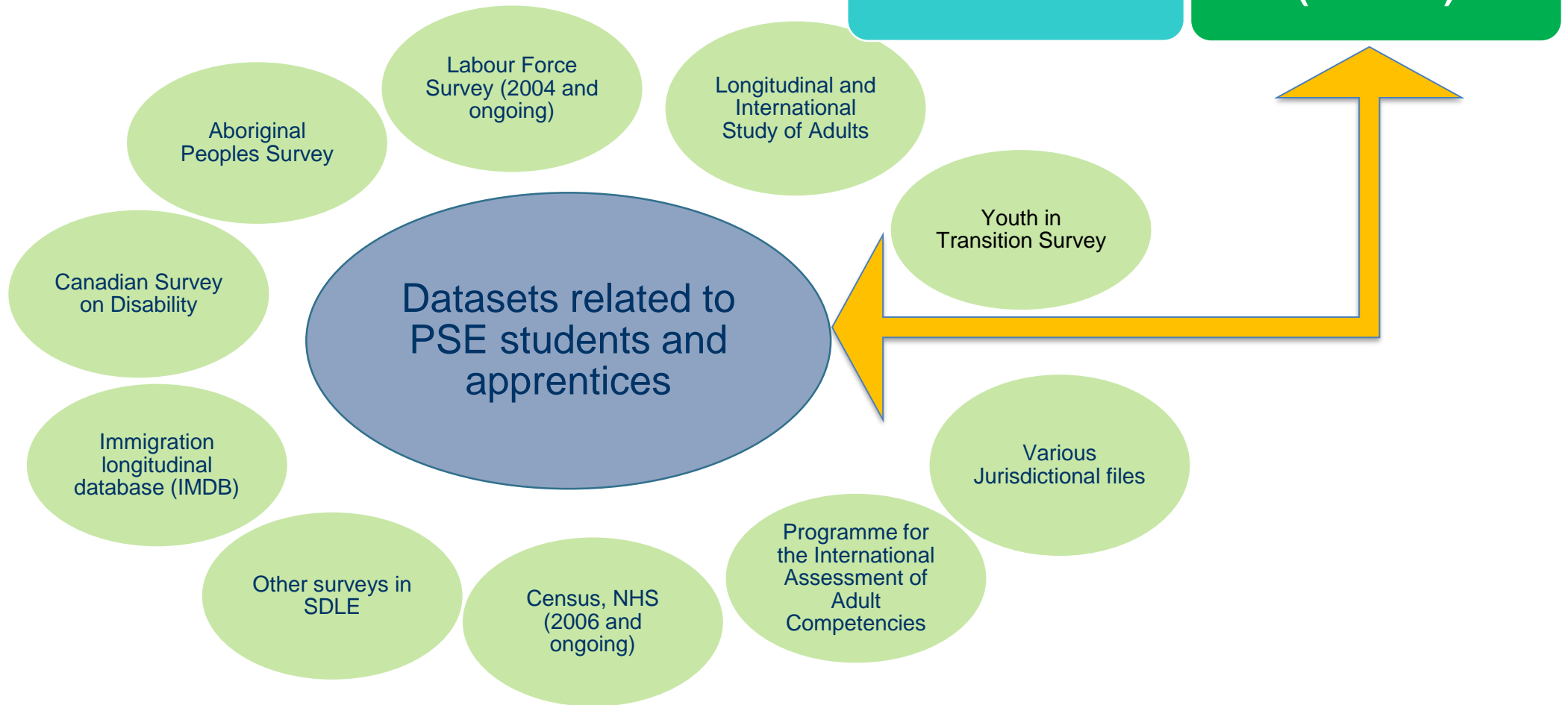
AG: Apprentice Grant

CAL: Canada Apprentice Loans

NAS: National Apprenticeship Survey



Education linkage vision



ELLP: recent analytical projects

- Pilot projects to produce graduate outcome indicators for the Maritime universities and B.C. postsecondary institutions
- Maritime universities student pathway indicators (pilot study)
- Alberta Benefits to Postsecondary Education Project (Alberta provincial release, Feb. 2018)
- RAIS Pilot Longitudinal Study: Indicators on pathways, earnings and mobility for Nova Scotia and New Brunswick, and Alberta
- RAIS Longitudinal Study : Indicators on pathways and earnings for all provinces and territories

ELLP: Current projects

- As of the end of March 2018, graduate outcome indicators were produced for all provinces and territories.
- The Canadian Student Loan Program file is being linked to the Maritime pilot project data to expand the analytical potential with loan information.
 - Files in the ESDC-FRDC as of Spring 2018
- Apprenticeship Loans and Grants files are also being linked for program evaluation purposes.

Outputs

- Set of education indicators to be produced annually
- Customized analytical files
 - E.g., data used for *Insight on Canadian Society* article ‘Labour market outcomes of graduates from universities in the Maritime provinces, 2006 to 2011’ (Maritime university graduates aged 20 to 35, cohorts 2006 to 2011, with tax data, not studying full-time, not self-employed)
- Microdata available to researchers in the RDCs
 - PSIS data linked with selected tax variables for the Maritime provinces available since December 2017
 - Access is granted once approval is obtained (<http://www.statcan.gc.ca/eng/rdc/process>)

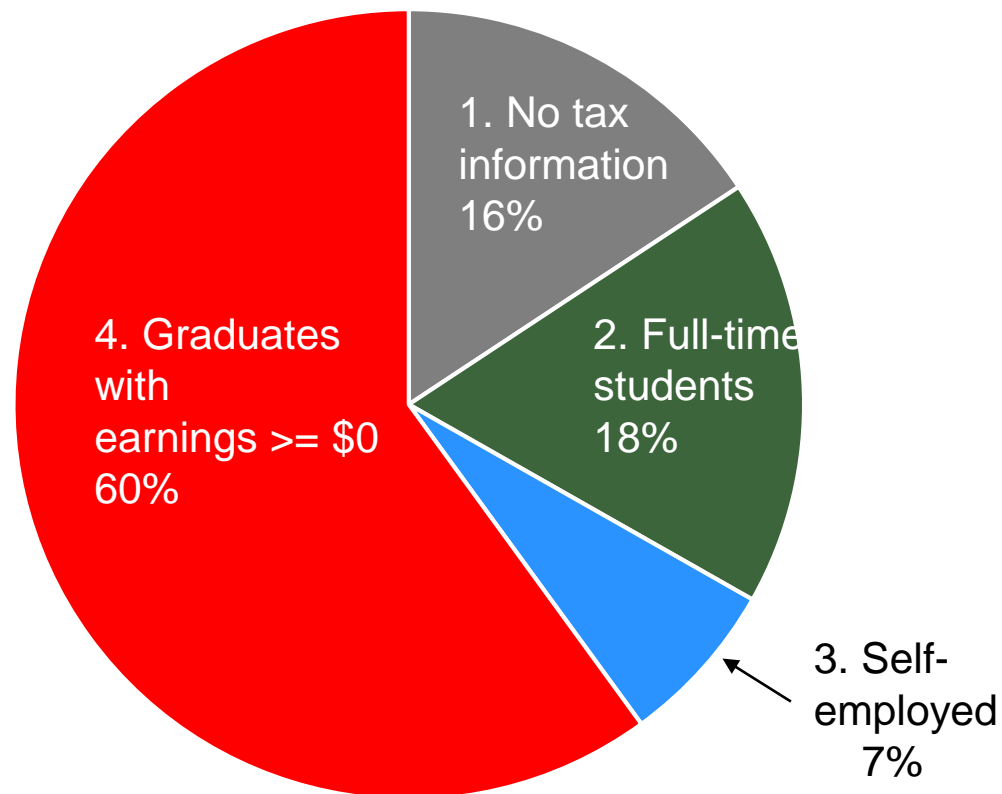


Labour market outcomes of Ontario postsecondary graduates (preliminary results)



The ELLP allows the examination of labour market outcomes of graduates

2013 cohort
173,045 graduates

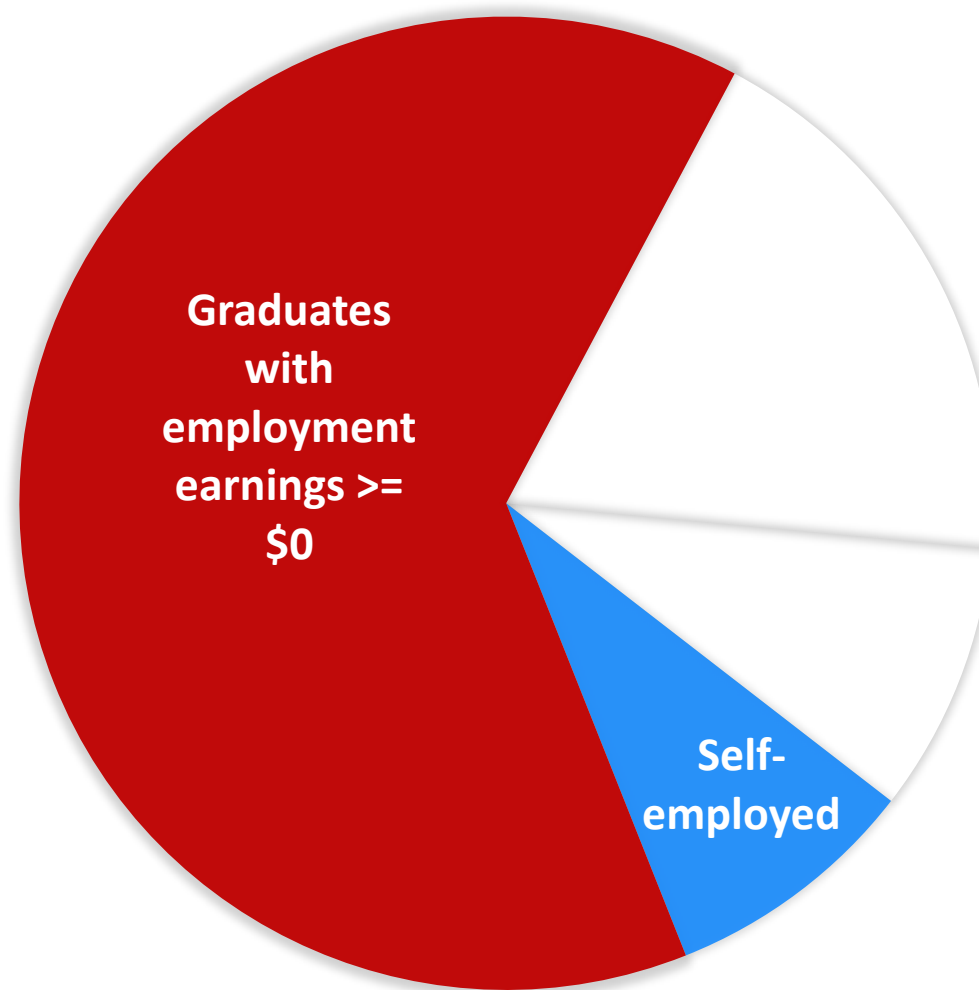


Notes: Preliminary results for the 2013 cohort of graduates observed 2 years later in 2015. Results for other cohorts are also possible. Categories may not add up to 100% due to rounding. Categories are mutually exclusive: category 2 excludes category 1; category 3 excludes categories 1 & 2; category 4 excludes categories 1, 2 & 3.

Source: Statistics Canada. *Postsecondary Student Information System (PSIS)*, 2012/2013 to 2013/2014 and *T1 Family File (T1FF)*, 2015 (subset compiled from linked files extracted January 30, 2018).

The next section is based on 2013 Ontario graduates who:

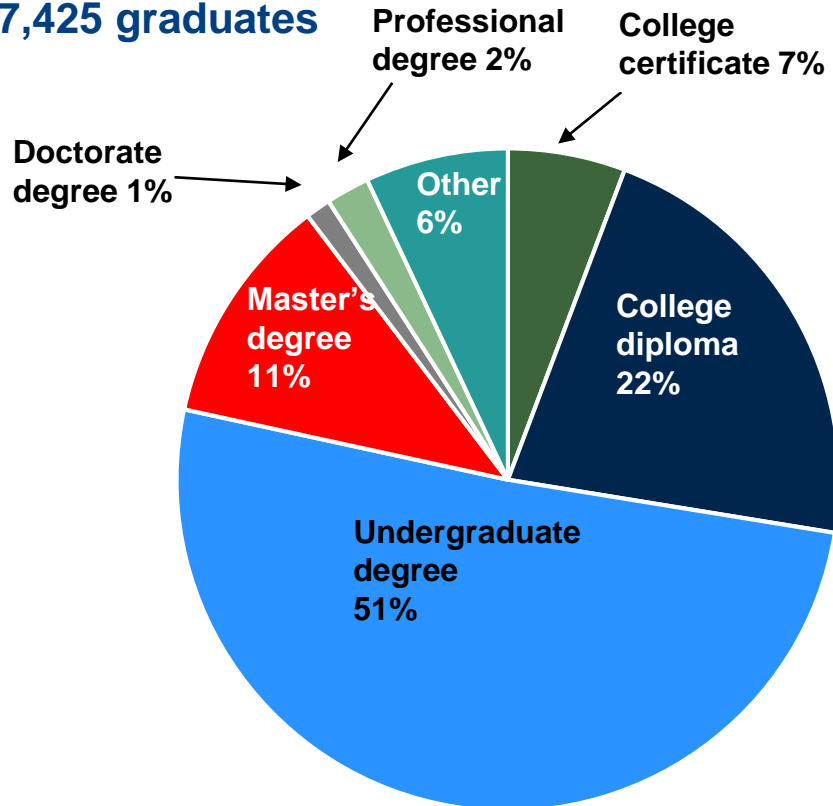
- **were under age 35 at graduation**
- **and who in the in the year of income analysis:**
- **had tax information**
- **were not attending school full-time**
- **had employment earnings \geq \$0 or were self-employed**



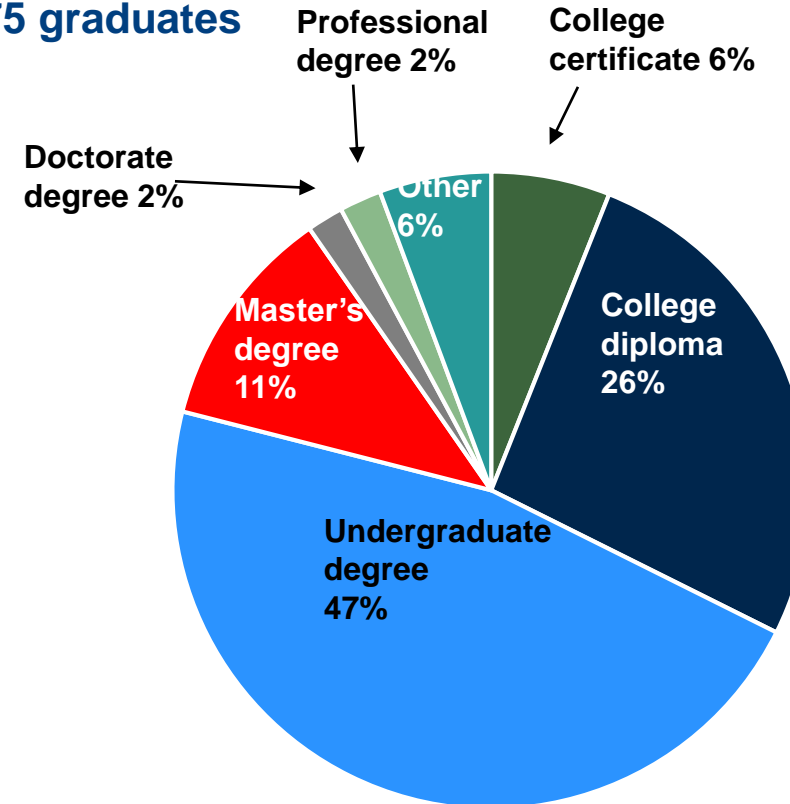


Distribution of the 2013 Ontario graduates in the 2015 outcome analysis, by type of program

Women
57,425 graduates



Men
43,575 graduates

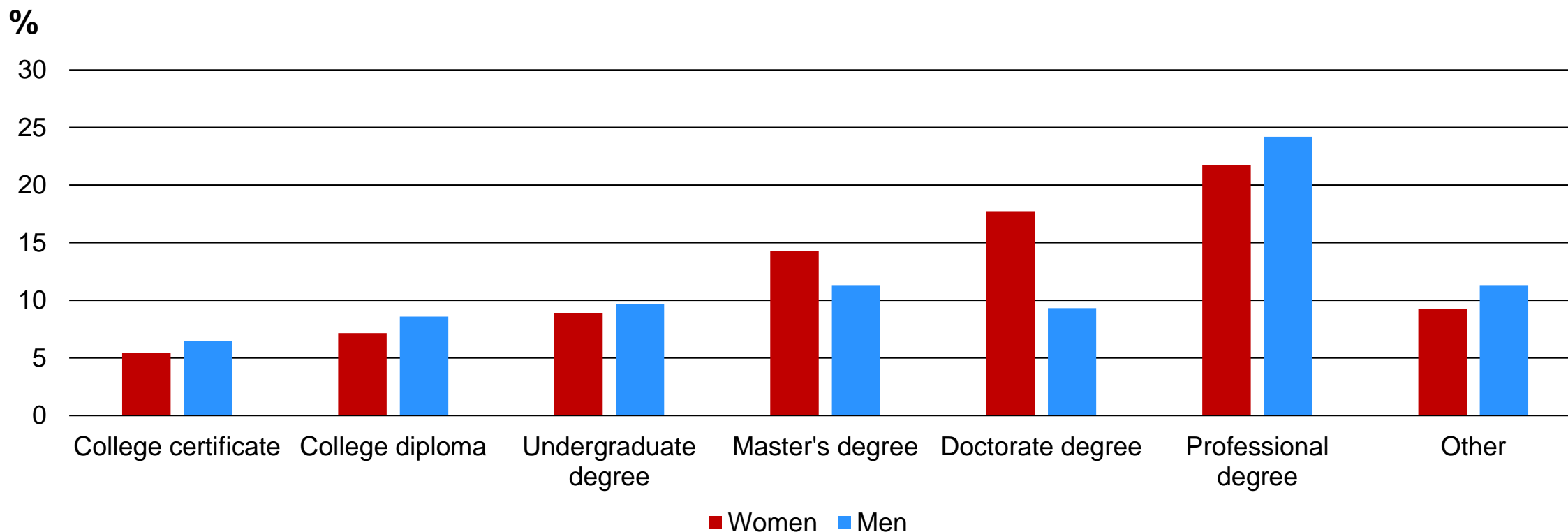


Note: Preliminary results for the 2013 cohort of graduates under the age of 35, excluding those without tax data and who returned to school full-time in the year of analysis. In this study, 'Professional degrees' (Law, Medicine (MD), Dentistry, Veterinary medicine, Optometry, Pharmacy) are separated from undergraduate degrees.

Source: Statistics Canada. *Postsecondary Student Information System (PSIS)*, 2012/2013 to 2013/2014 and *T1 Family File (T1FF)*, 2015 (subset compiled from linked files extracted January 30, 2018).



On average, one out of ten postsecondary graduates reported self-employment income two years after graduation

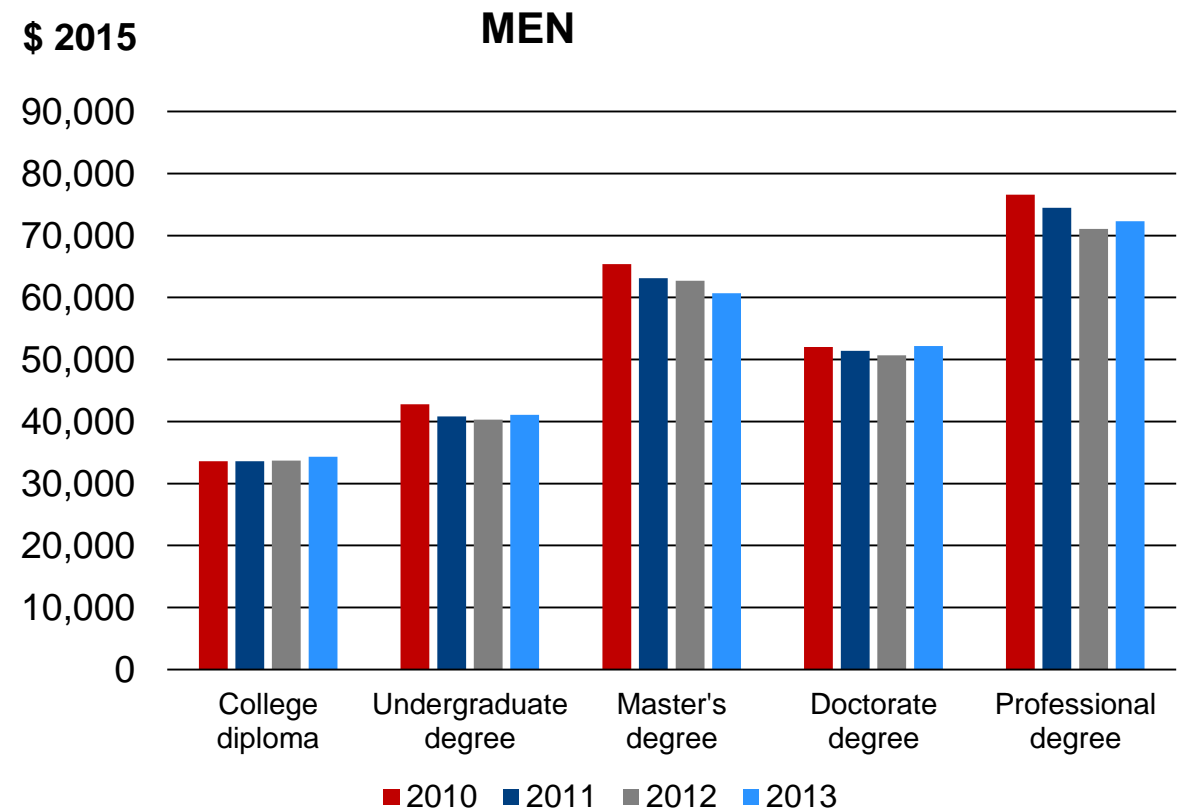
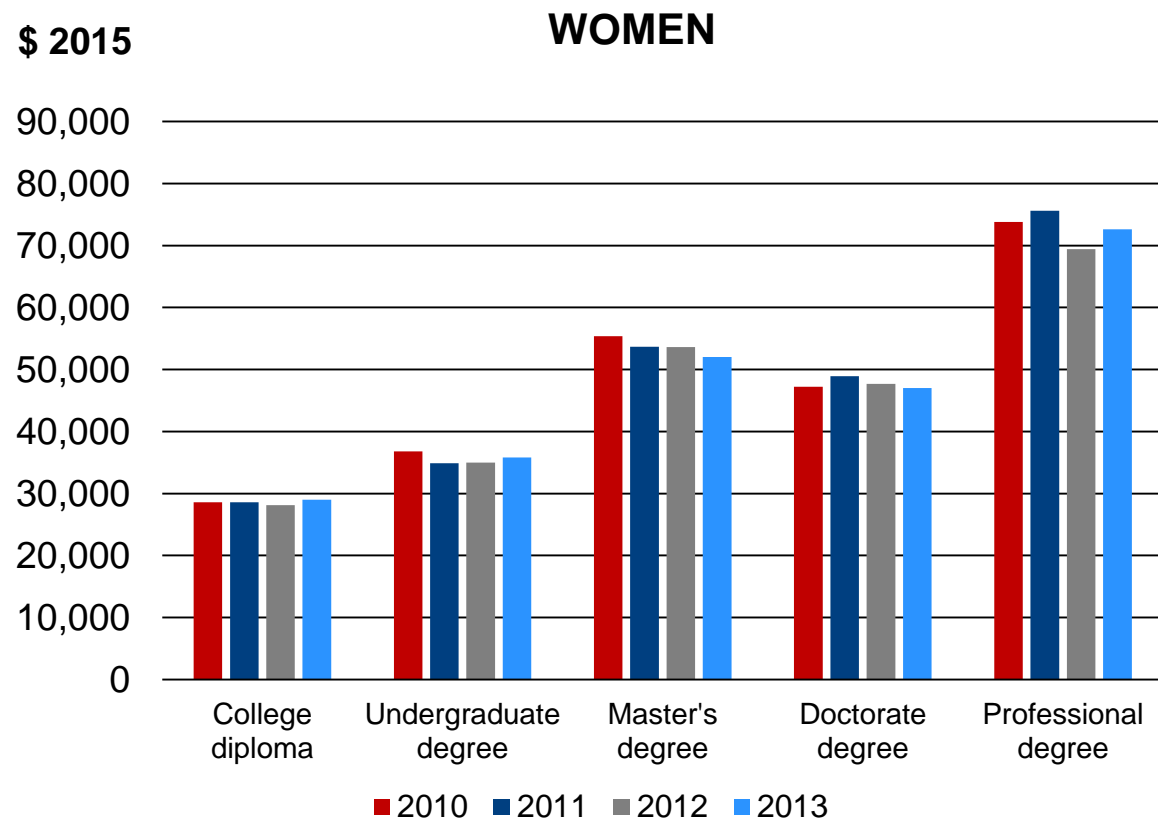


Note: Preliminary results for the 2013 cohort of graduates under the age of 35, observed 2 years later in 2015, excluding those without tax data and who returned to school full-time in the year of analysis.

Source: Statistics Canada. *Postsecondary Student Information System (PSIS)*, 2012/2013 to 2013/2014 and *T1 Family File (T1FF)*, 2015 (subset compiled from linked files extracted January 30, 2018).



Median employment income¹ by education level and graduating cohort



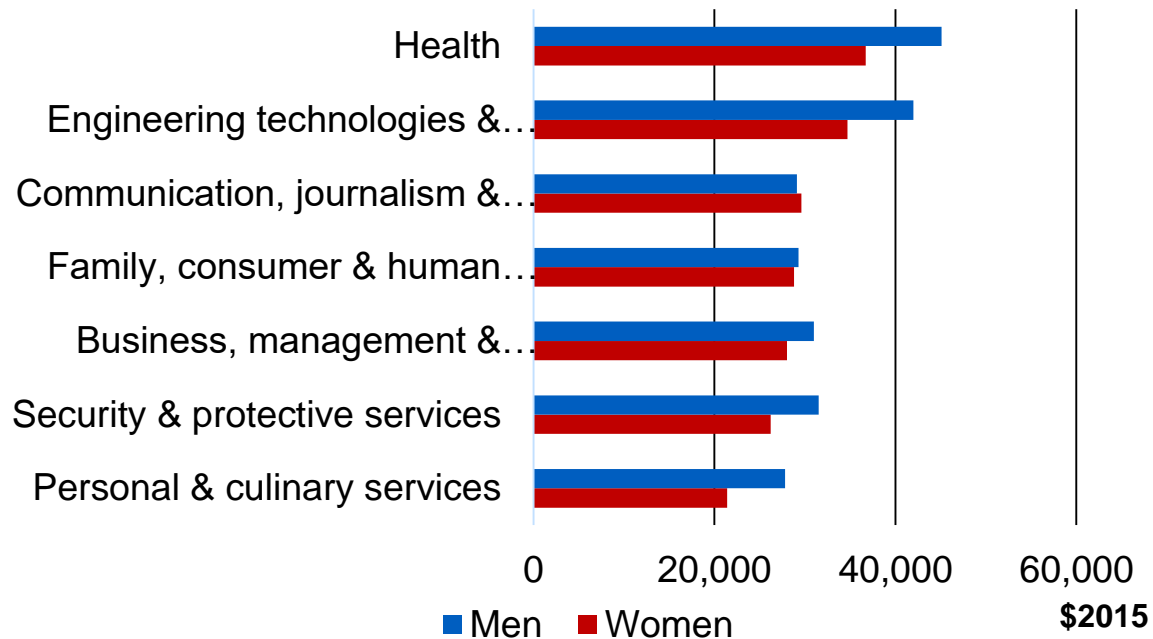
Note: Preliminary results for the 2010 to 2013 cohort of graduates under the age of 35, observed 2 years later, excluding those without tax data and who returned to school full-time in the year of analysis. 1. Employment income includes employment earnings (wages, salaries, other employment income) and net self-employment earnings.

Source: Statistics Canada. *Postsecondary Student Information System (PSIS)*, 2009/2010 to 2013/2014 and *T1 Family File (T1FF)*, 2012 to 2015 (subset compiled from linked files extracted January 30, 2018).

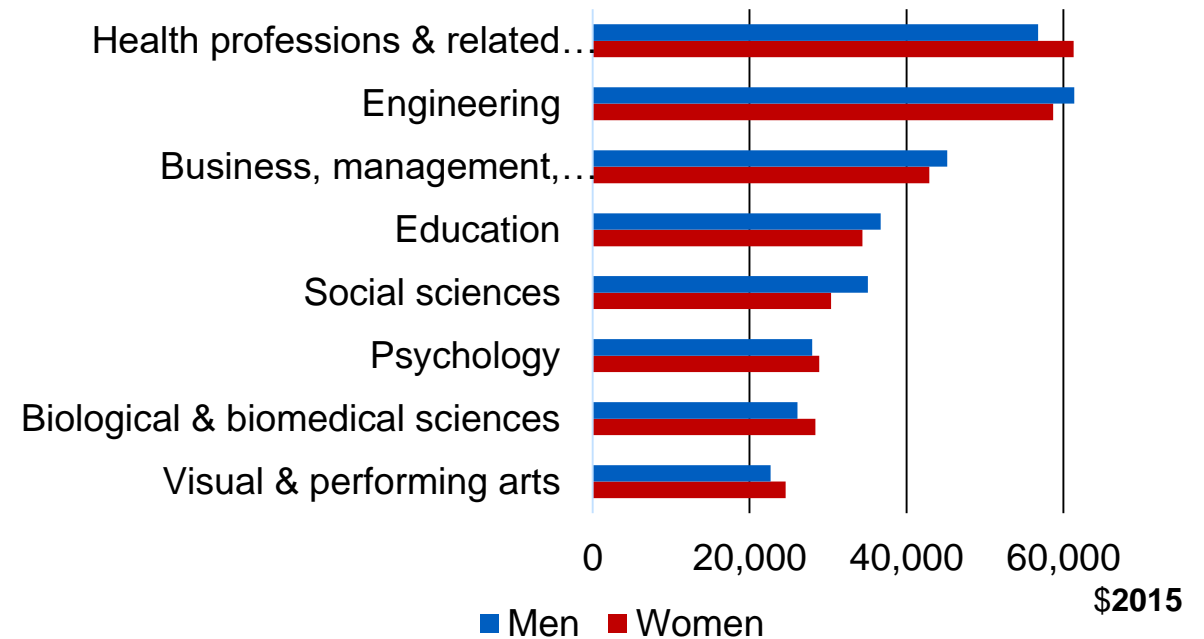


Median employment income¹ in 2015 varied by field of study² and type of program

College diploma, 2013



Undergraduate degree, 2013

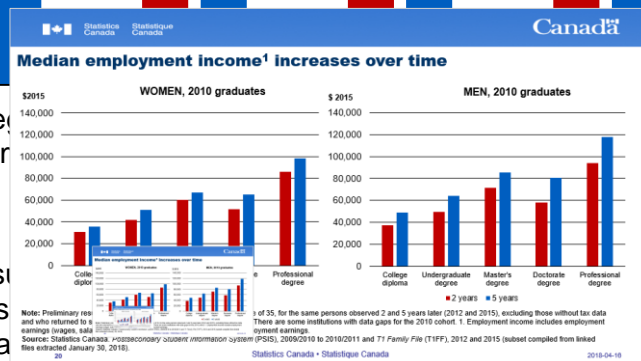
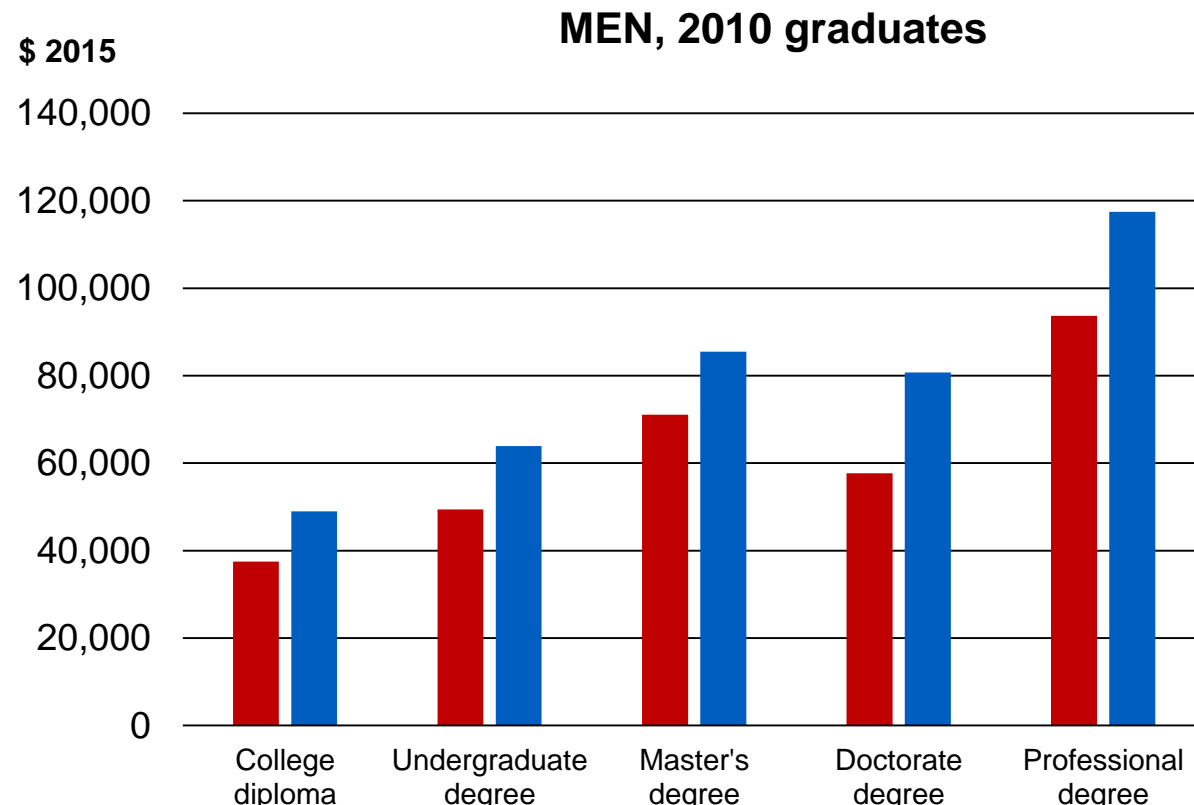
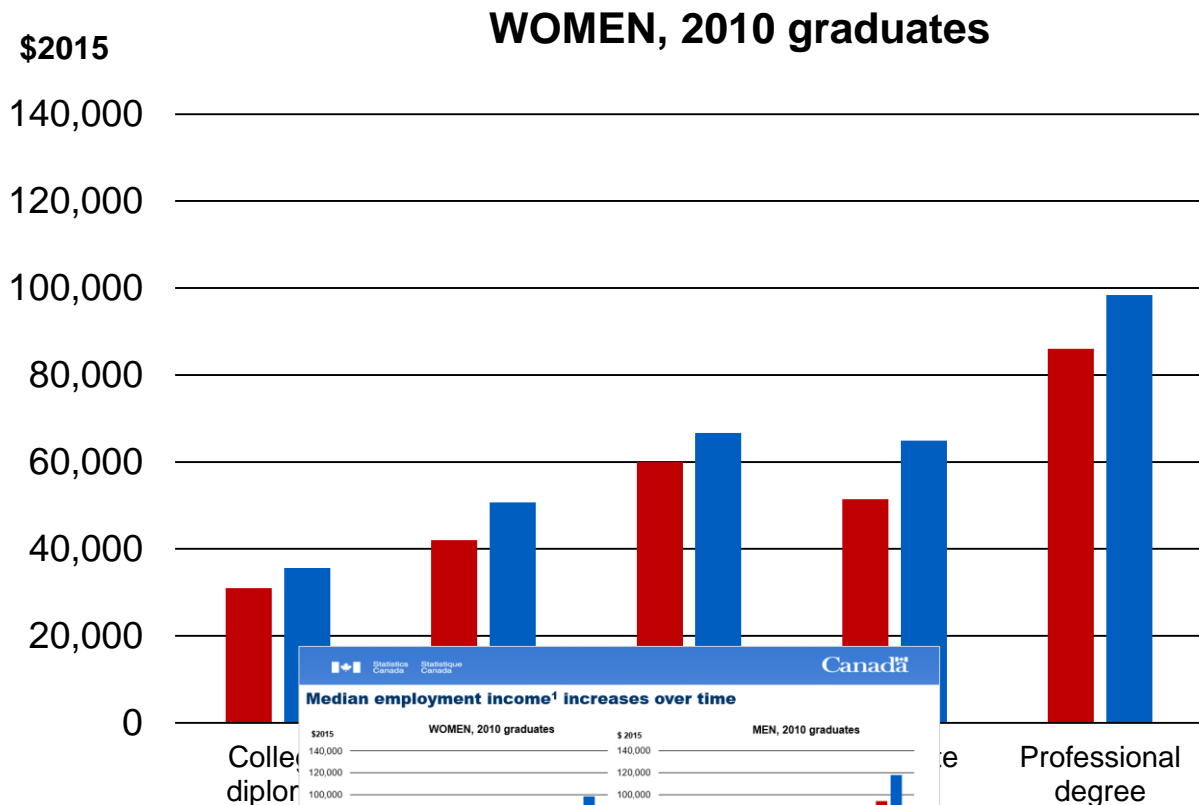


Notes: Preliminary results for the 2013 cohort of graduates under the age of 35, observed 2 years later in 2015, excluding those without tax data and who returned to school full-time in the year of analysis. 1. Employment income includes employment earnings (wages, salaries, other employment income) and net self-employment earnings. 2. The small number of fields of study are selected as some of the more popular fields from the 49 series in the Classification for Instructional Programs (CIP) Canada 2011. In this study, 'Professional degrees' (Law, Medicine (MD), Dentistry, Veterinary medicine, Optometry, Pharmacy) are separated from undergraduate degrees.

Source: Statistics Canada. *Postsecondary Student Information System (PSIS)*, 2012/2013 to 2013/2014 and *T1 Family File (T1FF)*, 2015 (subset compiled from linked files extracted January 30, 2018).



Median employment income¹ increases over time

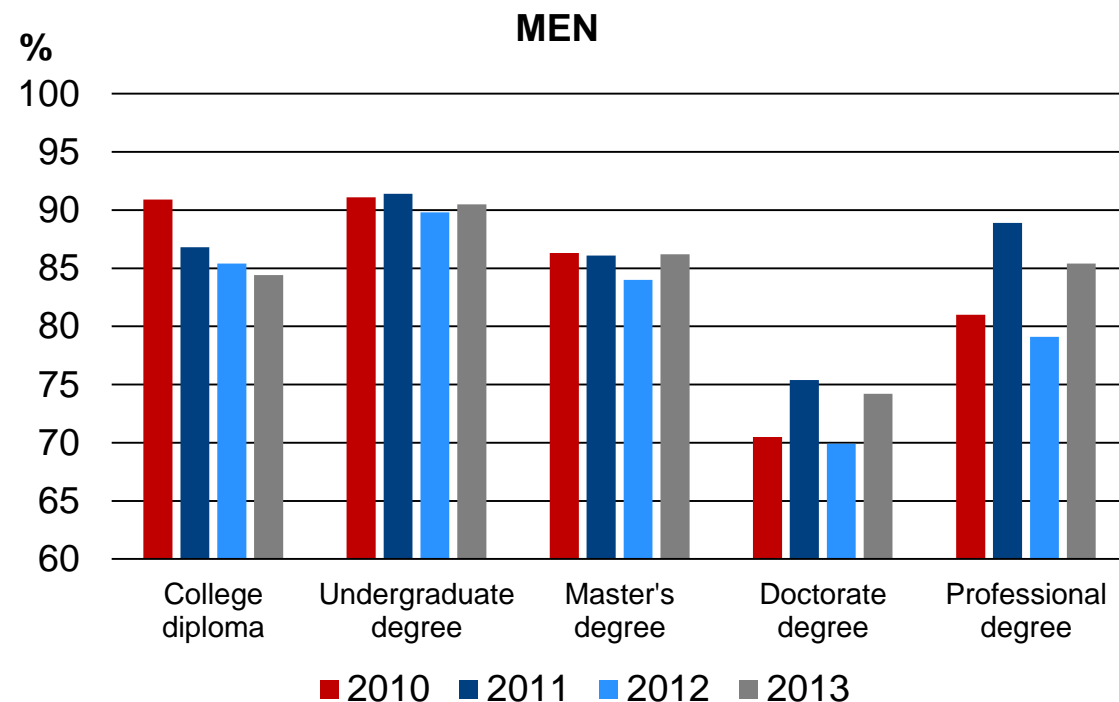
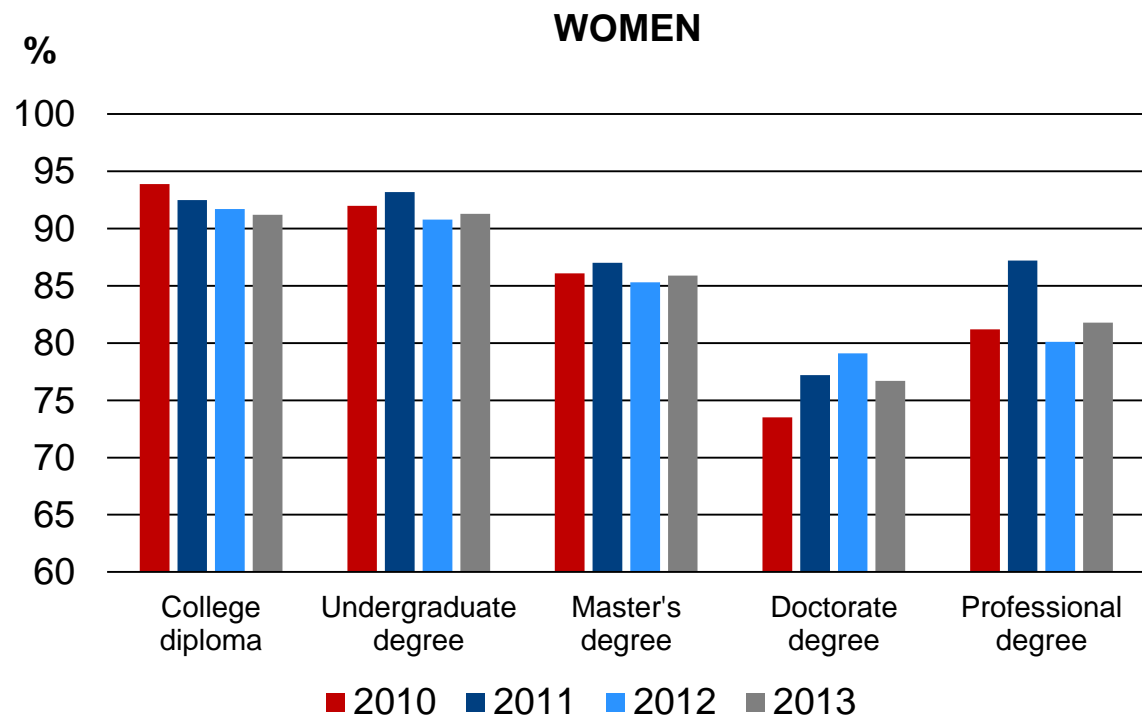


Note: Preliminary results for women and men who returned to school. Sample size of 35, for the same persons observed 2 and 5 years later (2012 and 2015), excluding those without tax data. There are some institutions with data gaps for the 2010 cohort. 1. Employment income includes employment earnings (wages, salaries, and other income from employment).

Source: Statistics Canada. *Postsecondary Student Information System (PSIS)*, 2009/2010 to 2010/2011 and *T1 Family File (T1FF)*, 2012 and 2015 (subset compiled from linked files extracted January 30, 2018).



The *geographic retention rate** 2 years after graduation decreases with levels of education above the undergraduate



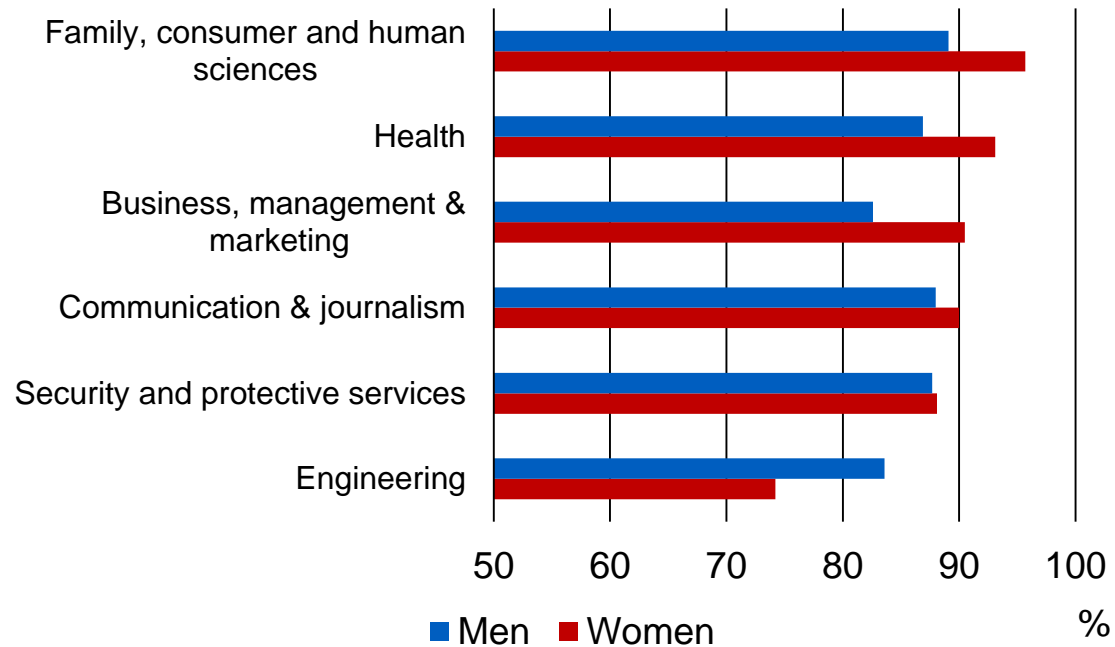
Note: Preliminary results for the 2010 to 2013 cohort of graduates under the age of 35, observed 2 years later, excluding those without tax data and who returned to school full-time in the year of analysis.1. Geographic retention rates refer to the proportion of graduates of Ontario postsecondary institutions, still living in Ontario 2 years after their graduation.

Source: Statistics Canada. *Postsecondary Student Information System (PSIS)*, 2009/2010 to 2013/2014 and *T1 Family File (T1FF)*, 2012 to 2015 (subset compiled from linked files extracted January 30, 2018).

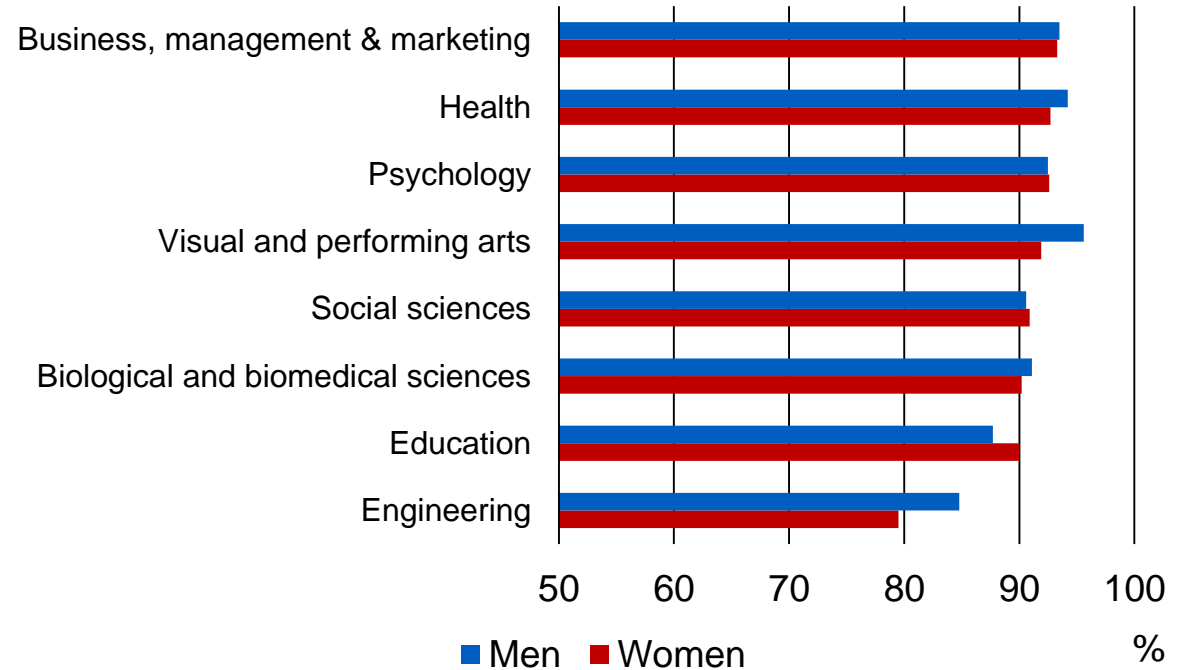


Geographic retention rates¹ vary by field of study² and gender

College diploma



Undergraduate degree



Note: Preliminary results for the 2013 cohort of graduates under the age of 35, observed 2 years later in 2015, excluding those without tax data and who returned to school full-time in the year of analysis. 1. Geographic retention rates refer to the proportion of Ontario graduates aged 15-34 at graduation, still living in Ontario 2 years later. 2. Only most popular fields of study out of 49 series are shown in these charts.

Source: Statistics Canada. *Postsecondary Student Information System (PSIS)*, 2012/2013 to 2013/2014 and *T1 Family File (T1FF)*, 2015 (subset compiled from linked files extracted January 30, 2018).



Multiple credentials analysis (preliminary results for British Columbia)

Multiple Credentials

- Postsecondary graduates who accumulate more than one certificate, diploma or degree, either concurrently or over a period of several years, are referred to here as graduates with multiple credentials.
- There is an interest in learning more about students' completing more than one credential and what effect it has on their labour market outcomes.
- There is also an interest in the outcomes of graduates who take a traditional path in earning more than one credential and graduates who take a less traditional path.
 - **Traditional path:** moving to a higher credential in the years after their initial graduation (i.e. a bachelor's degree followed by a master's degree).
 - **Non-traditional path:** obtaining an additional credential where the first credential is not a prerequisite (e.g. bachelor's degree then a college certificate or diploma).

Distribution of single and multiple credentials, British Columbia graduates

Education level obtained in 2009	Single credential		Multiple credentials	
	Count	%	Count	%
Career training ¹ Certificate	11,160	77.1%	3,310	22.9%
Career training ¹ Diploma	4,710	67.6%	2,255	32.4%
Career training ¹ , Other Short Credential	985	79.4%	255	20.6%
Bachelor's Degree	15,100	74.8%	5,095	25.2%
Other ²	8,780	81.0%	2,060	19.0%
Total	40,735	75.8%	12,975	24.2%

Notes: Numbers are randomly rounded to base 5.

1. 'Career training' refers to the 'Career, technical or professional training program' category in PSIS.

2. This category includes all other education levels with small counts by cell.

Source: Statistics Canada. Postsecondary Student Information System (PSIS), 2008/09 to 2014/15 longitudinally linked files. Extracted August 2017.



2009 Bachelors' degree graduates with and without multiple credentials by 2014, British Columbia institutions

Bachelor degree in 2009 + any other credentials (obtained 2009 to 2014)	Counts	% distribution
1 Bachelor's degree	15,100	75%
2 Bachelor's degrees	420	2%
1 Bachelor's degree + 1 Master's degree	1,010	5%
1 Bachelor's degree + 1 Career training ¹ diploma	345	2%
1 Bachelor's degree + 1 Career training ¹ certificate	355	2%
1 Bachelor's degree + Other type of credential	2,970	15%
Total	20,205	100%

Notes: Numbers are randomly rounded to base 5.

1. 'Career training' refers to the 'Career, technical or professional training program' category in PSIS.

Source: Statistics Canada. *Postsecondary Student Information System (PSIS)*, 2008/2009 to 2014/2015 longitudinally linked files. Extracted August 2017.



2009 Bachelor's degree graduates who then obtained a college credential¹ between 2009 and 2014, British Columbia institutions

College credential obtained in:	Counts
Same institution type, same field of study	250
Same institution type, different field of study	125
Different institution type, same field of study	175
Different institution type, different field of study	460

Notes: Numbers are randomly rounded to base 5.

1. College credentials include: certificate or diploma for a 'Career, technical or professional training program' or for a 'post career, technical or professional training program' (post-diploma certificate).

Source: Statistics Canada. *Postsecondary Student Information System (PSIS)*, 2008/09 to 2014/15 longitudinally linked files. Extracted August 2017.

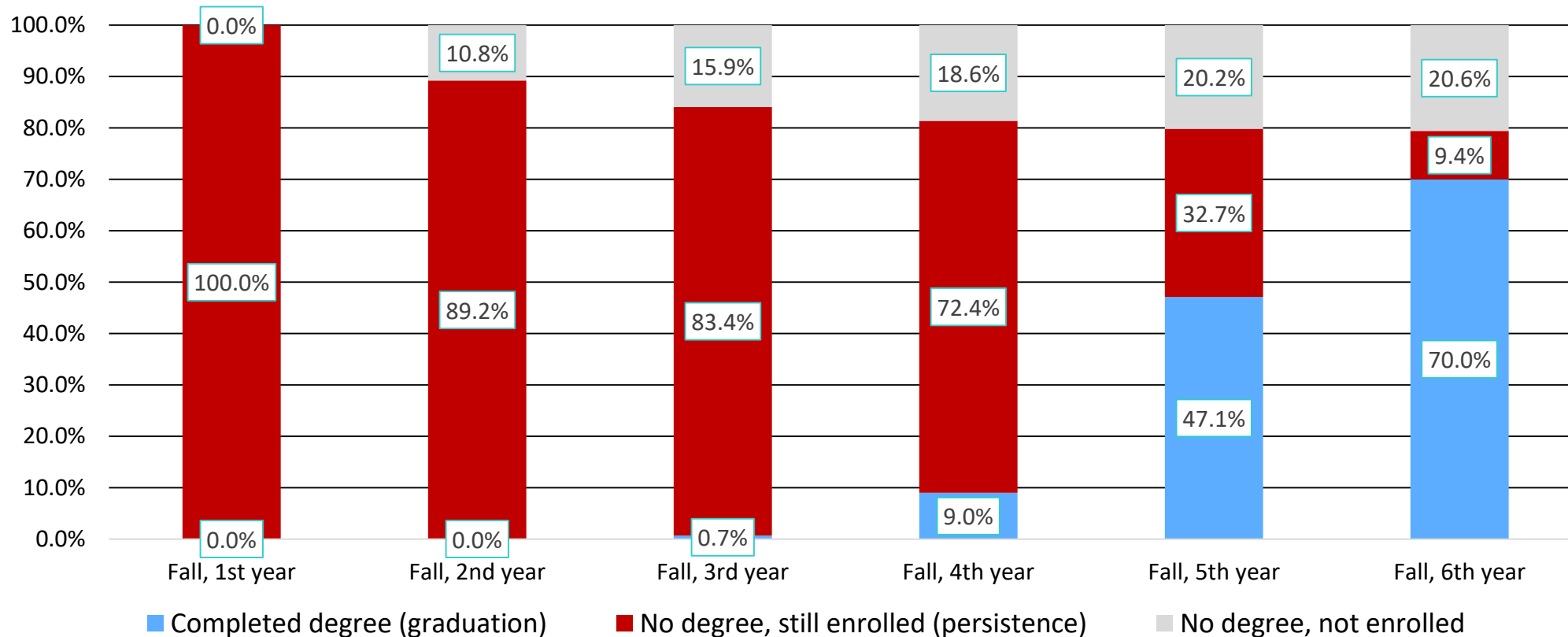


Student pathway indicators (preliminary results)



Persistence and Completion Rates for students in a program leading to an undergraduate degree

2009/10 cohort of new entrants under age 20, Ontario institutions



Note: The 2009/10 new entrants cohort includes students aged less than 20 on Dec. 31st, 2009, first enrolled in 2009/10 and full-time in Fall 2009, in a program leading to an undergraduate degree in a Ontario public college or university.

Source: Statistics Canada. Longitudinally linked Postsecondary Student Information System data, 2008/09 to 2014/15; extracted Jan. 2018.



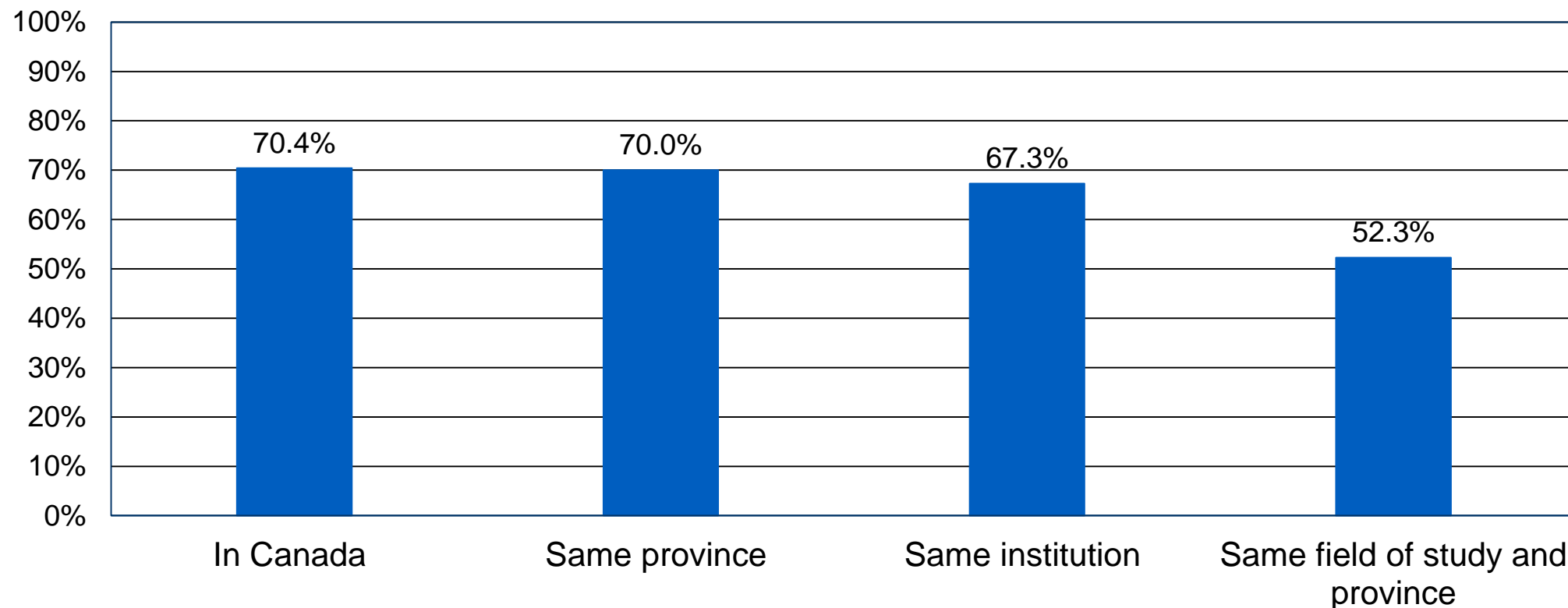
Summary of persistence and cumulative graduation rates for the 2009/10 cohort of new, full-time entrants under age 20 in an undergraduate degree program in Ontario

Enrolment and graduation status	Fall 2009 (1st year)	Fall 2010 (2nd year)	Fall 2011 (3rd year)	Fall 2012 (4rd year)	Fall 2013 (5th year)	Fall 2014 (6th year)
Is the student still enrolled in or did they graduate from an undergraduate degree at the same institution?						
Yes - still enrolled, not yet graduated	100.0%	86.9%	79.6%	68.2%	29.3%	7.4%
Yes - graduated	0.0%	0.0%	0.7%	8.8%	45.7%	67.3%
No	0.0%	13.0%	19.8%	23.1%	24.9%	25.3%
Is the student still enrolled in or did they graduate from an undergraduate degree from an Ontario institution?						
Yes - still enrolled, not yet graduated	100.0%	89.2%	83.4%	72.4%	32.7%	9.4%
Yes - graduated	0.0%	0.0%	0.7%	9.0%	47.1%	70.0%
No	0.0%	10.8%	15.9%	18.6%	20.2%	20.6%
Is the student still enrolled in or did they graduate from an undergraduate degree program anywhere in Canada?						
Yes - still enrolled, not yet graduated	100.0%	89.6%	84.0%	73.1%	33.3%	9.8%
Yes - graduated	0.0%	0.0%	0.7%	9.0%	47.3%	70.4%
No	0.0%	10.4%	15.3%	17.9%	19.4%	19.8%
Is the student still enrolled in or did they graduate from an undergraduate degree in the same field of study (13 primary groupings) from any Ontario institution?						
Yes - still enrolled, not yet graduated	100.0%	70.7%	62.3%	51.6%	21.7%	5.2%
Yes - graduated	0.0%	0.0%	0.6%	7.7%	36.1%	52.3%
No	0.0%	29.3%	37.1%	40.7%	42.2%	42.5%

Note: The 2009/10 new entrants cohort includes students aged less than 20 on Dec. 31st, 2009, first enrolled and full-time in Fall 2009, in a program leading to an undergraduate degree in Ontario. **Source:** Statistics Canada. Longitudinally linked Postsecondary Student Information System data, 2008/09 to 2014/15; extracted Jan. 2018.



Graduation rates of the 2009/2010 Ontario undergraduate degree entrants cohort, by Fall 2014 (5 academic years later)



Note: The 2009/10 new entrants cohort includes students aged less than 20 on Dec. 31st, 2009, first enrolled and full-time in Fall 2009, in a program leading to an undergraduate degree in an Ontario university or college.

Source: Statistics Canada. Longitudinally linked Postsecondary Student Information System data, 2008/09 to 2014/15; extracted Jan. 2018.

Other derived highlights:

- The largest increase in the proportion of students who leave their undergraduate degree program before graduation¹ takes place between the first and the second year.
- In the second year:
 - 86.9% continued an undergraduate program at the same institution,
 - approximately 2.3% changed to continue their undergraduate degree program at a different institution in Ontario,
 - a further 0.4% continued elsewhere in Canada.
- Additionally, 18.5% of the undergraduate degree students still at an Ontario institution switched their field of study by second year. (Some changes in field of study grouping may be related to how students with no specialization in first year are classified.)

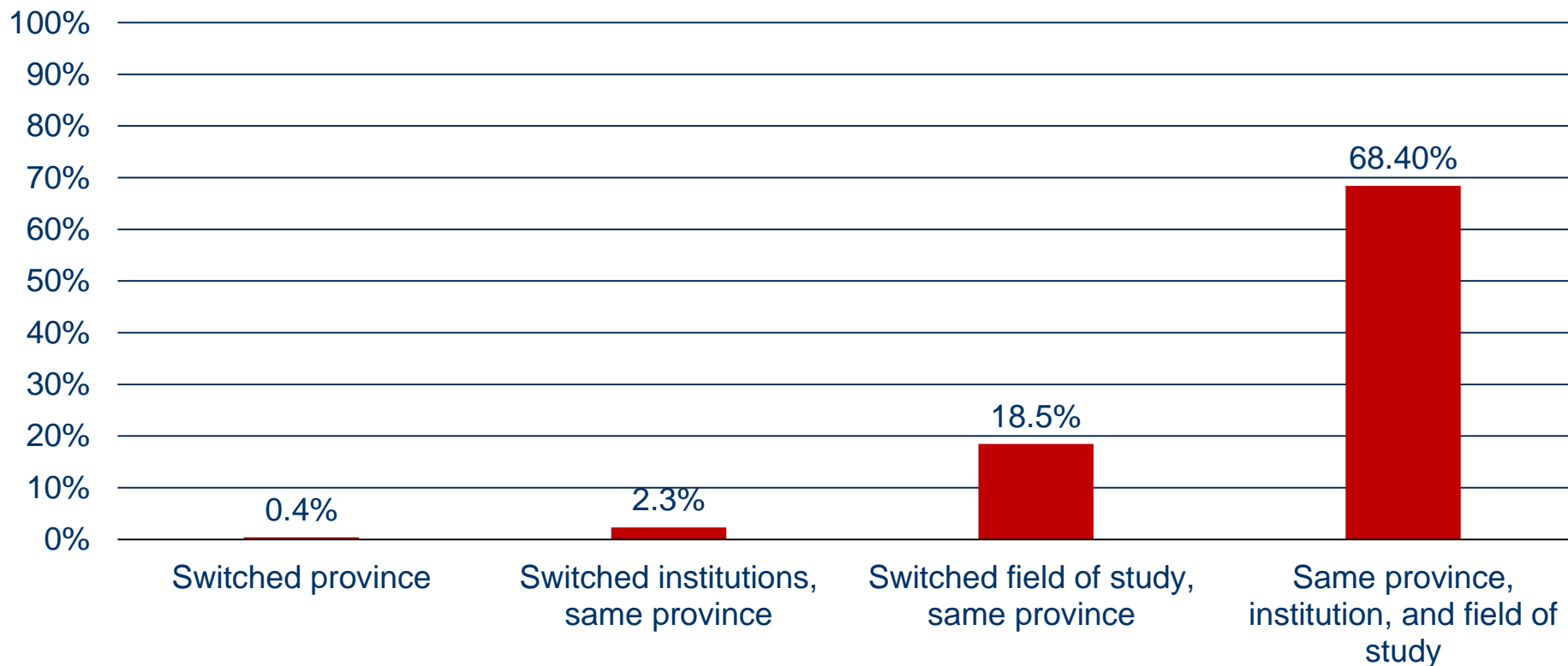
¹. Includes those who cannot be traced due to selected data gaps.

Notes: The new entrants cohort includes students aged less than 20 on Dec. 31st, 2009, first enrolled and full-time in Fall 2009, in a program leading to an undergraduate degree in an Ontario university or college.

Source: Statistics Canada. Longitudinally linked Postsecondary Student Information System data, 2008/09 to 2014/15; extracted Jan. 2018.



Characteristics of the 2009/2010 Ontario entry cohort, still enrolled in an undergraduate program in Fall 2010



Notes: The categories are not mutually exclusive.

The new entrants cohort includes students aged less than 20 on Dec. 31st, 2009, first enrolled and full-time in Fall 2009, in a program leading to an undergraduate degree in an Ontario institution.

Source: Statistics Canada. Longitudinally linked Postsecondary Student Information System data, 2008/09 to 2014/15; extracted Jan. 2018.

Moving forward

- Publish selected indicators
- Complement the platform with other student and apprentice data files (e.g. Canada student loan, apprenticeship loans, National Graduate Survey or National Apprenticeship Survey)
- Complete the work to make linked files accessible to researchers
- Update and grow the linkable possibilities!



We welcome your feedback and questions

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