



NB-IRDT

New Brunswick Institute for
Research, Data and Training

APPRENTICESHIP PROGRAMS IN THE ATLANTIC
PROVINCES: PROGRAM CHARACTERISTICS, APPRENTICE
MOBILITY AND EARNINGS



PROJECT INFO

PROJECT TITLE

Apprenticeship Programs in the Atlantic Provinces: Program Characteristics, Apprentice Mobility and Earnings

PRINCIPAL INVESTIGATOR

Herb Emery, Ted McDonald and Andrew Balcom

RESEARCH TEAM

This project was completed with the assistance of analysts at NB-IRDT

PARTNERS

Funding for this project was provided by the Government of New Brunswick, Post-Secondary Education, Training and Labour (PETL) through contract #156640

HOW TO CITE THIS REPORT

Emery, H., McDonald, J.T., & Balcom, A. (2017). Apprenticeship programs in the Atlantic provinces: program characteristics, apprentice mobility and earnings. Fredericton, NB: New Brunswick Institute for Research, Data and Training.

EXECUTIVE SUMMARY

This report presents descriptive statistics on various dimensions of apprenticeship training in the Atlantic provinces. The report is based on statistics generated by Statistics Canada from a complex individual-level longitudinal dataset linking data from multiple sources including the Registered Apprenticeship Information System, T1 tax files and T4 statements of earnings over the period 2008-2013 inclusive. The longitudinal nature of the data allow mobility to be evaluated, including comparisons of province of study, province of residence and province of work before, during and after apprenticeship training. The report considers three dimensions of apprenticeships: characteristics of participants including demographic characteristics, field of study, and status in the program; mobility of apprentices, comparing province of study with province of employment and province of residence while enrolled and after the program is either completed or discontinued; and earnings of those in the program and those who completed or discontinued the program, with a focus on differences in earnings for movers compared to non-movers. For all three dimensions, results are compared across individuals enrolled in apprenticeship programs in each of the Atlantic provinces.

It was found that the number of apprentices enrolled in New Brunswick has been remarkably steady over time, in contrast with growth in the number of apprentices enrolled in the other Atlantic provinces: between 2008-2013 the number enrolled in New Brunswick increased from 4893 to 5080 while the equivalent figures for 2008 and 2013 were 5325 and 6515 in Nova Scotia, 5433 and 6773 in Newfoundland and 763 and 1126 in Prince Edward Island. For both Nova Scotia and Prince Edward Island the increase over the period has been relatively steady while enrollment patterns over time in Newfoundland were much more variable, likely related to energy prices. The percentage of enrolled apprentices completing the program in New Brunswick, Nova Scotia and Prince Edward Island was steady over the period, though there was more variation over time in discontinuers, particularly for Newfoundland and Labrador apprentices where the discontinuation rate peaked at 20% in 2009. Roughly 10% of those in apprenticeship programs and residing in each of the Atlantic provinces were enrolled in other provinces, mainly Alberta. Among completers from each province, about 95% were residing in the same province two years later, while close to 20% of completers from each Atlantic province were primarily employed in another province, mainly Alberta, two years after completion. This implies about 15% of completers are residing in their province of residence but primarily employed in another province. Those completing apprenticeships earned substantially more on average than discontinuers who in turn earned more than continuers in each Atlantic province. Those working in other provinces than Alberta but outside of their province of study earned substantially more than those who worked in their province of study, and both completers and discontinuers working in Alberta earned markedly more than their counterparts who remained working in their province of study. As well, statistics on the mobility of apprentices completing their programs suggests little interprovincial mobility even two years after completion and when significantly higher earnings are available in Alberta. Commuters are a non-trivial proportion of completers and discontinuers, suggesting that the provinces in which they obtained their training continue to benefit in terms of higher taxes paid. One conclusion from the analysis is that the apprenticeship programs in Nova Scotia, New Brunswick and Prince Edward Island appear to be serving the requirements for skilled trades in New Brunswick. This is also generally true of apprenticeships in Newfoundland though with much more cyclical variation and connection to Alberta.

INTRODUCTION

This report presents a statistical description of individuals enrolled in apprenticeship programs in the Atlantic provinces over the period 2008-2013 based on cross-tabulations generated by Statistics Canada from a recently developed integrated dataset called The Longitudinal Apprentices and Trades Qualifiers Database. The Database comprises several input files including the Registered Apprenticeship Information System (RAIS), T1 Tax Returns, T4 Statements of Remuneration, Records of Employment, and other files (see Appendix 1). These administrative data files are longitudinal thereby allowing the same individuals to be tracked over time so that mobility decisions can be observed. The tables allow an examination of the incidence, program status, mobility and earnings of individuals enrolled in apprenticeship programs in New Brunswick, with a particular focus on comparisons among New Brunswick and the other Atlantic provinces. The report is laid out as follows. First, recent literature on various dimensions of apprenticeship programs in Canada is reviewed, followed by a discussion of key definitions and concepts. The linked data file is then described and strengths and weaknesses of the dataset mentioned. The next section presents the empirical results organized in three subsections covering program parameters, retention and interprovincial mobility, and earnings of individuals who are enrolled in an apprenticeship and individuals who have completed or discontinued the program. The final section summarizes the main results and draws policy implications arising from them as well as some possible avenues for future work. Figures based on the results are presented in the body of the report while tables of results are included in Appendix 2.

BACKGROUND

There has been a marked increase in the size of apprenticeship training programs in Canada over the past 20 years, with close to a 200% increase in new apprenticeship registrations since the 1990s according to a recently released report from Statistics Canada. This is partly in response to Canada's aging workforce and the need for skilled tradespeople to meet skill shortages. The report "National Apprenticeship Survey: Canada Overview Report, 2015" is based on results from the 2015 National Apprenticeship Survey (NAS), a random survey of apprenticeship completers and discontinuers who were listed in the Registered Apprenticeship Information System. It provides a range of information on the characteristics of Canadian apprentices as of the survey date and provides a broader Canadian context for this report. Based on self-reports, apprentices were most likely to be male (86.3%) younger (52.8% were under 25), Canadian-born (91.3%) and white (85.5%, with 6.3% of Aboriginal origin and 8.2% belonging to a visible minority). Red Seal trades accounted for 78.2% of all apprentices and over 50% of apprentices were in the top 10 Red Seal trades. 72.8% of apprentices who completed their program received a certificate of qualification in the Red Seal Trades and of those who completed an apprenticeship in the Red Seal Trades, 88.5% held a job related to their apprenticeship. 65.5% of apprentices reported to have no difficulty completing their programs. For those who did experience trouble, financial constraints accounted for 24.7%, and job instability accounted for 21.2%. Less than 10% reported having issues with course work, teachers or exams.

¹ Kristyn Frank and Emily Jovic, National Apprenticeship Survey: Canada Overview Report, 2015 (Statistics Canada, 2017), 6

² Ibid., 6. Aboriginal status and visible minority status were self-identified in the National Apprenticeship Survey.

³ Carpenter, Construction Electrician, Automotive Service Technician, Hairstylist, Steamfitter/pipefitter, Plumber, Welder, Cook, Industrial Mechanic, and Industrial Electrician.

⁴ Ibid., 6

⁵ Ibid., 6.

In terms of interprovincial mobility, results from the 2015 NAS showed that 12.8% of those in a registered apprenticeship program moved province, territory or country before beginning their program. Approximately 6% moved during their program, and 3.8% moved to a different province or territory for a job after completion. Those who worked outside of their province of registration did so due to job requirements. Few worked outside of their province of residence; of those who did, 50.8% worked in Alberta. For labour market outcomes, completers had a higher average annual income at \$69,512 compared to discontinuers at \$59,782. 80.8% of completers had a permanent job, compared to 77.0% for discontinuers. Immigrants had the same rate of employment as Canadian born apprentices, but women (72.5%) and aboriginals (76.3%) both had lower rates.

Other work on apprentices in Canada has used the 2007 NAS to examine determinants of low completion rates where the sample is individuals who were enrolled in an apprenticeship program. The author found that completion rates for apprentices fall after the age of 28. Completion rates increase with the length of the program so that the longer the apprenticeship lasts, the more likely apprentices are to complete the program. Apprentices that are immigrants, of aboriginal descent, have a disability, or are below 18 all have lower rates of completion. Individuals who completed high school are more likely to complete. When controlling for all other factors, apprentices in Building, Construction and from Eastern Canada are less likely to complete their program.

Work by McDonald and Worswick used data from the 2006 Census Canada to study how the incidence of having completed an apprenticeship varies between immigrants and non-immigrants where the sample was the adult population rather than a subset enrolled in an apprenticeship program. The authors note that through much of the 20th century Canada has had a persistent deficit of skilled tradespersons, and immigration has been expected to help close that deficit. Changes in immigration policy through the 1990s and 2000s have resulted in education levels for recent immigrants increasing, leading to a relatively smaller supply of skilled tradespeople. Immigrants from Africa, Eastern and Southern Asia were found to be less likely to have completed an apprenticeship than immigrants from 'traditional source countries' (Western Europe, Australia, etc.). Both sets of immigrants are less likely to native-born Canadians. These pattern are also true for those born in Canada to immigrants from these countries.

A paper by Coe and Emery (2012) considered accreditation requirements for the skilled trades and implications for the pace of labour market adjustment. The authors reported that Canadian labour markets for building trades are flexible and that interprovincial migration of workers is an important adjustment mechanism for labour demand changes. More stringent accreditation requirements may not impede the rate at which the labour market adjusts but they do increase the economic rents to workers with the accreditation. Furthermore, shorter term changing labour market conditions did not appear to have had any impact on apprenticeship program requirements, suggesting that standards are not raised or lowered in response to changes in demand for those occupations.

⁶ Ibid., 7

⁷ Ibid., 37

⁸ Ibid., 7

⁹ Benoit Dostie, A Competing Risks Analysis of the Determinants of Low Completion Rates in the Canadian Apprenticeship System (Canadian Labour Market and Skills Researcher Network, 2010), 3

¹⁰ Ibid., 3

¹¹ Since the Census only reports highest level of education completed, it is not possible to identify those who discontinued an apprenticeship from those who did not undertake one at all.

¹² Patrick J. Coe and Herbert Emery, Accreditation Requirements and the Speed of Labour Market Adjustment in Canadian Building Trades (Canadian Public Policy 38 (1), 2012), 106

CONCEPTS AND DEFINITIONS

Among those enrolled in an apprenticeship program at some point during the calendar year, an individual's status in the program as of the end of the year is classified as one of five mutually exclusive categories. These include 1) continuers, those still enrolled in the program as of the end of the calendar year where enrollment has been less than 1.5x the normal program duration; 2) long term continuers, those still enrolled in the program and who have been enrolled in the program for at least 1.5x longer than normal program duration; 3) completers, those who successfully completed the program by the end of the calendar year; 4) discontinuers, those who terminated enrollment in the program before completion; and 5) trade qualifiers, those who met the jurisdictional qualifications to write the certification exam.

For interprovincial mobility a number of alternative location concepts are available in the data: 1) province of residence, defined as the province where the individual filed his/her tax return (from T1 tax form); 2) province of study as identified in the apprenticeship registration data, and 3) province of employment, defined as the province where the largest share of earned income was received (based on T4 slips).

DATA & SAMPLE SPECIFICATIONS

Results from this report are based on cross-tabulations generated by Statistics Canada from a recently developed integrated dataset called The Longitudinal Apprentices and Trades Qualifiers Database. The Database comprises several input files including the Registered Apprenticeship Information System (RAIS), T1 Tax Returns, T4 Statements of Remuneration, Records of Employment, and other files (see Appendix 1). The RAIS files cover the period from 2008 to 2013, while the taxation and employment-based administrative files cover the period from 1997 to 2013. The file contains near complete-coverage of all individuals who were registered in an apprenticeship program across the ten provinces and three territories (including trade qualifiers) during the 2008-2013 period. For this report, individuals enrolled in apprenticeship programs in each of the four Atlantic provinces are included. As of 2013, there were 5080 enrolled in apprenticeship programs in New Brunswick, 6515 in Nova Scotia, 6773 in Newfoundland and 1126 in Prince Edward Island.

One of the main advantages of this linked file is that it is longitudinal so that changes in location of residence, of study and of employment across years can be observed and documented, for example individuals who move provinces to start an apprenticeship or individuals who continue to live in the province of study after completion of the program but who have earned a majority of income in another province.

All reported results reflect minimum cell count requirements imposed by Statistics Canada in order to maintain the confidentiality of individuals in the database. Given the relatively small enrollment in apprenticeship programs in each of the Atlantic Provinces and the fact that rates of both completion and interprovincial mobility are relatively low, it was necessary to suppress some results and combine categories for others.

RESULTS

Characteristics of apprentices

Tables 1-5 (see Appendix 2 for all Tables) present descriptive statistics for individuals enrolled in apprenticeship programs in a given year over the period 2008-2013 by province of enrollment. It should be noted that changes in composition over time will be muted by the fact that many apprenticeship programs are multi-year. Table 1 presents three series: the number of people enrolled in an apprenticeship program in the given year and province indicated (see also Figure 1); the proportion of those who reside outside of that province; and the number of apprentices per 1000 provincial population aged 15-64 (see also Figure 2). In New Brunswick (NB) the number of people enrolled in apprenticeship programs has been relatively constant over the period 2008-2013 while in contrast the number of people enrolled in apprenticeship programs in Nova Scotia (NS) and Newfoundland and Labrador (NF) has each increased by more than 20% over the same period. In Prince Edward Island (PEI) the increase from 2008-2013 was more than 45%. The number of apprentices per 1000 people aged 15-64 was also steady in NB but increased in each of the other provinces. Overall, NF has consistently had the highest ratio, with 17.15 apprentices per person aged 15-64 in 2003 compared to 11.57 in PEI, 10.15 in NS and 9.93 in NB. Among those studying in NB around 95% also resided in NB and numbers in NS were similar. In NF a similarly very high percentage of apprenticeship students also resided in NF and this has increased over time. In PEI, about 90% also resided in PEI.

Figure 1

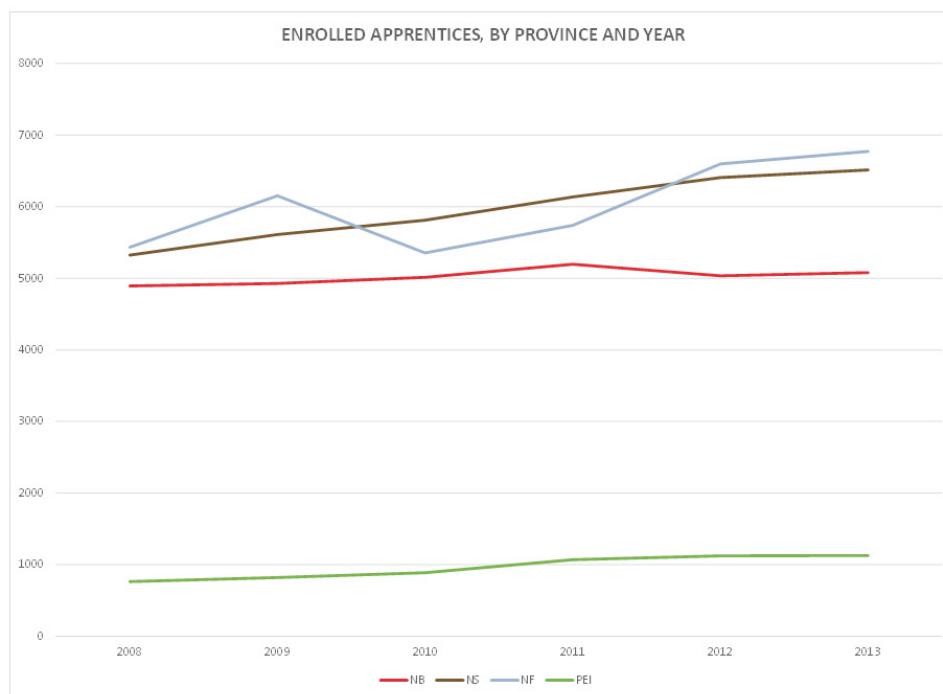
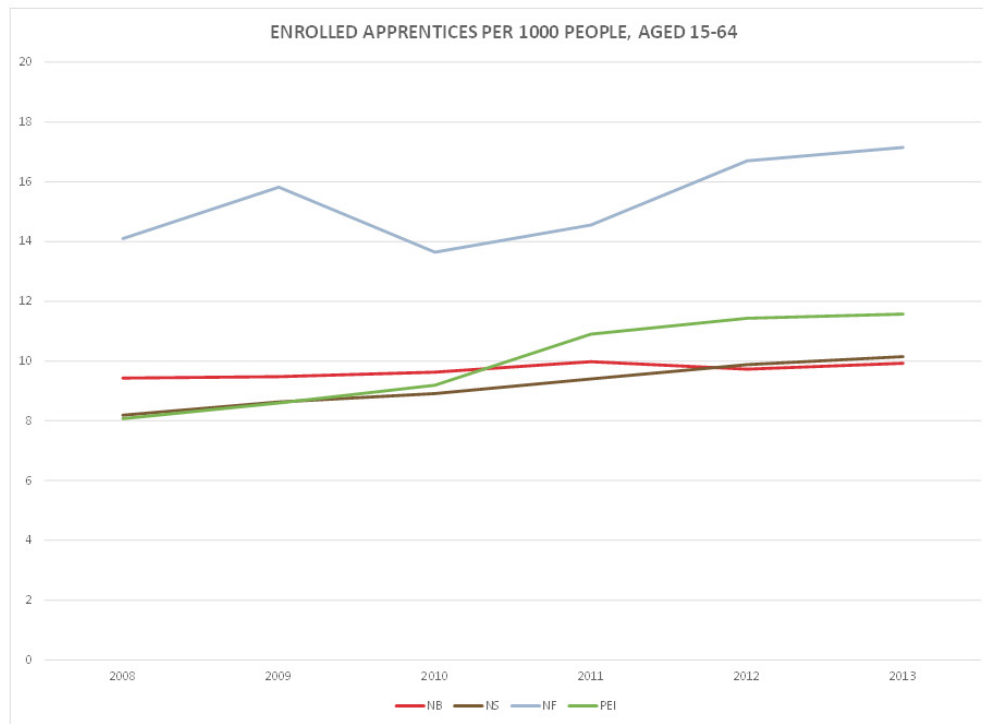


Figure 2



Tables 2 and 3 present the sex and age distribution of apprentices by year and province of study. Apprentices in each Atlantic province are overwhelmingly male – over 90% - with the highest proportion in NB. There has been little change in this proportion over time. The age distribution of apprentices in NB, NS and PEI has been remarkably stable over the time period, with the highest proportion of apprentices in the youngest age category <25 years followed by those 25-34. In NF the proportion of apprentices aged less than 25 years increased from 0.25 in 2008 to 0.32 in 2013 with offsetting declines of those aged 30-34, 35-39 and 40-44. As well, in statistics not reported, more than 90% of apprentices in NB, NS and NF are in Red Seal occupations (PEI was suppressed due to small sample counts).

Table 4 presents the status of individuals as of the end of the year in which they were enrolled in an apprenticeship program. For NB the proportion completing, continuing and discontinuing have all been very stable over time, with 11-14% completing (see also Figure 3) and 6% discontinuing each year (see also Figure 4). The pattern is similar for NS though with slightly lower completion rates and slightly high discontinuation rates. For NF and PEI the numbers showed more volatility over time, with a peak of 20% of those enrolled in NF apprenticeship programs in 2009 discontinuing the program falling to 6% discontinuing in 2013. In PEI 14% discontinued in 2012 falling to 5% in 2013. It remains to be seen whether this is connected to business cycle effects and why NS and NB do not show similar patterns.

¹³ It is worth noting that the participation rate in apprenticeships among people aged <25 years is much lower than the proportion of university students in the same age group. This age difference may be a factor in differential rates of geographic mobility across education levels though it should be noted that trades may be a second choice for individuals who do not gain a place in university.

Figure 3

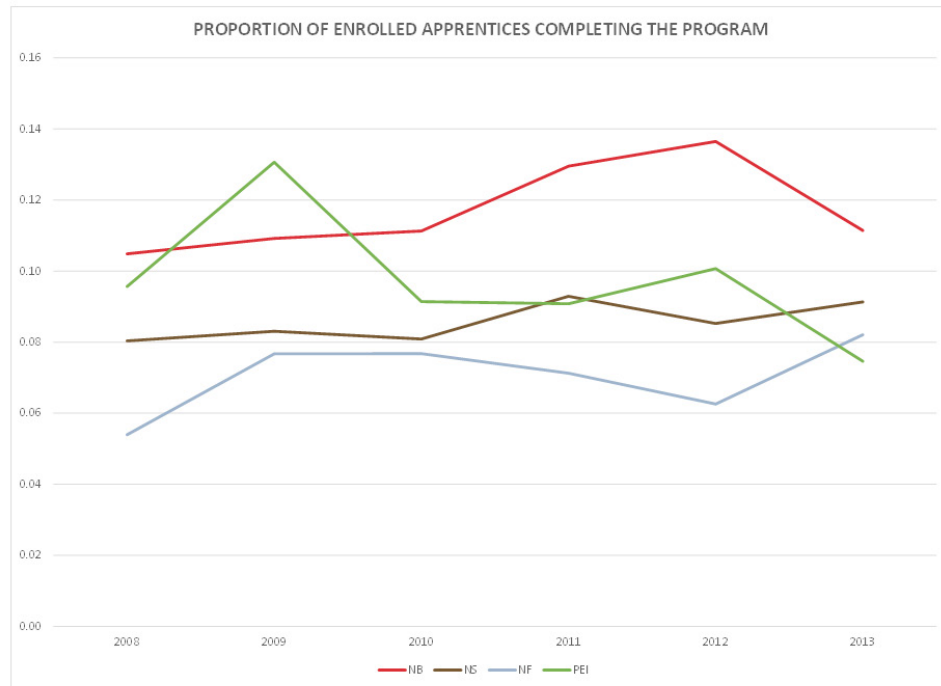
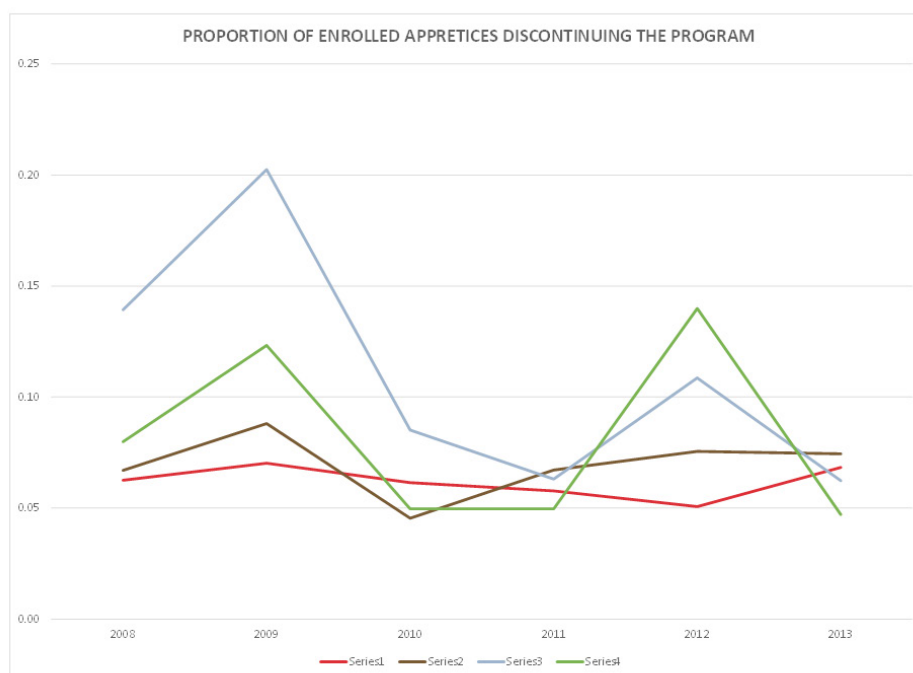


Figure 4



Mobility

The next set of tables focus on mobility where location is variously measured as province of residence for tax purposes, province of study and province of employment where relevant. Tables 6a and 6b show different dimensions of location for continuers. It should be noted that destination provinces and/or years of observation have been combined where necessary in order to report statistics that meet Statistics Canada's confidentiality requirements for disclosure. In table 6a it can be seen that approximately 95% of those studying in NS, NB, NF and PEI are also resident in that province. In 6b, among those who are resident in NS and NB who are also enrolled in an apprenticeship program about 90% are studying in their province of residence while around 5% are studying in Alberta. These figures have not changed much over the sample period. For NF and PEI, the proportion of those apprentices resident in those provinces also studying there increased over the sample period, with a parallel shift away from studying in Alberta.

Table 7a focuses on individuals who successfully completed apprenticeship program and successful trade qualifiers. In the left hand panel the table presents the proportion of those completers who were residing outside of their province of study one year after completion and two years after completion. Results are aggregated across multiple years because of small sample sizes and results for PEI cannot be reported at all. For NB, NS and NF even two years after completion only about 5% are residing outside the province. In contrast, the proportion of completers employed outside the province of study one year after completion is more than twice as large, with 5% of NB completers working in Alberta and 4% working elsewhere and rising to 10% and 6% respectively two years after completion. The difference is even larger for NS and NF. For NS completers, 9% are working in Alberta one year after completion and 6% are working elsewhere. These figures rise to 13% and 6% two years after completion. For NF, fully 19% of completers are employed in Alberta one year after completion and 4% are employed elsewhere. Unlike the case for the other provinces though, these numbers fall two years after completion, to 15% and 3% respectively. This difference perhaps reflects some cyclical variation in the NF economy. The key conclusion from these numbers is that each province is retaining a very large proportion of their trained apprentices but that a significant proportion of them are commuting to Alberta and other provinces for employment.

Table 7b reports similar statistics for the sample of individuals who discontinued their apprenticeship program. Patterns for proportions residing outside of the province of study and for employment outside the province of study are similar to those reported in Table 7a for completers, with a relatively small proportion of discontinuers living in another province two years after discontinuing their studies and a larger proportion employed in another province than their province of study.

Earnings

The third set of tables report mean annual earnings (in adjusted 2013 dollars) by year for various categories of individuals by apprenticeship status and province of residence and employment, by year. Median values are not reported here but illustrate similar patterns though with somewhat less variation across years. Tables 8a and 8b illustrate mean earnings by year for individuals still enrolled in an apprenticeship program in each of the Atlantic provinces as of the end of the year, with Table 8a reporting earnings by province of residence and Table 8b reporting earnings by province of employment. Enrolled apprentices in NB and NS who also reside in those provinces earn around \$35,000 per year with little change across the sample period. Apprentices enrolled in a program in NB but residing elsewhere earned about \$15,000 more in 2013 though there was substantial variation across sample years. For NS earnings were in the order of \$20,000 more in 2013 though again with substantial variation across sample years. Apprentices enrolled in NF and living in NF earned more than the corresponding individuals in NB and NS, and those working outside of NF earned the most of any apprentices enrolled in programs in the Atlantic provinces. For example the mean wages of NF apprentices residing outside of NF in 2013 was more than \$72,000. Larger sample sizes permit a finer level of disaggregation when instead earnings are compared across province of employment. Apprentices studying in PEI earned less than apprentices enrolled in other provinces, whether they lived in that province or elsewhere.

Differences in earnings for stayers and movers across the Atlantic provinces may reflect differences in regulatory environments reflecting ease of credential recognition as well as the mix of trades in which apprentices are training.

If instead earnings by province of employment are considered (Table 8b) it can be seen that for apprentices in NB and NS earnings during the year are higher only if the individual works in Alberta, though by a margin of \$17,000 or more. Earnings of apprentices working in Ontario and other provinces were comparable to home province earnings from 2008-2010 but increased over the period 2011-2013 for apprentices working in Ontario. For NF apprentices patterns over time by province of employment are similar to those by province of employment though the earnings gap between those working in NF and working elsewhere is larger than the gap between those living in NF and living elsewhere. This reflects the fact that a number of NF apprentices remain resident in NF but work outside the province. For PEI apprentices, those working in PEI earn consistently less than other Atlantic counterparts working in their province of study but those PEI apprentices working elsewhere earned substantially more (approximately \$25,000 more in 2013).

Table 9 presents mean wages for individuals who completed an apprenticeship program one year after and two years after completion. Note that annual figures were not reported owing to small sample sizes so data across multiple years had to be combined. For completers in NB and NS who also worked in their province of study earnings were in the order of \$56,000 with little difference one year or two years after completion. For those who studied in NB or NF and worked in Alberta earnings were markedly higher one year after completion and higher again two years after completion: earnings of individuals completing an NB apprenticeship but working in Alberta were \$93,000 one year later and \$97,000 two years later, while the comparable figures for NS completers working in Alberta were \$97,000 and \$104,000 respectively. NB and NS completers working in other provinces than Alberta earned between the home province and Alberta amounts. For individuals completing apprenticeships in NF earnings of those working in NF were \$69,000 one year after completion and \$85,000 two years after completion, an amount larger than NB and NS completers working in provinces other than Alberta. NF completers working in Alberta earned almost \$130,000 two years after completion. Though not reported, figures based on province of residence rather than province of employment follow similar patterns though reflect the presence of commuters living in the Atlantic provinces but working elsewhere.

The final table, Table 10, presents mean earnings for individuals who discontinued an apprenticeship program before completion. Earnings are higher than mean earnings of continuers in the same age range but are substantially lower than mean earnings of completers as would be expected. Discontinuers who were enrolled in NB, NS and NF all earn on average approximately \$20,000 less per year than completers over the same range of years, whether working in the province of training, Alberta or elsewhere. However it is notable that earnings even of discontinuers who studied in NF but were working in Alberta were close to \$100,000 two years after discontinuing. This suggests that discontinuers may be terminating their apprenticeship to take advantage of offers for well paid jobs where trade certification is not compulsory, especially in Alberta. For the earnings results two robustness checks were conducted and indicated that the main results were similar when median rather than mean earnings were used and when individuals with self-employment earnings were omitted from the sample.

SUMMARY & IMPLICATIONS

The analysis highlighted a number of notable results about the apprenticeship programs in the Atlantic provinces. First, the number of apprentices enrolled in NB has been remarkably steady over time, in contrast with growth in the number of apprentices enrolled in NS and PEI and variable enrollment patterns over time in NF likely related to energy prices. The percentage of enrolled apprentices discontinuing the program in NB has been constant while again there was marked variation over time in discontinuation rates for NF apprentices, with a peak in 2009 for NF of 20% discontinuing their program. It should be noted that also in 2009 the average price of crude oil fell to \$60 from \$102 the year before in inflation adjusted dollars. Electricians were the most common field of study in all four Atlantic provinces, and automotive services and carpentry were in the top five in each. Welding was in the top four in NF and PEI. Over the study period 2008-13 there were no major changes in the composition of enrolled apprentices by field in any province. It is notable that carpentry and welding, trades that do not require compulsory licensing, are still among the most commonly undertaken apprenticeships and this would appear to indicate the value in the labour market of certification.

Apprentices studying in each province were overwhelmingly likely also to reside in the same province, while about 10% of those in apprenticeship programs and residing in NB were studying in other provinces, mainly Alberta. Among completers from each province, about 95% were residing in the same province two years later, while close to 20% of completers from each Atlantic province were primarily employed in another province, mainly Alberta two years after completion. There were similar pattern for discontinuers, with about 7% residing and 15% working out of province two years after discontinuing the program.

The earnings of individuals enrolled in apprenticeship programs in NS, NB and PEI who are also working or residing in those provinces showed little change over the study period and were consistently lower than for those working in other provinces. Individuals studying and working in PEI earned the lowest amount on average across the four provinces. Earnings of individuals studying in NF were higher than in other Atlantic provinces and more variable over the period. For those studying in one of the provinces but working elsewhere earnings were also highly variable over the period, yielding gaps in earnings that for NB apprentices varied from \$3,000 more than NB earnings to \$16,000 more than NB earnings. The highest amount was for individuals studying in NF but working in Alberta where earnings were on average over \$70,000. Completers earned substantially more on average than discontinuers who in turn earned more than continuers in each Atlantic province. Those working in other provinces than Alberta but outside of their province of study earned substantially more than those who worked in their province of study. However for those working in Alberta two years after completion of an apprenticeship in NB, NS and NF were earning on average \$100,000 or more. Discontinuers working in Alberta also did relatively well, with those who discontinued a program in NF still earning close to \$100,000.

Based on this descriptive analysis a number of themes emerged. The main characteristics and outcomes of individuals enrolled in apprenticeship programs in NB, NS and PEI have not changed substantially over the period 2008-2013, while apprenticeships in NF have shown more variability in characteristics and outcomes over the period. In particular, large proportions of individuals completing an apprenticeship program in Atlantic Canada still reside in their province of study two years after completion. This is the case even though substantially higher earnings are obtained for those apprentices trained in Atlantic Canada but working in other provinces, particularly Alberta. The implication then is that apprenticeship programs appear to be serving the requirements for skilled trades in NB. It also appears that those who discontinued the program may be choosing to do so in order to earn more, especially in Alberta. Commuters are a substantial proportion of completers and discontinuers, suggesting that the provinces in which they obtained their training continue to benefit in terms of higher taxes paid.

Finally, NS substantially expanded the size of their apprenticeship program over the period though this was associated with few compositional changes except for a small uptick in discontinuation rates. Apprentices in NF experience much more cyclicity in enrollment and discontinuation rates, likely reflecting a greater sensitivity to energy prices and closer integration with the Alberta labour market. What follows from this is that an increase in apprenticeship places in NB or NS may simply lead to an increase in commuters – those individuals remaining in their province of training but working elsewhere – if there is not an increase in the demand for skilled trades in those provinces. However, since the destination province is typically Alberta, greater exposure to the Alberta labour market may increase the cyclicity of completion and discontinuation rates as has been observed in NF.

¹⁴ This is relevant to bear in mind changes to the apprenticeship system that can affect enrollment in apprenticeship programs, such as increasing harmonization of requirements across provinces and with recent technological developments in New Brunswick in terms of ease of access to information on and application to an apprenticeship program.

APPENDIX 1: DATA SOURCES

Statistics Canada recently constructed the Longitudinal Apprentices and Trades Qualifiers Record Linkage Environment. This record linkage environment is comprised of several administrative data files and provides the capacity to integrate (or link) these files together as needed to meet specific research needs. The files listed below are included in the linkage environment:

* Registered Apprenticeship Information System (RAIS), 2008 to 2013: The RAIS file contains information on the socio-demographic characteristics of registered apprentices and trades qualifiers, the characteristics of the programs in which they are enrolled, and their status within the program. The RAIS data are longitudinal, meaning that individuals can be followed over time as they progress through (or discontinue) their apprenticeship training.

* T1 Tax Returns, 1997 to 2013: The T1 Tax Return files provide information on the demographic, earnings and income characteristics of individuals and their spouse

* T4 Statement of Remuneration Paid (T4), 1997 to 2013: The T4 file provides information on earnings, taxes withheld and contributions/premiums and business number for each job held by an individual.

* T4E Statement of EI Benefits Received (T4E), 1997 to 2013: The T4E provides information on Employment Insurance benefits received by individuals.

* EI Status Vector File (EISVF), 1997 to 2013: The EISVF provides information on the use of the Employment Insurance program on a week-by-week basis, including the duration of each EI supported spell of unemployment.

* Record of Employment (ROE), 1997 to 2013: The ROE contains information on job separations, and is primarily used by Statistics Canada to identify layoffs.

* Longitudinal Employment Analysis Program file (LEAP), 1997 to 2013: The LEAP provides firm-level information and contains information on worker's industry of employment, firm size of employment, transitions between employers, and number of employers during the year.

* Longitudinal Immigration Database (IMDB) (1980 to 2013): The IMDB provides information on the immigration status of individuals who became permanent residents in Canada since 1980.

APPENDIX 2

**Table 1: Demographics for all apprentices enrolled in provincial apprenticeship programs,
by year and province of enrollment**

Province of residence (T1PMF)						
	2008	2009	2010	2011	2012	2013
New Brunswick						
N	4893	4928	5013	5196	5034	5080
resides NB	0.95	0.96	0.97	0.96	0.95	0.94
per 1000 pop 15-64	9.43	9.48	9.63	9.98	9.73	9.93
Nova Scotia						
N	5325	5610	5812	6136	6406	6515
resides NS	0.93	0.95	0.95	0.94	0.93	0.93
per 1000 pop 15-64	8.19	8.63	8.91	9.40	9.88	10.15
Newfoundland						
N	5433	6153	5355	5739	6599	6773
resides NF	0.88	0.90	0.94	0.95	0.94	0.97
per 1000 pop 15-64	14.10	15.82	13.64	14.55	16.70	17.15
PEI						
N	763	819	886	1068	1122	1126
resides PEI	0.92	0.90	0.92	0.91	0.88	0.89
per 1000 pop 15-64	8.07	8.60	9.19	10.90	11.43	11.57

**Table 2: Proportion of enrolled apprentices who are male,
by year and province of enrollment**

	2008	2009	2010	2011	2012	2013
NB	0.98	0.98	0.97	0.97	0.96	0.96
NS	0.96	0.95	0.95	0.95	0.95	0.95
NF	0.93	0.90	0.92	0.91	0.91	0.90
PEI	0.94	0.94	0.93	0.92	0.91	0.91

**Table 3: Age distribution of persons enrolled in apprenticeship programs,
by year and province of enrollment**

NB	2008	2009	2010	2011	2012	2013
Less than 25 years	0.37	0.37	0.37	0.38	0.37	0.36
25 to 29 years	0.24	0.24	0.25	0.24	0.24	0.24
30 to 34 years	0.14	0.14	0.14	0.14	0.14	0.15
35 to 39 years	0.09	0.09	0.09	0.09	0.10	0.09
40 to 44 years	0.06	0.06	0.06	0.06	0.06	0.06
45 to 49 years	0.05	0.04	0.05	0.05	0.05	0.05
50 years or older	0.05	0.04	0.04	0.04	0.04	0.05
NS						
Less than 25 years	0.32	0.33	0.34	0.34	0.34	0.32
25 to 29 years	0.23	0.23	0.24	0.25	0.25	0.27
30 to 34 years	0.15	0.15	0.14	0.14	0.14	0.14
35 to 39 years	0.11	0.11	0.10	0.10	0.10	0.10
40 to 44 years	0.08	0.08	0.08	0.07	0.08	0.08
45 to 49 years	0.06	0.05	0.05	0.05	0.05	0.05
50 years or older	0.05	0.04	0.05	0.04	0.05	0.05
NF						
Less than 25 years	0.25	0.24	0.29	0.31	0.30	0.32
25 to 29 years	0.26	0.29	0.27	0.27	0.26	0.27
30 to 34 years	0.17	0.16	0.14	0.15	0.16	0.15
35 to 39 years	0.12	0.12	0.11	0.10	0.10	0.09
40 to 44 years	0.09	0.08	0.08	0.08	0.07	0.07
45 to 49 years	0.06	0.06	0.05	0.05	0.05	0.05
50 years or older	0.05	0.05	0.05	0.04	0.05	0.05
PEI						
Less than 25 years	0.42	0.44	0.43	0.44	0.42	0.46
25 to 29 years	0.20	0.22	0.20	0.21	0.21	0.22
30 to 34 years	0.12	0.12	0.14	0.14	0.13	0.10
35 to 39 years	0.08	0.08	0.08	0.09	0.09	0.09
40 to 44 years	0.08	0.06	0.06	0.05	0.05	0.05
45 to 49 years	0.05	0.05	0.04	0.05	0.04	0.03
50 years or older	0.05	0.03	0.06	0.04	0.06	0.05

**Table 4: status in an apprenticeship program among those registered in an apprenticeship program,
by year and province of enrollment**

NB	2008	2009	2010	2011	2012	2013
Completer	0.10	0.11	0.11	0.13	0.14	0.11
Continuer	0.72	0.74	0.74	0.72	0.72	0.72
Long-term continuer	0.03	0.02	0.03	0.03	0.03	0.03
Discontinuer	0.06	0.07	0.06	0.06	0.05	0.07
Trade qualifier (challenger)	0.08	0.06	0.06	0.06	0.06	0.07
NS						
Completer	0.08	0.08	0.08	0.09	0.09	0.09
Continuer	0.74	0.73	0.77	0.76	0.75	0.74
Long-term continuer	0.05	0.04	0.04	0.04	0.05	0.05
Discontinuer	0.07	0.09	0.05	0.07	0.08	0.07
Trade qualifier (challenger)	0.07	0.06	0.06	0.04	0.04	0.04
NF						
Completer	0.05	0.08	0.08	0.07	0.06	0.08
Continuer	0.62	0.59	0.71	0.75	0.72	0.75
Long-term continuer	0.14	0.10	0.09	0.08	0.08	0.08
Discontinuer	0.14	0.20	0.09	0.06	0.11	0.06
Trade qualifier (challenger)	0.05	0.04	0.04	0.04	0.03	0.02
PEI						
Completer	0.10	0.13	0.09	0.09	0.10	0.07
Continuer or long-term continuer	0.67	0.65	0.76	0.81	0.70	0.84
Discontinuer	0.08	0.12	0.05	0.05	0.14	0.05
Trade qualifier (challenger)	0.15	0.09	0.09	0.05	0.06	0.04

**Table 5: Most common apprenticeship programs based on enrollment,
by year and province of enrollment**

NB	2008	2009	2010	2011	2012	2013
Electricians	0.21	0.23	0.22	0.22	0.24	0.24
Automotive service	0.17	0.17	0.17	0.16	0.16	0.16
Carpenters	0.13	0.12	0.14	0.14	0.13	0.12
Plumbers, pipefitters and	0.12	0.12	0.12	0.12	0.13	0.12
Millwrights	0.06	0.06	0.05	0.05	0.05	0.05
NS						
Electricians	0.23	0.23	0.22	0.23	0.24	0.24
Automotive service	0.18	0.18	0.17	0.17	0.16	0.16
Millwrights	0.18	0.19	0.21	0.20	0.19	0.18
Carpenters	0.12	0.11	0.11	0.11	0.11	0.10
Exterior finishing	0.04	0.04	0.04	0.05	0.05	0.05
NF						
Electricians	0.28	0.28	0.34	0.35	0.33	0.34
Plumbers, pipefitters and	0.12	0.12	0.13	0.13	0.13	0.13
Automotive service	0.09	0.10	0.08	0.08	0.08	0.08
Heavy equipment and cra	0.09	0.06	0.05	0.05	0.04	0.05
Welders	0.09	0.08	0.08	0.08	0.09	0.09
Carpenters	0.09	0.08	0.07	0.08	0.08	0.08
PEI						
Electricians	0.21	0.23	0.21	0.24	0.23	0.24
Carpenters	0.17	0.20	0.19	0.18	0.17	0.16
Automotive service	0.16	0.15	0.16	0.14	0.12	0.14
Plumbers, pipefitters and	0.11	0.08	0.09	0.10	0.10	0.09
Welders	0.11	0.10	0.09	0.09	0.11	0.11

**Table 6a: Province of residence of continuers or long term continuers,
by year and province of enrollment**

	2008	2009	2010	2011	2012	2013
NB in NB	0.98	0.98	0.98	0.98	0.97	0.96
NS in NS	0.95	0.96	0.96	0.95	0.95	0.94
NF in NF	0.91	0.95	0.95	0.95	0.97	0.97
PEI in PEI	0.96	0.93	0.95	0.92	0.92	0.90

**Table 6b: Province of enrollment for continuers or long-term continuers,
by year and province of residence**

	2008	2009	2010	2011	2012	2013
NB	0.89	0.89	0.91	0.93	0.91	0.89
Alberta	0.07	0.07	0.05	0.03	0.04	0.06
Other province/territory	0.04	0.05	0.04	0.04	0.06	0.05
NS	0.88	0.86	0.91	0.92	0.91	0.89
Alberta	0.08	0.09	0.05	0.03	0.04	0.07
Other province/territory	0.04	0.04	0.04	0.04	0.05	0.05
NF	0.85	0.85	0.90	0.92	0.93	0.94
Alberta	0.12	0.12	0.08	0.05	0.05	0.04
Other province/territory	0.03	0.03	0.03	0.03	0.03	0.02
PEI	0.86	0.86	0.90	0.93	0.91	0.92
Alberta	0.09	0.08	0.05	0.03	0.05	0.05
Other province/territory	0.05	0.06	0.05	0.04	0.04	0.04

**Table 7a: Province of residence and province of employment for completers,
by province of enrollment**

# Completing		Residing outside of province of study		Employed outside of province of study	
		Year T+1	Year T+2	Year T+1	Year T+2
NB = 1535	NB	0.96	0.95	0.91	0.84
	AB	0.02	0.03	0.05	0.10
	Other	0.02	0.02	0.04	0.06
NS = 1174	NS	0.96	0.94	0.85	0.81
	AB	*	*	0.09	0.13
	Other	0.04	0.06	0.06	0.06
NF = 1009	NF	0.96	0.96	0.77	0.82
	AB	*	*	0.19	0.15
	Other	0.04	0.04	0.04	0.03

* AB is included in other due to small sample counts

**Table 7b: Province of residence and province of employment for discontinuers,
by province of enrollment**

# Discontinuing		Residing outside of province of		Employed outside of province of	
		Year T+1	Year T+2	Year T+1	Year T+2
NB = 631	NB	0.94	0.92	0.89	0.88
	AB	*	*	0.05	0.07
	Other	0.06	0.08	0.06	0.05
NS = 666	NS	0.94	0.93	0.88	0.16
	AB	*	*	0.08	0.1
	Other	0.06	0.07	0.04	0.04
NF = 795	NF	0.96	0.95	0.84	0.84
	AB	*	*	0.11	0.11
	Other	0.04	0.05	0.05	0.05

* AB is included in other due to small sample counts

Table 8a: Mean wages of continuers, by province of residence and year

Mean (2013 Dollars)

	2008	2009	2010	2011	2012	2013
NB	34300	33000	32300	32500	33500	33600
Resides elsewhere	49900	45400	35600	40400	40100	48700
Sample Size	3668	3736	3839	3889	3789	3804
NS	35300	32700	33900	34900	37300	38800
Resides elsewhere	58100	50100	55100	53000	62900	63100
Sample Size	4185	4307	4701	4887	5091	5170
NF	42200	35000	36100	39900	48800	51800
Resides elsewhere	75400	62100	61700	58800	68000	72100
Sample Size	4120	4215	4283	4767	5303	5650
PEI	27800	26400	25800	28800	31400	32000
Resides elsewhere	41300	40200	32800	36500	39900	39100
Sample Size	513	535	677	864	781	947

Table 8b: Mean wages of continuers, by province of employment and year

Mean (2013 Dollars)

	2008	2009	2010	2011	2012	2013
NB	33800	32900	32100	31900	31900	31200
Alberta	59000	49400	49200	56600	58800	60400
Employed elsewhere	35400	27300	33200	44400	53300	54200
Sample size	3587	3675	3769	3799	3669	3645
NS	35300	32700	33900	34900	37300	38800
Ontario	34500	34900	35500	36300	37800	40800
Alberta	52400	39400	45400	55800	57100	59900
Other province/territory	38900	30200	28500	35900	38500	44400
Sample Size	4514	4805	4960	5050	5319	5474
NF	35500	31600	32100	36400	44700	49200
Alberta	57400	47600	52200	59200	71600	71100
Employed elsewhere	53200	47100	36800	44700	60700	57500
Sample size	3746	3987	4076	4545	5122	5496
PEI	26300	26200	25300	27900	29100	29600
Employed elsewhere	41400	30300	37500	44100	51300	54100
Sample size	492	500	644	796	715	850

**Table 9: Mean wages of completers and trade qualifiers,
by province of employment (completed in 2009-2011)**

	Year T+1	Year T+2
New Brunswick	56900	56800
Alberta	92700	96600
Employed elsewhere	67000	83000
Sample size	1535	1535
Nova Scotia	55500	56800
Alberta	96900	103900
Employed elsewhere	80600	79700
Sample size	1174	1174
Newfoundland	68700	84500
Alberta	99900	128500
Employed elsewhere	69600	73500
Sample size	1009	1009

**Table 10: Mean wages of discontinuers, by province of employment
(discontinued in 2009-2011)**

	T+1	T+2
New Brunswick	38300	38800
Alberta	70800	87000
Employed elsewhere	41500	48200
Sample size	631	631
Nova Scotia	38600	41200
Alberta	63800	73000
Employed elsewhere	60800	51400
Sample size	666	666
Newfoundland	45400	55900
Alberta	79200	98100
Employed elsewhere	58200	42200
Sample size	795	795



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