

# Should I Stay or Should I Go?

Migration and Earnings Among Atlantic Canadian Graduates in  
Recessionary Periods

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# Introduction

## How “scarring” are recessionary periods?

For many, a recession is seen as only a temporary downturn in the economy. Although employment, growth, and other measures of economic opportunity may slow or deteriorate for a period, a recovery is usually expected that will eventually turn the economy’s fortunes around. The general belief is that recessions are inevitable bumps along the road to a country’s economic development.

Yet, recessions can have persistent effects that last long after an economy is considered to have recovered. Typically referred to as “economic scarring”, the reverberations caused by a recession can affect individuals and not just aggregate indicators of economic health. One group of individuals that are particularly negatively affected by recessions are those graduating from college or university.<sup>i</sup>

A growing body of literature has acknowledged the immediate and long-term consequences of completing education during a recession. Prior to the financial crisis of 2008, a series of studies documented the earnings losses that were attributable to graduating in a recession that can last as long as five years after leaving school.<sup>ii</sup> There are fewer job openings during recessionary, so labour market entrants generally must seek jobs at firms of lower average quality, which in turn lowers earnings compared to the opportunities that would have been available had they completed their education during better economic times.<sup>iii</sup>

Career mobility is also negatively affected by recessions. College-aged graduates are generally younger and are more likely to change jobs by leveraging current employment.<sup>iv</sup> Yet in the period of economic recovery following recessionary periods, mobility can become constrained when graduates lack the financial resources to easily move to better positions. This is made worse if “queues” of graduates are created during economic slowdowns—as college-aged people take up, continue studies, or otherwise delay labour market entry to weather recessionary periods.

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i There are important differences in terminology in Canada and the United States when it comes to identifying post-secondary education. In Canada, the term college normally refers to an institution that can at most confer Bachelor’s degrees, while a university refers to one that can additionally reward Master’s and possibly Doctoral degrees. In the province of Quebec, college generally refers to the intermediate step taken by most students of attending a CEGEP between high school and that of pursuing a bachelor’s degree. CEGEP is an acronym for “Collège d’enseignement général et professionnel.” It is a publicly funded college providing technical, academic, vocational or a mix of programs; they are exclusive to the province of Quebec’s education system.

ii See for example Aslund and Rooth (2007).

iii Examining data from Norway, Liu et al. (2016) find that the wage loss from graduating in a recession is at least partly due to being unable to find work in a high paying industry. Oyer (2008) finds that MBAs face earnings losses when graduating in a recession that are largely driven by initial job placement. For more examples, see Devereux, 2002; Elsbey et al, 2016; among others.

iv See Topel and Ward (1992).

These factors can increase the amount of competition in the job market after the recession ends,<sup>v</sup> which can cause much economic harm in the medium and long term.<sup>vi</sup>

Yet to date, what we know of graduating during a recession has examined the situation from a national level without considering how subpopulations (i.e., women, indigenous peoples, and persons with disabilities) navigate these periods. Although these high-level analyses are a good starting point, understanding these graduates' mobility patterns in the context of recessions may unmask important differences that would otherwise be overlooked.

In this report, we examine the effect of the unemployment rate at graduation from university on earnings by observing the wage profiles of Atlantic Canadian university graduates in the period surrounding the Great Recession for up to five years after completing their education.<sup>vii</sup> This report is the first of its kind to examine the effect of graduating during the great recession in Canada. We also investigate the regional variation of the influence of economic conditions at graduation which, to our knowledge, has yet to be explored.

Finally, we estimate mobility patterns after graduation to predict the risk of “brain drain” away from the Atlantic provinces. We conduct the analysis using a novel administrative platform known as the **Education and Labour Market Longitudinal Linkage Platform** (ELMLP). The platform allows for the linkage of several different administrative datasets, of which we use the T1 family file (T1FF) income tax record data and education records from the Postsecondary Student Information System (PSIS). We link records from the PSIS and T1FF for university graduates of Atlantic Canada into four descriptive periods: “before the recession” (the year 2006), “during the recession” (2007 to 2009), “after” (2010 to 2011), and the “recovery period” (2012 to 2013).<sup>viii</sup>

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v Oreopoulos et al. (2012) report that the probability of obtaining a graduate degree in Canada is not affected by graduating in a recession.

vi There is evidence that graduating in a recession can affect physical health in the long term as well. Maclean (2013) finds that the health of males that enter the job market when the state unemployment rate from where they graduated from is high is lower at age 40.

vii In this paper, we denote the Atlantic provinces as being comprised of the Maritimes (Newfoundland, Nova Scotia, and Prince Edward Island) and the province of Newfoundland and Labrador.

viii It is important to note that these are simply labels for these time periods and they do not necessarily correlate with the economic conditions of the provinces during these periods, but rather the unemployment picture in Canada as a whole.

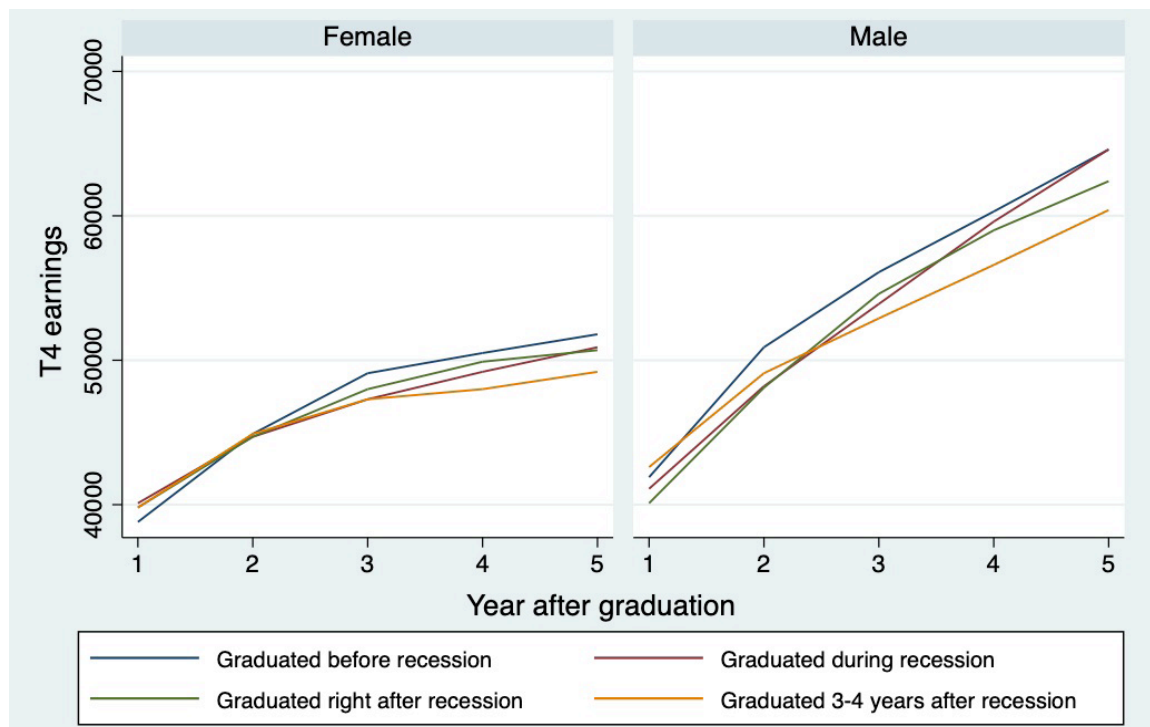
# Key Findings

## Earnings penalties when graduating in recessionary periods

We begin by investigating how the salaries of men and women who graduated from university in Atlantic Canada are affected by graduating during better or worse economic conditions (see Exhibit 1).<sup>ix</sup> Overall, the earnings trajectory for female degree holders is flatter than it is for male graduates—that is, women’s earnings have increased at a slower pace than men’s earnings have. For female graduates, earnings have actually decreased with time: the highest earners are those that have graduated before the recession, followed with similar earnings profiles for those graduating both during and just after the recession. True for both genders, earnings are lowest for “recovery” period graduates in the years following a recession, pointing to the lasting negative repercussions graduates experience resulting from economic downturns.

Exhibit 1.

### Earnings trajectory by graduate cohort and gender



Calculations by the authors. Average earnings reported on income tax records (T4s) are displayed. The time periods are as follows: before for recession denotes the year 2006; during recession for 2007 to 2009; after recession for 2010 to 2011; and during recovery for 2012 to 2013.

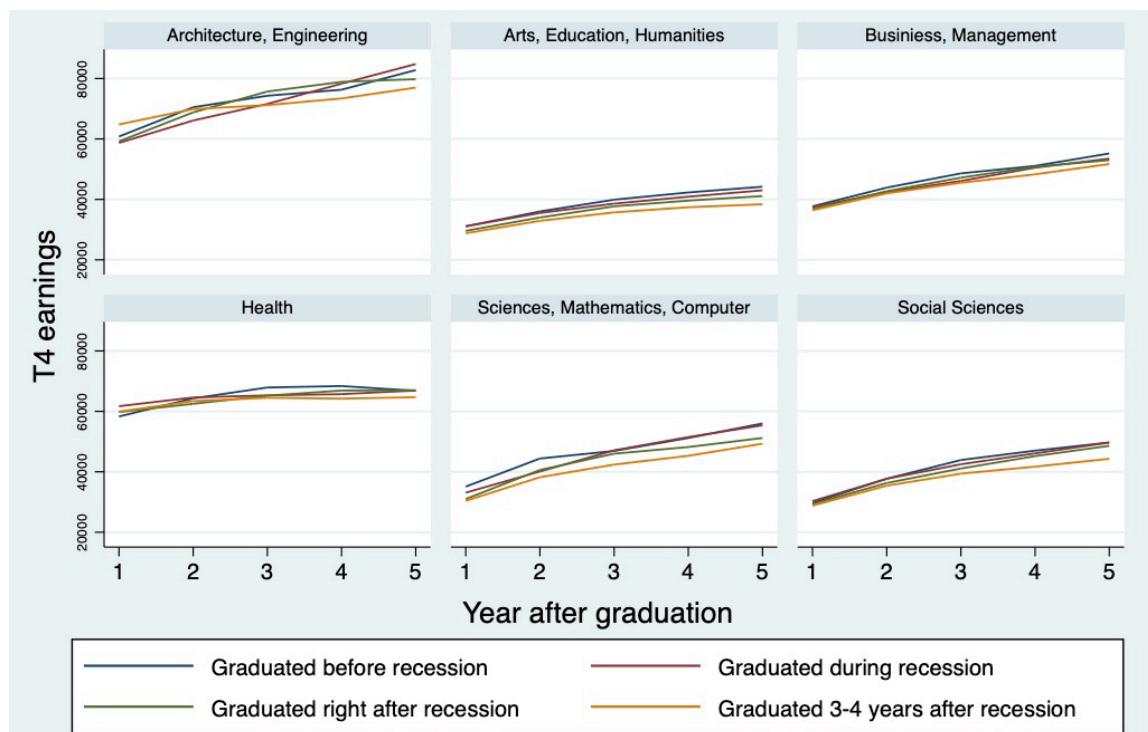
<sup>ix</sup> It is important to note that these are T4 earnings reported in these figures, and no corrections have been made for inflation. Inflation is averaged at roughly 1.75% per annum during this period.

We next consider earnings trajectories across the fields of study that graduates enter the labour market with (see Exhibit 2). Once again, salary trajectories are most promising for those who graduated before and during the great recession. For each of the six different fields of study we divide university majors into, those graduating during recovery periods fare the worst, having the lowest earnings after five years. The one notable exception is engineering and architecture graduates in the recovery period, who initially fare better than their counterparts entering the labour market before, during, or just after the recession, but fall to the bottom roughly four years after graduation.

There does not seem to be a significant practical difference in graduates' earnings across recessionary periods, at least when comparing within individual fields of study. That is, in a substantive sense, earnings remain relatively stable between graduates entering the labour market, before, during and just after a recession, with some very slight lagging during recovery. This is surprising, as we would expect that some industries would be hit harder by a recession than others.

Exhibit 2.

### Earnings trajectory by graduate cohort and field of study



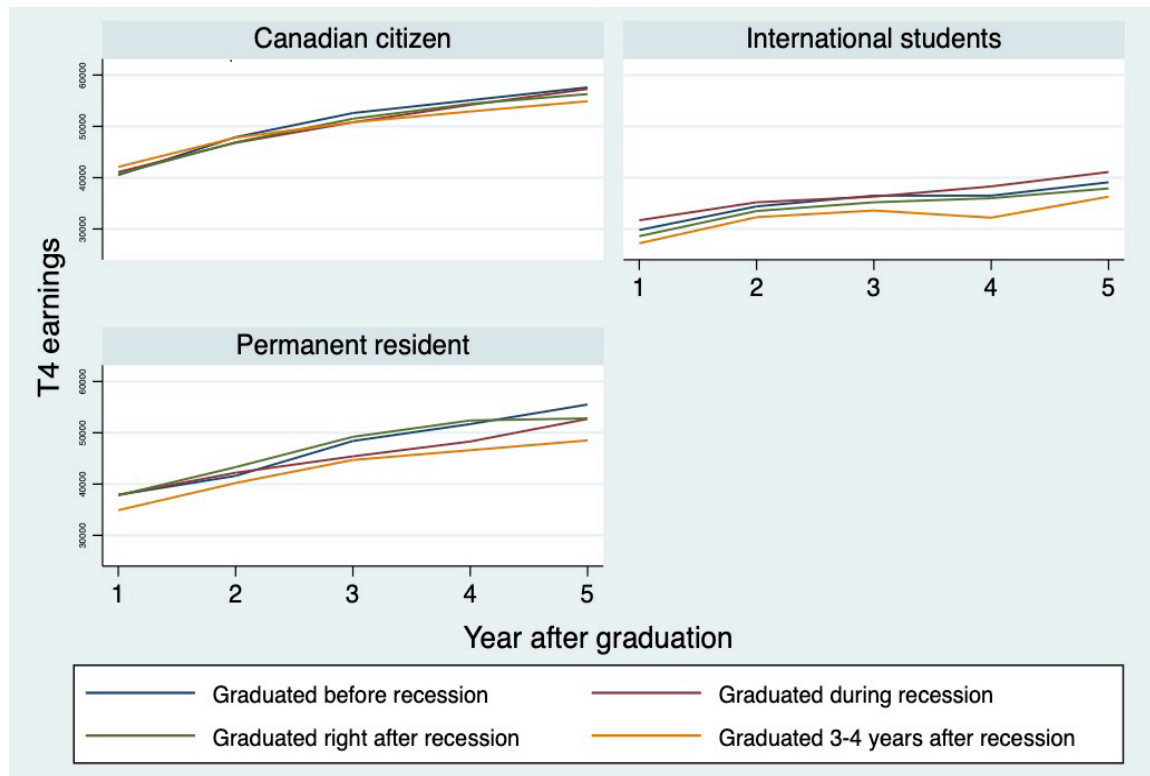
Calculations by the authors. Average earnings reported on income tax records (T4s) are displayed. The time periods are as follows: before for recession denotes the year 2006; during recession for 2007 to 2009; after recession for 2010 to 2011, and during recovery for 2012 to 2013.

Graduating during a recession for different residency statuses tells a different story (see Exhibit 3). Canadian citizens seem to be the most insulated from recessions, with salary trajectories in the “before,” “during,” “after,” and “recovery” periods of the great recession being closely aligned. Somewhat surprisingly, Canadian citizens who graduate during the recovery period earn the highest starting salaries (albeit their earnings trajectories are less steep than Canadians graduating in other periods).

On the other hand, permanent residents earn less than Canadian citizens, and this difference appears to grow as time goes on. Opposite to Canadian citizens, it would appear that permanent residents experience greater losses during an economic downturn and in the resulting aftermath.<sup>x</sup> Yet the difference is even greater for international students, who earn significantly less than Canadian citizens, have greater volatility between the periods of a recession, and have much poorer earnings trajectories. All told, the impacts of recessions are felt much differently depending on one’s citizenship status.

Exhibit 3.

### Earnings trajectory by graduate cohort and residency status



Notes: Calculations by the authors. Average earnings reported on income tax records (T4s) are displayed. The time periods are as follows: Before for recession denotes the year 2006, During recession for 2007 to 2009, After recession for 2010 to 2011, and During recovery for 2012 to 2013.

<sup>x</sup> This result is a surprise given the large literature documenting immigrant assimilation in Canada (see e.g. Aydemir and Skuterud [2005], Baker and Benjamin [1994]).

## Moving to Find Opportunity

Common logic dictates that earnings decrease as unemployment rates rise.<sup>xi</sup> We would therefore expect recessionary periods to be quite detrimental on graduates' outcomes. Yet, we find that earnings increased with the unemployment rates in the Atlantic provinces—a peculiar finding that belies the concerning trend of brain drain as graduates move elsewhere to find opportunity. Non-Atlantic provinces also tend to pay higher wages, which can further encourage emigration.<sup>xii</sup> We break down graduates' movement between provinces one and five years after graduation by looking at patterns by gender across recessionary periods (see Exhibit 4). Emigration out of the Atlantic provinces is substantial just one year after graduation and increases considerably over the four years afterwards. Interestingly, male degree holders appear to be much more mobile than women. Higher proportions of women than men remain in the same province after graduation, with similarly large shares of men opting to leave the Atlantic provinces to find employment elsewhere in Canada. In fact, the only points where men and women have similar levels of mobility is in the choice to leave their home province for somewhere else among the Atlantic provinces.

Exhibit 4.

### Mobility statistics

	<i>One year after graduation</i>		<i>Five years after graduation</i>	
	<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>
<b>Before</b>				
Stay in same province	58%	63%	51%	58%
Stay in Atlantic provinces	10%	10%	11%	10%
Move elsewhere	32%	27%	38%	32%
<b>During</b>				
Stay in same province	60%	63%	51%	57%
Stay in Atlantic provinces	9%	10%	10%	10%
Move elsewhere	31%	26%	39%	33%
<b>After</b>				
Stay in same province	61%	66%	51%	58%
Stay in Atlantic provinces	10%	11%	9%	11%
Move elsewhere	29%	24%	40%	32%
<b>Recovery</b>				
Stay in same province	58%	63%	50%	57%
Stay in Atlantic provinces	9%	9%	9%	9%
Move elsewhere	34%	28%	41%	34%

Notes: Population statistics for college graduates in the Atlantic provinces aged 20 to 64. Figures calculated by the authors. The time periods are denoted as: before for the year 2006; during for 2007 to 2009; after for 2010 to 2011; and recovery for 2012.

<sup>xi</sup> This pattern has been well documented, for example, by Oreopoulos et al., 2012 and Altonji et al., 2016.

<sup>xii</sup> The 2013 average income for an individual (excluding zeros) for ages 25 to 54 in the Atlantic provinces is \$51,200, while for Canada it is \$56,100; see Statistics Canada table 11-10-0239-01.



However, it is worth noting that it would not appear that recessionary periods have a substantial effect on patterns of mobility among graduates. That is, the differences between before, during, after, and recovery periods are relatively minor at both one and five years after graduation. Instead, emigration is a persistent concern for the Atlantic provinces. This is further indicated when we look at annual unemployment statistics between the Atlantic Provinces and the rest of Canada (Exhibit 5).

Exhibit 5.

### **Annual unemployment statistics**

<b>Year</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
Canada	6.6	6.3	5.9	7.4	8.3	7.8	7.7	7.1
Newfoundland and Labrador	16	15.2	12.2	14.9	15.5	12.6	13.4	11.7
Prince Edward Island	10.9	10.6	11	12.3	9.7	11	12.2	12
Nova Scotia	7.9	8	7.6	8.7	9.6	10	8.5	9.8
New Brunswick	8.9	7.9	8.4	8.3	9.3	9.1	9.5	11.2

*Notes: Statistics obtained using Statistics Canada table 14-10-0287-03. Unemployment rates are expressed in percentage points for January of the listed year and are seasonally adjusted for those aged 15 and over*

Encouragingly, the impact of unemployment on wages decreases with time—to the point where it disappears entirely five years after graduation. While there are many possible explanations, we suggest that the best graduates in Atlantic Canada successfully find work in their home provinces at lower salaries, while less attractive graduates emigrate to other provinces. Over time, these more effective workers who stayed in Atlantic Canada move up the salary scale at a quicker pace than leavers, so they eventually catch up to the higher salaries offered in other provinces with time in the labour market.<sup>xiii</sup>

<sup>xiii</sup> Results from the regression analyses also feature some well-established patterns including an earnings premium for marriage, lower wages for non-Canadian citizens entering the labour market, and higher salaries for those whose higher education focused on Business and STEM subjects. Of note: conditional on the factors included in our statistical model, there is no statistically detectable gender gap in the average earnings one year after graduation. However, we do see a statistically detectable difference two years later after graduation, and this difference grows at five years after graduation.

## Provincial migration patterns

We break down mobility patterns among “movers” in our last series of analyses. First, we find that higher unemployment rates at graduation more strongly encourages people to leave Nova Scotia and New Brunswick than it does in Newfoundland and Prince Edward Island (where graduates are more likely to stay). As stated above, this effect of unemployment is quite consistent over time. It would therefore appear that unemployment in Nova Scotia and New Brunswick should be a greater driver of emigration than it is for other provinces across Canada, and its effect is not universally negative in the Atlantic provinces.

Finally, we investigate the mobility patterns across the provinces for different university majors, specifically STEM majors in the Sciences, Engineering, and Health.<sup>xiv</sup> In the Atlantic Provinces, graduates of the sciences are less likely to reside in New Brunswick and Newfoundland and Labrador after graduation, while they are more likely to choose to live in Prince Edward Island and Nova Scotia. The mobility of engineering and Health graduates varies somewhat by gender. Female graduates of Health fields have a preference for Prince Edward Island and Nova Scotia, though they have a distaste for New Brunswick. Female Engineers prefer Newfoundland and Labrador. Regardless of gender, engineering graduates are less likely to choose to live in New Brunswick. In fact, the only provinces that seem to be drawing more STEM graduates from the Atlantic provinces are Alberta (all STEM graduates) and British Columbia (graduates of Engineering, the Sciences, and male graduates in Health). A summary of these results is displayed in Exhibit 6.<sup>xv</sup>

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xiv For reasons of brevity, we examine the effect of university major category on province of residence only for the case of five years after graduation. The probabilities in this section are relative to that in the category of Arts as described above

xv For this table, a “+” denotes an increased probability of living in the province for that major, a “-” denotes a decreased probability, and a blank entry means that there is no statistically detectable difference in the probability of residence for that choice of major group category. For gender breakdowns, the columns correspond to the preferences of male and female graduates in each of the specified disciplines.

Exhibit 6.

## Effect of major category on residence after graduation

	All	Female	Male	All	Female	Male
	<b>Newfoundland</b>			<b>PEI</b>		
Social Sciences				+	+	
Business				+	+	+
Sciences	-	-	-	+	+	+
Engineering	+	+				
Health			+	+	+	
	<b>Nova Scotia</b>			<b>New Brunswick</b>		
Social Sciences	+	+		-	-	-
Business	+	+		-	-	-
Sciences	+	+	+	-	-	-
Engineering			-	-	-	-
Health	+	+		-	-	
	<b>Quebec</b>			<b>Ontario</b>		
Social Sciences			-	+	+	+
Business	-	-	-	+		+
Sciences	-		-			
Engineering	-		-	-		-
Health	-	-	-			
	<b>Manitoba</b>			<b>Saskatchewan</b>		
Social Sciences						
Business	-	-	-	-	-	-
Sciences						-
Engineering	-		-	-		
Health	-			-		
	<b>Alberta</b>			<b>British Columbia</b>		
Social Sciences	+	+	+			
Business	+	+	+	-		-
Sciences	+	+	+		+	
Engineering	+	+	+		+	
Health			+	-	-	-

# Policy Discussion

High unemployment encourages those who graduate from universities in Atlantic Canada to relocate to areas outside of it. This, in turn, results in a net increase in earnings because salaries in these other regions are higher and emigration provides additional opportunities in the form of higher paying jobs. Therefore, we find no evidence of substantial (or even moderate) labour market “scarring” when graduating in poor economic times in Atlantic Canada. At present, it appears that there is not a pressing need to specifically address this issue. However, the results do indicate that the Atlantic provinces have considerably elevated levels of emigration, particularly in New Brunswick.

These findings have implications for a particularly sensitive subject in terms of policy: tuition fees. Quebec has had a two-tiered system of tuition since the 1997-1998 academic year, charging more for Canadians from elsewhere in Canada than those who reside in Quebec on a permanent basis;<sup>xvi</sup> this is in addition to charging international students even more elevated levels of tuition. These kinds of policies can be justified on the basis that students from other provinces are not likely to remain and contribute to the tax base, effectively using tax dollars from the province in which they are attending university and then returning to their home province without repaying them – similar to the reasoning for the higher tuition costs for international students. Newfoundland and Labrador also charge out of province tuition; however, it is not substantially higher.<sup>xvii</sup> Yet to date, none of the other Atlantic provinces charge out of province tuition. Therefore, to help assuage the extra financial burden that emigration causes, universities in the Maritime provinces may wish to consider adopting out of province tuition measures of cost-recovery, or otherwise incentivize graduates’ stay in the province upon completion.<sup>xviii</sup>

However, there are additional considerations to out of province tuition hikes. One possible objection is that they may be a form of double-dipping, since the Atlantic Provinces already receive much in the form of equalization payments from the “have” provinces to help compensate the provincial governments for their inferior economic conditions relative to those that contribute. Tuition increases are a sensitive subject and have in the past sometimes led to severe backlash (for example, the 2012 Quebec student protests arose in response to a proposed 75% tuition increase over 6 years).

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xvi See for example <https://thelinknewspaper.ca/article/the-further-away-the-more-you-pay> (Accessed August 27, 2021).

xvii For example, see <https://www.mun.ca/undergrad/money-matters/2021-22-tuition-and-fees/> (Accessed August 27, 2021) for information about out of province tuition fees for Memorial University.

xviii However, some policies to discourage internal migration after graduation in Canada have been found to be of limited effectiveness; see Webb (2019).



Yet for the case of out of province tuition, such reactions should be considerably less likely as smaller portions of the student body are affected and prospective students are not currently residing in the province where the increases are taking place.<sup>xix</sup>

There are policies that can be used to discourage emigration because of economic conditions. For example, wage subsidies can be provided to companies to help guarantee that they continue to maintain or even expand the number of employees on staff. However, there are challenges to implementing these kinds of policies in the case of Atlantic Canada. First, Atlantic Canada has a level of unemployment that is consistently higher than the rest of Canada, and so increasing opportunities to a substantial level would likely be extremely expensive if not unsustainable. Second, some industries may need to be specifically targeted as not all suffer equally when experiencing bouts of unemployment, increasing its complexity. These limitations need to be carefully considered if a province wishes to help smooth the effects of economic downturns by attempting to retain college graduates during times of elevated unemployment.

Of additional policy interest are the elevated rates of emigration of STEM graduates from the Atlantic provinces to Alberta and British Columbia. STEM graduates are among the highest earning majors, and increasing the proportion of graduates with these degrees is often a policy goal. There is an additional consideration that graduates with these majors are often more expensive to produce in terms of resources, and thus their emigration represents higher than usual additional costs borne by their respective governments. The Atlantic provinces may wish to take action to discourage STEM graduates from leaving soon after graduation.

In summary, in this report, we first document substantial emigration from the Atlantic provinces. This is empirically important and changes the effect of the returns to graduating in a recession. A secondary surprising finding is that patterns related to immigrant assimilation (in terms of earnings) do not appear to hold in Atlantic Canada; future work is needed to investigate these issues as well as expand the above analysis to the remaining Canadian provinces when data availability permits such a review.

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xix It is useful to recognize that the issues of funding students who will ultimately leave the province (whether because there are no opportunities at home or because they come from elsewhere) are present in other places, such as with the states of Vermont and Michigan in the United States.

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