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Retention and Mobility of NBCC Graduates: 2017 to 2019 Graduate Cohorts



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Project Title

Retention and mobility of NBCC graduates: 2017 to 2019 graduate cohorts

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Executive Summary

Migration from rural and small-town areas to larger urban centers has been a long-standing trend, and as of July 2021, more than half of New Brunswick's total population lives in either Moncton, Saint John, or Fredericton.¹ This is part of a global migration trend whereby people, mostly young adults, are choosing to leave rural and small towns for larger urban areas.

With a median age of 27, New Brunswick Community College (NBCC) graduates comprise the demographic most likely to make this migration decision. The locations of NBCC campuses – three in larger cities² and three in small-town areas³ – also make its graduates a good sample to observe when investigating rural to urban migration decisions. As such, this study reports on the intra-provincial migration trends of NBCC graduates by their campus for the 2017 to 2019 graduation cohorts. Graduate mobility is discussed 1 and 3 years after graduation, showing which NBCC campuses' graduates are more or less likely to remain in or migrate from New Brunswick after graduation.

The majority of NBCC graduates attended a campus in the location of their pre-enrollment residence. For those who attended and graduated from local campuses, a high percentage remain in the same locale after graduation. In fact, even for the smallest NBCC campuses in Woodstock and Saint Andrews, 88 percent of local graduates are still in the area 3 years after graduating.

For NBCC graduates who attended a campus in a location different from where they resided before enrolling, a high percentage of them (over 85 percent) return to their pre-enrollment location of residence. In other words, a high proportion of NBCC graduates live in the same area they lived before college - whether they attended college there or not.

We did not find evidence that the smaller NBCC campuses in Miramichi, Woodstock, or Saint Andrews attracted populations to those locations. The graduates who had moved to attend a non-local NBCC campus and who did not return were more likely to reside in Fredericton, Moncton, or Saint John – though, graduates who moved to attend the smaller campuses and remained after graduation represent less than three percent of the graduates from those campuses. Given the size of the campuses, these post-graduation attraction rates to the smaller campus locations would translate to an addition of only 4 to 7 residents per year.

The results suggest that having access to a local NBCC campus versus having to move to attend NBCC is not an important factor for local population size. It may still be the case, however, that having access to a local campus increases total participation in NBCC programs even if the local access does not impact residence location choices after graduation.

¹ Statistics Canada [StatCan] (2022b, 2023).

² NBCC has campuses in the three larger cities of Fredericton, Moncton, and Saint John.

³ NBCC also has campuses in the three small-town areas of Saint Andrews, Miramichi, and Woodstock.

Introduction

Over the last few years, youth retention and mobility have been widely discussed in New Brunswick (NB). Even with recent increases in in-migration to NB, the province continues to grapple with the challenges of an aging population, ongoing inter-provincial outmigration of its younger population, and continued rural out-migration, whereby rural NB residents are moving to urban areas in the province.

A report by the Atlantic Provinces Economic Council (APEC) predicts that in less than 10 years, more than half of the Atlantic population will be residing in Moncton, Saint John, Fredericton, Halifax, Charlottetown, or St. John's (2021). Rural NB generates the majority of the province's output in primary resource-based industries such as fishing and agriculture, and though output growth is predicted in these industries, employment is expected to contract due to improved practices and technology (APEC, 2021). Fewer jobs in these industries will mean weaker overall growth and employment (APEC, 2021).

Part of the work being done to mitigate this has been studying the mobility decisions of post-secondary students who graduate from institutions in the province. This demographic not only falls within an age group of interest, but they also stand to make substantial economic contributions wherever in NB they choose to settle after graduation. As younger and more educated New Brunswickers are the demographic more likely to move inter- and intra-provincially, it is important to understand the factors that influence these decisions, and to create incentives to encourage this demographic to stay and contribute to NB's economy.

So far, research has been focusing on the provincial retention rates of post-secondary graduates in NB (see Balzer et al., 2023 and Bhuiyan et al., 2021), but much less is known about post-secondary education as a factor influencing intra-provincial migration:

Does moving to attend school increase the likelihood that an individual will not return home?

Are students more likely to stay in the location where they studied?

To date, research on the topic of inter-provincial retention of post-secondary graduates finds that graduates who resided in NB prior to admission have the highest retention rates (Boco et al., 2020; Bhuiyan et al., 2021). For NB university graduates, 89 percent are still in the province a year after graduation; and for college graduates, 97 percent are still in NB a year after graduation.

As colleges in NB are predominantly attended by students who resided in NB prior to admission and therefore have the highest retention rates (Bhuiyan et al, 2021), college graduates are an important demographic to study when investigating factors behind decisions to remain in the province, as well as factors that influence youth intra-provincial mobility. Understanding these factors can help inform policies that incentivize graduates to stay and contribute to the local economy.

The objective of this report is to present the mobility outcomes of graduates from the New Brunswick Community College (NBCC) by the campus attended. There are currently six NBCC campuses in NB, each offering its own unique set of programs:

- Moncton campus
- Saint John campus
- Fredericton campus
- Saint Andrews campus
- Miramichi campus
- Woodstock campus

As NBCC continues to expand its program offerings, it is important to see the effects that having an NBCC campus in a given city has on the attraction and retention of graduates in the area.

This report attempts to answer four research questions:

1. Where are graduates who remain in the province residing after graduation?
2. Which NBCC campus location(s) has the most graduates settling in its geographic boundary after graduation, if they did not live there prior?
3. Which NBCC campus is more likely to have its graduates remain in its geographic boundary, if they lived there prior?
4. What percentage of non-local NBCC campus graduates return to their pre-enrollment location/residence after graduation?

If there is no correlation between NBCC graduates' campus location and where they choose to move and live after graduation, NBCC might consider concentrating its programs on fewer campuses. However, if the opposite is true – and there is a correlation between NBCC campus attended and graduates' later location of residence – NBCC might justify foregoing the cost advantages associated with economies of scale (that is, the cost advantages of increasing the scale of production) and instead organize more opportunities for study in more communities.

Study results are obtained by matching data available in the Citizen Data at the New Brunswick Institute for Research, Data and Training (NB-IRDT) to registrar data made available by NBCC. Linking these two datasets is key for determining the mobility of NBCC graduates by the campus they attended. The longitudinal nature of the Citizen Data is helpful, as it allows these graduates' mobility decisions to be tracked over time.

The rest of this report is divided into the following sections: Background, Data and Methodology, Results, and Discussion/Conclusion.

Background

There are currently six NBCC campuses in NB. The Moncton and Saint John campuses are located in the province's two largest cities and offer full- and part-time programs, online programs, and apprenticeship training in the fields of Applied and Media Arts, Business Administration, Civil Engineering Technology, Electrical and Electronics Engineering, Health, Hospitality and Tourism, Information Technology, and Social Sciences, as well as Trades. These campuses have the largest student populations, with the Saint John campus having over 1500 students enrolled in programs, and the Moncton campus having over 1400 students enrolled.

The Miramichi and Fredericton campuses are smaller campuses based on student population. These campuses host fewer than 1000 students at a given time. The Fredericton campus, located in NB's capital city, is the newest of the NBCC campuses and offers fewer programs than the Saint John and Moncton locations. Here, students can complete programs in Business Administration, Civil Engineering Technology, Health, Information Technology, and Social Sciences. The Miramichi campus offers fewer programs⁴ than the Fredericton location and is the only campus to offer academic programs in the field of Environment and Marine Systems.

The smallest NBCC campuses are the Saint Andrews and Woodstock campuses, with just over 250 students enrolled in programs at each campus a given time. These campuses offer the fewest programs, all of which fall within the fields of Business Administration, Health, Information Technology, Social Science, or Trades.

The economic benefit of NBCC to the province lies, in part, in the human capital of its alumni. Over 2500 of the graduates of the 2019/20 class were employed in NB after graduation, supporting an estimated 4079 full-time equivalent jobs and over \$200 million in wages (NBCC & Stiletto, 2021). Household spending of this group, induced by economic activity, equated to over \$150 million with \$87.5 million in total taxes. Overall, NBCC's alumni have boosted provincial GDP by an estimated \$7.2 billion and have supported over 70,000 jobs in the province (NBCC & Stiletto, 2021).

As such, studying these graduates is not only beneficial to NBCC for designing in-house policies for students but is also beneficial to the province in determining how to better serve such an important demographic. As the majority graduates hold credentials in program fields offered in the Moncton, Saint John, and Fredericton campuses, it is important to look at results by campus and determine which campus plays the most important role in the attraction and retention of graduates in NB.

⁴ The Miramichi campus offers programs in the fields of Applied and Media Arts, Business Administration, Environment and Marine Systems, Health, Informational Technology, and Social Sciences, as well as Trades.

Data and Methodology

Data

This report assesses the mobility decisions – retention and attraction – of NBCC graduates from 2017 to 2019. It links together graduate data available in the NBCC Student Data holdings with provincial resident geographic information available in the Citizen Data.

Student Data – 2013-2020

Student Data provided by the NBCC registrar contains information on students who previously enrolled or are currently enrolled at NBCC. This data set contains background and demographic data, as well as information on the students' program of study.

Citizen Data – 1971-2022

Citizen Data derived from the NB Department of Health contains demographic and geographic information on NB residents who have been issued a provincial Medicare card. As the vast majority of residents in the province are registered for Medicare, this data set is close to being representative of the actual NB population. However, on occasion, individuals living in the province may be absent from the Citizen Data, such as active military personnel and some classes of temporary residents. A small percentage of NB residents in the province are also missing from the Citizen Data because of inconsistent or missing records that are required for matching to the Student Data.

Regarding students, Canadian students normally resident in another province typically are not eligible for Medicare and therefore will not be found in the Citizen Data unless they settle in NB after graduation. Full-time international students have been eligible to enroll in Medicare since 2017, but others may not be eligible and as such will similarly not be in the Citizen Data while enrolled.

“Matched” individuals are those NBCC graduates present in the Student Data who are also found in the Citizen Data, and “unmatched” individuals are those present in the Student Data but who are not found in the Citizen Data. As such, the location of unmatched graduates cannot be tracked over time, and they may or may not reside in the province after graduation.

Since most of the unmatched graduates are not NB-based students, they are assumed to have left the province after graduation. While this is likely to be the case for most, because of matching errors arising from missing data, there will still be some underestimation of the true retention rate.

Methodology

This report utilizes descriptive and empirical methods in assessing graduates' mobility.

Descriptive Statistics

As with previous NB-IRDT reports using the Citizen Data to assess the mobility of NB residents, this report bases presence and movement within the province on updated Medicare information. Matched individuals are considered retained in NB if they are recorded as having an active Medicare status either 1 or 3 years after graduation. Their location in the province is determined by updated addresses in the Medicare Registry.

In NB, a resident is required to update their Medicare each time they move within the province. These updated addresses are used to identify the graduate's location before their program starts, as well as 1 and 3 years after graduation. In other words, they are used to determine retention in and attraction to an NBCC campus location.

Geographic location is defined using Statistics Canada geography levels, namely, Census Metropolitan Area (CMA), Census Agglomeration (CA), or Census Division (CD) (StatCan, 2018). A CMA or CA is "formed by one or more adjacent municipalities centered on the population core." For a city or town to qualify as a CMA in Canada, it must have a population of at least 100,000, of which at least 50,000 must live in the population core. A CA must have a population of at least 10,000. A CD is a group of "neighboring municipalities joined together for the purposes of regional planning and managing common services" (StatCan, 2022a).

For this report, a graduate is considered "retained" in their campus location or "attracted" to their campus location if they live within the following geographic boundaries after graduation:

Table 1: NBCC Campuses and Their Corresponding Geographic Boundaries

| Campus | Census Metropolitan Area or Census Division |
|---------------|--|
| Moncton | Moncton CMA |
| Saint John | Saint John CMA* |
| Fredericton | Fredericton CMA |
| Miramichi | Miramichi CA, Northumberland CD, and Gloucester CD |
| Woodstock | Woodstock CA, Carleton CD, and Victoria CD |
| Saint Andrews | Saint Andrews CA and Charlotte CD |

**Excludes the Charlotte CD. Although the Charlotte CD is considered a part of the Saint John CMA, we have excluded it from the geographic boundaries of the Saint John campus and placed it under the geographic boundaries of the Saint Andrews campus.*

Additionally, graduates' movements are grouped into five possible categories based on where they live before enrollment and after graduation ([Table 2](#)).

Table 2: Post-Graduation Mobility Categories and Their Definitions

| Mobility Categories | Definitions |
|----------------------------------|---|
| Stayer-Stayer (retention) | Graduates who attend the NBCC campus in the same CMA/CA/CD where they lived pre-enrollment and remain in that location for 1 or 3 years after graduation. |
| Stayer-Mover | Graduates who attend the NBCC campus in the same CMA/CA/CD where they lived pre-enrollment but move away from that CMA/CA/CD within 1 or 3 years after graduation. |
| Mover-Stayer (attraction) | Graduates who attend an NBCC campus in a different CMA/CA/CD from where they lived pre-enrollment and remain in that location for 1 or 3 years after graduation. |
| Mover-Mover | Graduates who attend an NBCC campus in a different CMA/CA/CD from where they lived pre-enrollment and move to a CMA/CA/CD outside of their pre-enrollment location and campus location. |
| Mover-Returner | Graduates who attend an NBCC campus in a different CMA/CA/CD from where they lived pre-enrollment and move back to the pre-enrollment CMA/CA/CD within 1 or 3 years after graduation. |

Descriptive statistics on the counts and rates of retention and attraction are presented for each NBCC campus, where possible, based on sufficient sample sizes. For the mobility categories, calculations are limited to those students within the province after graduation.

Statistical Analysis

A Generalized Least Squares (GLS) regression model is used in determining the extent to which factors can affect a graduate's decision to remain or settle in their CMA, CA, or CD. Each regression model controls for the graduate's sex, age, graduation year, and immigrant status. For the regression considering the likelihood of settling in a campus CMA, CA, or CD, we control for pre-enrollment residence. The variable of interest is the campus attended.

Results

Summary Descriptive Statistics

Tables 3 and 4 present the number of graduates from NBCC by the campus attended and their matching rates. As mentioned earlier, matched graduates are those graduates who are found in the Citizen Data, while unmatched individuals are those not found in the Citizen Data.

Each year, more than 2000 students graduate from NBCC, and about 95 percent of them are found in the Citizen Data. NBCC Saint John produces the highest number of graduates, accounting for slightly over 30 percent of NBCC graduates each year. NBCC Moncton and Fredericton account for approximately 26 to 30 percent and 9 to 11 percent of graduates, respectively, each year. Of the NBCC campuses outside the main cities, NBCC Miramichi accounts for the most graduates of the three smaller campuses, with 13 to 15 percent of graduates finishing from that location. NBCC Saint Andrews and Woodstock produce the fewest graduates each year.

Table 3: Number of Graduates by Campus, (Matched and Unmatched)

| Campus | 2017 | 2018 | 2019 |
|---------------|-------------|-------------|-------------|
| Moncton | 540 | 615 | 600 |
| Saint John | 690 | 700 | 665 |
| Fredericton | 185 | 230 | 200 |
| Miramichi | 300 | 275 | 270 |
| Woodstock | 145 | 160 | 140 |
| Saint Andrews | 195 | 175 | 125 |
| Total | 2050 | 2155 | 2000 |

Table 4: Matching Ratio, by Campus

| Campus | 2017 | 2018 | 2019 |
|---------------|--------------|--------------|--------------|
| Moncton | 93.5% | 95.1% | 94.2% |
| Saint John | 95.7% | 95.7% | 96.2% |
| Fredericton | 94.6% | 93.5% | 92.5% |
| Miramichi | 93.3% | 92.7% | 94.4% |
| Woodstock | 96.6% | 96.9% | 100.0% |
| Saint Andrews | 92.3% | 94.3% | 96.0% |
| Total | 94.6% | 95.1% | 95.3% |

Notes: "matched" refers to graduates who are found in the Citizen Data. The final sample is also limited to those for whom address before enrollment is not missing from the enrollment data.

As previous research on provincial retention rates of NB graduates shows, graduates from NBCC have one of the highest retention rates of all NB institutions (Bhuiyan et al, 2021; Boco et al, 2020). For each graduation cohort, about 90 percent of graduates are still in NB within 1 and 3 years of graduation.

NBCC Woodstock has the highest provincial retention rates of the NBCC campuses, with 94 percent of its graduates still in NB a year after graduation and 92 percent still in NB 3 years after graduation. NBCC Fredericton, on the other hand, has the lowest provincial retention rates of the NBCC campuses, with 90 percent of its graduates remaining in NB within a year after graduation and 86 percent still in NB 3 years after.

That said, retention rates for all campuses are still relatively high, which raises the question of where in the province these graduates are choosing to settle after graduation.

Table 5: Provincial Retention Rates, by Campus

| Campus | 1-Year Provincial Retention Rates | 3-Year Provincial Retention Rates |
|----------------------|--|--|
| Moncton | 91.2% | 88.6% |
| Saint John | 93.7% | 91.2% |
| Fredericton | 90.2% | 86.2% |
| Miramichi | 92.3% | 89.3% |
| Woodstock | 94.4% | 92.1% |
| Saint Andrews | 90.9% | 90.9% |
| Overall | 92.3% | 89.8% |

Note: This table counts unmatched graduates as among those who departed the province. Most unmatched graduates are out-of-province graduates (excluding international students, who were eligible for Medicare at the start of the study period [2017]) who did not enroll in NB Medicare.

Where are Graduates Residing in the Province After Graduation? ⁵

Due to small sample counts, rather than showing the exact NB city graduates move to after graduation, we define post-graduate mobility by proximity to their campus or their pre-enrollment CMA, CA, and/or CD.

Graduates who belong to each mobility category are calculated as a percentage of total graduates of that campus. For instance, if there are five graduates from NBCC Fredericton, with each belonging to one of the five mobility categories, each of them will account for 20 percent of total graduates of NBCC Fredericton.

⁵ It should be noted that the term “returns” is used loosely, as some graduates who attend a non-local NBCC campus never actually change their address. In other words, “returns” can also mean “remains.”

The majority of NBCC graduates attended a local campus of NBCC (Table 6). Of those graduates, around 90 percent of "local" graduates reside in the same location of their campus of study three years after graduation (stayer-stayer) for all NBCC campuses, including the smaller campuses such as the Woodstock/Saint Andrews campuses (Table 7).

Table 6: Proportions NBCC Graduates by Mobility Decisions for Campus of Attendance and Post-Graduation Residence, 1 and 3 Years After Graduation, by NBCC Campus

| Campus | | Moncton | | Saint John | | Fredericton | | Miramichi | | Woodstock / Saint Andrews | |
|---|---|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|---------------------------|-------------------|
| | | 1 Year Post-Grad | 3 Years Post-Grad | 1 Year Post-Grad | 3 Years Post-Grad | 1 Year Post-Grad | 3 Years Post-Grad | 1 Year Post-Grad | 3 Years Post-Grad | 1 Year Post-Grad | 3 Years Post-Grad |
| Attended Local NBCC | Resides in location of NBCC (Stayer-Stayer) | 54.0% | 48.3% | 69.4% | 66.0% | 58.3% | 50.5% | 58.9% | 54.7% | 50.3% | 47.0% |
| | Resides in a location different from NBCC campus (Stayer-Mover) | 2.7% | 7.5% | 1.9% | 5.5% | 2.9% | 10.1% | 2.0% | 6.1% | 3.5% | 6.5% |
| Attended non-local NBCC | Did not return after graduation (Mover-Mover) | 1.0% | 3.1% | 1.1% | 3.6% | 1.0% | 3.0% | 1.3% | 4.1% | 1.8% | 4.2% |
| | Returned after graduation (Mover-Returner) | 40.0% | 34.9% | 26.3% | 21.4% | 33.0% | 24.2% | 37.1% | 32.4% | 43.9% | 39.9% |
| Resides in NBCC location of study but not from location | Mover-Stayer | 2.3% | 6.2% | 1.3% | 3.6% | 4.9% | 12.1% | 0.7% | 2.7% | 0.6% | 2.4% |

*Notes: Sum of column cells is 100% except for instances due to rounding and other requirements for data release. Woodstock and Saint Andrews campuses have been combined due to small sample sizes. See [Table 1](#) for mobility definitions.

Table 7: Percentage of Local Graduates Retained in Their Pre-Enrollment Location of Residence and Percentage of Non-Local Graduates Who Returned to Their Pre-Enrollment Residence, 1 and 3 Years Post-Graduation

| Campus | Attended local, residing local | | Attended non-local, residing local | |
|-------------------------|--------------------------------|-------------------|------------------------------------|-------------------|
| | 1 Year Post-Grad | 3 Years Post-Grad | 1 Year Post-Grad | 3 Years Post-Grad |
| Moncton | 95% | 87% | 98% | 92% |
| Saint John | 97% | 92% | 96% | 86% |
| Fredericton | 95% | 83% | 96% | 86% |
| Miramichi | 97% | 90% | 97% | 89% |
| Woodstock/Saint Andrews | 93% | 88% | 96% | 90% |

Notes: Percentages are calculated from the proportions in [Table 6](#).

While the majority of NBCC graduates attended their local campus, a substantial proportion of NBCC graduates did not attend the NBCC campus in their location of high school study – in other words, they moved away to study. Of these graduates, with the exception of NBCC Fredericton graduates, over 85 percent are residing in the community in which they attended high school (i.e., their pre-enrollment residence) 3 years after graduation (Table 7).

The share of graduates who return to their original community after graduation is comparable to the share of local graduates remaining in the community. This finding suggests that the availability of access to NBCC programs in a local community is not very important for retaining more population post-graduation.⁶ The access to local programming may be important for increasing total enrolment in NBCC, however, if costs of attending non-locally are a barrier.

Table 7 suggests that residing in the home (pre-NBCC study) community is a common outcome immediately after graduation regardless of whether the graduate stayed or moved to study. The common reduction in the percentages of graduates still residing the pre-enrollment location of residence three years after graduation between graduates who stayed and moved to attend NBCC suggests that migration decisions are a product of push and pull factors common to college graduates and that are not specific to where the graduate chose to attend NBCC.

⁶ Using graduate numbers for 2019 by campus from [Table 3](#), and the percentage of graduates living in their pre-NBCC enrollment community from [Table 7](#), we can compare how many more residents with an NBCC credential would be in a location if all graduates had attended the local campus. If all graduates had attended their local campus, then 3 years after graduation there would be 1 less resident in Moncton, 32 fewer residents in Saint John, 12 more residents in Fredericton, 8 more residents in Miramichi, and 2 fewer residents between Saint Andrews and Woodstock. Overall, the change in the number of residents residing locally if all had attended their local NBCC campus represents around 2.5 percent of the total 2000 NBCC graduates in 2019.

Campus Attraction Rates

For each campus, attraction rates are calculated by dividing the number of students who did not live in their campus geographic boundary prior to enrollment but continue to reside there after graduation by the total number of graduates who did not live in their campus geographic boundary prior to enrollment.

Table 8: Number of Students Settling in Their Campus Geographic Boundary After Graduation (Mover-Stayers)

| Campus | Number of Graduates Who Lived Outside Campus Geographic Boundary Pre-Enrollment (1 Year) | Resided in Campus Geographic Boundary Within 1 Year of Graduation | Number of Graduates Who Lived Outside Campus Geographic Boundary Pre-Enrollment (3 Years) | Resided in Campus Geographic Boundary Within 3 Years of Graduation |
|-----------------------------|--|---|---|--|
| Moncton | 650 | 35 | 640 | 90 |
| Saint John | 535 | 25 | 520 | 65 |
| Fredericton | 205 | 25 | 200 | 60 |
| Miramichi | 295 | 5 | 285 | 20 |
| Woodstock/ Saint Andrews | 395 | 5 | 390 | 20 |
| Total | 2080 | 95 | 2035 | 255 |

Notes: Numbers are based on those still within the province. Those who leave the province within 1 or 3 years are excluded from the pre-enrollment residence counts, hence the two separate columns for 1 and 3 years.

As determined in the previous section, NBCC Woodstock/Saint Andrews have the lowest attraction rates, as a very small percentage of non-local graduates of these campuses (1 to 7 percent) settle in those campus locations after graduation. NBCC Fredericton has the highest attraction rates, with about 30 percent of non-local graduates settling in Fredericton 3 years after graduation.

NBCC Moncton and Saint John have about the same attraction rates (though NBCC Moncton is slightly higher). Both have fewer than 15 percent of their non-local graduates settle in the area 3 years after graduation.

Table 9: Campus Attraction Rates 1 and 3 Years After Graduation

| Campus | 1-Year Attraction Rate | 3-Year Attraction Rate |
|--------------------------------|-------------------------------|-------------------------------|
| Moncton | 5.4% | 14.1% |
| Saint John | 4.7% | 12.5% |
| Fredericton | 12.2% | 30.0% |
| Miramichi | 1.7% | 7.0% |
| Woodstock/Saint Andrews | 1.3% | 5.1% |
| Total | 4.6% | 12.5% |

Notes: Those who reside in their campus geographic boundary pre-enrollment are excluded from calculations.

Table 10 below shows how the likelihood of a non-local NBCC graduate settling in their campus geographic boundary after graduation (mover-stayer) varies by campus after controlling for factors such as age, marital status, and sex, which can influence mobility decisions. The dependent variable is a binary variable with a value of 1 if the student lives in their campus geographic boundary at any point after graduation, and 0 otherwise. The sample is limited to those who did not live in their campus geographic boundary prior to enrollment.

The likelihood of a graduate settling in the geographic boundaries of their campus after graduation if they did not live there prior to enrollment increases if the campus is in Fredericton. Compared to those attending the Moncton campus, those who attended the Fredericton campus are 12 percent more likely to settle in the Fredericton CMA after graduation if they did not live in Fredericton prior to enrollment, other things equal.

For Saint John and Woodstock campus graduates, results show that they are less likely to settle within the geographic boundaries of their campus, other things equal; but the lack of statistical significance indicates that this variation is not a significantly meaningful result.

Those who attend the Miramichi and Saint Andrews campuses, however, have statistically significant results showing they are less likely to live in their campus's geographic boundary after graduation after accounting for other factors. Graduates from the Miramichi campus are 4 percent less likely, and graduates from the Saint Andrews campus are 14 percent less likely, to settle in their campus geographic boundary after graduation.

As seen in the previous table, the attraction rates of these campuses are low relative to the campuses in bigger cities, as most graduates do not choose to live in these locations after they graduate. Despite these results taking into account factors such as age, marital status, sex, and pre-enrollment residence – which can affect post-graduation mobility decisions – students who attend the NBCC campuses in smaller cities are less likely to settle locally after graduation.

Simply put, results show a relationship between a mover graduate's campus location and their decision to settle in their campus geographic boundary. The NBCC campus a non-local student attends is a determinant of whether they settle there after graduation, and NBCC campuses in

smaller NB cities have a lower attraction value than NBCC campuses in larger NB cities. This is not surprising, given the attraction of moving to larger cities for younger people more generally.

Other factors which affect a graduate's likelihood of being a mover-stayer graduate after graduation are their age, graduation year, being a humanities graduate, and their previous residence. Students under age 27 are 2 percent less likely than those older than 27 to be mover-stayer graduates. As well, graduates in the 2019 graduation cohort are less likely than those who graduated earlier in 2017 to be mover-stayer graduates. This is likely due to a shorter amount of time having passed since graduation for 2019 graduates relative to 2017 graduates.

Humanities graduates are 22 percent less likely than Education graduates to be mover-stayer graduates. As well, prior place of residence also matters, with those who resided in Saint John, Fredericton, or any towns or cities outside those mentioned in Table 10 being less likely than those who resided in Moncton pre-enrollment to be mover-stayer graduates. This is either because they are moving back to their pre-enrollment address after graduation or moving elsewhere in the province.

Table 10: The Likelihood of Mover Graduates Settling in the Same Geographic Boundary as Their NBCC Campus (i.e., Becoming Mover-Stayers)

| Variable | Coefficient (Robust SE.) |
|---|--------------------------|
| NBCC Campus (comparison category: Moncton) | |
| <i>Saint John</i> | -0.013 (0.024) |
| <i>Fredericton</i> | 0.123*** (0.040) |
| <i>Miramichi</i> | -0.044** (0.040) |
| <i>Woodstock</i> | -0.027 (0.036) |
| <i>Saint Andrews</i> | -0.114*** (0.020) |
| Younger than 27 years old (median age of sample) | -0.027* (0.031) |
| Graduation Year (comparison category: 2017) | |
| 2018 | -0.010 (0.018) |
| 2019 | -0.032* (0.018) |
| Male | -0.026 (0.025) |
| Married | 0.041 (0.028) |
| International Student | 0.145 (0.264) |
| Field of Study (comparison category: Education) | |
| <i>Visual Arts and Communication Technology</i> | -0.091 (0.112) |
| <i>Humanities</i> | -0.220* (0.133) |
| <i>Social Sciences and Law</i> | -0.121 (0.108) |
| <i>Business Management and Public Administration</i> | 0.028 (0.108) |

| | |
|--|-------------------|
| Physical Life Sciences and Technology | 0.170 (0.143) |
| Math, Computer Science, and Information Science | 0.055 (0.116) |
| Architecture and Engineering | -0.028 (0.108) |
| Health | -0.039 (0.107) |
| Personal, Protection, and Transportation Services | -0.073 (0.109) |
| Other | -0.055 (0.140) |
| Pre-Enrollment Residence (comparison category: Moncton) | |
| Saint-John | -0.100*** (0.039) |
| Fredericton | -0.088** (0.038) |
| Edmundston | -0.018 (0.125) |
| Campbellton | -0.066 (0.071) |
| Miramichi | -0.045 (0.045) |
| Woodstock | -0.029 (0.047) |
| St. Andrews | -0.081* (0.048) |
| Other NB | -0.096*** (0.037) |

Notes: '*' denotes the level of statistical significance, with '***' indicating significance at the 1 percent level. 'Robust SE' = Robust Standard Errors.

Campus Retention Rates

Table 11 below assesses which NBCC campus relative to others sees more retention of its local students after graduation after controlling for differences across graduates in age, marital status, and sex, which are known to affect mobility decisions. Using regression analysis, the dependent variable in the statistical model is a binary variable equal to one if a graduate had attended their local campus of NBCC and resided in the same area 3 years later, and zero otherwise.

Results show that graduates who lived in Saint John prior to enrollment and graduate from NBCC Saint John are about 5 percent more likely to remain in Saint John after graduation, other things equal. For graduates from NBCC Fredericton, Miramichi, and Woodstock, estimates show they are less likely to remain in their campus geographic boundaries, but the estimates are not statistically significant from zero. This suggests that campus of study is not a significant determinant of the decision to remain in that location after graduation.

For those students who live in Saint Andrews prior to enrollment and attend their local NBCC campus (i.e., NBCC Saint Andrews), they are 6 percent less likely to remain in the area after graduation than the base category of graduates from the Moncton area, and the estimate is significantly different from zero.

Statistical significance on these results shows that the decision of graduates to leave their location of residence and study after graduation varies significantly by that location of residence and study. In other words, there is a correlation between the graduates' decision to settle in a location and the NBCC campus they attend. Campuses in smaller cities like Saint Andrews show a lower likelihood of retaining local graduates.

Table 11: The Likelihood of Stayer Graduates Remaining in Their NBCC Campus Geographic Boundary if They Already Lived There Pre-Enrollment (i.e. Becoming Stayer-Stayers)

| Variable | Coefficient (Robust SE.) |
|--|--------------------------|
| NBCC Campus (comparison category: Moncton) | |
| <i>Saint John</i> | 0.047*** (0.012) |
| <i>Fredericton</i> | -0.015 (0.023) |
| <i>Miramichi</i> | -0.020 (0.020) |
| <i>Woodstock</i> | -0.004 (0.021) |
| <i>Saint Andrews</i> | -0.057** (0.030) |
| Younger than 27 Years Old (median age of sample) | 0.015 (0.011) |
| Graduation Year (comparison category: 2017) | |
| 2018 | 0.035*** (0.017) |
| 2019 | 0.072*** (0.012) |
| Male | 0.043*** (0.017) |
| Married | -0.006 (0.028) |
| International Student | -0.101* (0.264) |
| Field of Study (comparison category: Education) | |
| <i>Visual Arts and Communication Technology</i> | 0.044 (0.034) |
| <i>Humanities</i> | -0.007 (0.082) |
| <i>Social Sciences and Law</i> | -0.003 (0.028) |
| <i>Business Management and Public Administration</i> | -0.010 (0.023) |
| <i>Physical Life Sciences and Technology</i> | -0.009 (0.041) |
| <i>Math, Computer Science, and Information Science</i> | -0.033 (0.032) |
| <i>Architecture, Engineering, and Related Technology</i> | -0.046* (0.027) |
| <i>Health and Related Fields</i> | -0.015 (0.025) |
| <i>Personal, Protective, and Transportation Services</i> | -0.026 (0.039) |
| Other | -0.136 (0.102) |

Notes: '**' denotes significance the level of statistical significance, with '***' indicating significance at the 1 percent level. 'Robust SE' = Robust Standard Errors.

Discussion and Conclusion

This study shows the attraction and retention rates of NBCC campuses for students who graduated in 2017 to 2019, to examine the influence that local access to college programs may have on a graduate's decision to remain in their pre-enrolment location of residence or migrate to a new location of residence. As rural and small-town out-migration continues to rise in Canada, understanding mobility decisions, especially for younger workers, can inform policy options for addressing labour shortages and population decline currently taking place in these areas.

The majority of NBCC graduates attended a campus in the location of their pre-enrollment residence. For those who attended and graduated from their local campuses, a high percentage remain in the same locale after graduation. In fact, even for the smallest NBCC campuses in Woodstock and Saint Andrews, 88 percent of local graduates are still in the area 3 years after graduating.

For NBCC graduates who attended a campus in a location different from where they resided before enrolling, a high percentage of them (over 85 percent) return to their pre-enrollment location of residence. Overall, it appears that attending a local campus versus moving to attend a non-local NBCC campus does not have an important influence on population retention.

We did not find evidence that NBCC campuses in Miramichi, Woodstock, or Saint Andrews attracted population to those locations. Of the minority of graduates who had moved to attend a non-local NBCC campus, those who did not return were more likely to reside in Fredericton, Moncton, or Saint John – though, graduates who attended the smaller campuses and remained after graduation represented less than 3 percent of the graduates from those campuses. Given the size of the campuses, these post-graduation attraction rates to the smaller campus locations would translate to an addition of 4 to 7 residents per year.

The results suggest that access to a local campus of NBCC versus having to move to attend NBCC does not change graduates' decisions about where to reside after completing study, which suggests that local access to NBCC programs is unimportant for local population size. Although factors affecting the decision about if and where to enroll in NBCC programs are outside the scope of this report, it may still be the case that having access to a local campus increases total participation in NBCC programs even if the local access does not impact residence location choices after graduation.

References

- Atlantic Provinces Economic Council. (2021). *Looking ahead: Atlantic Canada's urban and rural dynamics*. Retrieved February 4, 2022, from <https://www.apecocon.ca/publications/view/?publication.id=414&site.page.id=2000>
- Balzer, A., McDonald, T., Miah, P., & Mokhtar, R. (2023). *Graduate retention in New Brunswick: 2019 and 2020 cohort update*. Fredericton, NB: New Brunswick Institute for Research, Data and Training. <https://www.unb.ca/nbirdt/research/publications/graduate-retention-in-new-brunswick-2019-and-2020-cohort-update.html>
- Bhuiyan, E. M., Daigle, B., McDonald, T., & Miah, P. (2021). *College & university graduate retention in New Brunswick: 2010 - 2018*. Fredericton, NB: New Brunswick Institute for Research, Data and Training. <https://www.unb.ca/nbirdt/research/publications/college-and-university-graduate-retention-in-new-brunswick-2010--2018.html>
- Boco, E., Leonard, P., & McDonald, T. (2021). *Retention, attraction, and labour market outcomes of post-secondary graduates in New Brunswick*. Fredericton, NB: New Brunswick Institute for Research, Data and Training. <https://www.unb.ca/nbirdt/research/publications/retention-attraction-and-labour-market-outcomes-of-post-secondary-graduates-in-new-brunswick.html>
- Emery, J. C. H., Wang, L., & Daigle, B. (2019). *The impact of official bilingualism on the geographic mobility of New Brunswickers: Evidence from 2001 to 2016*. Fredericton, NB: New Brunswick Institute for Research, Data and Training. <https://www.unb.ca/nbirdt/research/publications/the-impact-of-official-bilingualism-on-the-geographic-mobility-of-new-brunswickers.html>
- NBCC, & Stiletto. (2021, January). *NBCC economic impact report*. NBCC Publications. Retrieved January 21, 2022, from https://nbcc.ca/docs/default-source/publications/nbcc-economic-impact-2021-full-report.pdf?sfvrsn=be42a54_4
- Statistics Canada. (2018, September 17). *CMA and CA: Detailed definition*. Ottawa, ON: Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/92-195-x/2011001/geo/cma-rmr/def-eng.htm>
- Statistics Canada. (2022a, January 9). *Census division (CD)*. Ottawa, ON: Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/92-195-x/2021001/geo/cd-dr/cd-dr-eng.htm>
- Statistics Canada. (2022b, December 21). *Population estimates on July 1st, by age and sex (Table no. 17-10-0005-01)*. Ottawa, ON: Statistics Canada. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710000501>
- Statistics Canada. (2023, January 11). *Population estimates, July 1, by census metropolitan area and census agglomeration, 2016 boundaries (Table no. 17-10-0135-01)*. Ottawa, ON: Statistics Canada. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710013501>